

Director of Infection Prevention and Control Annual Report 2017/18



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1.0 Introduction and Executive Summary

The purpose of this report is to inform the Trust Board of Infection Prevention and Control (IPC) Performance during 2017/18 and to present plans for the next twelve months.

The report provides assurance that systems are in place and working effectively to minimise and avoid hospital acquired infection and that the Trust is compliant with the Hygiene Code.

The Trust was set very challenging targets for reportable healthcare associated infections in 2017/18 (MRSA blood stream infection and *Clostridium difficile* diarrhoea). We have continued to deal with cases of multi-resistant Gram negative infections during the year, including the management of two hospital acquired cases. These cases remind us that if we get the basics right (effective hand hygiene, effective environmental cleaning and effective decontamination of multi patient use equipment) the risk of cross infection is minimised.

I would like to thank everyone in the Trust for their continuing efforts to avoid all preventable infections in our hospitals. This is a key priority for us and an area in which we have been able to demonstrate real improvement in the quality of care we provide.

- The MEHT vision is that no person is harmed by a preventable infection
- Monthly audit and surveillance identifies risks which are reported in the monthly Director of Infection Prevention and Control (DIPC) report along with measures taken to reduce those risks
- There is evidence of Divisional IPC engagement with a clear accountability process through leadership of Clinical Directors and Lead Nurses. During 2017/18 this process has been strengthened with key indicators of IP&C reported in the quarterly directorate reports to the trust Patient Safety and Quality committee
- Auditing and regular local compliance monitoring takes place to ensure that Health Care Workers are doing what they have been trained to do and doing it competently
- There is evidence of 'Board to Ward' leadership setting clear standards of Health Care Worker behaviour, entrenching a sustainable IPC culture
- Patients can have confidence that Healthcare in MEHT will be associated with minimal risk of Healthcare Associated Infection (HCAI)

Dr Louise Teare
Director of Infection Prevention and Control

2.0 Description of Infection Prevention and Control Arrangements during 2017/2018

MEHT Approach to reducing Healthcare Associated Infections (HCAIs)

The Trust board places IPC as a top priority. This is central to patient safety, patient experience and in gaining and maintaining public confidence. MEHT strives to develop a culture which ensures every staff member takes responsibility for infection prevention and control, integrating this seamlessly into clinical practice.

Director of Infection Prevention and Control

The DIPC is a Medical Microbiologist.

The role of the DIPC includes;

- monitoring monthly progress with reductions in MRSA blood stream, *Clostridium difficile* and Gram negative blood stream infections
- leading on the investigation of significant infection control incidents such as major outbreaks
- being Chair of the IPC Group
- meeting weekly with the Infection Prevention and Control Team
- submission of the Annual Report and Annual Programme
- representing Infection Prevention and Control at the Patient Safety Group and the Patient Safety and Quality Committee

Chief Director of Estates and Facilities Management

The Director of Estates and Facilities manages all Soft and Hard FM Services and is responsible for:

- ensuring hospital cleanliness is high on the corporate agenda
- providing plans for year on year improvements in hospital cleanliness
- ensuring robust systems, processes and adequate resources are in place to achieve high standards of cleanliness
- providing quarterly reports to the IPC Group

Chief Nurse and Chief Medical Officer

The Chief Nurse and Chief Medical Officer provide professional support and leadership to the Infection Prevention and Control Matron and actively support and lead as advised by the DIPC on key infection prevention matters. In all clinical areas, the Chief Nurse and Chief Medical Officer ensure Lead Doctors and Lead Nurses are accountable for ensuring the Hygiene Code is in place in their area of control.

Divisions

The Associate Chief Nurses and Clinical Directors are accountable for delivery of full compliance with the Hygiene Code in their area of control.

Divisional teams escalate infection prevention risks to the Trust Risk Register as and when appropriate.

Reporting Line to Trust Board

The IPC Group reports to the Patient Safety and Quality Committee.

Infection Prevention and Control Team

Infection Prevention Matron	1.0 WTE
Senior Infection Prevention Specialist Nurse	1.0 WTE
Infection Prevention Nurse	1.0 WTE
Infection Prevention Lead Audit Facilitator	1.0 WTE

The team meet formally with the DIPC once a week and communicate on a daily basis with each other and all services requiring advice or support as required. The team have strong links with the community IPC team and the Infection Prevention Nurses in the Clinical Commissioning Group (CCG).

Role and Remit

The IPC Team provides expert knowledge, direction and education in infection prevention and control across the Trust. The team liaise regularly with Clinicians, Executive Directors and Managers.

The remit of the team includes:

- The production and updates of policies and guidelines for the prevention and control of infection across the organisation
- The communication of information relating to communicable diseases to all relevant parties in the Trust
- The training of all relevant staff in the prevention and control of infection in the Trust
- The provision of appropriate infection prevention and control advice, taking into account national guidance
- Surveillance of trends of infection and taking action to reduce numbers of cases where an increase is seen
- Investigation and control of outbreaks of infection
- Root cause analysis investigation of healthcare associated infection

Infection Prevention and Control Link Practitioners

The Infection Prevention and Control Link Practitioners (IPLPs) provide enhanced knowledge and education within their area of practice.

The role of IPLPs is to

- act as a local resource of Infection Prevention knowledge and as a role model for colleagues
- support Ward Managers with accountabilities for Infection Prevention and Control
- act as a point of liaison, informing their line manager and the IPT of any infection risks or issues arising in their clinical areas
- under the supervision of the IPT, ensure that agreed programmes of audit and surveillance (e.g. high impact interventions) are carried out, feeding back to their manager and colleagues as appropriate
- ensure that staff are fully informed and adhere to current policies and procedures in relation to infection prevention and control
- liaise with and inform the IPT as appropriate

Infection Prevention and Control Group

The Infection Prevention & Control Group (IPCG) is chaired by the DIPC and has representation from across the Trust.

This group reports key issues/exceptions to the Patient Safety & Quality Committee on a quarterly basis. The DIPC provides regular Infection Prevention and Control input to the Trust Clinical Governance Group.

The Group co-ordinates the drafting and implementation of a Trust-wide Infection Prevention and Control strategy with all key internal and external stakeholders. The strategy encompasses recommendations from the Health Act 2008: Code of Practice for the Prevention and Control of Healthcare Associated Infections (Department of Health, updated 2015) and enables the Trust to meet national targets for acute trusts to achieve year on year reductions in Meticillin Resistant *Staphylococcus Aureus* (MRSA) bacteraemia, Meticillin Sensitive *Staphylococcus Aureus* (MSSA) bacteraemia, *Clostridium difficile* infection, *E Coli* bacteraemia, Carbapenemase Producing Enterobacteriaceae (CPE) and other HCAs as appropriate. Also, to further increase year on year the proportion of staff successfully sustaining or completing appropriate infection prevention and control training programmes.

The Group receives quarterly reports from:

- Surgical Site Surveillance Teams
- Estates Domestic Services
- Occupational Health
- Decontamination Group
- Water Safety Quality Group
- Antibiotic pharmacist

Regular agenda items include:

- Organisational Learning from IP&C incidents
- Organisational Learning from root cause analysis of *Clostridium difficile*, MRSA Bacteraemia and MSSA Bacteraemia
- Progress against the Infection Prevention and Control Annual Workplan
- Evidence of compliance with national Legionella guidelines
- Evidence with compliance of all theatres against HTM 03.01
- Antimicrobial stewardship
- Surgical Site Infection Surveillance
- Any other infection incidents and/or outbreaks
- Horizon scanning

