

BOARD OF DIRECTORS MEETING

Agenda Item	P1-158-17	Date: 5 th July 2017
Subject /title	Infection Prevention and Control Annual Report	
Author	Debbie Kretzer, Lead Infection Control Nurse.	
Responsible Director	Helen Porter, Director of Nursing and Quality	
Executive summary and key issues for discussion		
Infection Control Strategy Listening to and learning from feedback is key to planning and improving the quality of care delivered. We participate in national and local surveys seeking feedback from patients, relatives, staff and visitors to the Trust. The Infection Control Strategy for 2015 - 2019 was submitted for board approval in 2015 and a more detailed program of work is agreed annually by the Infection Control Committee. The strategy and annual program represent a continuing cycle of improvement and strengthening of infection prevention and control arrangements. Progress is monitored by the Infection Control Committee to ensure that infection prevention and control is reviewed and amended to achieve key performance indicators.		
Key Performance Indicators NHS Outcomes Framework 2016/2017 - Domain 5 indicators (Treating and caring for people in a safe environment and protecting them from avoidable harm) includes improvements in the incidence of MRSA bacteraemia and Clostridium difficile infection. Whilst these infections are challenging, they serve only as indicators and prevention of all avoidable infections is the ultimate aim. Emerging pathogens and existing lower profile infections are equally important and often, more challenging to address. Therefore, internally our performance uses a wider selection of indicators: <ul style="list-style-type: none">• Achieve MRSA bacteraemia objective• Achieve Clostridium difficile infection objective (no lapse in care)• Sustain reductions in E. coli and MSSA bacteraemia• Maintain high standards in national Patient Led Assessment of the Care Environment (PLACE).• Maintain Cleanliness Scores above 96%• Continue high levels of participation and compliance with Saving Lives care bundle audits.• All areas will achieve a green light for Infection Prevention Society audits• Compliance with specific infection control policy audits• Successful surveillance and outbreak prevention or effective management of unavoidable outbreaks.• Patient satisfaction surveys will note improvements or continued excellence.		
Key Performance Indicators Achieved The majority of national healthcare associated infection objectives were achieved and we demonstrated continued improvement or sustained quality of care.		

- Meticillin resistant Staphylococcus aureus (MRSA) bacteraemia 0
- Meticillin sensitive Staphylococcus aureus (MSSA) bacteraemia 2
- Escherichia coli (E. coli) bacteraemia 5
- Vancomycin-resistant Enterococci bacteraemia (VRE) 2
- Our Clostridium difficile national objective is to have no more than 1 case attributed to the Trust (according to surveillance definition). Although we exceeded our Clostridium difficile objective, none of the cases was due to any lapse in care or cross infection within the Trust.
 - Clostridium difficile infection (CDI) attributed to the Trust - 4
- In the most recent quality report CQC awarded us an outstanding certification. The CQC inspectors observed staff and noted compliance with hand hygiene standards and bare below the elbows. Staff were noted to be knowledgeable on preventing infection and minimising risks to patients, visitors and staff. The CQC commented also that clinical areas at the point of care were visibly clean.
- Patient surveys continue to demonstrate high levels of satisfaction with cleanliness and hand hygiene. In the latest national Care Quality Commission's inpatient survey, patients rated The Clatterbridge Cancer Centre NHS Foundation Trust as one of the best in the country and we received the highest score nationally for cleanliness (9.7/10).
- Excellent scores were maintained in the cleanliness and condition and appearance elements of Patient Led Assessments of the Care Environment (PLACE). Cleanliness scored 99.84%, a slight improvement on previous years. Our score of 91% for Condition, maintenance and appearance is very good but slightly lower than our previous year scores.
- Our Carbapenemase producing Enterobacteriaceae (CPE) screening processes were extended in 2014 to take account of the national guidance and this continues to detect a very small number of patients colonised. However local screening for vancomycin resistant Enterococcus (VRE) continues to detect an increasing number of new patients with bowel carriage of VRE. There is no evidence of onward transmission/cross infection within CCC.
- Hand hygiene scores in audits and from patient surveys, remain higher than national averages.
- Since March 2016, we have been using the new electronic audit system to monitor trends in practice for High Impact Interventions and data demonstrates consistently high scores.
- In March 2015, a UV-C emitting device was purchased to augment isolation room decontamination using the hydrogen peroxide 'fogging' system. UV-C is available out-of-hours and also provides the option of routine decontamination of treatment and procedure areas such as the interventional suite rooms. A RAG rating system has been created so that ward staff are able to determine appropriate decontamination methods according to the potential contaminant.
- Data collection and surveillance of all patients with indwelling urinary catheters has been continuous since 2012. During 2016/2017, 203 catheterised patients were monitored, over a total of 2495 catheter days. Of these, 22 patients developed a catheter associated urinary tract infection (CAUTI) which remains consistent with the previous three years surveillance but an improvement on the 2012-2013 baseline number of CAUTI (33).
- The Water Safety Group was established as a subcommittee of the

Infection Control Committee and the actions associated with the Water Safety Plan are in progress. Testing of water outlets in all inpatient areas began in April 2015 and Pseudomonas contamination in two showers was successfully managed. Short-term control was achieved with point-of-use filters but more long term resolution required remedial plumbing work. Random water sampling continues in all inpatient areas to provide assurance. A new copper and silver ionization system has been installed and once the final elements of preparation are completed (installation of 'break-tanks'), the service will be commissioned to provide ongoing assurance of microbiologically safe water standards. Regular water testing for Pseudomonas will continue and Legionella testing will begin.

- There were neither outbreaks of infection nor instances of cross infection but, due to outbreak potential, a number of cases required contact tracing, thorough investigation and management. Including seasonal influenza, norovirus, Group A Streptococcus and Pseudomonas aeruginosa infections and carbapenemase -producing Enterobacteriaceae and vancomycin-resistant Enterococcus colonisation

Key Performance Indicators Not Achieved

- All wards and inpatient areas scored green on the RAG rating for Infection Prevention and Control Audits during 2016/2017 with average overall score of 93%. However, one directorate scored overall amber and another scored red with individual areas scoring below 80%. Issues identified were largely related to the environment especially in satellite clinics, some dated equipment, clutter and lack of storage but some clinical practice required improvement including 'Bare Below the Elbows' and management of sharps. Managers have produced action plans to address issues identified during the audits.

Focus for Improvement

In addition to our own internal mechanisms to identify any areas requiring further improvement, a number of publications are used as the focus to continuously reassess the quality and standards within the Trust.

- CQC Fundamental Standards of Care
- NHS England - Clostridium difficile infection objectives for NHS organisations
- NICE guidance - Prevention and control of healthcare-associated infections in secondary care (PH36)
- NICE Quality Standard 61 – Infection Prevention and Control

UK Five Year Antimicrobial Resistance Strategy 2013 to 2018

Strategic context and background papers (if relevant)

The Health and Social Care Act 2008: code of practice on the prevention and control of infections and related guidance

Recommended Resolution

That the Trust Board notes positive performance with regard to infection prevention and control.

Risk and assurance								
The report aims to provide the Trust Board with assurance as to the prevention and control of infection provided at CCC.								
Link to CQC Regulations								
Regulation 12: safe care and treatment								
Resource Implications								
None								
Key communication points (internal and external)								
Freedom of Information Status								
<p>FOI exemptions must be applied to specific information within documents, rather than documents as a whole. Only if the redaction renders the rest of the document non-sensical should the document itself be redacted.</p> <p>Application Exemptions:</p> <ul style="list-style-type: none"> • Prejudice to effective conduct of public affairs • Personal Information • Info provided in confidence • Commercial interests • Info intended for future publication 	<p>Please tick the appropriate box below:</p> <table border="1"> <tr> <td><input checked="" type="checkbox"/></td> <td>A. This document is for full publication</td> </tr> <tr> <td><input type="checkbox"/></td> <td>B. This document includes FOI exempt information</td> </tr> <tr> <td><input type="checkbox"/></td> <td>C. This whole document is exempt under FOI</td> </tr> </table> <p>IMPORTANT:</p> <p>If you have chosen B above, highlight the information that is to be redacted within the document, for subsequent removal.</p> <p>Confirm to the Trust Secretary, which applicable exemption(s) apply to the whole document or highlighted sections.</p>		<input checked="" type="checkbox"/>	A. This document is for full publication	<input type="checkbox"/>	B. This document includes FOI exempt information	<input type="checkbox"/>	C. This whole document is exempt under FOI
<input checked="" type="checkbox"/>	A. This document is for full publication							
<input type="checkbox"/>	B. This document includes FOI exempt information							
<input type="checkbox"/>	C. This whole document is exempt under FOI							
Equality & Diversity impact assessment								
Are there concerns that the policy/service could have an adverse impact because of:	Yes	No						
Age		X						
Disability		X						
Sex (gender)		X						
Race		X						
Sexual Orientation		X						
Gender reassignment		X						
Religion / Belief		X						
Pregnancy and maternity		X						
Civil Partnership and Marriage		X						
If YES to one or more of the above please add further detail and identify if full impact assessment is required.								
Next steps								
Appendices								

Strategic Objectives supported by this report

Improving Quality	x	Maintaining financial sustainability	
Transforming how cancer care is provided across the Network		Continuous improvement and innovation	x
Research		Generating Intelligence	

Link to the NHS Constitution

Patients		Staff	
Access to health care		<i>Working environment</i> Flexible opportunities, healthy and safe working conditions, staff support	
Quality of care and environment	x	<i>Being heard:</i> <ul style="list-style-type: none"> Involved and represented Able to raise grievances Able to make suggestions Able to raise concerns and complaints 	
Nationally approved treatments, drugs and programmes			
Respect, consent and confidentiality	x		
Informed choice		Fair pay and contracts, clear roles and responsibilities	
Involvement in your healthcare and in the NHS		Personal and professional development	
Complaint and redress	x	Treated fairly and equally	

Infection Prevention and Control Annual Report

2016-2017



The Clatterbridge Cancer Centre



NHS Foundation Trust

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1. Executive Summary

This report has been produced covering the period 1st April 2016 to 31st March 2017.

1.1. The Clatterbridge Cancer Centre NHS Foundation Trust

The Clatterbridge Cancer Centre NHS foundation Trust (CCC) is one of the UK's leading providers of non-surgical cancer treatment including pioneering chemotherapy, radiotherapy and eye proton therapy. The Trust serves a population of approximately 2.3 million in Cheshire, Merseyside, North Wales and the Isle of Man; providing treatment at home, in chemotherapy clinics in nine hospitals across the region, or on our own sites at Wirral and Aintree. During 2016/2017, we treated more than 27,000 patients; registered over 9,000 new patients and accommodated 3,704 inpatient episodes of care and 69,000 outpatient clinic attendances plus 93,330 separate attendances for outpatient radiotherapy and 47,335 for outpatient chemotherapy treatment.

Our mission:

To improve health and wellbeing through compassionate, safe and effective cancer care.

Our vision:

To provide the best cancer care to the people we serve.

Our values:

Putting people first
Achieving excellence
Passionate about what we do
Always improving our care
Looking to the future

1.2. Infection Control Strategy

Listening to and learning from feedback is key to planning and improving the quality of care delivered. We participate in national and local surveys seeking feedback from patients, relatives, staff and visitors to the Trust.

The Infection Control Strategy for 2015 - 2019 was submitted for board approval in 2015 and a more detailed program of work is agreed annually by the Infection Control Committee. The strategy and annual program represent a continuing cycle of improvement and strengthening of infection prevention and control arrangements. Progress is monitored by the Infection Control Committee to ensure that infection prevention and control is reviewed and amended to achieve key performance indicators.

