



Report Cover Sheet

Report to:	Trust Board	
Date of the Meeting:	27 March 2019	
Agenda Item:	Agenda Item P1/051/19	
Title:	Infection Prevention & Control (IPC) 2017/18 Annual Report	
Report prepared by:	Joe Allan, Interim Deputy DIPC	
Executive Lead:	Sheila Lloyd, DIPC	
Status of the Report:	Public	

Paper previously considered by:	<ul style="list-style-type: none">• Infection Control & Prevention Sub-Committee• Quality & Safety Sub-Committee• Quality Committee
Date & Decision:	July 2018 / January 2019

Purpose of the Paper/Key Points for Discussion:	<p>The IPC Annual Report 2017-18 meets the Health & Social Care Act (2008) Code of Practice of the Prevention and Control of Infections.</p> <p>The purpose of this paper to assure the Trust Board that there are safe systems and processes in place to effectively prevent, control and manage the risks associated with healthcare associated infections.</p> <p>Key achievements:</p> <ul style="list-style-type: none">• MRSA Bacteraemia objective with zero cases• <i>Clostridium difficile</i> infection objective with no lapses in care• Sustained reduction in E.coli and MSSA Bacteraemia• Maintain high standards in Patient Led Assessment of the Care Environment (PLACE) audits• Maintained cleanliness scores above 96%• Successful surveillance (including screening), audit and outbreak prevention, including effective management of unavoidable outbreaks• IPC training, as of, 21 March 2019 is as follows:<ul style="list-style-type: none">- Chemotherapy - 87%- Haemato-Oncology – 75%- Integrated Care – 82%- Radiation Services – 83%• 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. <p>Indicators for improvement:</p> <ul style="list-style-type: none">• An increased incidence of VRE colonisation was detected on two occasions within haematology possibly due to limited en-suite accommodation
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	<ul style="list-style-type: none"> Monitoring of Saving Lives High Impact Interventions was undertaken sporadically during this period. An external contractor has worked with the Trust to develop a simple design which is readily available on hand held devices in all clinical areas

Action Required:	Discuss	
	Approve	√
	For Information/Noting	

Next steps required	For the trust Board to seek further assurance if indicated.
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The paper links to the following strategic priorities (please tick)

Deliver outstanding care locally	√	Collaborative system leadership to deliver better patient care	
Retain and develop outstanding staff		Be enterprising	
Invest in research & innovation to deliver excellent patient care in the future		Maintain excellent quality, operational and financial performance	√

The paper relates to the following Board Assurance Framework (BAF) Risks

BAF Risk	Please Tick
1. If we do not optimise quality outcomes we will not be able to provide outstanding care	√
2. If we do not prioritise the costs of the delivering the Transforming Cancer Care Programme we will not be able to maintain our long-term financial strength and make appropriate strategic investments.	
3.If we do not have the right infrastructure (estate, communication & engagement, information and technology) we will be unable to deliver care close to home.	
4. If we do not have the right innovative workforce solutions including education and development, we will not have the right skills, in the right place, at the right time to deliver the outstanding care.	√
5. If we do not have an organisational culture that promotes positive staff engagement and excellent health and well-being we will not be able to retain and attract the right workforce.	
6. If we fail to implement and optimise digital technology we will not deliver optimal patient outcomes and operational effectiveness.	
7. If we fail to position the organisation as a credible research partner we will limit patient access to clinical trials and affect our reputation as a specialist centre delivering excellent patient care in the future.	
8. If we do not retain system-side leadership, for example, SRO for Cancer Alliance and influence the National Cancer Policy, we will not have the right influence on the strategic direction to deliver outstanding cancer services for the population of Cheshire & Merseyside.	
9. If we do not support and invest in entrepreneurial ideas and adapt to changes in national priorities and market conditions we will stifle innovative cancer services for the future.	
10. If we do not continually support, lead and prioritise improved quality, operational and financial performance, we will not provide safe, efficient and effective cancer services.	√

Equality & Diversity Impact Assessment

Equality & Diversity Impact Assessment		
Are there concerns that the policy/service could have an adverse impact on:	YES	NO
Age		√
Disability		√
Gender		√
Race		√
Sexual Orientation		√
Gender Reassignment		√
Religion/Belief		√
Pregnancy and Maternity		√

If YES to one or more of the above please add further detail and identify if a full impact assessment is required.

Infection Prevention and Control Annual Report

2017-2018



The Clatterbridge Cancer Centre



NHS Foundation Trust

Executive Summary

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1. Executive Summary

This report has been produced covering the period 1st April 2017 to 31st March 2018.

The IPC Annual Report 2017-18 meets the Health & Social Care Act (2008) Code of Practice of the Prevention and Control of Infections.

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 hospitals across the region, or on our own sites at Wirral (CCC-W), Aintree (CCC-A) and Liverpool (CCC-L). During 2017/18, we registered more than 10,000 new patients; accommodated 7,625 inpatient episodes of care and over 85,000 outpatient clinic attendances plus 92,000 separate attendances for outpatient radiotherapy and 57,000 for outpatient chemotherapy treatment.

In July 2017 CCC amalgamated with haemato-oncology and blood and marrow transplantation services which remain hosted within The Royal Liverpool University Hospital (RLUH). In this interim period, before the completion of our new building in the heart of Liverpool, staff working within haematology refer to RLUH policies and working practices and receive infection prevention and control support from experts and services belonging to RLUH.

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 both 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 programme of work is agreed annually by the Infection Control Committee. The strategy and annual programme 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. Wish List elements in the annual programme for 2017-2018 were delayed or deferred due to long-term staff sickness and the addition of new mandatory national surveillance objectives which took precedence.

As in previous years, Government's mandate to NHS England is to help create the safest, highest quality health and care service. The revised mandate for 2017-2018 asks that we now also deliver measurable improvement in antimicrobial prescribing, resistance rates and healthcare associated infection rates to support the national ambition to halve inappropriate prescribing of antibiotics and halve Gram-negative infections (*Klebsiella*, *Pseudomonas E.coli*) by 2020. Cancer services face particular challenges in this area due to our immunocompromised patient population.

1.3. Key Performance Indicators

Whilst national objectives are challenging, they serve only as indicators and prevention of all avoidable infections is the ultimate aim. Emerging pathogens and infections with lower profile are equally important and often, more challenging to address especially within cancer services. Therefore, internally, we use a wider selection of indicators to monitor our own performance and share learning with others:

- Achieve MRSA bacteraemia objective
- Achieve *Clostridium difficile* infection objective (no lapse in care)
- Sustain reductions in *E. coli* and MSSA bacteraemia
- Reduce vancomycin resistant Enterococci (VRE) bacteraemia (new)
- Reduce carbapenemase producing Enterobacteriaceae (CPE) (new)
- Reduce *Pseudomonas* species bacteraemia (new)
- 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 (including screening), audit and outbreak prevention or effective management of unavoidable outbreaks
- Patient satisfaction surveys will note improvements or continued excellence.

KPIs and infection prevention and control systems will be re-evaluated for 2019- 2020 to include the additional patients and risk factors and set new baseline data.