Infection Prevention and Control Group Membership

DIPC

Chief Nurse

Director of Nursing

Matron for Infection Prevention

Associate Chief Medical Officer, Patient Safety

Chief Director of Estates and Facilities

Contract Manager – Bouygues

Responsible Person (water) Retained Estate

Occupational Health Manager

Antibiotic Pharmacist

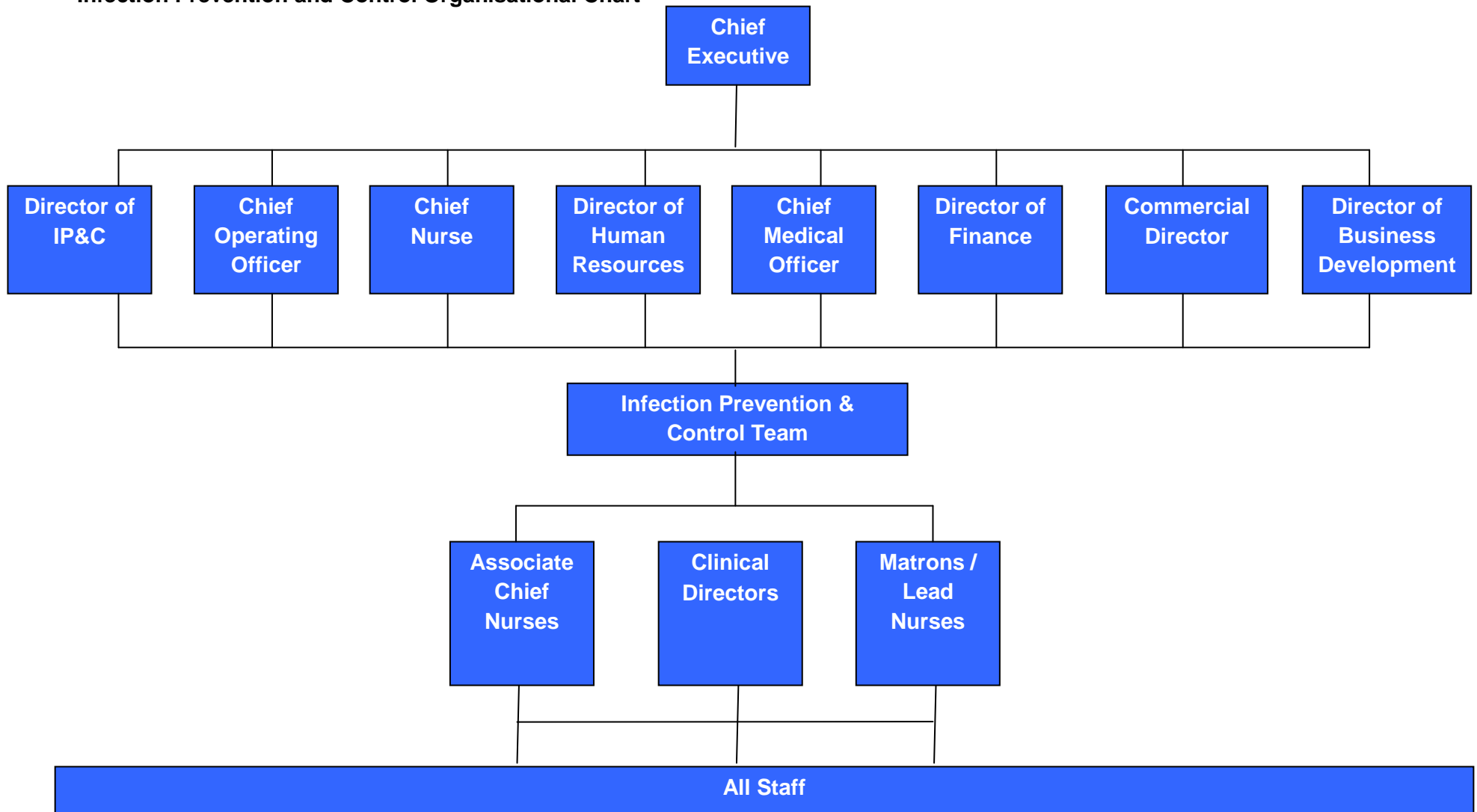
Chair of Patient Council

Consultant in Communicable Disease Control

Infection Prevention and Control Lead Nurse for Mid Essex CCG

In addition to the membership detailed above, any other individual may be invited to attend at the discretion of the Chair

Infection Prevention and Control Organisational Chart



3.0 Summary of Infection Prevention and Control Group Activity during 2017/18

- Approved revised Terms of Reference
- Ratified the Annual Report for 2016/17
- Received and considered directorate environmental and infection prevention audit scores and plans for improvement
- Received reports of root cause analysis of HCAs and supported practice improvements.
- Received outbreak and incident reports and supported improvement programme
- Monitored progress against the annual programme
- Continued to ensure a high standard of IPC education amongst the MEHT workforce
- On-going work to ensure sustained compliance with outcome 8 of Care Quality Commission requirements

4.0 Infection Prevention and Control Programme 2017/18

The Annual Programme for 2017/18 was based on requirements of the 2008 Health Act (updated December 2015). The annual programme was monitored by the Infection Prevention and Control Group. National issues and targets were taken into consideration as well as local needs. Main activities have included:

- Mandatory surveillance
- Voluntary participation in Surgical Site Infection Surveillance Scheme
- Audit of clinical practice
- Audit of environmental cleanliness
- Education
- Development and update of policies and guidelines
- Continuing involvement with the Saving Lives delivery programme
- Increasing participation and joint working with the CCG
- Working with the Patient Council to improve Patient Experience
- Management of outbreaks
- Participation in the European Point Prevalence Survey of Healthcare Associated Infection and Antibiotic Prescribing

5.0 Infection Prevention and Control Board Assurance

The IPC board assurance process involves regular Directorate audit of key performance indicators for infection prevention and control. Score Cards are prepared for directorate governance meetings with an expectation of action plans for non-compliances. .

Fundamental standards of IPC have been incorporated into the Patient Safety check list. Infection risks identified are included in the Chief Nurse dashboard. There is full engagement of Associate Chief Nurses and Clinical Directors in this process.

6.0 Mandatory Health Care Associated Infection Reporting Data

Introduction

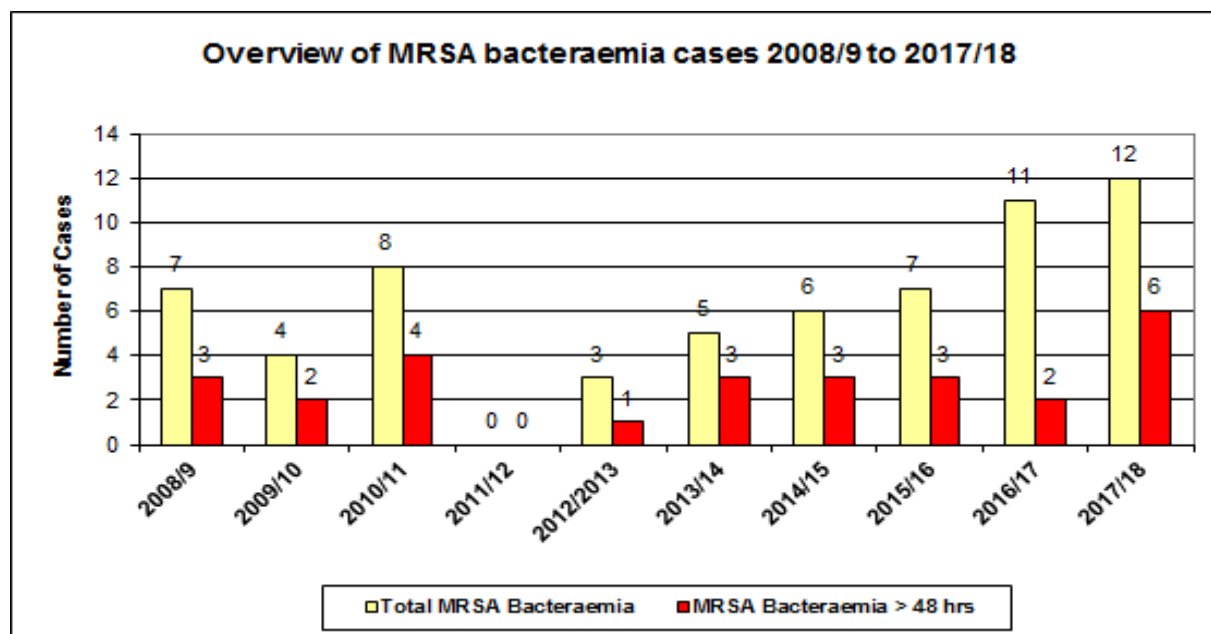
Meticillin resistant *Staphylococcus aureus* (MRSA) bacteraemia (blood stream infections), the most serious of MRSA infections, are reported by the Trust to the Department of Health as part of the national mandatory surveillance programme. Positive tests for *Clostridium difficile* toxin and blood stream infections caused by Meticillin sensitive *Staphylococcus aureus* (MSSA) and *Escherichia coli* (*E Coli*) are also reported.

Since 2013/2014 the national target for MRSA bacteraemia has been zero. For *Clostridium difficile*, MEHT was set a target of 13 cases for 2017/2018. The DH has set a target for each CCG of a 10% reduction in *E.coli* blood stream infections during 2017/18 based on 2016 performance data.

An explanation of how cases of infection are apportioned to the trust can be found in Appendix 1.

Meticillin Resistant *Staphylococcus aureus* Bacteraemia (MRSA)

An overview of all Mid-Essex MRSA bacteraemia cases since 2008 can be seen in the chart below;



Where cases are identified 48 hours or more after admission to hospital a panel review consisting of Clinicians, the IP team and the Clinical Commissioning Group (CCG) decides if there is a case to appeal against attribution to the trust (i.e. management of the case was in line with local and national guidance).

Where appeal is felt to be appropriate, the case is put forward for review by NHS England.

There have been eight cases of MRSA bacteraemia apportioned to the Trust for 2017/2018. Following post infection review one case was assigned as third party as no breaches in key policy were noted.

Cases seven and eight were on the same patient and the latter case was a contaminated sample at the point of sampling.