1.3. Key Performance Indicators

NHS Outcomes Framework 2016/2017 - Domain 5 indicators (Treating and caring for people in a safe environment and protecting them from avoidable harm) includes improvements in the incidence of MRSA bacteraemia and Clostridium difficile infection. Whilst these infections are challenging, they serve only as indicators and prevention of all avoidable infections is the ultimate aim. Emerging pathogens and existing lower profile infections are equally important and often, more challenging to address. Therefore, internally our performance uses a wider selection of indicators:

- Achieve MRSA bacteraemia objective
- Achieve Clostridium difficile infection objective (no lapse in care)
- Sustain reductions in E. coli and MSSA bacteraemia

- Maintain high standards in national Patient Led Assessment of the Care Environment (PLACE).
- Maintain Cleanliness Scores above 96%
- Continue high levels of participation and compliance with Saving Lives care bundle audits.
- All areas will achieve a green light for Infection Prevention Society audits
- Compliance with specific infection control policy audits
- Successful surveillance and outbreak prevention or effective management of unavoidable outbreaks.
- Patient satisfaction surveys will note improvements or continued excellence.

1.3.1. Key Performance Indicators Achieved

The majority of national healthcare associated infection objectives were achieved and we demonstrated continued improvement or sustained quality of care.

- Meticillin resistant Staphylococcus aureus (MRSA) bacteraemia 0
- Meticillin sensitive Staphylococcus aureus (MSSA) bacteraemia 2
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 - Clostridium difficile infection (CDI) attributed to the Trust - 4
- In the most recent quality report CQC awarded us an outstanding certification. The CQC inspectors observed staff and noted compliance with hand hygiene standards and bare below the elbows. Staff were noted to be knowledgeable on preventing infection and minimising risks to patients, visitors and staff. The CQC commented also that clinical areas at the point of care were visibly clean.
- Patient surveys continue to demonstrate high levels of satisfaction with cleanliness and hand hygiene. In the latest national Care Quality Commission's inpatient survey, patients rated The Clatterbridge Cancer Centre NHS Foundation Trust as one of the best in the country and we received the highest score nationally for cleanliness (9.7/10).
- Excellent scores were maintained in the cleanliness and condition and appearance elements of Patient Led Assessments of the Care Environment (PLACE). Cleanliness scored 99.84%, a slight improvement on previous years. Our score of 91% for Condition, maintenance and appearance is very good but slightly lower than our previous year scores.
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- Hand hygiene scores in audits and from patient surveys, remain higher than national averages.
- Since March 2016, we have been using the new electronic audit system to monitor trends in practice for High Impact Interventions and data demonstrates consistently high scores.

- In March 2015, a UV-C emitting device was purchased to augment isolation room decontamination using the hydrogen peroxide 'fogging' system. UV-C is available out-of-hours and also provides the option of routine decontamination of treatment and procedure areas such as the interventional suite rooms. A RAG rating system has been created so that ward staff are able to determine appropriate decontamination methods according to the potential contaminant.
- Data collection and surveillance of all patients with indwelling urinary catheters has been continuous since 2012. During 2016/2017, 203 catheterised patients were monitored, over a total of 2495 catheter days. Of these, 22 patients developed a catheter associated urinary tract infection (CAUTI) which remains consistent with the previous three years surveillance but an improvement on the 2012-2013 baseline number of CAUTI (33).
- The Water Safety Group was established as a subcommittee of the Infection Control Committee and the actions associated with the Water Safety Plan are in progress. Testing of water outlets in all inpatient areas began in April 2015 and *Pseudomonas* contamination in two showers was successfully managed. Short-term control was achieved with point-of-use filters but more long term resolution required remedial plumbing work. Random water sampling continues in all inpatient areas to provide assurance. A new copper and silver ionization system has been installed and once the final elements of preparation are completed (installation of 'break-tanks'), the service will be commissioned to provide ongoing assurance of microbiologically safe water standards. Regular water testing for *Pseudomonas* will continue and *Legionella* testing will begin.
- There were neither outbreaks of infection nor instances of cross infection but, due to outbreak potential, a number of cases required contact tracing, thorough investigation and management. Including seasonal influenza, norovirus, Group A *Streptococcus* and *Pseudomonas aeruginosa* infections and carbapenemase - producing *Enterobacteriaceae* and vancomycin-resistant *Enterococcus* colonisation

1.3.2. Key Performance Indicators Not Achieved

- All wards and inpatient areas scored green on the RAG rating for Infection Prevention and Control Audits during 2016/2017 with average overall score of 93%. However, one directorate scored overall amber and another scored red with individual areas scoring below 80%. Issues identified were largely related to the environment especially in satellite clinics, some dated equipment, clutter and lack of storage but some clinical practice required improvement including 'Bare Below the Elbows' and management of sharps. Managers have produced action plans to address issues identified during the audits.

1.4. Focus for Improvement

In addition to our own internal mechanisms to identify any areas requiring further improvement, a number of publications are used as the focus to continuously reassess the quality and standards within the Trust.

- CQC Fundamental Standards of Care
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- NICE Quality Standard 61 – Infection Prevention and Control
- UK Five Year Antimicrobial Resistance Strategy 2013 to 2018

Main Report

2. Description of Infection Control Arrangements

People can expect all Trust staff to take responsibility and be accountable for continuous improvement in infection prevention and control. The Board and Executive Team are up-to-date with the status of infection prevention and control within the Trust and understand the implications of poor practices. This annual report has been produced covering the period 1st April 2016 to 31st March 2017.

2.1. Infection Prevention and Control Policy Statement

The Board has collective responsibility for minimising the risks of infection and the general means by which it prevents and controls such risks. As such it is committed to a strategy, which minimises risks through a comprehensive system of internal controls whilst maximising potential for innovation and best practice. The Board acknowledges that the contribution of its staff is fundamental to achieving this. The Trust will support and help its employees in providing services that are safe for patients. This will require that all staff recognise that Infection Prevention and Control is everyone's business.

2.2. Infection Control Committee

Heads of Department/Service have local responsibility for infection prevention and control within their area. The responsibility includes ensuring that all staff access infection control training and for disseminating information to staff within their area.

All wards and departments are represented at the Infection Control Committee to ensure that arrangements within the Trust result in optimal treatment of infections with minimal risk of healthcare-associated infections. The Infection Control Committee meets quarterly and the minutes of each meeting are recorded permanently once agreed at the subsequent meeting.

Additional clinical staff (including the Medical Director) may be requested to join the committee as needed to help develop targeted action plans to influence specific infection prevention and control issues.

2.3. Reporting Line to Trust Board

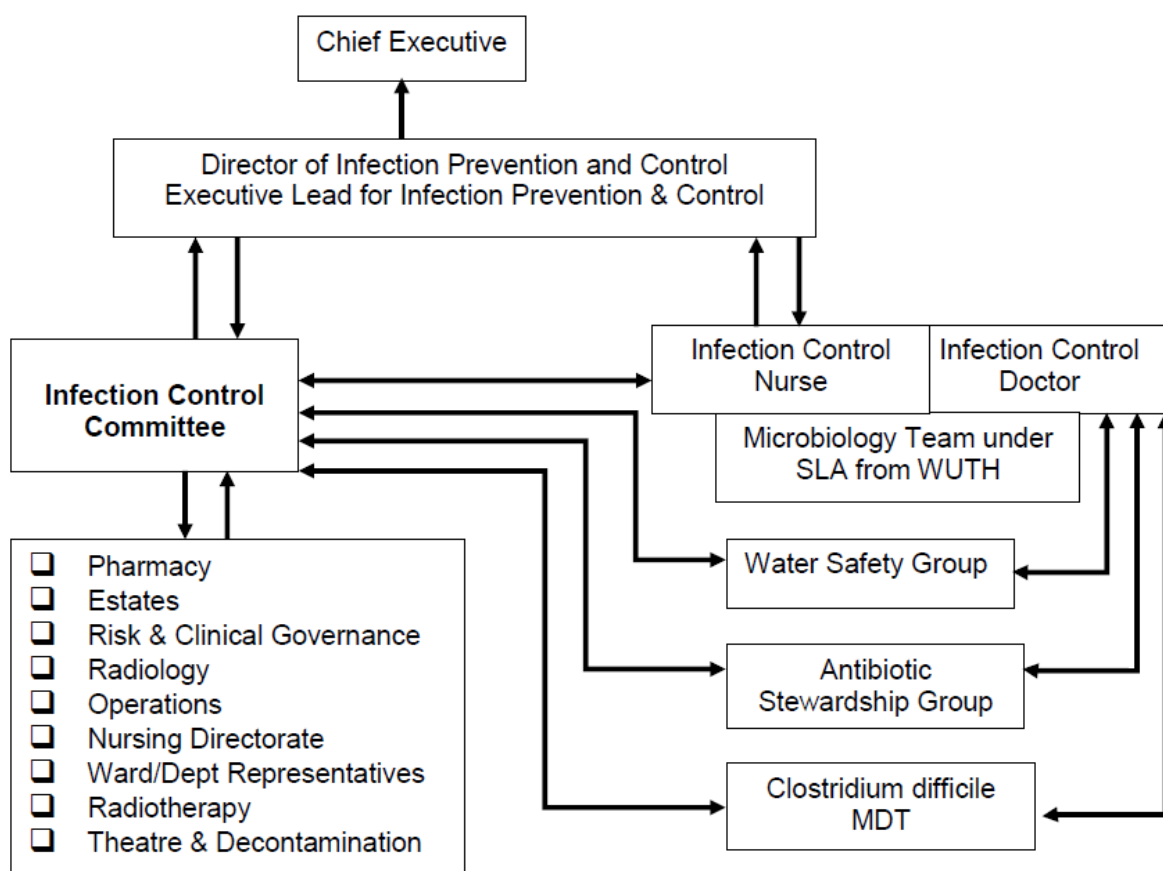
Oversight of the Infection Control Committee and systems of escalation are routed to the Board via the Quality Committee.



* Director of Infection Prevention and Control (Director of Nursing and Quality) attends

2.4. Infection Prevention and Control Structure

The Clatterbridge Cancer Centre



2.5. Assurance framework

An 'Assurance Framework' describes the systems and processes (controls) in place for preventing and managing infection within the Trust and how we know that these controls are effective (assurance). The Trust manages the risks associated with HCAI through a framework of quality assurance systems and reporting mechanisms.

2.5.1. Internal Assurance Mechanisms

There are standardised processes for reporting infection prevention and control elements to the Infection Control Committee, the Quality Committee and quarterly to the Trust Board. Occasionally information is also escalated via the Health and Safety Committee, the Risk Management Committee and/or Drugs and Therapeutics.

Methods of reporting include:

- Matrons Report to the Quality Committee using agreed content and format
- Director of Infection Prevention and Control (DIPC) :
 - Weekly updates on HCAI
 - Annual report using agreed content and format (this report)
- Untoward events monitoring via Risk Management
 - Incident reports
 - Root Cause Analysis findings and action plans
- Outbreak reports and 'Lessons Learned'

A variety of mechanisms are used to detect problems and monitor progress against national or local standards and policy. Including a comprehensive and ongoing program of surveillance, audit, and root cause analysis. Local patient satisfaction surveys, results of benchmarking and/or gap analysis are used to plan actions and devise other monitoring processes.