1.3.1. Key Performance Indicators Achieved

The majority of our 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 1
- *Pseudomonas* species bacteraemia 2
- Excellent scores were maintained in the cleanliness and condition and appearance elements of Patient Led Assessments of the Care Environment (PLACE). Cleanliness scored 100%, further improvement on previous years. Our score of 94% for Condition, maintenance and appearance is very good and also represents improvement on the previous year.
- Cleanliness score for 2017-2018 is 98%.
- National and local patient surveys continue to demonstrate high levels of satisfaction with cleanliness and hand hygiene. In the latest Care Quality Commission's (CQC) inpatient survey, patients rated CCC as one of the best in the country with a score for cleanliness of 9.7/10. The most recent quality report (published February 2017) CQC awarded us an outstanding certification; this

- remains valid until superseded by more recent inspection findings.
- World Health Organization 5 moments for hand hygiene scores and scores in local audits and from patient survey remain higher than national averages.
- Our WHO self-assessment score has consistently indicated 'Hand Hygiene Leadership Level'. This year we have been invited to participate in a regional project, researching the development of a novel approach to hand hygiene monitoring; this will require additional support at executive level.
- All wards and inpatient areas scored green on the RAG rating for Infection Prevention and Control Audits during 2017/2018 with average overall score of 96%. However, it has not been possible to visit all satellite areas. Also individual elements within the infection prevention and control audits demonstrated environmental risks with individual elements scoring below 80%. Issues related to clutter and lack of storage and taps, walls and flooring in some areas; these have been largely resolved.
- Through the year, spot check audits demonstrated 100% of patients were isolated appropriately at CCC-W with appropriate infection prevention and control precautions in place. In line with risk assessment and policy during periods of bed pressure, patients may be taken out of isolation if it is safe so to do but incident reports are completed.
- There were neither outbreaks of infection nor instances of cross infection at CCC-W but, due to outbreak potential, a number of cases required contact tracing, thorough investigation and management. Including seasonal influenza, chicken pox, mumps, *Pseudomonas aeruginosa* infections and colonisation with resistant bacteria.
- At CCC-W, our carbapenemase producing Enterobacteriaceae (CPE) admission screening processes were extended in 2014 to take account of the national Patient Safety Alert and Public health England guidance. We detect a number of CPE colonised patients at CCC-W but have had no infections due to this organism.
- Local screening for vancomycin resistant Enterococcus (VRE) continues to detect a high number of new patients with bowel carriage of VRE. All samples were collected before or on admission and there is no evidence of onward transmission/cross infection within CCC-W as patients are promptly isolated.
- Ongoing data collection and surveillance of all patients with indwelling urinary catheters had been in place at CCC-W since 2012. However during 2017 and 2018 it has not been possible to continue surveillance for the full year. Data from quarter three and quarter four indicates temporary decline in the standard of documentation and a potential increase in the number of CAUTI detected but this needs monitoring and further review to establish whether or not this was a temporary phenomenon. More focused point prevalence audits will be implemented to take the place of ongoing surveillance within CCC.
- The copper and silver ionization system has been fully installed and commissioned at CCC-W. To provide assurance of microbiologically safe water standards, testing was extended to include *Legionella* species in addition to existing testing for *Pseudomonas* species. *Legionella* serogroup 2 was detected in several infrequently used outlets but not in any showers or in high risk areas. Increased flushing regimes were introduced by clinical staff and Estates will implement any required maintenance solutions.
- Sharps audits identified two bins incorrectly assembled but none (0) of the sharps containers was more than three quarters full and none (0) had protruding sharps.

1.3.2. Key Performance Indicators Not Achieved

Levels of patient satisfaction and standards of care remain consistently high but the number of serious infections has increased. Indeed, there has been a marked rise in the

number of bacteraemia reported particularly gram negative and resistant gram positive bacteria. However, KPIs were set in March 2017 prior to the amalgamation of existing oncology services and haematology and blood and marrow transplantation. Therefore the type and number of infections reflects the additional number of severely immunocompromised patients under the care of CCC rather than any recognisable decline in standards.

- Vancomycin-resistant Enterococci bacteraemia (VRE) 15
An increased incidence of VRE colonisation was detected on two occasions within haematology and limited ensuite isolation likely precludes adequate control measures even with additional cleaning and environmental disinfection.
- Carbapenemase producing Enterobacteriaceae bacteraemia (CPE) 4
Haemato-oncology patients are screened weekly for carbapenemase producing Enterobacteriaceae in line with RLUH policy and procedure. Levels of CPE colonisation detected in CCC patients at RLUH is considerably higher than those attending CCC-W and this is most likely due, in part, to local RLUH epidemiological factors. However, the presence of these bacteria in immunocompromised patients is extremely concerning and may have contributed to four CPE blood stream infections.
- Klebsiella species bacteraemia 11
A total of 15 bacteraemia due to Klebsiella were reported with 11 attributed to CCC. The majority of these Trust apportioned cases occurred in severely immunocompromised haemato-oncology patients.
- Escherichia coli (E. coli) bacteraemia 10
A total of 14 E.coli blood stream infections were reported with 10 of these apportioned to CCC.
- The Infection Prevention and Control service to haemato-oncology continues to be provided by experts at RLUH and patients have access to all facilities including the specialist isolation ward. However, there were a number of challenges attempting to balance the need for individual patient's protective isolation and isolation to prevent the spread of infection. In addition to seasonal influenza, a significant increase in patients with other respiratory viruses (parainfluenza and/or respiratory syncytial virus) was detected; affecting hospital inpatients and outpatients in the community. Thorough investigation by experts at RLUH they did not detect evidence of poor practice but ongoing transmission within the wards could not be excluded and resultant bed closures created additional challenges for both patients and staff.
- Clostridium difficile infection (CDI) attributed to the Trust - 6
Our original Clostridium difficile national objective was to have no more than 1 case attributed to the Trust (according to surveillance definition). This was increased in July to take account of the additional haematology patients. We exceeded our Clostridium difficile objective by 1 case but none of the cases was due to any lapse in care or cross infection within the Trust.
- Monitoring of Saving Lives High Impact Interventions at CCC was undertaken only sporadically during 2017-2018 as suitable monitoring systems were not consistently available to staff across all sites. An external contractor was commissioned to design a simple to use IT system which is now readily available on hand held devices in all clinical areas across all sites.

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 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)
- Public Health England and UK Government objectives

1.5 Summary of Priorities for 2018-2019

The majority of essential planned actions from the programme of work for 2017-2018 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 2018/2019 and particular emphasis will be required to:

- Form an Infection Prevention and Control Operational group (IPCOG) and clarify escalation processes to HICC
- Include haematology in all developments and develop formal systems for information exchange with the Infection Prevention and Control Team at The Royal Liverpool University Hospital
- Reassess and realign Infection Prevention and Control processes within the Trust to clarify responsibilities
- Work collaboratively with regional groups in Liverpool, Wirral and other Cancer Centres to achieve the reduction in gram negative blood stream infections:
 - In-depth review of all Klebsiella bacteraemia
 - Work with clinical teams to improve hydration messages and fluid balance and stool charting.
- Continue to promote the Sepsis Working Group and appropriate management of sepsis
- Continue roll-out and training of new audits on hand-held devices
- Allocate existing ICN audit devices to share between Matrons covering all areas.
- Reinforce screening requirements and review our audits and monitoring processes and ensure CPE screening is appropriately undertaken.
- Continue to highlight incidents to 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 PropCare to ensure Estates and Facilities Management include infection prevention and control strategies including microbiologically safe water and that plans for the new cancer centre promote best practice in infection prevention and control.
- Prepare patient information leaflet pertaining to respiratory viruses and prepare publicity campaign for flu season.