A summary of the six hospital attributed cases is as follows:

- Case 1 – this patient was admitted with possible urosepsis. MRSA screen positive on admission. The patient was not managed in line with Trust MRSA policy.
- Case 2 – this patient had a long term urinary catheter. The patient acquired MRSA whilst on the ward. The indwelling urinary catheter was not managed in line with Trust Policy.
- Case 3 – this patient had a PICC line, which became infected and the continuing care was poorly documented. The patient passed away and the cause of death was listed as MRSA bloodstream infection.
- Case 4 - initially assigned as CCG. Following PIR it was realised that on a previous admission the patient had been nursed in a bay next to a known MRSA positive patient who had not been isolated. This case was therefore re-assigned as a Trust case.
- Case 5 – this patient was previously known to be MRSA positive, but not managed in line with Trust policy when re-admitted.
- Case 6 – this patient with underlying epidural abscess was known to be MRSA positive, but not managed in line with Trust policy.

Policy Failures include;

- Failure to identify MRSA status on admission with prompt isolation and decolonisation to minimise the risk of spread to other patients
- Failure to use antibiotics covering MRSA in empiric antibiotic treatment

Number of new cases of MRSA acquired in MEHT during 2017/18

During 2017/18 there have been 74 cases of MRSA acquired in MEHT on 22 wards as illustrated in the table below. Due to the high number of MRSA cases acquired on Baddow and Braxted wards, for a three month period, patients were screened on a two weekly basis. Both wards also screened on discharge when the destination was to a high risk area (nursing/care home, intermediate care) or if the patient had a long term invasive device and were being discharged under the care of community nursing.

Heybridge and Rayne wards were associated with a period of increased MRSA incidence during the year. To mitigate this risk, an IPC nurse was seconded to the wards for a three month placement. She worked with ward staff to develop systems and processes to minimise future risk and 'embed' infection prevention and control.

Number of new cases of MRSA acquired in MEHT during 2017/2018

Number of new cases of MRSA acquired in MEHT 2017/2018	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Baddow		1	1			1		2	1		1		7
Billericay			1		1								2
Braxted	3						1	1			1	1	7
Burns Adult												1	1
Danbury		1				1			2		2		6
ESS							1		1				2
Felsted		1				1							2
GITU							1	1					2
GHDU				1									1
Goldhanger						2		1				1	4
Heybridge			1						4	1			6
John Ray								1					1
Lister				1	1							1	3
Mayflower		3											3
Notley			1					2		1		1	5
Phoenix								1				1	2
Postnatal							1						1
Rayne	1					1				1		1	4
Stock					1			1	1				3
Stroke	1						2	3	1		1		8
Terling							1		1		1		3
Writtle									1				1
Total	5	6	4	2	3	6	7	13	12	3	6	7	74

Comment: Wards listed are those areas where the positive samples have been taken and may not be the area where the MRSA has been acquired.

Meticillin-Sensitive *Staphylococcus aureus* (MSSA) Bacteraemia

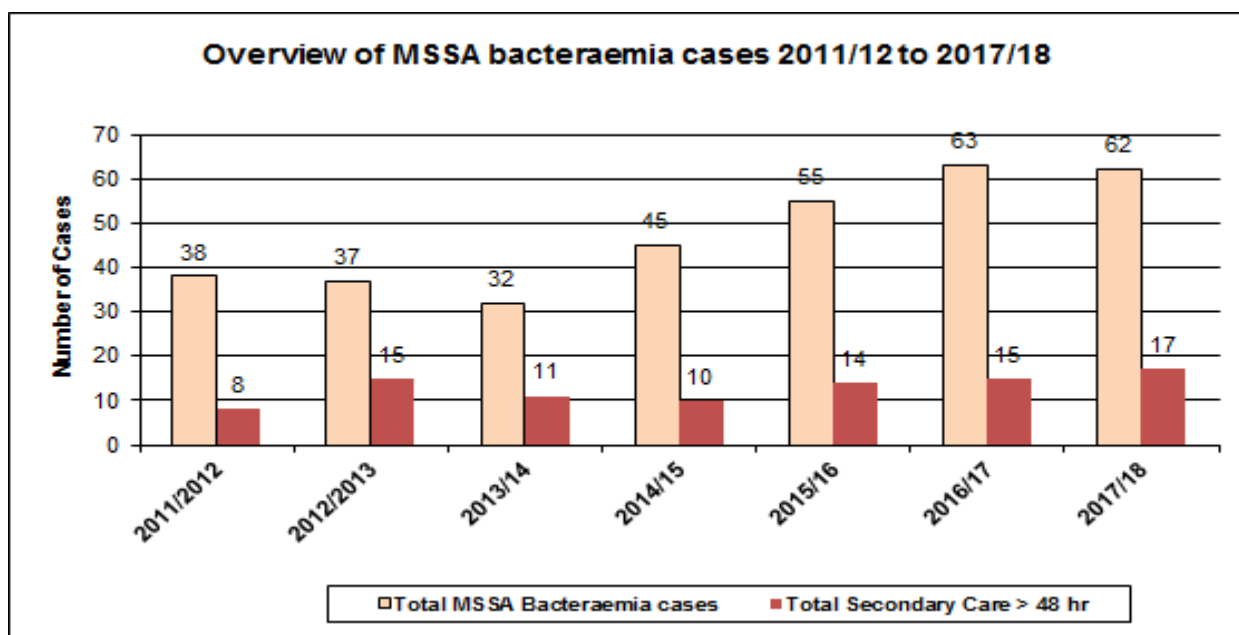
MSSA bacteraemia cases can be caused by haematogenous spread from other sources of infection in the body or the primary cause could be transmission of bacteria into the blood stream from the skin at time of insertion of an intravenous cannula / catheter or during on-going management of that device.

MSSA bacteraemia reporting is part of mandatory reporting, but no end of year ceiling has been applied.

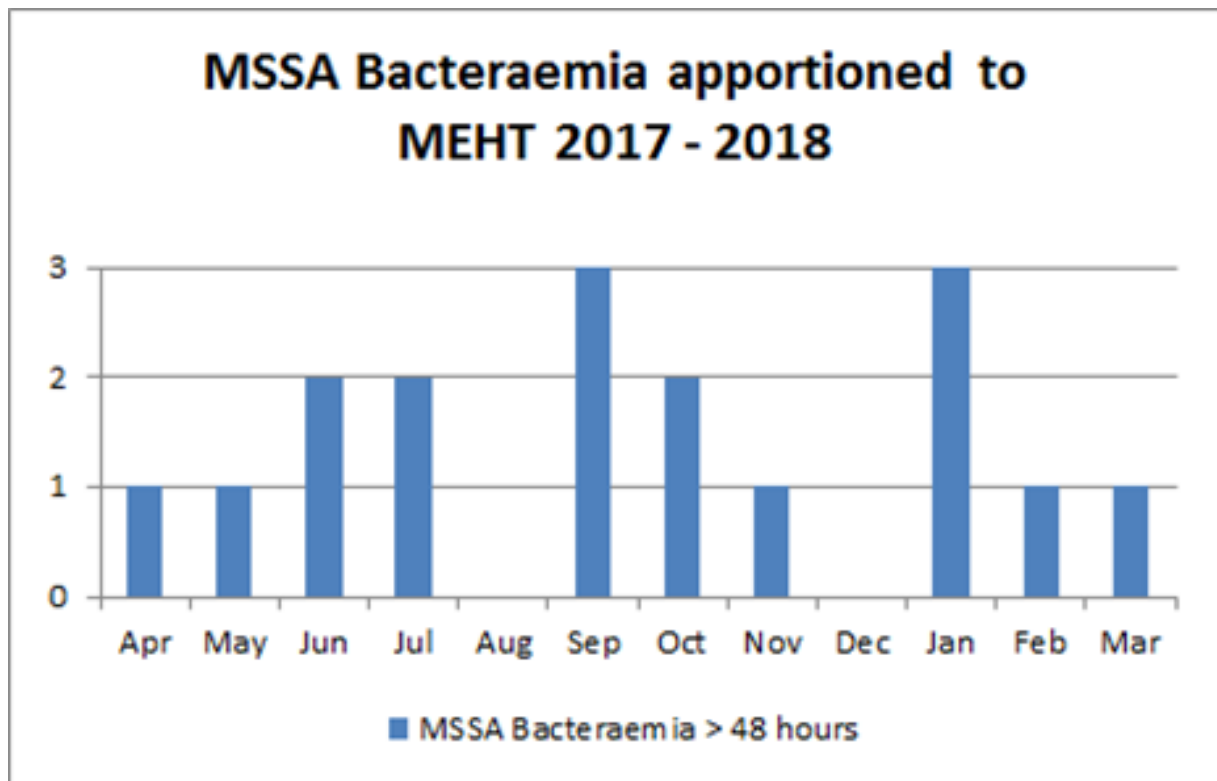
The overall number of MSSA bacteraemia cases has stabilised during the last year with 62 cases reported in 2017-2018, compared to 63 cases in 2016-2017

17 cases were identified 48 hours or more after admission representing a slight increase.

A comparison of the total number of cases compared to the number of post 48 hour cases since 2011 can be seen in the graph below:



Distribution of cases over 2017 - 2018 is illustrated below;



All MSSA bacteraemia cases have root cause analysis carried out to identify any avoidable issues requiring action trust-wide, in order to prevent recurrence.