2.5.2. External Assurance Mechanisms

Assurance to external organisations is generally measured by the Trust's ability to achieve national and regional mandated objectives including Clostridium difficile infections; feedback from national patient and staff surveys and measurement against national quality indicators including:

- Code of Practice
- Care Quality Commission – Fundamental Standards,
- Health Protection Agency - Clostridium difficile checklist
- National Institute for Health and Care Excellence (NICE) Quality Improvement Guide - Prevention and control of HCAI

Examples of evidence include:

- Discussion and reporting, publicly, within the Trust and, at regional meetings including:
 - The Open and Honest Care: driving improvement programme - includes a commitment to publish a set of patient outcomes, patient experience and staff experience measures so that patients and the public can see how we are performing in these areas. This information is published monthly.
 - NHS Safety Thermometer: measures harm and the proportion of patients that are 'harm free' from certain conditions including urine infections.
- Monthly Chief Executive review and sign off of Mandatory Surveillance System (MESS) data.
- Quarterly meetings with service commissioners and regular reporting against contractual and quality agreements
- Feedback of performance from external assessments such as:
 - Care Quality Commission assessment and report
 - NHS Improvement review
 - Annual PLACE assessment

2.6. Infection Control Team

Infection prevention and control support, advice, and training are provided by the Trust's own Infection Prevention and Control Team. Infection Prevention and Control Nurses (ICNs) are represented by two whole time equivalent posts including a Lead Nurse. Since her appointment in January 2010 the Lead Nurse has been the responsible operational lead for infection prevention and control within the Trust and reports directly to the DIPC.

Additional support is provided by Wirral University Teaching Hospital under Service Level Agreements (SLA) including access to an accredited microbiology laboratory service (Micropath) and a nominated Consultant Medical Microbiologist as the Infection Control Doctor. These arrangements aim to ensure optimal clinical care for patients and Occupational Health arrangements and support for staff.

Other key individuals / groups have specific, defined responsibilities for the prevention and control of infection and for providing assurance on the Trusts Infection Prevention and Control arrangements.

- The Director of Nursing and Quality is the designated Director of Infection Prevention and Control (DIPC) (as per Winning Ways) and has strategic and executive responsibility for Infection Prevention and Control. Other responsibilities include management of the infection control nurses (ICNs).
- Link Staff (nurses and radiographers) are responsible for acting in line with the terms of reference for the role which includes: participating in audits, highlighting concerns, acting as a role model in the work environment and supporting the ward/department manager to promote and maintain infection control standards.
- All Trust staff members have individual responsibility for prevention and control of infection as detailed within job descriptions:
 “All employees are expected to follow consistently high standards of infection control practice, especially with reference to hand decontamination, adherence to dress code, and for clinical staff, aseptic technique and to be aware of and follow all Trust infection control guidelines and procedures relevant to their work.”

2.7. Links to Prescribing and Formulary Committee

Links between infection prevention and control and prescribing within the Trust are formally established by role specific responsibilities and nominated membership of groups and committees including an antibiotic stewardship group to ensure that antibiotics are used appropriately across the Trust and are in line with the national initiative Start Smart Then Focus. Core membership of the group includes: Consultant Microbiologist, DIPC, Lead ICN, Antibiotic Pharmacist (Chair), and Consultant Oncologists. Clinical Nurse Specialists/ Champions and other staff groups are invited as necessary for particular projects.

Antibiotic prescribing is formally monitored during monthly point prevalence audits undertaken by pharmacy (Section 10.4). Results are reviewed by the Antibiotic Stewardship Group and reported to the Drug and Therapeutics Committee and via the Infection Control Committee.

The Clostridium difficile Multidisciplinary Review Group was formed by members of the Antibiotic Stewardship group to bring together expertise from various sources. The main purpose of the group is to contribute to the Clostridium difficile investigation process within the Trust, and to meet with and provide advice to clinical teams on appropriate management of patients with Clostridium difficile infection. Meeting notes and action plans are reviewed by the Infection Control Committee and the DIPC. In addition, our core values facilitate effective informal working relationships.

Weekly ward visits by our Consultant Medical Microbiologist/Infection Control Doctor facilitates support and education of medical staff as part of the ‘Antibiotic Ward Round’ and provides formal opportunity for staff to refer more complex patients for immediate advice.

2.8. Budget Allocation

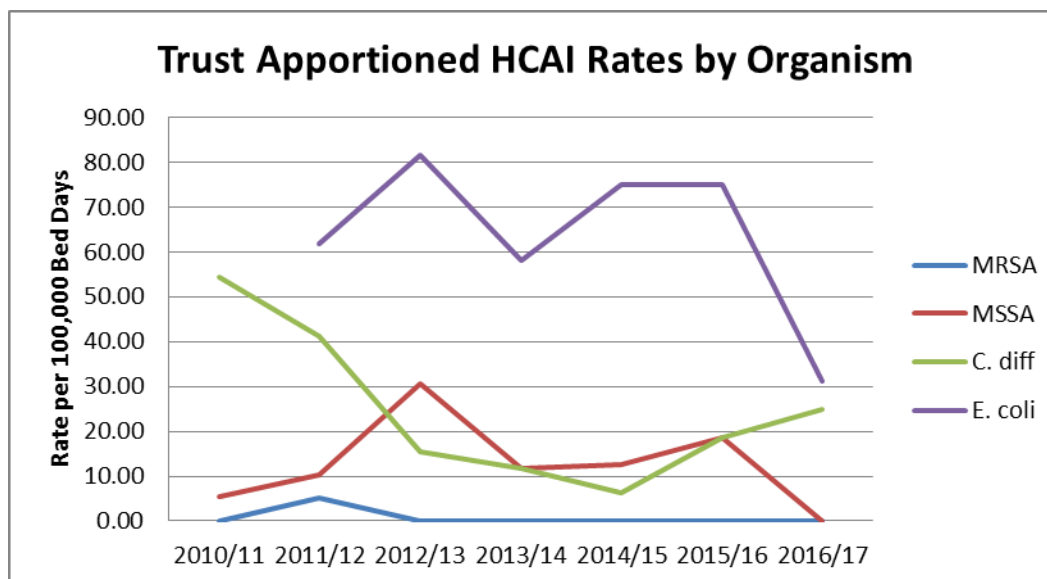
The Trust has demonstrated commitment to an adequately resourced program of infection prevention and control and continues to provide funding for:

- 2 whole time equivalent Infection Control Nurses (including 1 Lead Nurse)
- Advanced Pharmacist - Antimicrobial Therapy and Medicines Management
- Consultant Medical Microbiologist (and nominated Infection Control Doctor)
- Laboratory services including scientific support and MRSA screening.
- Other posts such as DIPC and Matrons are funded separately.

Additional funding may be identified via health and safety, risk management, quality or governance mechanisms or through submission of a formal business case. Any additional consumable requirements are funded through departmental budgets.

3. Healthcare associated infection (HCAI) statistics

People can expect us to monitor levels of infection and use this information to adjust practice where necessary. For the purposes of national surveillance, clear definitions are used to determine whether or not an infection is reported and whether the infection is apportioned to hospital or community care. However, definitions are for surveillance purposes and any result attributed to an individual area does not necessarily mean that the infection was acquired there.



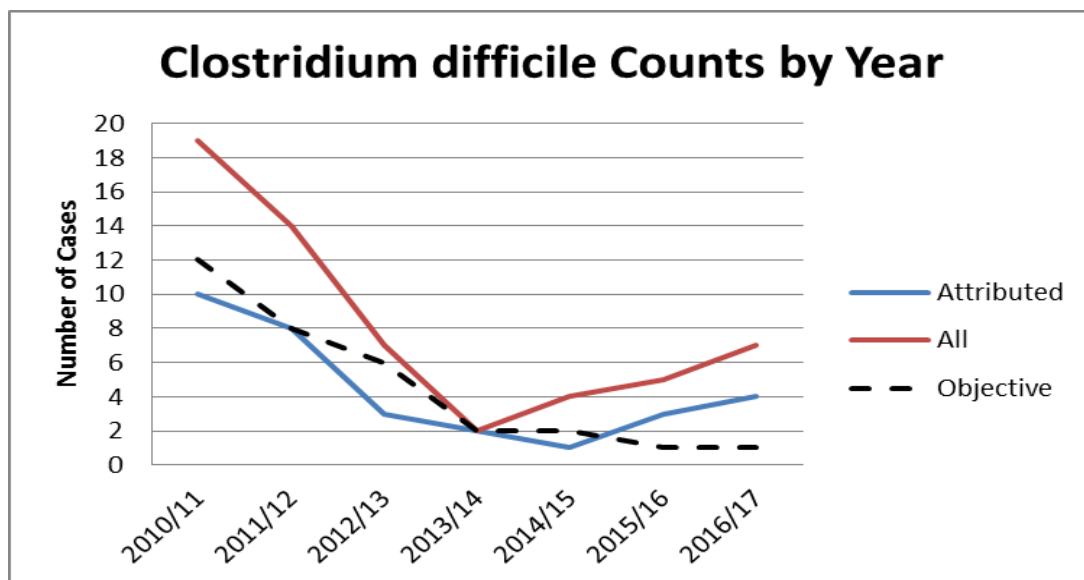
We have made significant improvement since monitoring began but, as demonstrated in the chart, the rates of Trust-apportioned *Clostridium difficile* infections detected during 2016/2017 continue to increase. There is no evidence of poor practice or cross infection and no specific themes or trends were identified but all patients receiving cancer treatment are at increased risk due to the nature of the treatment and underlying disease.

The infection rates in the previous chart reflect the following actual numbers for 2016/2017:

- *Clostridium difficile* infection (CDI) - 4 but no 'lapse in care'
- Methicillin resistant *Staphylococcus aureus* (MRSA) bacteraemia - 0
- Methicillin sensitive *Staphylococcus aureus* (MSSA) bacteraemia - 0
- *Escherichia coli* (E. coli) bacteraemia - 5

3.1. *Clostridium difficile*

Positive *Clostridium difficile* toxin results identified after the first three days of admission are, by definition, attributed to the hospital even if the infection is not acquired here. Each case of *Clostridium difficile* infection (CDI) is fully investigated to identify any risks and a multidisciplinary review group (C.diff MDT) meets to ensure patients receive appropriate management. Service Commissioners consider the result of investigations to determine whether or not cases are linked with identifiable lapses in care. The following graph illustrates the total number of cases reported by the hospital and those which, by definition, are attributed to the Trust as hospital acquired. The 'objective' line indicates the mandatory improvement targets which decrease annually irrespective of comparative rates of infection between hospitals.



3.1.1. Clostridium difficile Results

Of samples tested during 2016/2017, seven patients were identified with Clostridium difficile toxin positive results and were reported to the national HCAI system. Of these patients, three were detected on admission from patients admitted with diarrhoea and four cases were attributed to the Trust by definition but with no associated lapse in care.

A further six patients were identified with Equivocal results (no toxin detected) but, as these cases do not meet national criteria, they cannot be reported as patients with infection. None of the cases identified was linked cross infection at our Trust.

3.2. Meticillin Resistant *Staphylococcus aureus* (MRSA) bacteraemia

Detection of MRSA colonisation via screening remains relatively stable but we have had no cases of MRSA bacteraemia to report during 2016/2017 and it has been almost six years since our last attributed case.

3.3. Meticillin Sensitive *Staphylococcus aureus* (MSSA) bacteraemia

A single case of MSSA bacteraemia was reported to the national database but it does not meet the definition of attributed to the hospital. The patient was admitted with a fever and skin and soft tissue infection and blood cultures were collected on admission.

3.4. *Escherichia coli* (E. coli) bacteraemia

Escherichia coli (E. coli) are found normally in the bowel (intestines) of every person and national surveillance highlights that it is one of the commonest germs to cause blood stream infections.