The following will be added to the wish list

- Devise an audit to monitor communication of screening results to patients.

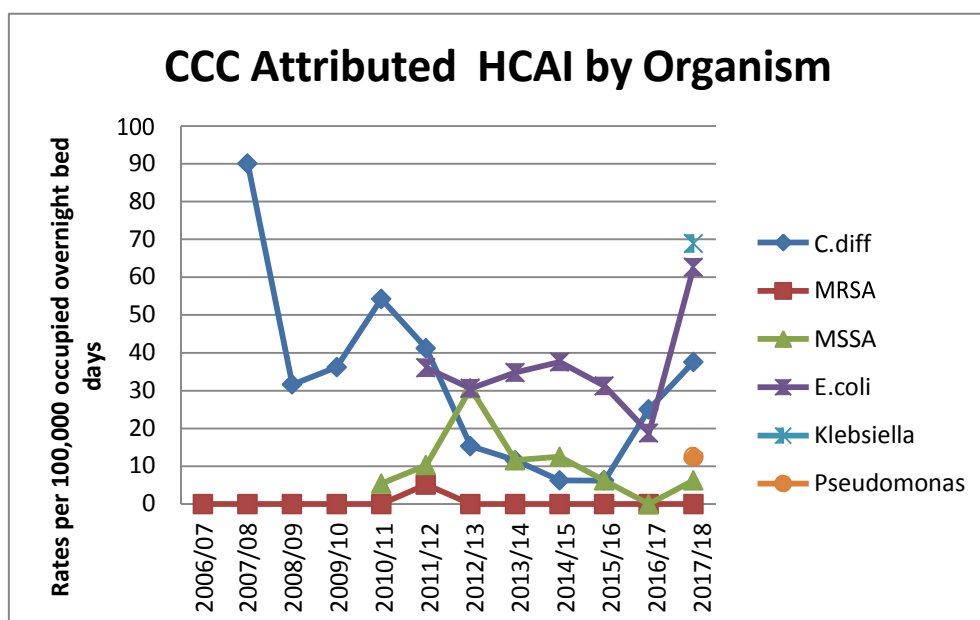
Main Report

2. 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 or entirely caused by poor practice.

The infection rates in the following chart reflect the following actual numbers for 2017/2018:

- Clostridium difficile infection (CDI) - 6 but no 'lapse in care'
- Meticillin resistant *Staphylococcus aureus* (MRSA) bacteraemia - 0
- Meticillin sensitive *Staphylococcus aureus* (MSSA) bacteraemia - 1
- Escherichia coli (E. coli) bacteraemia – 10
- Klebsiella – 11
- Pseudomonas – 2



We have made significant improvement since monitoring began but, as demonstrated in the chart, the rates of Trust-apportioned Clostridium difficile infections detected during 2017/2018 continue to increase as well as a noticeable increase in blood stream infections due to gram negative bacteria (GNB) (includes E.coli, Klebsiella, Pseudomonas). Normal bowel flora includes GNB and whenever these bacteria come into contact with open wounds (mucositis, treatment site reactions, indwelling medical devices etc.) there is a risk of infection. When this is combined with compromised immunity the risk increases.

There is no evidence of poor practice or cross infection and no specific themes or trends were identified but all patients receiving cancer treatments are at increased risk due to the nature of the treatment and underlying disease. As treatment becomes more aggressive the risks increase especially in an aging population.

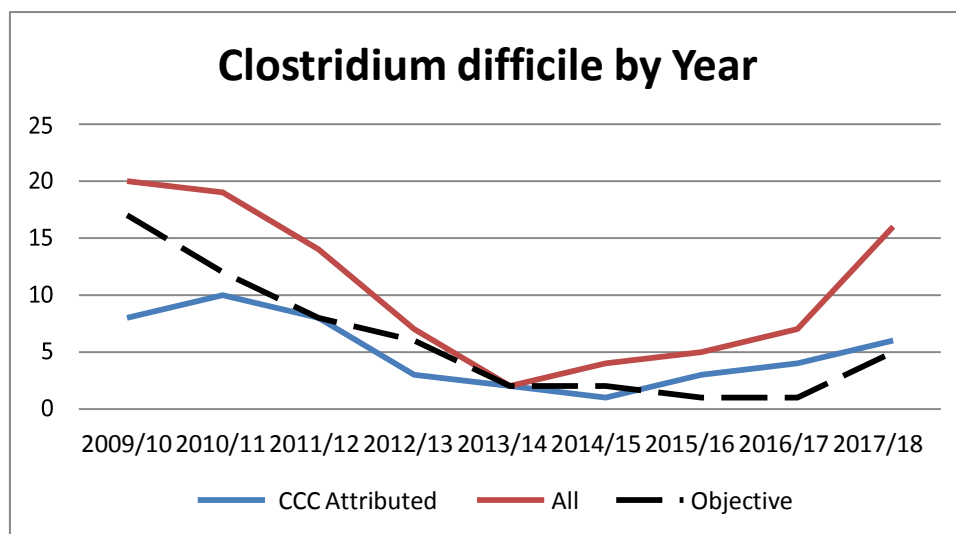
2.1. Clostridium difficile

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. Changes to the national reporting algorithm are planned from next year

(2019-2020) and this may have an impact on the number of cases classed as attributed to CCC. Each year we report all patients with CDI to the healthcare associated infection data capture system. The system automatically allocates cases based on date of admission and date of sample collection. However, from 2019-2020 definitions will change:

- Cases will be classed as hospital attributed after 2 days
- Hospital care may be implicated in community onset cases if the patient has had a recent admission to the reporting hospital.

The following graph illustrates the total number of cases reported by the hospital and those which, by definition, are attributed to the Trust as 'Trust Apportioned cases'. The 'objective' line indicates the mandatory improvement targets which decrease annually irrespective of comparative rates of infection between hospitals or patient population.



2.1.1. Clostridium difficile Results

Of samples tested during 2017/18 seventeen patients were identified with Clostridium difficile toxin positive results and were reported to the national HCAI system. Of these patients, eleven were detected on admission from patients admitted with diarrhoea. 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. Commissioners consider the result of investigations to determine whether or not cases are linked with an identifiable 'Lapse in Care'. We finished 2017-2018 with six cases of CDI attributed to CCC by definition (one above amended objective) but there has been no evidence of cross infection and patient care is of a high standard.

2.1.2. Actions to take forward from 2017-2018

Improve fluid balance recording and stool charting (electronic recording in Meditech was not suited to ward nursing methodology).

- Formal stool charting included in fluid balance charts and instructional leaflets created by ward managers
- Encourage independent patients to participate in stool charting (independent patients stool chart developed) and updated in line with patients comments
- Formal guidance included also in the Inpatient handbook
- Reminder for nurses is included in safety huddles and reinforced periodically

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

PHE reported a steep decline of 85% in the incidence rate (per 100,000 population) of all nationally reported cases of MRSA bacteraemia between April to June 2007 and January to March 2014 (from 10.2 to 1.5). This was followed by a 13% increase in incidence rates January to March 2014 and January to March 2018. At CCC detection of MRSA colonisation via admission screening remains relatively stable but we have had no cases of MRSA bacteraemia to report during 2017/2018 and it has been almost seven years since our last attributed case.