Following review of MSSA Blood Stream infection a number of themes were identified including possible endocarditis, septic arthritis, salivary gland infection, cyst infection, phlebitis, cellulitis at an epidural site. In some instances documentation of invasive devices including VIP scoring was sub-optimal.

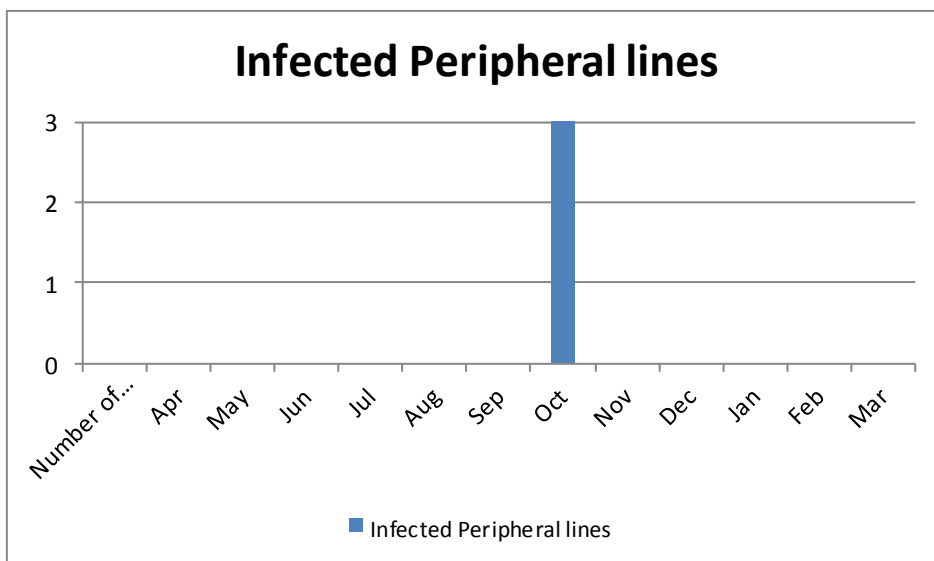
Focused education on the importance of accurate VIP scoring, including appropriate escalation has taken place during the year.

Infections caused by invasive Vascular Devices

Infections caused by invasive vascular devices such as central lines and peripheral lines should be avoidable.

During the year there was one central line infection in September 2017 on GITU.

There have been 3 infected peripheral lines identified during the year, all have caused MSSA bacteraemia and increased patient stay.



Monitoring of peripheral IV access devices is recorded on VitalPAC which was implemented trust-wide in 2015.

Clostridium difficile

Background

Clostridium difficile infection (CDI) is the predominant cause of antibiotic-associated diarrhoea among hospitalised patients and is of great importance as a healthcare associated infection. Acquisition of *Clostridium difficile* may manifest as asymptomatic colonisation of the intestine, or as an infection ranging in severity from mild diarrhoea through to severe disease in the form of pseudo-membranous colitis and/or toxic megacolon, both of which can lead to death. The risk of infection is higher in the healthcare setting due to a combination of risk factors including a predominantly elderly population, antibiotic use and the possibility of cross-infection.

Since 2004 it has been a mandatory requirement to report all CDI in NHS acute Trusts in patients aged 65 years and over. In April 2007 enhanced surveillance for CDI was introduced and it became mandatory to report all CDI in patients aged 2 years and older.

The table below shows the increasing number of stool samples from Q1: 2016

<i>C difficile</i> Samples Submitted to MEHT Microbiology from all locations										
	Q1 2016	Q2 2016	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018
Total Faecal Samples Tested	2685	2595	2865	2574	2781	2820	4383	2962	3743	4003
Total Faecal Samples Tested for C difficile	736	905	1278	928	1012	1107	1229	1214	1292	1262
Positive	12	19	21	19	29	23	35	28	12	41
Percentage Tested for C difficile	27.41 %	34.87 %	44.61 %	36.05 %	36.39 %	39.26 %	28.04 %	40.99 %	34.52 %	31.53 %
Percentage Positive	1.63%	2.10%	1.64%	2.05%	2.87%	2.08%	2.85%	2.31%	0.93%	3.25%

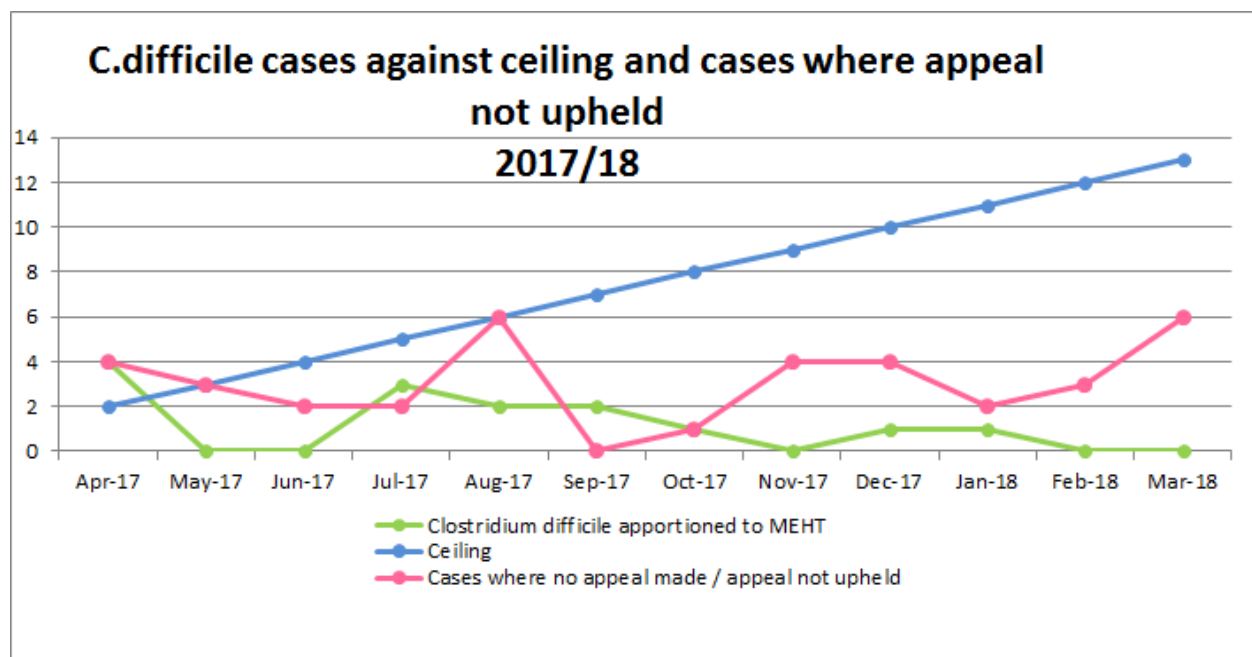
There were 52 over 72 hour cases of *Clostridium difficile* reported in MEHT during 2017/18. Three of the cases were repeat samples from continuing infection. One sample was taken more than 28 days after the first and reported as a repeat infection and so included in the numbers. Thirty eight cases had successful appeals.

Learning from Root Cause Analysis of *Clostridium difficile*

Appeals can be made to the CCG against attribution of cases to MEHT where the case has been managed in accordance with local and national guidance, and no breach in key policy noted. Where appeals are successful the case will not count towards the ceiling in terms of possible financial penalties, but will still be reported against the trust.

Panel reviews are held for each case and increasingly *Clostridium difficile* cases are patients with multiple co-morbidities colonised prior to admission and requiring antibiotics for good clinical reasons, precipitating symptoms.

The graph below shows that the *Clostridium difficile* trajectory applied to MEHT was breached from April 2017. However, the majority of cases were successfully appealed when taken to the scrutiny panel held by the Clinical Commissioning Group. Appeals are upheld where the management of cases was in line with local and national guidance before and after diagnosis.



Reasons for not appealing against cases include;

- Delays in sampling
- Delay in isolation
- Problems with antibiotic stewardship before diagnosis
- Issues with treatment of *C. difficile* (e.g. IV Vancomycin prescribed when it should have been oral)
- No documentation of reason or escalation when unable to isolate patient when first symptomatic
- Recording of loose stools was inconsistent (i.e. recorded in different places so an accurate assessment of symptoms was difficult)
- Administration of Loperamide prior to result being known

The main issue involved isolation of patients. It is not clear how great a part bed capacity plays in this, but the infection prevention team have included management of patients with diarrhoea in their induction session for nursing staff to increase awareness of policy.

Whilst *Clostridium difficile* used to be a hospital problem, excellent cleaning practice, including the adherence to bed and bed space cleaning between patients, has meant that cross infection in hospital is now an unusual event. *Clostridium difficile* is however widespread in the community. The challenge for MEHT staff is to recognise that *Clostridium difficile* carriers who are admitted and given antibiotics for good clinical reasons are likely to have the toxin gene 'switched on.' The sudden development of diarrhoea therefore, needs prompt sampling and isolation to avoid environmental contamination and minimise the risk of spread to other patients.

MEHT staff are to be congratulated for their increasing awareness of this during the year, evidenced by the high number of successful appeals. The challenge going forward is to sustain this awareness.