Public Health England (2017) reports highlight that between 2012 and 2016, the rate of E. coli bacteraemia in England increased by 26% (from 50.6 to 63.6 cases per 100,000 population). Definitions used for national reporting of E. coli do not distinguish between infections attributable to the Trust or those developing outside the Trust. Nevertheless, the rate of infection at The Clatterbridge Cancer Centre NHS Foundation Trust (CCC) has now dropped well below the national average to 31.3 cases per 100,000 patients. This rate represents five cases of E. coli bacteraemia but, of these, three were present on admission to hospital. In one case the likely source of infection was pneumonia, two most likely associated with the gastrointestinal tract and two were urinary tract, but not

catheter associated. All patients were immunocompromised and the infections may be considered unavoidable due to tumor sites and multiple risk factors.

4. Surveillance

Routine surveillance enables the Infection Control Team to monitor and identify potentially preventable infections, potential causative factors and trends. In line with the House of Commons Public Accounts Committee 52nd report of the Session 2008–2009: Reducing Healthcare Associated Infection in Hospitals in England, and reinforced by the Health and Social Care Act - Code of Practice, attempts have continued to extend and enhance existing surveillance beyond that required by national standards. A recruitment delay has unfortunately necessitated a review of all audit and surveillance practices as it has not been possible to continue within available resources.

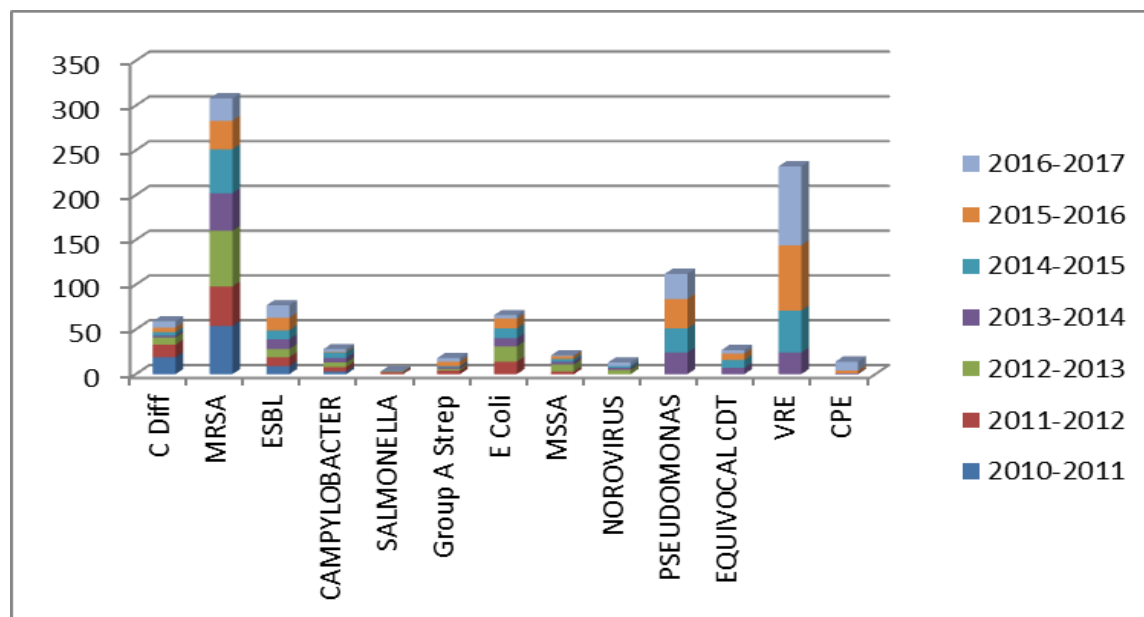
4.1. Alert Organisms

Alert organisms are those with specific infection control implications and include MRSA, Clostridium difficile, and multi-resistant organisms found in any specimen. The electronic patient record is flagged if a patient is identified with an alert organism at any site. This enables the Infection Control Nurses (ICNs) to ensure that the patient is appropriately isolated on admission and remains isolated for as long as necessary. The alerts also enable clinical staff to ensure that the correct clinical care and antibiotic management is implemented should the patient develop an infection.

The ICNs also have an automated infection control results reporting system. The system ensures that all positive results are immediately reported to the ICNs for further follow up. Improvements to the automated system are introduced as new threats emerge or reporting requirements change.

4.1.1. Alert Organisms by Year

As the graph below illustrates, the prevalence of some organisms (e.g. MRSA, E.coli) has decreased whereas others are increasingly common (e.g. VRE and CPE).



The following table highlights that the number of patients managed by the infection control team in any given year has increased significantly since monitoring began. The increasing number is primarily due to more alert organisms added to the watch-

list (e.g. E.coli or Pseudomonas) and increasing levels of VRE detected on admission screening.

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
TOTAL Alert Organisms	85	96	117	132	169	187	192

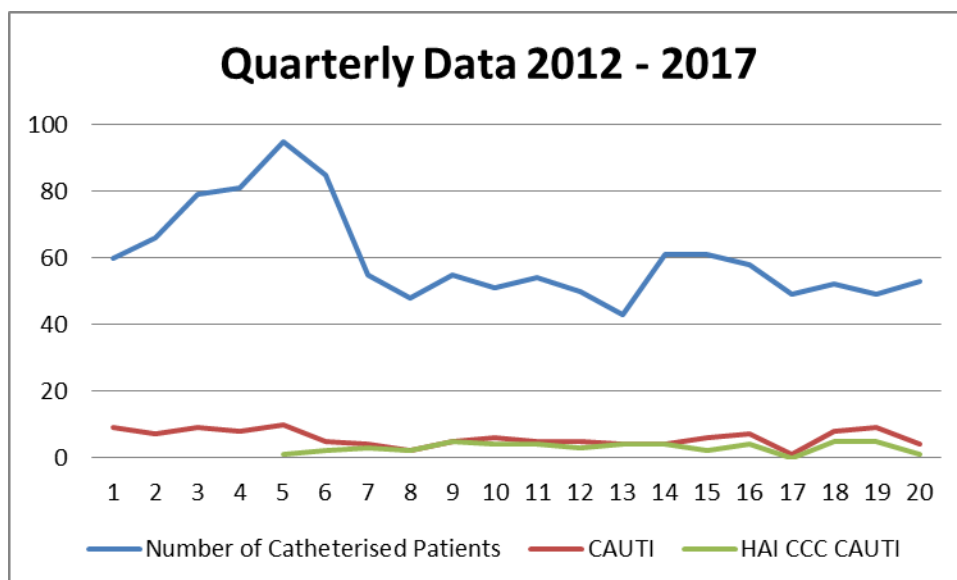
4.2. Alert Conditions

Alert condition surveillance includes medical diagnoses, syndromes, or individual symptoms that suggest a risk of infection. Alert conditions routinely monitored by the ICNs include any patient requiring isolation including those with diarrhoea, and patients with an indwelling urinary catheter. At present all patients with any carbapenemase-producing Enterobacteriaceae (CPE) risk factors are monitored also to ensure that high-risk patients are isolated and screened as required.

Success of alert condition surveillance relies on daily visits to clinical areas and communication with clinical care staff. Additional weekly summary reports generated by microbiology and daily reports from CCC Audit and Information Departments act as additional fail-safe systems.

4.3. Urinary Catheter Surveillance

Catheterisation places patients at significant risk of acquiring a urinary tract infection. The longer a catheter is in place the greater the risk. In July 2011 planned surveillance of all patients with an indwelling urinary catheter began and has been incorporated into the ICNs routine work load. Data collection methods and analysis have been refined with the support of the Clinical Effectiveness Team (CET Audit), and further changes implemented in order to simultaneously collect data useful for others.



The following results are based on patients who had a catheter in situ on admission or were catheterised between 1st April 2016 and 31st March 2017.

4.3.1. Results

During the year, 203 catheterised patients and 232 catheters were monitored, over a total of 2495 catheter days. Of these, 22 patients developed a catheter associated urinary tract infection (CAUTI) which is consistent with previous years. Although

there has been no further improvement in the overall number of CAUTI recorded, the number of CAUTI defined as hospital associated has decreased (11). The prevalence of catheterised patients is measured on a weekly basis and averages 12% (range 6% - 29%). Fewer patients were catheterised, fewer catheters were used and indications for catheter insertion were appropriate; with several patients having more than one indication for catheterisation. There has been an increase in the number of catheter days to 2495 from 2317 the previous year. This may highlight that catheters are not removed as soon as no longer required.

Surveillance indicated that standards of documentation continue to improve in some areas, with the highest standards again on Conway ward. Further improvement is required to ensure that catheter details are identified when patients are admitted with a urinary catheter already in place.

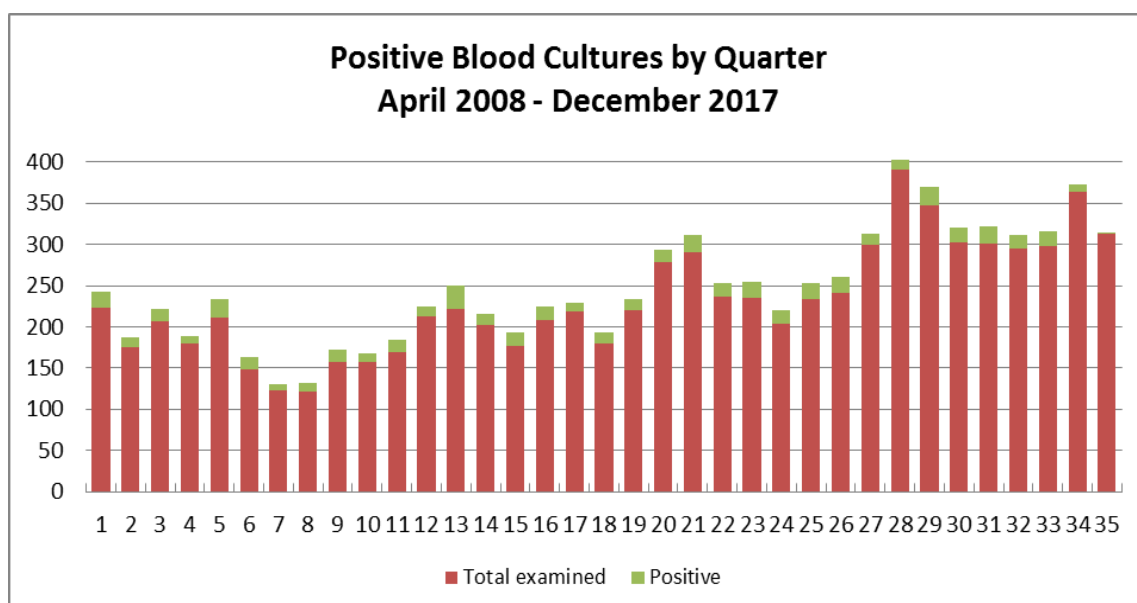
4.3.2. Actions and Learning Points

Improvements within the Trust continue to focus on ensuring that catheters are inserted for appropriate indications and remain in place only if there is a continuing need (HOUDINI). Recent enhancements to promote seamless transfer of care or transition to discharge include the introduction of:

- An electronic assessment tool with instructions for staff on appropriate management of urinary catheters
- A new catheter care plan with explanation
- Daily catheter checks
- A new information booklet for patients to retain, containing integral catheter passport detailing the type of catheter and the date of insertion
- A catheter take home pack with all equipment required for the first few days of care at home
- A catheter delivery service to ensure the correct catheter is delivered to the patient at home.