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

Public Health England (PHE) (2018) report that since the mandatory reporting of MSSA bacteraemia began in January 2011 there has been a general trend of increasing counts and incidence rates, with the highest incidence in Cheshire and Merseyside.

CCC reported a total of four cases of MSSA bacteraemia to the national database and, of these, a single case was attributed to the hospital. The patient was admitted unwell and developed a blood stream infection most likely associated with compromised skin integrity due to radiotherapy. Although this case represents an increase from last year (0), our Trust's rate of MSSA bacteraemia is now 6.26 per 100,000 occupied overnight bed days; among the lowest in the region.

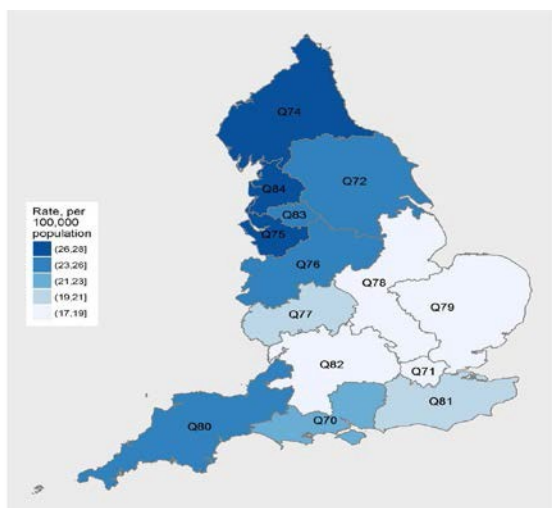


Image from PHE showing distribution rate of MSSA bacteraemia per 100,000 population

2.4. *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. The source of these infections can be difficult to establish with any degree of certainty but may include pneumonia, hepatobiliary, gastrointestinal or urinary tract infections. The incidence rate of all nationally reported E. coli bacteraemia has increased each year since July 2011 when mandatory surveillance of this microorganism began (Public Health England, 2018). This is primarily due to the increase in the rate of community-onset cases.

2.4.1. E.coli Rates

Our rate of CCC attributed E.coli blood stream infections during 2016-2017 was 18.78 comparable with many other NHS Trusts. Our rate for 2017-2018 is now above the national average but comparable with other specialist cancer trusts hosting haematology and blood and marrow transplant services.

2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
36.07	30.61	34.78	37.56	31.21	18.78	62.59

2.4.2. Actions to take forward from 2017-2018

Post Infection reviews and ongoing surveillance has been undertaken at CCC-W since 2011-12 and results reviewed in an ongoing manner. Significant improvements within the Trust continue to focus on ensuring that catheters are inserted according to best practice, for appropriate indications and remain in place only if there is a continuing need (HOUDINI).

Supported by

- An electronic assessment tool with instructions for staff on appropriate selection and management of urinary catheters
- A 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

Recent enhancements to promote seamless transfer of care or transition to discharge include the introduction of:

- 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.

These improvements may have contributed to historic rate reductions but the actual number of infections within CCC is relatively small so it is difficult to establish accurate trends. National data highlights seasonal peaks in summer months so the focus in regional groups is on improving hydration and preventing urinary tract infections in the community. This is unlikely to have a significant impact on our patient population but we are working with groups both in Liverpool and Wirral as well as a new infection prevention and control group formed by specialist cancer centres to try to first identify then address the common root causes for GNB including E.coli.

The actions required to improve fluid balance recording and stool charting for patients with CDI will address some of the national priorities for preventing E.coli infections.

- Urine colour chart to be included on the reverse of the patient fluid balance instruction leaflet in the next print run

2.5. *Klebsiella* species bacteraemia

In the first year of mandatory surveillance of *Klebsiella* bacteraemia (2017 to 2018), a total of 9,617 cases were reported, an incidence rate of 17.4 cases per 100,000. During this time, 30% (n=2,853) were hospital-onset cases, an incidence rate of 8.2 cases per 100,000 bed-days. The remaining 70% (n=6,764) were community-onset cases, an incidence rate of 12.2 cases per 100,000 population. Among specialist cancer centres, we reported the lowest actual number of *Klebsiella* species blood stream infections (15) and of these, eleven were attributed to CCC. However, our annual rate of *Klebsiella* species bacteraemia is 68.85 per 100,000 occupied overnight bed days. This is the highest rate in England by some margin with other specialist cancer trust rates around 23 per 100,000 occupied overnight bed days.

The source of blood stream infection in one patient is likely severe pneumonia and in another, a traumatic catheter insertion but the majority of these infections affected haematology transplant patients and gastrointestinal complications (graft versus host disease) are likely implicated. Work is ongoing with clinicians to thoroughly review all

patients and assess historic data to identify whether this was a temporary increase or a problem specific to CCC haematology patients

2.6. Pseudomonas aeruginosa

Pseudomonas aeruginosa is an opportunistic pathogen and is able to cause serious infections in immunocompromised individuals. As well as the nationally monitored blood stream infections, *Pseudomonas* species may cause pneumonia, wound or urinary tract infections. In this first year of mandatory surveillance, 4,286 cases of *Pseudomonas* bacteraemia have been reported with an incidence rate of 7.8 cases per 100,000 population. Division of cases is 38% (n=1,619) of cases were hospital-onset (an incidence rate of 4.7 cases per 100,000 bed-days); the remaining 62% (n=2,667) were community-onset cases (an incidence rate of 4.8 cases per 100,000 population).

Among specialist cancer trusts, we reported a much lower number and rate of *Pseudomonas* bacteraemia with only 2 CCC attributed cases (rate 12.52 per 100,000 occupied overnight bed days); other cancer trusts reported approximately 10 cases (rate approximately 20 per 100,000 occupied overnight bed days)

2.7. Vancomycin-resistant Enterococcus (VRE) bacteraemia

Mandatory reporting of VRE blood stream infections is required on a quarterly basis but patient details and review are not required and there is no associated national objective or opportunity to benchmark. This situation may be because under normal circumstances, VRE is not considered to be a significant pathogen. However in immunocompromised patients this microorganism has the ability to cause significant infection.

We have noted in previous reports, the increase in the number of patients identified as colonised with VRE on admission to hospital and since July 2017, we have seen significant increase in VRE blood stream infections. We reported one attributed case during 2016/2017 at CCC-W and 15 during the latter part of 2017-2018 all from haemato-oncology patients. More detailed review and analysis of cases is required to fully understand the mechanisms involved between rectal carriage and blood stream infections.

3. 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.