***Clostridium difficile* toxin negative and PCR positive cases**

In order to reduce the risk of *Clostridium difficile* transmission, the IPC team keep patients who are *Clostridium difficile* toxin negative, but PCR positive under very close surveillance. There is evidence that these cases can be stimulated to produce toxin by the use of antibiotics. Terminal cleaning of any area occupied by such patients before the diagnosis was made is required. In addition terminal cleaning of bays (and whole wards when required) is requested where there is any possibility of cases being linked to an area.

Escherichia coli bacteraemia

Background

Escherichia coli (*E. coli*) is a Gram-negative, rod-shaped bacteria which form part of the normal lower intestinal tract microflora of humans. Most *E. coli* are harmless, but they can cause serious infections, such as urinary tract infections and bacteraemia.

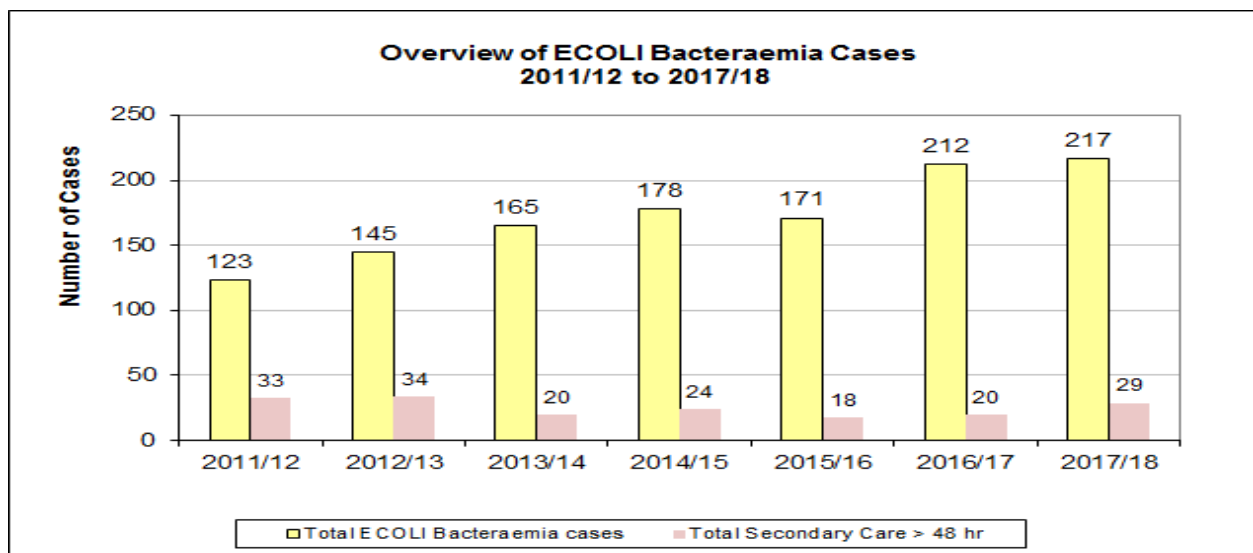
Some *E. coli* serotypes have been linked to serious food poisoning outbreaks, but this is rarely in conjunction with a bacteraemia. *E. coli* are mostly susceptible to antibiotics, however antibiotic resistant *E. coli* clones and plasmids harbouring antibiotic resistant genes are known to be circulating in the UK.

Although mandatory surveillance does not actively collect antibiotic susceptibility data, it is intended that the mandatory records will be linked to databases holding this.

Mandatory surveillance was extended to *E. coli* bacteraemia in June 2011 because there has been a year-on-year increase in *E. coli* bacteraemia reports made to the voluntary surveillance system while staphylococcal bacteraemia was declining.

The chart on the next page compares the total number of patients identified with *E.coli* bacteraemia to the number identified 48 hours or more after admission.

While the number of cases is gradually increasing year on year, the number of cases identified after 48 hours in hospital are remaining at around 20 cases per year.



***E.Coli* bacteraemia cases during 2017/18**

29 cases of *E.coli* bacteraemia were identified 48 hours or more after admission;

Root cause analysis to identify the source of the bacteraemia is undertaken in those identified 48 hours or more after admission to MEHT and also in those cases that have recently been discharged from the hospital.

Learning Points from Trust attributed *E.Coli* cases

Investigation of the 20 cases identified the initial source of the bloodstream infection to be;

- Urinary tract infection (with or without urethral catheter) (2 cases)
- Hospital acquired pneumonia (2 cases)
- Community acquired pneumonia (1 case)
- Empyema (1 case)
- Burns wounds (6 cases)
- Other skin lesions (1 case)
- Hepatobiliary – (2 cases)
- Gastro intestinal malignancy (1 case)
- Post urological procedure – (1 case)
- Post vascular surgery – (1 case)
- Vertical transmission to neonate – (1 case)
- Unknown – (3 cases)

It can be seen that many patients are admitted with underlying conditions that subsequently cause bacteraemia, but work regarding care of urethral catheters needs to continue, although there were only 2 post 48 hour cases in this category.

27% of cases occurred in Burns with the wounds presumed to be the source. Whilst this is not surprising there may be more work to be done in this area.

It is reassuring to note that there was no evidence of any case being related to an infected IV device.

Future work in understanding Gram negative blood stream infection needs to involve working across the whole health economy. This will mean close working with the Clinical Commissioning Group to understand the issues and will require even greater scrutiny of the bacteraemia cases.

7.0 Outbreaks and Incidents

Outbreaks

Diarrhoea and Vomiting

Winter vomiting disease is a term used to describe diarrhoea and/or vomiting caused by norovirus. It is common in the colder months and responsible for outbreaks in institutions such as hospitals, schools and cruise ships. Norovirus spreads rapidly through close contact with affected individuals, the environment or shared equipment that has become contaminated with the virus. Trust management of norovirus is based on national Guidelines.

http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317131639453

In hospitals, large numbers of patients, staff and visitors may be affected which can disturb the normal working of the hospital and cause distress to those affected. When there are high numbers of infected people in the community, it is difficult to prevent the infection coming into hospital.

The key messages relating to norovirus are:-

- the importance of scrupulous hand hygiene
- not to visit hospitals or come to work if unwell with diarrhoea and vomiting
- the early recognition and reporting of symptoms
- effective triage of patients with possible viral diarrhoea & vomiting in the emergency department and appropriate placement in side rooms
- the maintenance of high standards of environmental cleanliness
- limiting patient and staff transfers between wards
- minimising spread by closing affected wards to visitors if appropriate, although in recent times MEHT has been successful in controlling outbreaks without ward closure.

Clinical staff are encouraged to report potential outbreaks of diarrhoea and/or vomiting to the IPC team promptly as early intervention is known to reduce the number of those affected.

Often the conclusion of the investigation is that loose stools are due to non-infectious causes and the ward is simply kept under observation for a few days.

Between November 2017 and March 2018 a total of 120 bed days were lost across the medical and emergency care and musculo- skeletal divisions due to outbreaks of norovirus.

The wards involved were Braxted (x3), Notley, Lister (x5), Writtle (x2), Terling and John Ray wards. The national picture this year has also demonstrated a sharp increase in reported cases. There were many learning opportunities identified, including the management and maintenance of dishwashers. The movement of and sharing of staff was also identified as a risk, although there was no evidence to suggest nosocomial transmission.

Multi drug resistant *Acinetobacter* on the Burns ITU unit

Between 16th December 2017 and the 29th March 2018, five cases of multi - resistant *Acinetobacter baumannii* (MRA) occurred on the burns intensive care unit. Three were colonised on arrival (2 from Dubai and 1 from Mumbai) and two acquired on the unit. This was the first time MEHT has experienced spread of a carbapenemase producing organism and we were concerned to understand the mechanisms of transfer to avoid recurrence.

The mechanism of transfer for the first acquisition was positive air pressure from burns theatre, contaminating the corridor with bacteria released during theatre activity of a known MRA case. There was then onward transmission to Burn ITU room two with subsequent patient colonisation. This mechanism could not account for the second acquired case as no MRA patient had been to theatre in the relevant time period.

The second acquired case occurred after being nursed in the same room as the first. This was after a five and a half week period of the room being empty and several rounds of cleaning to a very high standard, fogging, change of air filters and cleaning of the ventilation system.

Extensive environmental investigation identified positive results from an aromatherapy unit, shower head and shower hose. With the exception of the shower head, these items had been in the room during the last patient's stay. Whilst the shower head was changed, this was attached to the shower hose with a metal clip. The shower hose was not changed between patients. Aromatherapy units are now single use patient items. Shower heads and the entire hose length are now changed between each patient.

A supportive visit was undertaken by the Infection prevention and control team of the CCG Joint Committee. Some minor areas for review were highlighted and an action plan developed. The burn service has subsequently been accredited by the European burns association as having an excellent service, to whom the association would support repatriation from any European destination for burns care.

8.0 Carbapenem Producing Organisms

To reflect the rising importance of Carbapenem Producing Organisms (CPO), the recording of any case is now reported in each DIPC report, along with control actions to mitigate risk.