4.4. All Bacteraemias

Blood cultures are collected from febrile patients but as the following chart demonstrates, the vast majority of blood cultures collected have no bacteria detected even after 5 days of incubation. Further observation is required as the number of blood cultures collected appears to be on the increase although the proportion of positive cultures is decreasing.



4.4.1. Vancomycin-resistant Enterococcus (VRE) bacteraemia

There have been two VRE bacteraemia to report during 2016/2017 both were positive blood cultures containing microorganisms. The first, detected on admission, was caused by Enterococcus gallinarum which has an inherent low level resistance to vancomycin rather than acquired resistance. The second case occurred in a patient with multiple risk factors including bowel and bladder tumours who was receiving end of life care.

5. Microbiological Screening

Antimicrobial resistance is one of the biggest challenges facing Infection Prevention and Control Teams and it is essential to prevent resistant organisms becoming established within our hospital. Microbiological screening is used as a means to identify asymptomatic carriage of resistant bacteria but it cannot prevent or diagnose infections unless results are used appropriately.

Screening has a significant associated ongoing financial cost and in order to be of greatest benefit to all patients, it must target those most likely to be colonised and/or with an increased risk of infection and must include samples from those body sites most likely to be affected. Also, it is essential for clinicians and infection control staff to take action to isolate anyone posing a risk to others and, if available and indicated, to ensure appropriate treatment is provided.

5.1. Annual Quality Screening Audit

The focus of the annual screening audit is to ascertain compliance with quality and risk management standards in relation to screening procedures within the Trust. Case notes and microbiology requests and results of all patients present as an inpatient on 27th June 2017 were reviewed.

Compliance with all of the following is required to provide full assurance:

- Was the patient screened appropriately?
 - If so, the screening type undertaken – e.g. MRSA, Clostridium difficile toxin positive (C. diff) and Vancomycin resistant enterococci (VRE) and Carbapenamase producing enterococci (CPE)
- How was the screening requested and reported?
- How was the clinician informed of the result?
- How was the patient followed up and when?
- Whether the patient has been informed of the specific organism and the timescales of informing the patient?
- How does the Trust monitor compliance of screening procedures?

Unfortunately, it is no longer possible to identify whether results were appropriately reviewed by clinicians as this function is not available within the new electronic patient record due to absence of an audit trail. Also difficulties arise when attempting to identify whether the result has been actioned since the information may be stored in one of several sections within the electronic patient record.

Total Inpatients by Ward	
CONWAY (26 beds)	21
MERSEY (25 beds)	17
SULBY (23 beds)	16
Total	54

All patients require a 'valid MRSA screen but only those meeting certain criteria require screening for VRE/CPE and only those patients with diarrhoea should be tested for the presence of Clostridium difficile toxin. Since previous screening history and requests are accessed the absence of screening may reflect practices within outpatient areas which would be also included in the review.

Total Screens by Patient by Ward				
	MRSA	C.diff	VRE/CPE	Excess screens
CONWAY	20/21 (95%)	8/8 (100%)	9/9 (100%)	3 (but not requested on Conway)
MERSEY	16/17 (94%)	6/6 (100%)	9/10 (90%)	10
SULBY	14/16 (87%)	1/1	3/4 (75%)	6
Total	50/54 (93%)	15/15 (100%)	21/23 (95%)	19

5.2. MRSA Screening

MRSA screening of all inpatient admissions (emergency and elective) was introduced many years ago. Practices and compliance with policy are audited using a number of mechanisms including daily monitoring and visits to the ward by the infection control nurse. The visits help ensure that appropriate patient care and infection prevention and control precautions are in place as necessary for any patients with positive results.

Four patients had no 'valid' MRSA screen; of these two patients were on Sulby and although, one had not yet completed the ward admission, the patient was an elective admission and could/should have been screened pre admission. One screen collected on Delamere was incomplete (nose only).

Since 2015, results are considered as 'valid' for any future admission occurring within a specified timescale. On the day of the audit, 12 patients were noted to have been screened when existing 'valid' screening results were available. Excessive MRSA screening is not associated with an infection prevention and control risk but indicates a potential for wasted resources.

5.3. Other Screening

Enterobacteriaceae (e.g. CPE) and Enterococci (e.g. GRE/VRE) are two very different types of bacteria but both live normally in human intestines, usually without causing problems. However, as with MRSA, infections caused by CPE or GRE/VRE can occur anywhere in the body and are more difficult to treat than infections caused by sensitive bacteria. Some strains of CPE are resistant to all known antibiotics and infections caused by these bacteria may be untreatable. Therefore national and international focus is to detect and isolate anyone colonised with CPE to prevent further spread. All patients meeting CPE admission screening criteria are screened, once only for VRE using a combined screening swab.

5.3.1. Carbapenemase-producing Enterobacteriaceae (CPE)

Public Health England issued guidance on the control of carbapenemase producing Enterobacteriaceae (CPE) and this was followed by a Patient Safety Alert with actions to be completed by 30th June 2014. The guidance contains a specific requirement for 3 consecutive screens at least 48 hours apart and for the patient to remain in isolation whilst awaiting negative results. The majority of patients admitted to our hospital have been an inpatient at another hospital in the previous year.

Therefore, national guidance created significant pressure on existing isolation facilities.

Despite a relatively high prevalence of CPE experienced in some other North West Trusts, screening programs at The Clatterbridge Cancer Centre (in line with national guidance) detected only eight colonised patients during 2016/2017. All screens were collected on admission or during pre-assessment.

The screening audit noted that two patients appeared to meet current screening criteria but had been either screened incorrectly (wrong request ordered Delamere) or not screened at all. Excessive screening was also detected for CPE/VRE in seven patients.

5.3.2. Vancomycin resistant enterococci (VRE) Screening

VRE is less likely to cause infection but these bacteria are far more prevalent, are spread easily by contact, able to survive for many months in the environment or on equipment and have been reported as responsible for hospital outbreaks. This organism is not covered by national guidance and consequently, considerable variation exists in screening and isolation practice between hospitals. Some organisations isolate patients only if other risk-factors are present (diarrhoea).

The increase in the number of admissions identified with bowel carriage of VRE was noted by the Infection Control Team during 2013/2014, and, due to the potential risk of cross infection, isolation and enhanced screening for VRE was introduced.

A total of 24 patient episodes of VRE were managed during 2013/2014 increasing year on year to 88 episodes in 2016/2017. Colonised patients are detected on admission or during pre-assessment and remain isolated until discharge.

5.3.3. Discussion and Actions

It has been challenging to ensure that national recommendations for CPE screening continue and it has been necessary to utilise inpatient isolation facilities as there is limited availability for isolation in day-case areas.

Environmental decontamination has been optimised and manual chlorine-based cleaning followed use of Ultraviolet C is now standard in VRE isolation rooms.

Incident forms are completed if guidance is not followed, for example when patients are risk assessed and removed from isolation after only two negative screens due to competing pressure for isolation beds.

6. Outbreaks

The number of cases required for a situation to be classified as an outbreak varies according to the infectious agent, severity of symptoms and the number of cases in a given time period and location. More generally, an outbreak requires “2 or more cases related in time and place” and “the observed number of cases is greater than the expected number of cases”. However, in some instances a single case of an infectious disease may be treated as an outbreak.

There were neither outbreaks of infection nor instances of cross infection but, due to outbreak potential, a number of cases required contact tracing, thorough investigation and

management. Including, individual cases of *Pseudomonas aeruginosa* infection, norovirus or Group A Strep.

6.1. *Pseudomonas aeruginosa*

Organisms such as *Pseudomonas aeruginosa* are able to contaminate water supplies and may contribute to cross infection. Laboratory isolates of *Pseudomonas aeruginosa* in all inpatients require investigation to exclude water outlets as potential sources of infection.

The Infection Control System was modified to send an automated alert to the Infection Control Nurses of any *Pseudomonas* in clinical samples. Although the organism is prevalent, none of the cases has been linked to acquisition from common sources or patient-to-patient transmission. The majority of patients were heavily colonised or had infection in chronic wounds or sputum.

6.2. Group A Streptococcus

The ICNs were contacted by Public Health England (PHE) on two occasions to provide information and assist with contact tracing as a patient attending CCC had been subsequently identified as having Group A Streptococcus. The requested information was provided immediately from 'Alert Organism' laboratory data collected by the ICNs and PHE were assured that no cross infection or outbreak at CCC was evident.

6.3. Norovirus

Seasonal norovirus has again created difficulties for hospitals and nursing homes within our region. Although individual cases of norovirus have been detected in patients admitted with diarrhoea, staff have followed infection control guidance including isolation and there have been no outbreaks or episodes of cross infection due to norovirus.

7. Hand Hygiene and High Impact Interventions

Weekly hand hygiene audits have been embedded into routine practice for many years and a minimum of 10 observations undertaken monthly in all inpatient and outpatient areas including diagnostic imaging, radiotherapy and satellite chemotherapy clinics. All clinical areas monitor high risk procedures and aseptic techniques using the Department of Health Saving Lives High Impact Intervention (HII) tools to regulate practice and ensure a consistent high standard of care. The original HII system has been closed and from April 2016 an alternative system was introduced on a pilot.

7.1. Hand Hygiene Strategy

In line with the Trust hand hygiene strategy, hand washing facilities at The Clatterbridge Cancer Centre continue to improve year-on-year. All clinical hand wash basins in refurbished areas are fitted with automated (non-touch) mixer taps and sensor operated soap dispensers. A number of other changes were implemented some time ago to reduce the number of items present in the vicinity of hand wash basins and thereby reduce the risk of contamination with water-borne organisms especially *Pseudomonas*.

The Water Safety Group was formed as a sub-group of the Infection Control Committee to progress a Water Safety Plan and implement required actions.

7.1.1. *Pseudomonas*

Health Technical Memorandum 04-01 was released in March 2013 to provide additional information on the technical aspects of ensuring water safety. The Water

Safety Group, working to an agreed plan, agreed microbiological testing and an approved external company to collect and analyse samples for the presence of Pseudomonas. During 2016 -2017 all outlets were negative.

7.1.2. Legionella

An updated 4th edition of the Approved Code of Practice for preventing Legionella in water systems was published by the Health and Safety Executive in November 2013 followed by Part 2 in 2015. The guidance and supporting documentation has been separated to make a clear distinction between, statutory requirements (contained in the code of practice document) and non-statutory technical recommendations. Following review of the documentation and evaluation of copper and silver ionization by the Head of Estates (as the Responsible Person (water) for the Trust), updated actions were included in the Water Safety Plan.

In addition to temperature control monitoring, microbiological testing will be introduced later this year alongside a new ionization system to provide additional safeguards.

7.2. SAVE LIVES: Clean Your Hands

Hand hygiene should be based on the use of an alcohol-based rub or, if hands are visibly dirty, by washing hands with soap and water. In 2010, the Trust registered with the World Health Organisation (WHO) campaign to SAVE LIVES: Clean Your Hands and introduced the 5 Moments for Hand Hygiene, using the self -assessment framework to focus on areas of hand hygiene requiring further development. Our score has consistently indicated 'Hand Hygiene Leadership Level'.

The WHO 5 moments for hand hygiene states that hand hygiene should be performed in the following clinical situations:

- before touching a patient
- before clean and aseptic procedures (e.g. inserting devices such as catheters)
- after contact with body fluids
- after touching a patient
- after touching patient surroundings.