3.1. Infection Prevention and Control Policy Statement

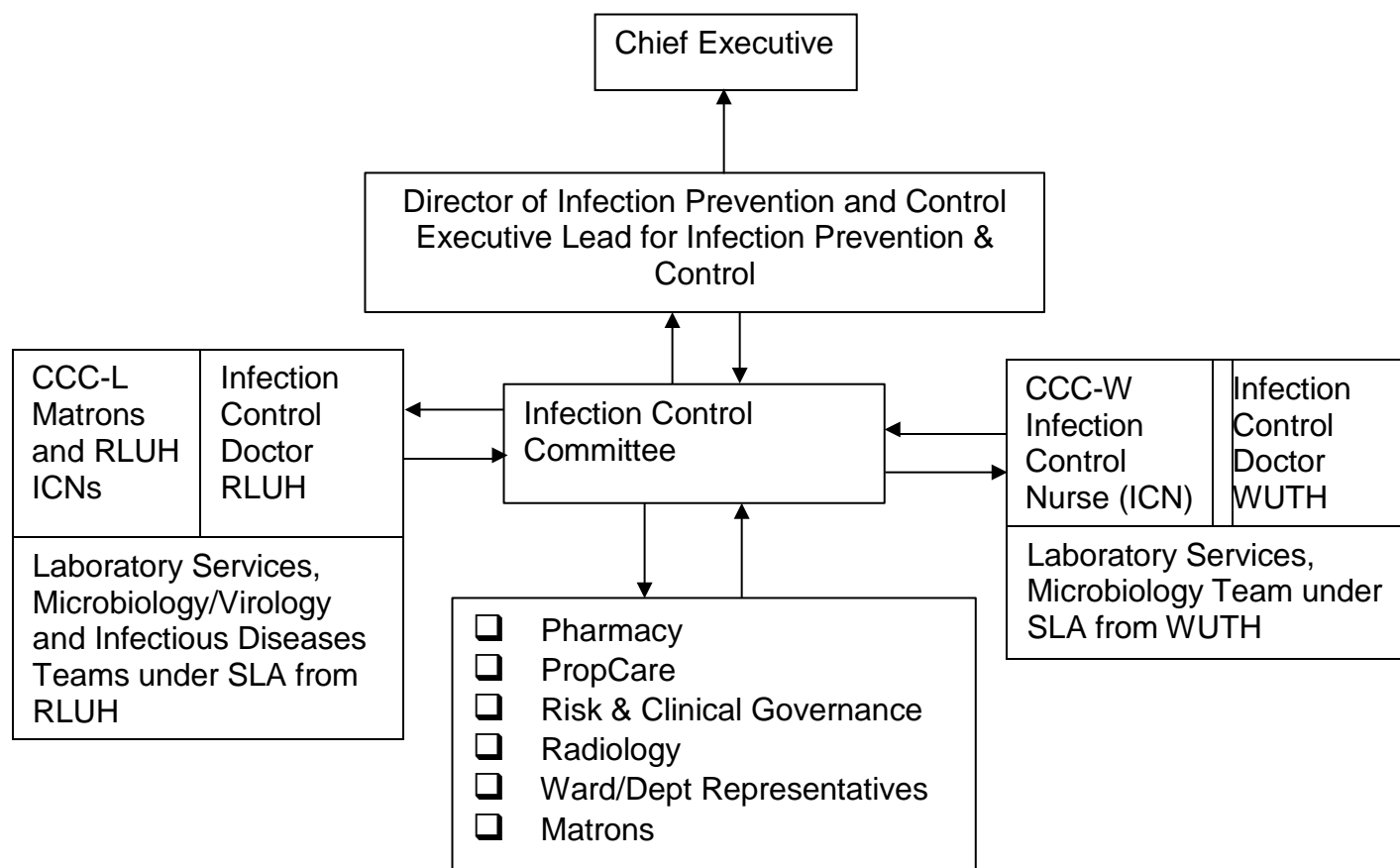
The Board has collective responsibility for minimising the risks of infection and the general means by which it prevents and controls such risks. As such it is committed to a strategy, which minimises risks through a comprehensive system of internal controls whilst maximising potential for innovation 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.

3.2. Reporting Line to Trust Board

Oversight of the Infection Control Committee and systems of escalation are routed to the Board via the Quality Committee as the Director of Infection Prevention and Control attends meetings.

3.3. Infection Prevention and Control Structure

A number of changes came into effect in July 2017 as haemato-oncology services were incorporated into The Clatterbridge Cancer Centre NHS Foundation Trust but remained based at The Royal Liverpool University Hospital (RLUH).



3.4. 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.

3.4.1. 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 including audit, surveillance and mandatory reporting
- 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 programme 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.

Following the amalgamation of services in July 2017, it became apparent that infection prevention and control escalation systems needed to be streamlined and reporting responsibilities clarified.

3.4.2. 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

3.5. Infection Control Team

Infection prevention and control support, advice, and training for CCC- Wirral, Satellite clinics and CCC-Aintree are provided by the Trust's own Infection Prevention and Control Nurses, 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 these areas of the Trust and now reports directly to the DIPC.

Other key individuals / groups have specific, defined responsibilities for the prevention and control of infection and for providing assurance on the Trusts 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 have included management of the infection control nurses (ICNs) in the absence of the Deputy Director of Nursing.
- 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.
- Advanced Pharmacist – Antimicrobials
- Matrons
- 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.”

For patients at CCC-W, 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.

Microbiology services to some CCC satellite clinics and haemato-oncology are provided by Liverpool Community Laboratories. Haematology staff follow RLUH policies, procedures and Antibiotic Formulary as expert advice regarding infection prevention and control, infectious disease and microbiology as well as laboratory services and continues to be provided on-site by experts and facilities at RLUH.

As almost every aspect of Trust business has infection prevention and control implications, in trying to create a blended approach, differences between organisation's structures have created a number of significant challenges and some gaps in reporting mechanisms are identified.

3.6. Links to Prescribing and Formulary Committee

Links between infection prevention and control and prescribing within CCC-W 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 and are in line with the national initiative Start Smart Then Focus. Core membership of the group includes: Consultant Microbiologist (WUTH), DIPC, Lead ICN, Antibiotic Pharmacist (Chair), and Consultant Oncologists. Clinical Nurse Specialists/ Champions and other staff groups are invited as necessary for particular projects.

Monthly point prevalence audits are undertaken by pharmacy (Section 10.4) and weekly ward rounds with a Consultant Medical Microbiologist (Section 10.4.1) are undertaken at CCC-W. Haematology staff receive support from Liverpool Community Laboratory and patients with positive microbiology results are regularly reviewed by RLUH teams and advised according to RLUH Antibiotic formulary.

The CCC antibiotic pharmacist has established links with RLUH pharmacy so that haematology prescribing audit information is reported via existing CCC-W systems via the Antibiotic Stewardship Group to the Drugs and Therapeutics Committee and 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. Formal review and challenge relating to decisions of any 'Lapse in Care' is undertaken by representatives from NHS England. 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.

3.7. Budget Allocation

The Trust has demonstrated commitment to an adequately resourced programme 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.
- An additional full time ICN post has been created and approved from 2018-2019 to address some of the challenges presented by providing care across multiple sites. 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.

4. Surveillance

Routine surveillance enables the Infection Control Team to monitor and identify potentially preventable infections, potential causative factors and trends. We 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.