CPO was formerly called CPE (Carbapenamase Producing Enterobacteriaceae), but has changed to a more generic term as skin organisms such as acinetobacter have more recently been identified as having the potential to be carbapenem resistant.

CPO have been identified as a major public health threat because of plasmid mediated spread of resistance and limited available therapeutic options.

Plasmids can exist as free DNA in the environment and carry the genes for resistance enzymes. Such plasmids can spread from one patient to another if there is poor infection prevention and control (e.g. failure to clean hands between and before each patient contact). In addition plasmids can move from one genus to another e.g. from *Klebsiella species* to *Escherichia coli*.

A letter was sent to all Chief Executives and a toolkit was introduced by Public Health England. Clinicians across MEHT have been advised and guidance has been produced to ensure on-going compliance with this standard.

It is vital that MEHT ensures that control measures are sufficient to contain CPO to prevent it from becoming endemic within the trust. Currently local guidance is that patients identified with CPO are isolated with an adjacent side room closed for use by attending staff to change into scrubs and shower.

These measures appear to have been successful since MEHT has identified a number of cases of CPO. There has been no evidence of transmission apart from the 2 cases discussed in section 7. It is acknowledged however, that these precautions are over and above the national guidance, that they may be difficult to accommodate at times when there is a pressure on beds or staffing and that they will be difficult to maintain if numbers of cases increase.

The cases identified have been different types as illustrated below;

Number of CPO identified	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Number of patients	0	0	0	0	0	2	0	0	0	0	1	0
Type	n/a	n/a	n/a	n/a	n/a	KPC & VIM NDM	n/a	n/a	n/a	n/a	NDM	n/a

9.0 Hand Hygiene

The following statement is given to all staff on induction. The professional responsibility for this patient safety behaviour is stressed continually.

If bacteria very easily contaminate hands of health care workers, which they do, it is only common sense to remove them prior to patient care. It is a professional duty of care to have clean hands before touching a patient.

Hand Hygiene is a fundamental standard for the Trust and our Trust Pledge to patients includes the following: *'We will deliver care in a clean environment, and protect you from acquiring infections.'* That health care workers have clean hands before touching patients, is implicit in this pledge.

- Hand hygiene is included in Corporate Induction and Mandatory training
- Trust-wide compliance with hand hygiene mandatory training at the end of March 2017 was >89% (target is 85%)

Effective hand decontamination, including after the wearing of gloves, results in significant reduction in the carriage of potential pathogens on hands and has been shown to reduce morbidity and mortality from HCAI.

Hand decontamination is thus considered to have a high impact on outcomes that are important to patients. Although hand hygiene has improved over recent years, there are remaining misconceptions about this standard principle of patient care and good practice is still not universal.

Clinical staff in wards and departments audit their hand hygiene practice each month and this is reported in the DIPC report.

10.0 Policies

The majority of Infection Prevention Policies were reviewed and updated in 2017-18. These can be found on the Trust intranet pages with other organisational policies

11.0 Ward Infection Prevention and Control Scorecards

Directorates use score cards as a basis for discussing IPC performance in their areas and identifying areas for patient safety and quality improvement. The score cards are presented at directorate governance meetings.

In 2017/18 the ward Infection Prevention and Control Scorecards included the following IPC Key Performance Indicators:

- Hand hygiene compliance
- Cleanliness of commodes and bedpans
- MRSA blood stream infections
- *Clostridium difficile* infection
- MSSA blood stream infections
- *E.coli* bacteraemia blood stream infections
- VRE blood stream infections
- New cases of MRSA acquired in MEHT
- Blood culture contamination
- Incidents and outbreaks
- Isolation of patients with *C. difficile*
- Isolation of patients with MRSA

As well as certain high impact interventions;

- Insertion and management of Central Venous Catheters
- Insertion and management of Peripheral Venous Catheters
- Decontamination of equipment

And

- Compliance with use of the MRSA care pathway.
- Isolation of patients
- Use of personal protective equipment
- Prevention of hospital acquired pneumonia

Hand hygiene and commode and bedpan cleanliness are audited every month. Other audits are staggered across the year on a quarterly basis. Audits selected represent those areas where there is thought there needs to be increased awareness of correct practice. The programme of audit for can be seen in Appendix 2

12.0 Antimicrobial Stewardship

Challenges with regards to antimicrobial stewardship (AS) in a trust such as MEHT are similar to elsewhere, and these include limited resources, paucity of antimicrobial education, reduced face to face time, lack of electronic prescriptions and increasing complexity of patients along with the changing demographics.

The decision to adopt the CDC guidelines was made in order to structure and address our local stewardship program and targets.

Core Elements of Hospital Antibiotic Stewardship Programs

- **Leadership Commitment: Dedicating necessary human, financial and information technology resources**

AS has been included as a new standing agenda in trust governance meetings, but has taken time to take shape and for the teams to get used to reporting. Producing data that is consistent with the current divisional structures is something being worked on. In time we will be able to generate data aligned with the current governance structures at our trust.

- **Accountability: Appointing a single leader responsible for program outcomes. Experience with successful programs show that a physician leader is effective**

One of the Consultant Microbiologists has been working over the last year as the antimicrobial stewardship lead, along with other colleagues. This will be further structured for the forthcoming year.

- **Drug Expertise: Appointing a single pharmacist leader responsible for working to improve antibiotic use.**

Over the year, the Microbiologist has worked very closely with pharmacy and A band 8 antimicrobial pharmacist has commenced working for the Trust during the year. This individual will be supported to complete a prescriber's course and will in turn play an important role in team building.

- **Action: Implementing at least one recommended action, such as systemic evaluation of ongoing treatment need after a set period of initial treatment (i.e. “antibiotic time out” after 48 hours)**

Over the year, the total defined daily dose (DDD) in Carbapenem use has been reduced by an impressive 50%.

Regular stewardship meetings have been established with the core members (Microbiology and Pharmacy); aiming to expand the team to include senior sisters.

- **Tracking: Monitoring antibiotic prescribing and resistance patterns**

Monthly antibiotic usage reports have been generated by pharmacy and reviewed in the stewardship meetings. An improved surveillance system is planned including using a pharmacy software package. Work has progressed and sample reports have been received.

- **Reporting: Regular reporting information on antibiotic use and resistance to doctors, nurses and relevant staff**

Antibiotic usage is reported to doctors systematically, for example an audit of septicaemia in ITU was undertaken, looking at resistance patterns. The data was presented to ITU and changes implemented. The total antibiotic consumption in ITU has reduced significantly (at least 20%) over the past 12 months.

A similar audit was presented to the Emergency Department and the empiric guidance has changed as a result from Piperacillin/Tazobactam to Co-amoxiclav and gentamicin based on epidemiology.

- **Education: Educating clinicians about resistance and optimal prescribing**

Multiple sessions have been presented trust-wide with the aim of interacting with the primary prescribers and nurses eg. in Grand Round sessions, during departmental teaching and in MDTs (weekly short opportunistic teaching with aim to influence behaviours). Antibiotic prescribing education is also included in doctor’s induction training.

13.0 Estates & Facilities Management

Legionella

A comprehensive Trust plan for controlling any Legionella risk has been maintained during 2017/18. This includes monthly monitoring of sentinel outlets for Legionella, temperature and chlorine dioxide levels at the Broomfield, Braintree Community Hospital, Fairfield Centre and St Peter's sites. Over and above this, reassurance testing of other outlets also takes place. Little used outlets are removed where possible or flushed on a regular basis. The current Legionella management contract with Evolution is in place including the provision of the site Legionella risk assessments, temperature monitoring legionella testing and chlorine dioxide management/maintenance.

Water samples for *Legionella Pneumophila* have been taken at regular intervals across the MEHT Estate and analysed by an independent UKAS Accredited Laboratory (Reg. No 9485) of which 68 out of 827 outlets were found to have *Legionella Pneumophila* contamination in the Retained Estate and none in the PFI. Several Outlets in West Wing have been identified as little used due to the office type occupation in ward specified areas. Several of these outlets have been disconnected. All other infected outlets were stripped down, cleaned and disinfected prior to re-sampling. Point of use filters were utilised where appropriate as a temporary measure.

Management of Legionella within the PFI building is conducted through the following:

- Infrequently used outlets, random sentinel taps and end of line outlets flushed twice weekly.
- Monthly hot and cold water temperature testing for all sentinel taps and selective normal outlets
- Three monthly shower head replacement
- Quarterly legionella bacteria samples are taken for laboratory analysis
- Annual thermostatic valve compliance testing

Pseudomonas aeruginosa

Sampling for *Pseudomonas* continues across both the Retained Estate and the PFI building.

As an outcome of the Water Quality Group meeting, regular reassurance testing within High Risk areas of the Retained Estate is carried out quarterly. *Pseudomonas* was identified on some outlets in Phoenix Ward, Stroke, Burns and ITU with outlets taken out of use to be either replaced or cleaned and disinfected with post cleaning samples taken all in accordance with the approved *Pseudomonas* Escalation Process.