WHO 5 Moments Compliance	Observed Actions	Actions Missed	Total opportunities	% Compliance
Before Touching the Patient	152	0	152	100%
Before Aseptic Task	148	0	148	100%
After Body Fluid Exposure	9	0	9	100%
After Touching the Patient	167	2	169	98.8%
After Contact With Patient Surroundings	42	0	42	100%

7.3. Other Hand Hygiene Audits

Results from hand hygiene audits are entered directly onto a local system. Average Scores for hand hygiene and HII are consistently high and this has been reinforced by local and national patient survey results.

Quarterly Trend Analysis BHH15	Q1	Q2	Q3	Q4	Total
Any Nurse or Midwife	99.1%	99.3%	99.6%	100%	99.6%
Any Auxiliary	98.2%	99.6%	98.1%	99.6%	99.2%
Any Doctor/Medical Staff	92.3%	81.3%	88.3%	81.8%	86.4%
Any Allied Health/Other	89.4%	95.5%	96.3%	95.8%	95.4%
Total	97.5%	97.4%	97.5	99.1%	98.0%

7.4. High Impact Intervention (HII) Audits

The Department of Health monitoring tools were adapted for inclusion to local HII website but the system required significant upgrades which would not be cost effective. Some, but not all HII systems were available via our Infection Prevention and Control Auditing system by means of quick practice audits but these no longer include clinical practices and further investment will be required in order to continue to collect clinical practice data. All clinical areas are able to retrieve and display results and compare practice to other wards/departments. Also, the ICNs produce a monthly report for each area with guidance on any improvements necessary.

Compliance by Tool across all Wards/Departments over Time

	Observations	Non Compliant	% Compliant
SICPs Control of Environment	438	13	97%
The Environment is (1) Free from clutter, (2) Well maintained and (3) Clean and routinely cleaned.			
SICPs Patient Placement	496	4	99%
Patients are assessed for risk of infection prior to or immediately after arrival in the clinical care environment.			
SICPs Transmission Based Precautions	267	3	99%
Patients are assessed for risk of infection prior to or immediately after arrival in the clinical care environment.			
SICPs Reusable Patient Equipment	48	1	98%
Reusable patient equipment should be cleaned between patients as per cleaning schedule			
SICPs Personal Protective Equipment	53	0	100%
PPE is stored, provided and used correctly			
SICPs Occupational Exposure MGMT	2	0	100%
Staff are aware of the correct procedure to follow when a significant occupational exposure incident occurs			
SICPs Safe Disposal of Waste	35	1	97%
TOTAL	769	22	98%

8. Decontamination

Decontamination is the combination of processes (including cleaning, disinfection and sterilisation) used to render a reusable item safe for further use on patients and handling by staff. Effective decontamination protocols are important to protect patients from the risks associated with contamination of the environment or medical equipment and are essential for building a strong reputation for providing high-quality care.

8.1. Monitoring

Cleanliness has been historically monitored by visual inspection by an individual. The person may look at a surface for visible signs of soiling, touch the surface to detect invisible soiling and may even detect unpleasant aromas. However, these methods may not be sufficient if small amounts of a contaminant are present. Taking swabs for microbiological analysis is able to detect viable microorganisms at very low levels but culture and analysis requires approximately 48 hours. Adenosine triphosphate (ATP) monitoring uses a reagent to detect ATP in any organic residue on surfaces in the form of relative light units (RLU) emitted by the chemical reaction and results are available within seconds.

Initially random ATP testing was undertaken at CCC to establish testing criteria and acceptable detectable levels of ATP on surfaces. Testing criteria are now supported by formal protocol and procedural documentation. Use of the tests has been incorporated into the ward audit programme and audit of the decontamination policy to provide immediate visual feedback for staff.

8.2. Environmental Decontamination

The Trust Decontamination Policy contains an approved list of disinfectants for specified uses within the hospital.

8.2.1. Hydrogen peroxide

As part of our ongoing commitment to provide safe, clean care for patients, the Trust also invested in hydrogen peroxide mist technology. For almost five years, hydrogen peroxide 'fogging' has been used as an adjunct to environmental disinfection after building works or refurbishment in clinical areas and to decontaminate isolation rooms or wards following episodes of infection.

Due to the increasing levels of VRE detected, requirement for this type of disinfection has sharply risen. An alternative system was sourced in an attempt to reduce ongoing maintenance costs; to reduce the length of time isolation rooms were unavailable for use and to provide a remote controlled operation to minimise the risks to staff. Additional training was arranged prior to implementation of the new system and the protocol for use required additional amendments. However this system has been embedded into routine use and has provided a more convenient system.

8.2.2. Ultraviolet radiation

The wavelength of UV radiation ranges from 328 nanometers (nm) to 210 nm with a maximum bactericidal effect at 240 to 280 nm. Use of artificial UV-C energy to deactivate microorganisms is available within the Trust using a dedicated device. The energy is produced in germicidal ultraviolet lamps by ionizing mercury vapour emitting a wavelength on approximately 254 nm. UV-C is used as an adjunct to routine terminal cleans using a dedicated protocol and to provide additional assurance in areas not suitable for 'fogging'.

8.3. Equipment Decontamination

The effective decontamination of reusable surgical instruments and equipment is essential in minimising the risk of transmission of infectious agents.

8.3.1. Sterile Services

To achieve the acceptable standards of decontamination, The Trust established a Service Level Agreement with an independent, specialist decontamination company (BMI Hospital Decontamination Ltd) to provide decontamination and sterilising of equipment for theatre, dental services, outpatients department and for Papillon.

All record-keeping and monitoring associated with sterilisation is undertaken by the Theatre Manager as the nominated 'Decontamination Lead'.

In Theatre, weekly audits are undertaken to ensure correct labelling of packs, pack integrity and return delivery of all instruments sent for decontamination.

In Theatre for 1 April, 2016 to 31 March, 2017: 127 instrument packs and 1127 supplementary items were decontaminated, processed and sterilised for 418 procedures.

All items were returned according to the SLA. There continues to be no issues with sterility or availability of instruments.

8.3.2. High Level Disinfection

High Level Disinfection is undertaken in very limited circumstances in nominated areas (Outpatients – nasendoscopes; Theatre – ultrasound probes and Radiotherapy – Papillion applicator probes) using agreed protocols of chlorine dioxide and sterile wipes. These processes are subject to ad-hoc random audits using adenosine triphosphate (ATP) monitoring with results reported to managers and the Infection Control Committee.

Documentation for each process is individually checked to identify whether:

- The decontamination record book is up to date to ensure traceability
- Final decontamination is undertaken at the end of the clinic and, for nasendoscopes only, that the leak testing procedure is undertaken pre clinic.

Equipment is then individually removed from storage and swabbed using a standard swabbing method and immediate analysis of adenosine triphosphate (ATP) is undertaken. During 2016/17, due to recruitment delay and resource issues, the frequency of audit has been reduced. Audits undertaken during quarter 1 and quarter 2 noted that practices in Outpatients were all according to protocol with no omissions. In Papillon, procedural amendments were advised to minimise risks but staff in all departments were knowledgeable about the required processes and all decontamination procedures audited were of a high standard.

8.3.3. Mattresses

An ongoing program of mattress audits is undertaken monthly by ward housekeepers to ensure hospital mattresses have intact covers and are impermeable to body fluids. An annual audit is also undertaken Trust-wide.

Following a successful trial in January 2015, a major mattress replacement was undertaken. The new type of mattress is a combination of static hospital foam and dynamic pressure relieving device which can be decontaminated in situ on the wards.

An accredited service provider is contracted to use an agreed decontamination protocol to maintain and decontaminate the larger dynamic mattresses after use by each individual patient. The requirement for this service has reduced significantly since the introduction of the combination mattresses but will be monitored by the Medical Devices Coordinator.

8.3.4. Other Medical Equipment

Agreed processes covered by the Decontamination Policy are used by healthcare staff to decontaminate lower risk items of medical equipment. The processes routinely used include use of: disinfectant wipes, chlorine based disinfectants or hydrogen peroxide mist.

ATP monitoring may be used during the main infection prevention and control audits for wards and departments and during local PEAT Inspections to provide assurance of agreed standards or to highlight any areas requiring additional cleaning.

9. Cleaning services

People can expect a clean, safe environment. Management of the soft facilities (soft FM) service level agreement (e.g. domestic services) has been formalised and includes provision of routine deep cleaning at 6-9 monthly intervals. Services are reviewed and evaluated during monthly meetings chaired by Head of Hotel Services and a variety of other monitoring audits are undertaken to ensure that standards remain high.

9.1. Monitoring Arrangements

The Trust monitors cleaning standards by a number of different mechanisms including:

- Daily review and monitoring by supervisors
- Daily ward visits by ICNs
- Ad-hoc inspections by Head of Hotel Services
- Monthly internal Patient Environment Action Team (PEAT) assessment on the Wirral site and quarterly inspection of the radiotherapy centre in Aintree
- Local Patient Feedback
- National Patient Survey
- Annual Patient Led Assessment of the Care Environment (PLACE).

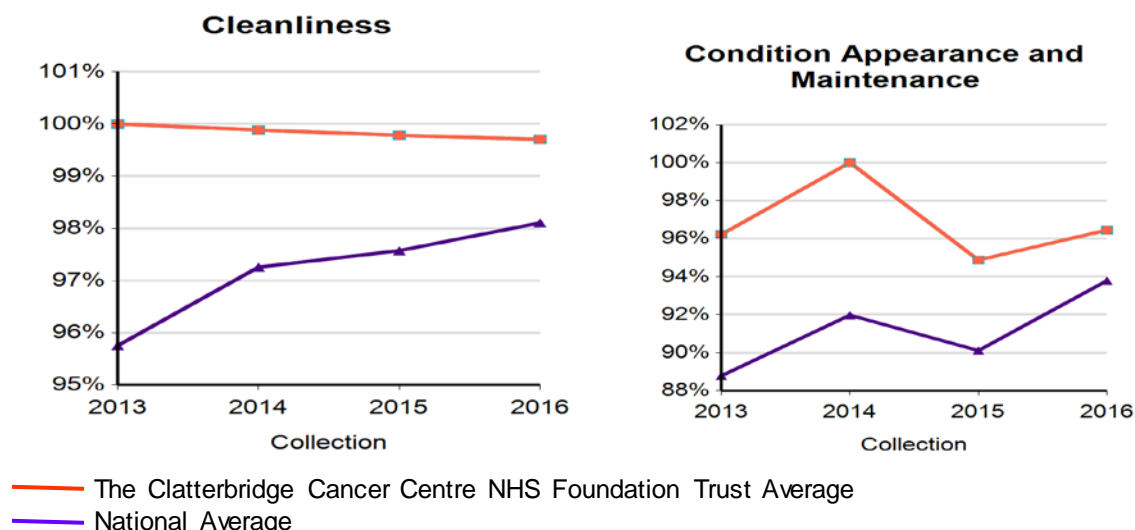
9.1.1. Patient Led Assessment of the Care Environment (PLACE)

The national Patient Environment Action Team (PEAT) assessment was replaced in 2013 by the new Patient-Led Assessments of the Care Environment (PLACE).

PLACE was introduced with the key purpose of ensuring patients are at the centre of all inspections of hospital environments. The CCC cleanliness scores and condition and appearance scores for 2016-2017 indicate that patients continue to be treated in a clean and safe environment.

- Cleanliness score 99.84%
- Condition Appearance and Maintenance score 91.2%.

According to data from the Health and Social Care Information Centre 2016 illustrated in the following charts, in both areas we score above national averages.