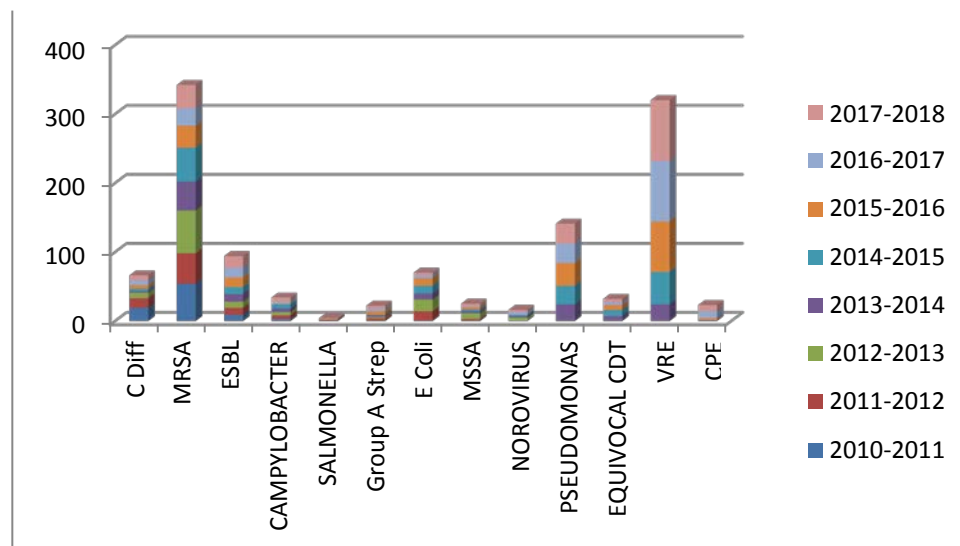
4.1.Alert Organisms

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 but this system links only with MicroPath lab on the Wirral. 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 CCC-W

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 at CCC-W 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, Klebsiella or Pseudomonas) and increasing levels of VRE detected on admission screening. This will increase considerably if haematology patients are included in counts.

	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
TOTAL Alert Organisms	85	96	117	132	169	187	192	211

4.1.2 Alert Organisms Haemato-oncology

Day to day infection prevention and control service is provided by RLUH infection control team.

4.2. Alert Conditions

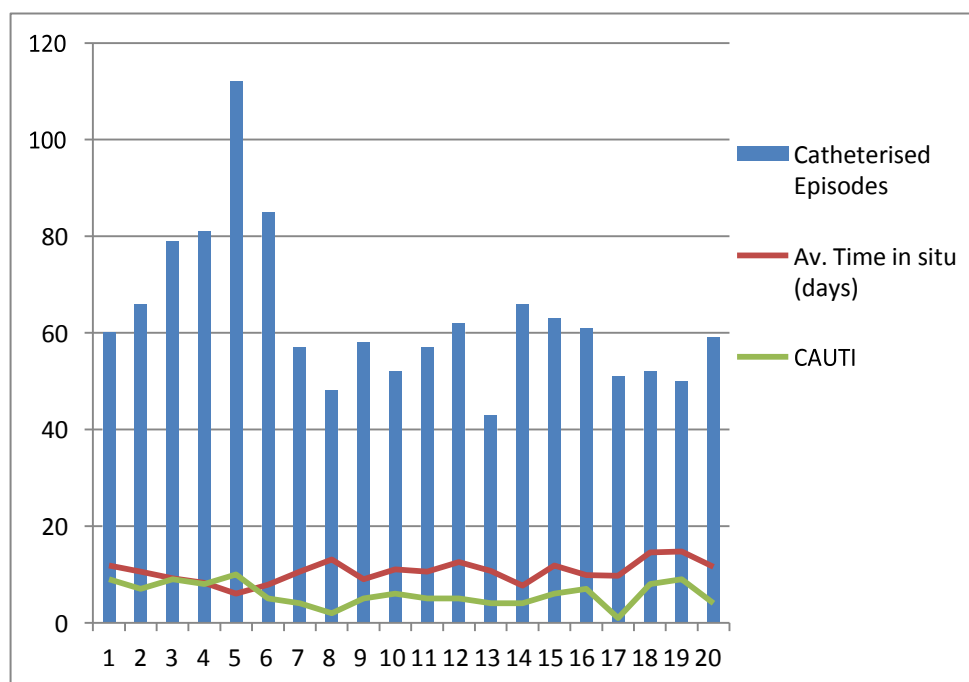
Alert condition surveillance includes medical diagnoses, syndromes, or individual symptoms that suggest a risk of infection. Alert conditions routinely monitored by the ICNs at CCC-W include any patient requiring isolation. The types of conditions monitored include seasonal community infections such as influenza; patients with diarrhoea, patients with fever and rash and patients with an indwelling urinary catheter.

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. This system of daily ward visits to clinical areas by CCC ICNs does not cover haemato-oncology or satellite areas.

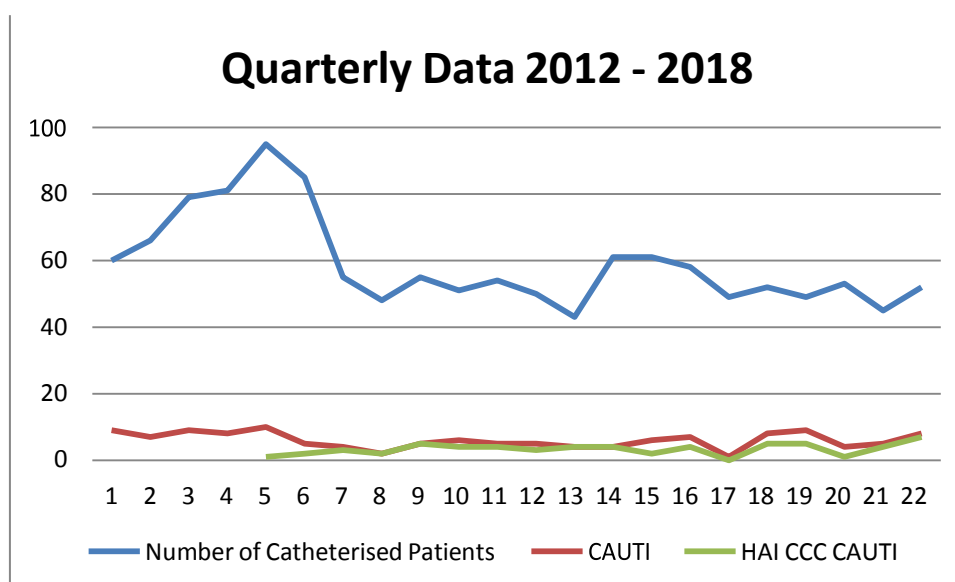
4.3. Urinary Catheter Surveillance

Rates of urinary catheterisation in acute medical hospitals in the UK range between 8 and 20% and between 15-25% in community settings. The presence of any indwelling medical device places patients at significant risk of acquiring an infection. Our quarterly data to the end of 2017 (4.3.1) demonstrates the relationship between duration and prevalence of catheterisation and the incidence of CAUTI. Therefore, the focus of education and training has been to emphasise the importance of only placing urinary catheters when absolutely necessary and to remove as soon as no longer required.

4.3.1. Urinary Catheter Surveillance Quarterly Data 2013 -2017



4.3.2. CCC Current Surveillance



Unfortunately, it has not been possible this year to complete 12 months data collection. The following results are based on patients who had a catheter in situ on admission or were catheterised between 1st October 2017 and 31st March 2018.