Water samples for *Pseudomonas aeruginosa* have been taken at regular intervals across the MEHT Estate and analysed by an independent UKAS Accredited Laboratory (Reg. No 9485) of which 13 Outlets were identified with *Pseudomonas aeruginosa* bacteria contamination in the Retained Estate and 38 in the PFI. No system contamination was identified with the causes being attributed to either little used outlets or local contamination.

Pseudomonas was identified on some outlets in Burns and ITU with outlets taken out of use to be either replaced or cleaned and disinfected with post cleaning samples taken all in accordance with the approved *Pseudomonas* Escalation Process. No system contamination was identified with the causes being attributed to either little used outlets or local contamination. Point of use filters were utilised where appropriate as a temporary measure.

When identified, little used outlets are taken out of service where possible and regularly flushed appropriately where not. Water testing of the Neo-natal and Renal units is currently being continued to ensure zero counts are maintained. Regular flushing is still in place and the position is monitored by the Water Quality Group.

Theatres

Retained Estate (Zones B, D and E): Theatres Ventilation Plant are subject to an HTM 03 annual validation, including Theatres A,B and C (Day Stay). All theatres have achieved validation, albeit with minor remedial actions which have been programmed in for rectification. The Retained Estate ventilation plant is maintained on a quarterly basis involving fully invasive testing including examination of ductwork and replacement of filters in accordance with HTM03.

Ductwork cleaning for ventilation serving Critical Areas is a requirement under HTM 03 as identified during regular inspection (maintenance) and has commenced in specific areas with a rolling programme being reviewed for implementation. Funding is currently provided annually through the Backlog Maintenance Capital allocation.

Bouygues carry out maintenance, cleaning and validation of ventilation plant for theatres in the PFI building to HTM 03.

MEHT Theatres retain accreditation with ISO 9001:2008.

Endoscopy

MEHT Endoscopy services are accredited by the Joint Advisory Group (JAG) with revalidation annually.

14.0 Surgical Site Infection

Surgical Site Infection (SSI) accounts for about 16% of all health care associated infections and is a major cause of morbidity, additional health care costs and extended length of stay. It has been estimated that the cost to the NHS of surgical site infections is around £700m a year.

Treatment of patients with surgical site infection also reduces the capacity to treat other patients, creating a further inefficiency. Surveillance and the feedback of rates, is recognised as an effective strategy to reduce the risk of SSI and studies show that SSI surveillance systems (SSISS) are associated with significant reductions in SSI.

The Public Health England (PHE) surveillance scheme, defines SSIs according to a standard set of criteria for which there are evidence based definitions. Continual monitoring and benchmarking against regional and national data, allows the opportunity for continual quality improvement.

A Nice Quality Standard was produced in October 2013 (Quality standard 49)

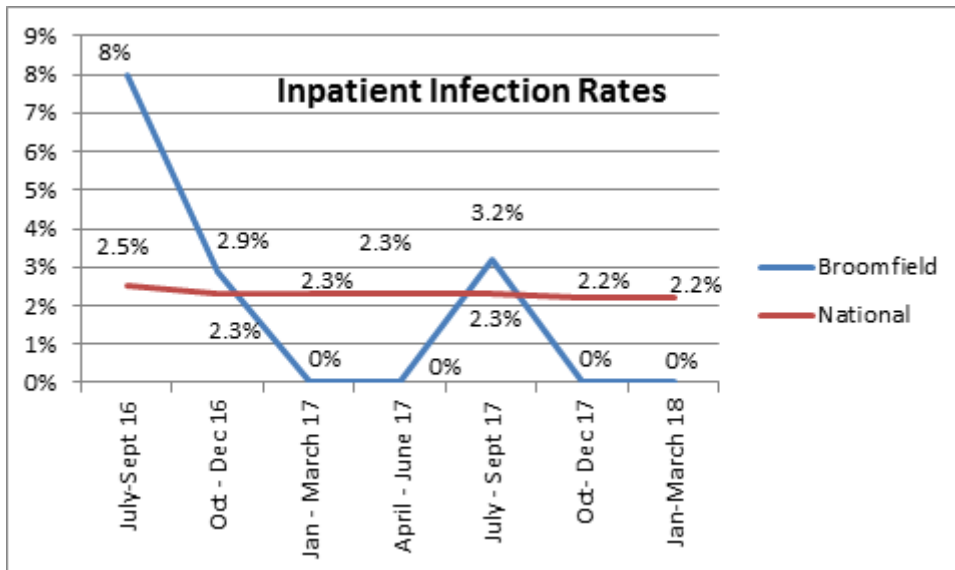
‘People having surgery should be cared for by healthcare providers that monitor SSI rates (including post-discharge infections), and provide feedback to relevant staff and stakeholders to enable continuous improvement through interventions and adjustment of clinical practice.’

Quality improvements identified:

- Improvement patient flow
- Improved quality of patient care
- Improved patient satisfaction
- Reduction in length of stay.

SSI surveillance in upper GI surgery

Upper GI SSI surveillance commenced in Q2 of 2017/18 and actions taken have led to an impressive reduction to no infections identified by Q4.



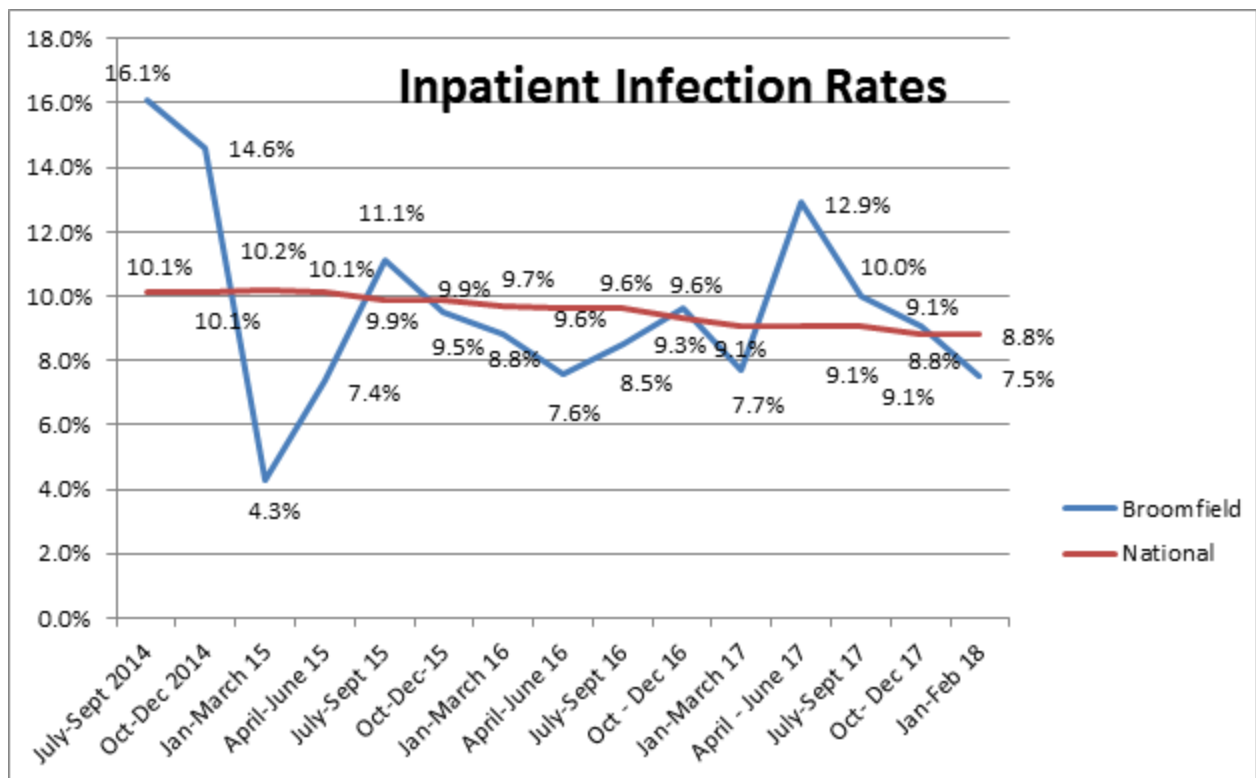
Large bowel SSI surveillance

In 2014 CQUIN funded a one year Surgical Site Infection Surveillance (SSIS) project. MEHT entered into the Large Bowel Category National SSIS programme with impressive results. The continued success of infection rates being maintained below the national average has led to the service being incorporated into everyday practice, and permanently financed by MEHT.

Infection rate for colorectal surgery, for the period of January – March 2018 is 7.5%.

This is a fantastic achievement compared to the National Average of 8.8%

Reduction of SSI has been associated with reduced length of Stay and associated costs.



Orthopaedic surgical site surveillance

Orthopaedic surgical site surveillance has been in place for several years and over that time has expanded from surveillance of infection after hip replacement surgery to include those after knee replacement, reduction of long bone fracture and repair of neck of femur.

The surveillance indicates that generally infection rates are below the national average as can be seen in the table below.