9.1.2. Patient Environment Action Team (PEAT)

Internal local PEAT inspections are undertaken to detect problems and monitor required improvements in key areas of infection control, cleanliness, food, maintenance and estates, Caldicott security and medication safety. Safety or cleanliness issues are immediately addressed and wider maintenance or refurbishment requirements are fed into the Estates strategy.

PEAT Inspection team representation includes: Executive director (DIPC); Matron/Head of Nursing; Estates/Technical services; Patient representative(s); Domestic services Manager and Infection control nurse. Ward or Department Managers may also accompany the PEAT during inspections of their own department.

9.1.3. Care Quality Commission National Patient Feedback

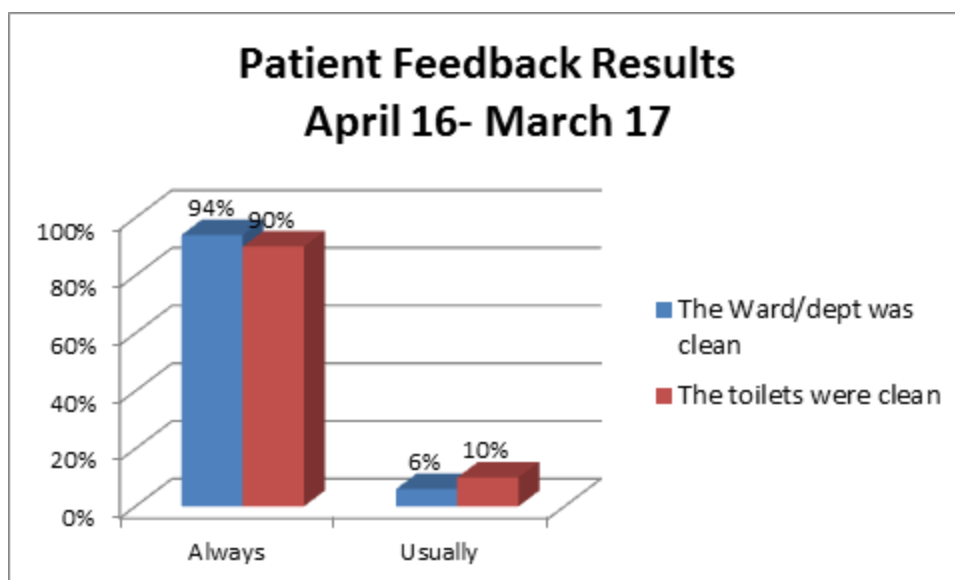
This survey looked at the experiences of 77,850 people who received care at an NHS hospital. Between August 2016 and January 2017, a questionnaire was sent to 1,250 recent inpatients at each trust asking a series of questions aimed at understanding what patients think about the care and treatment they received.

Once again national surveys identified The Clatterbridge Cancer Centre among the best performing in England. The Trust scored better than the national average in all infection prevention and control indicators including:

- Cleanliness of the wards - 9.7/10
- Cleanliness of bathrooms - 9.4/10

9.1.4. Local Patient Feedback

Patients are also surveyed locally including elements of infection prevention and control such as cleanliness. The following chart uses the results from local patient surveys to the Patient Experience Manager and reinforces that standards of cleanliness within the Trust are generally very good.



10. Infection Control Audit Programme

The Infection Control Nurses Audit Program for 2016/17 included a number of audits routinely conducted to ensure that all elements of infection prevention and control are monitored. Audit results are circulated to all Ward/Department Managers and when audits have identified any areas for concern, managers produce an action plan. The DIPC audits the Infection Control Policy annually to identify whether all required elements were submitted to the Infection Control Committee for review. **During 2016/2017 all documentation and process was followed in line with the Infection Control policy.**

10.1. Infection Prevention Society (IPS) Audit.

All clinical areas are audited at least annually and this includes both main sites and all satellite chemotherapy clinics. The frequency of re-audit is determined by the score an area is awarded. In previous years 85% was a passing score but the pass level was increased to 90% to ensure that standards continue to improve. Unfortunately limited resources has resulted in a delayed audit schedule

RAG Rating 2014	RAG Rating 2015	Re-audit Timescale
Red: <74%	Red: <80%	Within 3 months
Amber: 75- 84%	Amber: 81 - 89%	Within 6 months
Green: >85%	Green: >90%	Annual audit

Elements routinely audited in the IPS Audit include:

- Hand hygiene
- Clinical practices
- Ward environment
- Care of equipment
- Disinfectant and antiseptics
- Sharps handling and disposal
- Ward kitchens
- Waste disposal
- Linen handling and disposal
- Antisepsis and hygiene

Ward or department managers must produce an action plan to address any issues identified by the audit and areas are re-audited within a specified timescale according to Red, Amber or Green (RAG) risk rating and score.

- Integrated Care Directorate (inpatient and outpatient areas) scored green on the RAG rating for Infection Prevention and Control Audits during 2016/2017 with an average overall score of 93%.
- Chemotherapy Directorate (outpatient and day case chemotherapy) scored amber on the RAG rating with an average overall score of 82.5%. Clinical standards are high in each area but environmental scores are reduced due to facilities in some satellite chemotherapy clinics.
- Radiation Services Directorate (diagnostic and treatment areas) scored red on the RAG rating system with an average overall score of 76.4%. The score reflects standards of environmental repair, cluttered appearance and domestic cleaning required improvement. The standard of furnishings in waiting areas and clinical equipment required improvement. The majority of elements have been actioned and improved but formal re-audit has been delayed

10.2. Clostridium difficile Policy Audit

The policy is audited via a number of mechanisms including visits to the ward by the infection control nurse to ensure that appropriate patient care and infection prevention and control precautions are in place. All cases of Clostridium difficile are investigated and findings are reported to the Infection Control Committee and the DIPC. The Post Infection Review is also submitted to NHS England for further review to scrutinise processes within the Trust. Any actions required are monitored by the Clostridium difficile multidisciplinary action group

10.2.1. Results

The main findings from the post infection reviews (PIR) are that all patients were at increased risk of developing CDI due to multiple risk factors including: inpatient episodes at more than one hospital; receipt of: nasogastric feeds; cancer treatments likely to cause diarrhoea and often also several courses of high-risk antibiotics to treat unrelated but serious infections.

Patients with CDI or symptomatic equivocal results were treated with the best antibiotics available (fidaxomicin) and where this was not appropriate liquid vancomycin was used via nasogastric feeding tube. Specimen collection was appropriate with no delays in specimen collection and infection prevention and control precautions were implemented immediately on diagnosis.

10.2.2. Actions and Learning Points

Our main focus remains isolation and review of all patients developing diarrhoea but also to address less than optimum aspects of management:

- A summary of all case findings has been circulated in our Trust-wide Team Brief and cases used within essential training to promote learning.
- Daily infection prevention and control visits to clinical areas continue to help support clinical staff and ensure appropriate precautions are implemented as necessary and to assist with risk assessment and best use of available isolation rooms.
- Incident forms continue to be used to monitor and highlight those instances where practice was not in line with our own high standards.
- Challenges relating to the new patient record system persist and retrospective audit facility is limited.

10.3. Sharps

All sharps related incidents (inoculation injuries) are monitored by the Health and Safety Lead and an investigation is initiated. An unannounced Trust-wide sharps audit is also undertaken annually to assess practice and raise sharps awareness within the Trust. This year the audit was undertaken during March 2017.

10.3.1. Results

Eighteen (18) Wards/Departments were visited during the audit and one hundred and eleven (111) sharps containers were sighted. There were no high risk faults as there were no (0) sharps containers with protruding sharps, none (0) that were incorrectly assembled and none (0) that were more than three quarters full. All bins were correctly assembled, dated and signed and all were appropriately positioned.

Results demonstrate significant improvement in comparison with previous years but recurrent trends were identified.

Areas still requiring significant improvement include:

- Seven sharps containers had significant inappropriate non-sharp contents (e.g. packaging and gloves) – whilst this is not associated with risk to patients, it is associated with wasted resources due to the additional cost of disposing of sharps containers.
- Seven containers did not have the temporary closure in place whilst unattended.

Results were RAG rated and disseminated to all ward and department managers for follow up and actions. Subsequent ad-hoc follow up audits identified improvement in the use of the temporary closure mechanism but the non-sharps content of sharps containers remains an ongoing issue.

10.4. Antibiotic Use

Public Health England's Antimicrobial Stewardship: Start smart - then focus update states how evidence based antimicrobial stewardship should be combined with a robust auditing programme to ensure appropriate use of antibiotics in secondary care.

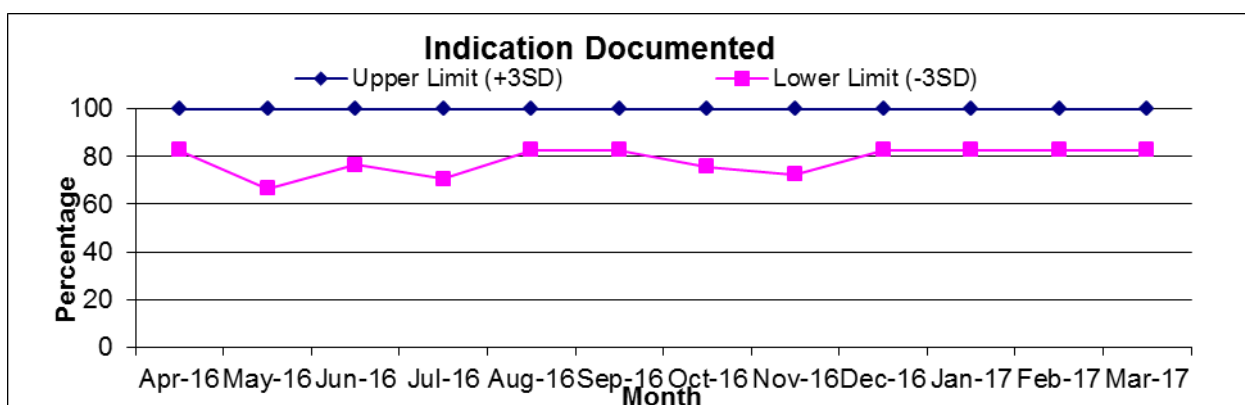
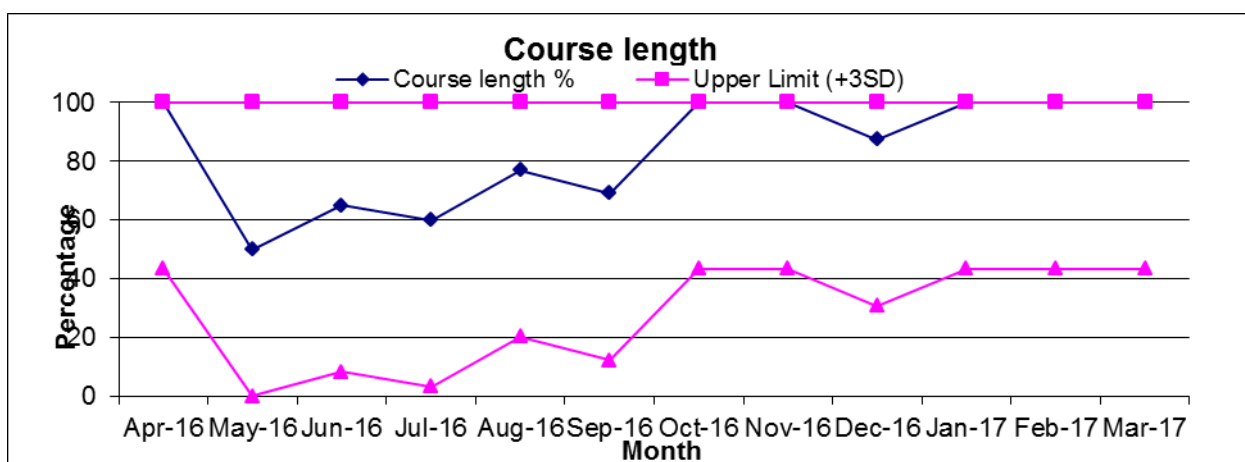
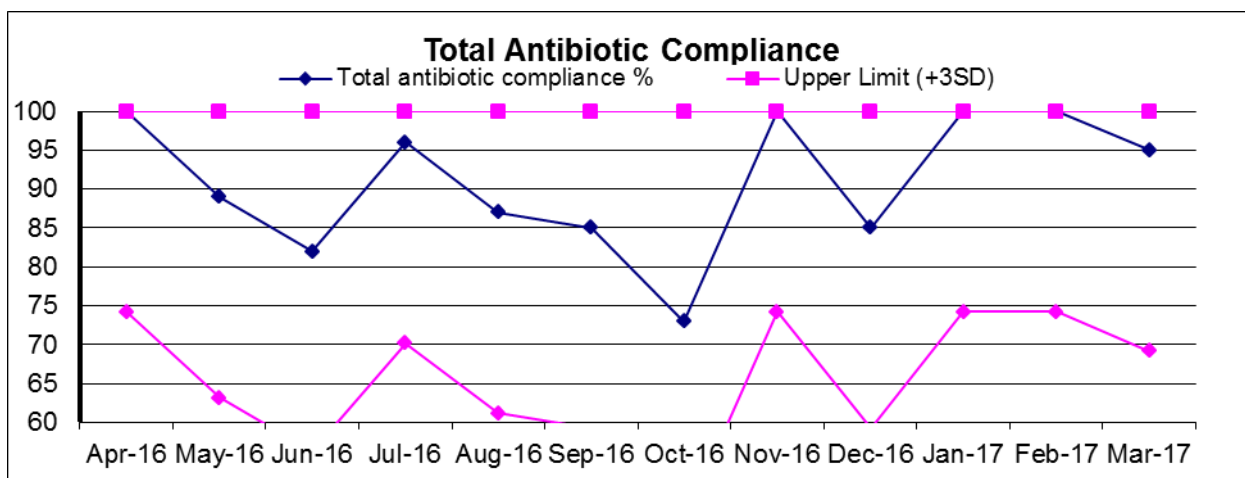
As a Trust we undertake monthly antibiotic point prevalence surveys compiled by the Antimicrobial Pharmacist and based on the self-assessment toolkit from PHE's publication. The audits monitor prescribing practice and are used to ensure anti-infective prescribing follows Trust guidelines, identifying any areas of concern. Results are escalated via the Antibiotic Stewardship group on a quarterly basis and via Drugs and Therapeutics Group.