4.3.3. Results

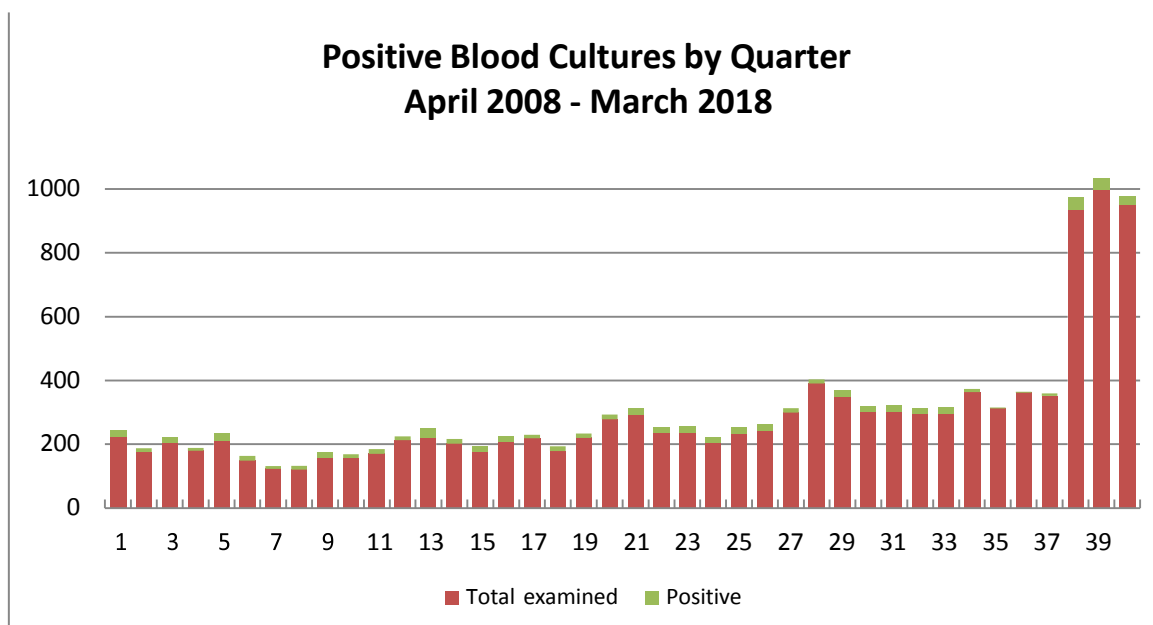
During quarters 3 and 4 of 2017 – 2018, a total of 97 catheterised patients and 120 catheters were monitored, over a total of 1218 catheter days. Of these, 13 patients developed a catheter associated urinary tract infection (CAUTI) (13%) but only 10 of these catheters were inserted at CCC (11%). The overall rate of CAUTI is 0.88 per 100 catheter days which is consistent with last year.

The prevalence of catheterised patients is measured on a weekly basis and averages 14% (range 8% - 23%). All patients had appropriate indications for urinary catheter insertion, the majority of catheters were inserted for urinary retention +/- immobility (often associated with spinal cord compression) or for input/output monitoring.

Reason for catheterisation	Q3	Q4
Obstruction of bladder or acute urinary retention	27	18
Input/Output	18	14
Nursing - End of life care	7	8
Immobility	5	5
Impaired skin integrity and with urinary incontinence	5	5
Haematuria	3	2
Treatment site reaction	2	2
Other including failed TWOC	8	3

4.4. All Other Bacteraemia

Blood cultures are collected from febrile patients according to clinical guidelines but as the following chart demonstrates, the vast majority of blood cultures collected have no bacteria detected even after 5 days of incubation. The significant increase in the final three quarters is due to the inclusion of haematology figures.



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.

There is a significant associated ongoing financial cost to screening 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.

All haematology patients are screened weekly for CPE according to existing protocols at RLUH but we have no audit data to report.

5.1. Annual Quality Screening Audit CCC-W

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. Electronic patient records and microbiology requests and results of all patients present as an inpatient on 12th April 2018 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, VRE or CPE
- How was the screening requested and reported?
- Were the screening swabs requested correctly?
- Was the screen actioned appropriately and patient informed of result?
- 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)	25
MERSEY (25 beds)	20
SULBY (23 beds)	12
Total	57

Total Screens by Patient by Ward				
Ward	MRSA	C. diff	VRE/CPE	Excess screens
CONWAY	23/25 (92%)	7/7 (100%)	12/12 (100%)	4
MERSEY	17/20 (85%)	2/2 (100%)	6/6 (100%)	4
SULBY	6/12 (50%)	1/1 (100%)	5/6 (83%)	4
Total	46/57 (%)	10/10 (100%)	33/34 (97%)	8

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. Previous screening history and requests are accessed during the audit and incorrect screens may be due to care in another area of the Trust rather than the current ward.

5.1.1 MRSA Screening

MRSA screening of all inpatient admissions (emergency and elective) was introduced nationally 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.

Seven patients had no 'valid' MRSA screen; two patients on Sulby had previous screens that had expired (last screen more than 2 months ago) but were not repeated, one radiotherapy patient was cared for in a single room on Sulby whilst awaiting transfer out and as the patient was isolated and not admitted, no screening was required. Two patients on Conway and two on Mersey had no MRSA screening results.

5.1.2 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.

The screening audit noted that two patients appeared to meet current screening criteria but had been either screened incorrectly (wrong request ordered) or not screened at all. Of those screened, all screens were collected on admission or during pre-assessment. Excessive screening was detected in twelve patients. Often, a combined VRE/CPE was collected for all 3 screening swabs rather than only the first screen as required.

5.2. Discussion and Actions

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. Public Health England issued guidance on the control of these organisms 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.

All patients meeting CPE admission screening criteria are screened, once only, for VRE using a combined screening swab. 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, have been reported as responsible for outbreaks and cause serious infection in immunocompromised patients. Excess screening for VRE is not an infection prevention and control risk but wastes resources as combined screens are more expensive and may cause delays as combined swabs take longer for the lab to process. In the past, the ICNs have addressed this by speaking individually to staff making the requests but this is more time-consuming with the current system of requesting and reporting and is not always possible.

Despite a relatively high prevalence of CPE experienced in some other North West Trusts, through screening we have managed to detect and limit spread from nine (9) patients known to be colonised. However, it has been necessary to utilise inpatient isolation facilities for patients with CPE requiring outpatient chemotherapy as there is no availability for isolation in day-case areas.

VRE 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 (e.g. diarrhoea). However this organism is becoming far more prevalent. A total of 24 patient episodes of VRE were managed during 2013/2014 at CCC-W 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.

In order to maintain high standards of terminal cleaning in isolation rooms, environmental decontamination has been optimised. Manual chlorine-based cleaning followed use of Ultraviolet C is now standard in VRE isolation rooms and hydrogen peroxide fogging in CPE isolation rooms.

Facilities at RLUH do not allow for isolation of patients with VRE and this may have contributed to spread of colonization which may precede infection.

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.

In England this year there has been an increase in both scarlet fever and measles activity and a prolonged influenza and norovirus season this autumn and winter. However, there were neither outbreaks of infection nor instances of cross infection at CCC-W. Due to outbreak potential, a number of individual cases required contact tracing, thorough

investigation and individual management including: chicken pox, mumps, group A streptococcal infection, norovirus, influenza and other respiratory viruses. An increased incidence of VRE was detected in haematology and managed by the RLUH infection control nurses.