Period	Category	No. of Operations	No. of SSIs	% Infected	National % Infection Rate
Apr- Jun 2016	Hip Replacement	86	0	0	0.5
Apr- Jun 2016	Knee Replacement	88	0	0	0.5
Apr- Jun 2016	Reduction of long bone fracture	65	0	0	1.1
Apr- Jun 2016	Repair of neck of femur	72	0	0	1.2
Jul-Sept 2016	Hip Replacement	95	0	0	0.5
Jul-Sept 2016	Knee Replacement	83	0	0	0.5
Jul-Sept 2016	Reduction of long bone fracture	69	0	0	1.0
Jul-Sept 2016	Repair of neck of femur	91	0	0	1.2
Oct – Dec 2016	Hip Replacement	101	0	0	0.5
Oct – Dec 2016	Knee Replacement	93	0	0	0.5
Oct – Dec 2016	Reduction of long bone fracture	66	1	1.5	1.1
Oct – Dec 2016	Repair of neck of femur	94	1	1.1	1.2
Jan – Mar 2017	Hip Replacement	81	0	0	1.1
Jan – Mar 2017	Knee Replacement	82	0	0	1.5
Jan – Mar 2017	Reduction of long bone fracture	67	0	0	1.5
Jan – Mar 2017	Repair of neck of femur	80	0	0	1.4
Apr- Jun 2017	Hip Replacement	103	0	0	1.0
Apr- Jun 2017	Knee Replacement	89	0	0	1.4
Apr- Jun 2017	Reduction of long bone fracture	76	0	0	1.5
Apr- Jun 2017	Repair of neck of femur	87	0	0	1.3
Jul- Sep 2017	Knee Replacement	122	0	0	1.4
Jul-Sept 2017	Hip Replacement	102	0	0	1.0
Jul-Sept 2017	Repair of neck of femur	88	0	0	1.3
Oct – Dec 2017	Hip Replacement	58	0	0	1.0
Oct – Dec 2017	Knee Replacement	56	0	0	1.3
Oct – Dec 2017	Reduction of long bone fracture	83	0	0	1.5
Oct – Dec 2017	Repair of neck of femur	105	0	0	1.3

15.0 Training and Development

Corporate Induction

This is a 30 minute session which all staff receive as part of their induction programme when they commence employment with MEHT and includes the following learning outcomes:

- Know who the members of the Infection Prevention and Control Team are and how to contact them
- Understand the reservoirs of infection
- Know the Trust policy on when hands must be decontaminated and understand why
- Know the Uniform Policy
- Know when and how to use alcohol hand rubs and when to wash hands
- Know the importance of waste segregation and what goes in what colour bag
- Understand what MRSA & *Clostridium difficile* are and key activities used in their reduction

Nursing Induction

This is 1 hour 30 minute session which all nursing staff (qualified and unqualified) receive when they join the organisation in addition to corporate induction on joining the trust. This goes into much greater detail than the corporate induction session and includes;

- Hand hygiene
- Use of personal protective clothing (PPE)
- Sharps
- Isolation of infectious patients
- Taking microbiological specimens
- Decontamination
- Management of patients with diarrhoea
- Aseptic non-touch technique (ANTT)
- Preventing hospital acquired pneumonia

Risk mandatory training

This is for established staff and is completed every 2 years. Mandatory training can be accessed online, though this largely covers hand hygiene, or is delivered by a 45 minute face to face training session.

This session covers the same subjects as the nursing induction but in less detail.

Clinical skills training session

This is a 30 minute session for staff undertaking cannulation and caring for IV devices.

The session delivered by the IP team concentrates on ANTT and visual infusion phlebitis scoring.

Infection Control Link Practitioners Meeting

This is a two hour bi-monthly session aimed at all Link Practitioners for Infection Prevention and Control. Most attendees are Nurses and Healthcare Assistants. The sessions included any relevant issues along with Learning from RCA for MRSA bacteraemia and *Clostridium difficile* cases.

Induction for Junior Doctors

All new FY1 and FY2 Doctors in the Trust have a session on infection prevention and control and antibiotic stewardship. The following competencies are developed and included in their FY2 portfolio.

- Hand Hygiene
- Antimicrobial Prescribing
- Blood Culture Technique
- Aseptic Non-Touch Technique

Staff education regarding sharps management 2017/18

A report of an external audit of sharps disposal was issued in late August 2017. Many areas across the trust demonstrated 100% compliance with current guidance which is an improvement on previous audits. However there were some areas for improvement highlighted:

- Containers left unattended with the temporary closure not in use
- Unlabelled containers
- Overfilled containers
- Incorrect assembly of sharps containers
- Sharps protruding from containers

The report was shared with Matrons to action and all teaching sessions provided by Infection Prevention and Control Team cover safe sharps disposal. An educational board was also produced for Marquee Week.

16.0 Occupational Health

All MEHT staff can access Occupational Health services or access appropriate Occupational Health advice via Occupational Health policies on the prevention and management of communicable infections in care workers. All job descriptions state that the post holder 'is accountable and responsible for the prevention and control of healthcare associated infections and must comply with the standards set by the Health Act 2006: Code of practice for the prevention and control of Healthcare Associated infections (Revised January 2015)'

Immunisations are offered by the Occupational Health Department to employees based on a local risk assessment as described in Immunisation against infectious disease (The Green Book). Vaccines are given to all MEHT employees free of charge.

Policies remain in place for identifying and managing healthcare staff infected with hepatitis B or C or HIV and advising about fitness for work and monitoring as necessary, in line with Department of Health guidance. Liaison with the UK Advisory panel for Healthcare Workers Infected with Blood-borne Viruses is sought on procedures that may be carried out by BBV-infected workers or when advice on patient tracing, notification and offer of BBV testing may be needed.

A risk assessment is undertaken for all staff following an accidental occupational exposure to blood and body fluids. Provision for out of hours treatment for the management of occupational exposure to infection to include a specific risk assessment following an exposure prone procedure is provided by the Accident and Emergency Service and on-call infection prevention and control specialists.

All records of relevant immunisations are stored in line with the Data Protection Act 1998 on COHORT, an occupational health data base which is fitted with a recall system which is reviewed regularly.

The principles and practice of prevention of infection (including cleanliness) are included in induction and training programmes for new staff. The principles include: ensuring that policies are up to date; feedback from audit results; examples of good practice; and action needed to correct poor practice;

On line mandatory infection prevention training is available to all staff on line Training records are held by the Training and Development Department and details of compliance are disseminated to all departmental managers.

The Occupational Health Department continues to vaccinate staff with the flu vaccine in line with the National Flu Campaign.

17.0 Domestic Services

All areas are assigned one of four risk categories according to its functionality, i.e. “Very High” in theatres, “High” in wards, “Significant” in clinical departments and “Low” in non-clinical areas. As each functional area represents a different degree of risk, it requires different frequencies of cleaning.

Over the year cleaning audit results have averaged:

Very High (Target above 98%) Scores 98.63%
High (Target above 95%) Scores 97.80%
Significant (Target above 85%) Scores 95.34%
Low (Target above 75%) Scores 93.46%

Action plans were put in place for those areas that scored below their target and the area re-audited.

A curtain change programme ensures that curtain changes are undertaken at frequencies in line with the National Specifications for Cleanliness in the NHS April 2007.

In addition to routine cleaning, a number of areas have undergone a deep or terminal clean as appropriate. This has generally been in response to outbreaks, periods of increased incidence (of a microorganism or potential symptoms of infection) or because of ward moves.

A programme was initiated for radiator cleaning throughout the Trust and is undertaken at frequencies in line with the National Specifications for Cleanliness in the NHS April 2007.

Enhanced cleaning was carried out with increased frequency during 2017/18 in response to outbreaks and periods of increased incidence of various microorganisms.

There is currently no annual deep cleaning program in place in MEHT and it is recommended that there should be discussion around the potential benefits of there being a proactive programme of enhanced cleaning with or without an annual deep cleaning programme.

Appendix 1

Terminology for Apportioning of Mandatory Data:

MRSA bacteraemia Trust apportioned reports: The analysis of Trust apportioned and all other reports is based on the model outlined by the National Quality Board. (http://www.dh.gov.uk/en/Consultations/Closedconsultations/DH_100641)

This includes patients who are (i) in-patients, day-patients, emergency assessment patients or not known; AND (ii) have had a specimen taken at an acute Trust or not known; AND (iii) specimen is 3 or more days after date of admission (or admission date is null), where the day of admission is day '1'.

MSSA bacteraemia Trust apportioned reports: The analysis of Trust apportioned and all other reports is based on the criteria applied to MRSA bacteraemia.

***Clostridium difficile* Infection Trust apportioned reports:** Include patients who are (i) in-patients, day-patients, emergency assessment patients or not known; AND (ii) have had a specimen taken at an acute Trust or not known; AND (iii) specimen is 4 or more days after date of admission (admission date is considered day '1').

Non-Trust apportioned reports ("all other reports"):

These include all reports that are NOT apportioned to an acute Trust. The two categories are mutually exclusive.

Episode duration:

The length of a patient episode is defined as 14 days for MRSA and MSSA bacteraemia and 28 days for CDI, with the first day of the episode being considered day '1'.