10.4.1. Antibiotic Audits

The results from the monthly point prevalence audits for the period 2016-2017 are shown in the following charts and indicate that total antibiotic compliance is generally good within the Trust, with periods of 100% compliance with local guidelines achieved.

The introduction of a weekly antimicrobial Stewardship ward round has been met with positive feedback from medical staff and a positive impact on patient care; which is reflected in improved compliance with NHS England Antimicrobial Resistance Commissioning for Quality and Innovation (AMR CQUIN) indicators.

- 100% rate of review of antibiotic prescriptions within 72 hours and overall compliance with the Trust antibiotic formulary shows an improvement in levels of antibiotic stewardship on the wards.
- Documentation of course length/review date and indications for prescribing has improved significantly



11. Infection Control Training

Infection Control training is mandatory for all staff at Corporate Induction and thereafter, at regular intervals, forms part of an individual's essential training.

11.1. Training provision to Trust

The Infection Control Nurses have been working with the Learning and Development Team to make a number of changes and ensure continued alignment with the North West - Core Skills training programme. All staff will attend the same Corporate Induction and may access Level 1 basic training via face-to-face; e-learning or workbook options. Level 2 training for clinical staff is available only as face-to-face to allow more focused individual training and content is updated in response to issues identified by incidents, audit, surveillance or feedback. This format also allows an element of practical skills training especially in correct use of personal protective equipment.

11.1.1. Mandatory Training

Attendance at mandatory training sessions is monitored and recorded; processes exist to flag non-attendance for follow up by line managers. Departments with less than 75% of staff trained will be recorded as red and action plans must be produced.

95% & above staff are compliant
75-94% staff are compliant
Less than 75% staff are compliant

Overall figures for this year continue to show low levels of compliance for Level 2 training but this is a significant increase of over 20% compared with the previous year and still likely reflects the more recent introduction of training at this level. Some staff groups have a lower level of compliance. Additional sessions have been arranged to assist managers to improve compliance.

Level 1 Compliance 92%
Level 2 Compliance 79%

11.1.2. 'Trolley dash' mobile road shows

Informal 'Trolley dash' sessions are used in patient care areas to introduce and reinforce new policy and guidance to staff rather than formal presentations that require staff to leave the clinical area. This pop-up format has been used on a number of occasions to promote brief messages on topics including hand hygiene, skin care, appropriate use of UV-C decontamination, sharps safety, use of new auditing devices and urinary catheter care.

11.1.3. Infection Control Week

Infection Control Week is promoted every year to educate staff and highlight the work undertaken in hospitals and community healthcare settings to keep patients and staff safe and free from healthcare associated infections. During 2016/2017 Infection Control week was promoted during October and combined with Hand Hygiene awareness in May. 'Let me watch you wash your hands to win a prize' was back by popular demand and skin hydration assessments undertaken. Other subjects covered include diarrhoea and Bristol Stool Charts as well as the 'Trolley dash' mobile road shows as 11.1.2.

11.2. Training undertaken by the Infection Control Team

The ICNs have received on the job training and self-directed learning in specialist aspects of infection prevention and control.

The Lead ICN has undertaken self-directed learning to research and develop local policy and strategy, and has participated in a number of regional infection prevention and control workshops and meetings including HCAI Leads forums promoted by PHE and NHS England.

12.Transforming Cancer Care

Full planning permission has been granted for the new specialist hospital in the heart of Liverpool. The ICNs have contributed to all user groups and been actively involved in many aspects of the project including selection of partners to provide soft FM services and sign-off of plans for all clinical areas.

Preparatory construction work is expected to start later this year, with the new hospital opening to patients by the end of 2019. The ICNs will continue provide full support in selection of internal fixtures and finishes to ensure that the new building incorporates high standards of infection prevention and control in every department.

13.Policy Review

The ICNs continue to review existing policies and research and develop new ones as required by the Health and Social Care Act - Code of Practice.

The status of all Infection Prevention and Control Policies and supporting documents is reviewed quarterly at the Infection Control Committee and a number of policies require review to reflect changes in practice and/or to take account of process changes due to the introduction of Meditech.

Including:

- Meticillin-resistant Staphylococcus aureus (MRSA): control and prevention
- Multi resistant bacteria
- Specimens
- Outbreak Management and Control
- Surveillance and Audit including SOPs and Reporting HCAI to the HPA

Policies owned by other teams within the Trust but required by the Code of Practice are undergoing scheduled review or in development including:

- Hepatitis B guidance – Occupational Health/HR
- Cleaning Policy – Hotel Services Manager
- Waste Management – Estates
- Control of Legionellosis

14.Patient Information / Feedback

14.1. Freedom of Information Request

Any Freedom of Information requests requiring infection prevention and control contributions have been completed within the required timescales.

14.2. Patient Information

All infection prevention and control information leaflets were reviewed updated and reformatted during 2016 and all leaflets contain the 'Information Standards' charter standard. Titles currently available in leaflet and electronic format include:

- MRSA
- Clostridium difficile
- Infection Prevention and Control – Information for Patients and Visitors

- Viral Gastroenteritis
- Multidrug resistant Bacteria

The information contained in the catheter information leaflet was again reviewed and incorporated into a 'Catheter Passport'. The passport was approved according to Trust standards and is in use in all inpatient areas.

15. Planned Developments and Changes to Practice

The past year has seen further developments and a number of new processes to ensure that patients are receiving safe, clean care. There is continued focus and the desire to provide an infection prevention and control service that exceeds minimum requirements and meets the expectations of patients, staff and others but it was not possible to maintain the additional level of service for the whole of 2016-2017.

15.1. Key Performance Indicators for 2016/2017

Key Performance Indicators reflect the status of infection prevention and control within the Trust and incorporate national objectives where these exist.

- Meticillin resistant Staphylococcus aureus (MRSA) bacteraemia - zero cases
- Clostridium difficile associated with the Trust - 1 case
- Demonstrate improvements in all avoidable infections including E.coli and Meticillin sensitive Staphylococcus aureus (MSSA) bacteraemia
- MRSA Screening compliance 100%
- CPE Screening compliance 100%
- Build upon standards of excellence for PLACE assessments
- Continue high levels of participation and compliance with observation audits and evaluate off the shelf products for monitoring HII standards.
- All areas will achieve a green light for main Infection Prevention Society audits
- Compliance with specific infection control policy audits
- Effective management of outbreaks
- Patient satisfaction surveys will note improvements or continued excellence.

15.2. Summary of Priorities for 2017-2018

The majority of essential planned actions from the programme of work for 2016-2017 were completed and many of the service improvements have been incorporated into routine practice for the Infection Control Nurses and will continue once staffing levels have resumed. One or two areas remain in progress and it has not been possible to undertake anything from our 'wish list'.

Incomplete actions are included in the new programme of work for 2017/2018 and particular emphasis will be required to:

- Continue roll-out and training of new audit devices
- Continue to work with Learning and Development to implement and evaluate changes to Infection Prevention and Control - Core Skills training.
- Reinforce screening requirements and review our audits and monitoring processes.
- Monitor that CPE screening is appropriately undertaken.
- Devise an audit to monitor communication of screening results to patients.
- Continue to work with IT Project Team to ensure that the essential infection prevention and control elements are retrospectively included in the electronic patient record.
- Continue to liaise with the Transforming Cancer Care Team to ensure that plans for the new cancer centre promote best practice in infection prevention and control.
- Develop close working relationships with the Infection Prevention and Control Team

at The Royal Liverpool University Hospital to ensure smooth integration of blood cancer and blood and marrow transplant services.

Appendix A Catheter Associated Urinary Tract Infection (CAUTI) Surveillance Data

Year	Quarter	Number Catheters	Catheterised Patients	Number CAUTI	% CAUTI	Number Catheter Days	CAUTI /100 catheter days	Rate CAUTI/ 100 patients
Summary 2012-2013			286	33	12%	2802	1.1	11.5
2013-2014	1	112	95	10	11%	674		
	2	107	85	5	6%	667		
	3	70	55	4	7%	604		
	4	54	48	2	4%	630		
Summary 2013-2014		343	283	21	7%	2575	0.81	7.4
2014-2015	1	68	55	5	9%	520		
	2	68	51	6	12%	576		
	3	68	54	5	9%	604		
	4	68	50	5	10%	780		
Summary 2014-2015		272	210	21	10%	2480	0.84	10
2015-2016	1	49	43	4	9%	461		
	2	73	61	4	7%	505		
	3	67	61	6	10%	748		
	4	71	58	7	12%	603		
Summary 2015-2016		260	223	21	9.5%	2317	1.18	9.5
2016-2017	1	53	49	1	2%	495		
	2	61	52	8	15%	579		
	3	59	49	9	18%	737		
	4	59	53	4	8%	684		
Summary 2016-2017		232	203	22	10.8%	2495	0.88	11