6.1. Influenza and Other Respiratory Viruses

Public Health briefing showed moderate to high levels of influenza activity in the UK during the winter of 2017 to 2018, with influenza B and influenza A (H3) co-circulating. Peak admission rates to hospitals and ICUs were the highest seen for the last 6 seasons, according to laboratory-confirmed case data. The impact was predominantly seen in older adults with many care home outbreaks being recorded. Activity from other circulating respiratory viruses including respiratory syncytial viruses (RSV), rhinovirus, adenovirus and parainfluenza was similar to that reported in recent years.

All respiratory viruses have significant implications within haematology as even minor respiratory viruses are associated with high mortality in severely immunocompromised patients. Clearly when infections are circulating in the community, staff, inpatients, outpatients and visitors may be potential sources of infection. In the context of this situation, same day respiratory virus testing was utilised extensively, to test patients admitted with fever and respiratory symptoms.

In addition to a number of negative swabs, parainfluenza, respiratory syncytial virus and influenza A and B were identified in patients across both sites. Patients on both sites also became symptomatic whilst an inpatient. At CCC-W it became apparent that on at least one occasion, the patient's relative was the source of influenza and the patient was isolated and contacts screened. In haematology, it was not possible to isolate every symptomatic patient due to the number of patients affected. Cohort isolation with droplet precautions was introduced as advised by virology specialists and national guidance. Also symptomatic, patients continued to attend for planned outpatient treatments

6.1.1. Healthcare staff Vaccination

The 2017 to 2018 season at CCC saw 75% of frontline staff vaccinated against a national average of only 68.7%. The highest uptake at CCC was among nursing staff.

6.1.2. Actions to take forward

Patient information leaflets will be produced and a publicity campaign asking anyone with potential infections to stay at home. We must also try to encourage patients with respiratory symptoms to contact the hospital before attending.

7. Hand Hygiene and High Impact Interventions

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. Weekly observational hand hygiene audits have been embedded into routine practice for many years and a minimum of 10 observations undertaken weekly in all inpatient areas and large departments and monthly in smaller outpatient areas including diagnostic imaging, radiotherapy and satellite chemotherapy clinics.

7.1. SAVE LIVES: Clean Your Hands

In 2010, the Trust registered with the World Health Organization (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.

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%

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. However the number of observations has reduced.

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%

Our WHO self-assessment score has consistently indicated 'Hand Hygiene Leadership Level'. This year we have been invited to participate in the development of a novel approach to hand hygiene monitoring; this will require additional support at executive level.

7.2. High Impact Intervention (HII) Audits

All clinical areas are required to 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 consistently high standard of care. Monitoring of HII at CCC was undertaken only sporadically during 2017-2018 as suitable monitoring systems were not consistently available to staff across all sites. 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 procedures.

The Department of Health monitoring tools were previously used extensively and reported to a database via a local website but the system required significant upgrades which would not be cost effective to use across all sites covered by CCC. Initially, haematology staff were able to utilise RLUH systems but these were not accessible to other wards and departments at CCC. Therefore, an external contractor was commissioned to design a simple to use IT system which is now readily available on hand held devices in all clinical areas across all sites. All clinical areas are able to retrieve and display results and compare practice to other wards and departments.

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 six 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 fogging 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. Although the system is embedded into routine use, it was necessary to look at other options for decontamination and UV-C was introduced.

8.2.2. Ultraviolet radiation

The wavelength of UV radiation ranges from 328 nanometres (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. All record-keeping and monitoring associated with sterilisation is undertaken by the Theatre Manager as the nominated 'Decontamination Lead'.

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 Papillion. In Theatre, weekly audits are undertaken to ensure correct labelling of packs, pack integrity and return delivery of all instruments sent for decontamination. All items were returned according to the SLA.

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 was reduced. Audits undertaken during 2017-2018 noted that practices in Outpatients and Papillion were all according to protocol and all decontamination procedures audited were of a high standard.

8.3.3. Mattresses

An ongoing programme 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.

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 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 and is monitored by the Medical Devices Coordinator.

8.3.4. Other 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. The auditing system used by the ICNs provides quick check audits based on Standard Infection Control Precautions (SICPs) and monitors all types of low level cleaning of equipment and the environment.

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

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 and monthly inspections by Head of Hotel Services
- Local Patient Feedback
- National Patient Survey
- Annual Patient Led Assessment of the Care Environment (PLACE).
- Cleaning standards within haematology are monitored by RLUH

9.1.1. Monthly Supervisors Audit

The formal auditing of cleaning standards at CCC-W is undertaken monthly in all areas using a nationally recognised tool. The tool highlights both cleanliness and maintenance issues. Cleaning is immediately actioned and estates and maintenance issues reported to the Estates Department for them to rectify. Any healthcare cleaning issues are reported to the ward manager or nurse-in charge for immediate rectification. Overall scores are 98% at CCC-W.

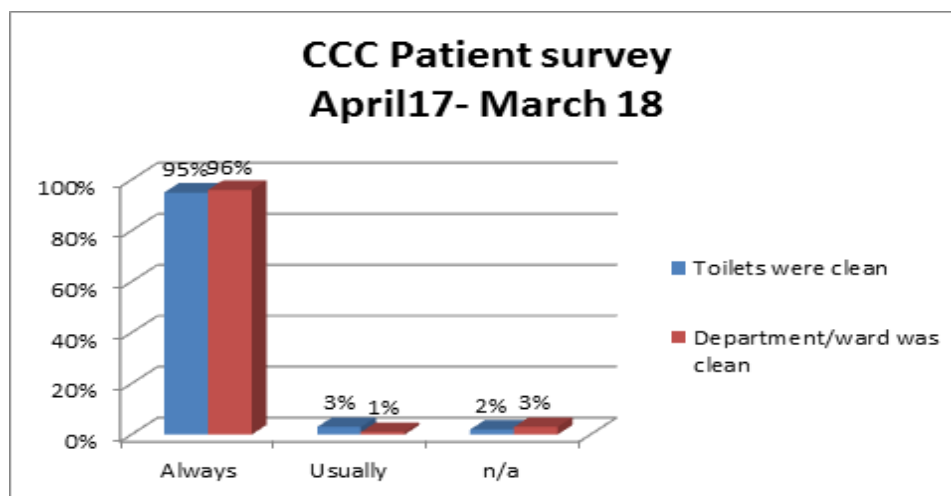
9.1.2. Patient Led Assessment of the Care Environment (PLACE)

The national Patient Environment Action Team (PEAT) assessment was replaced in 2013 by the Patient-Led Assessments of the Care Environment (PLACE) which 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 2017-2018 indicate that patients continue to be treated in a clean and safe environment.

- Cleanliness score 100%
- Condition Appearance and Maintenance score 94%.

9.1.3. 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 and demonstrate continued improvement.



9.1.4. Care Quality Commission National Patient Feedback

The national patient feedback survey looks at the experiences of 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

10. Infection Control Audit Programme

The Infection Control Nurses Audit Programme for 2017/18 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.

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. Ward or department managers may access a non-compliance register contained within the audit system and update actions or close any non-compliance reported. Areas are re-audited within a specified timescale according to Red, Amber or Green (RAG) risk rating and score. 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

10.1.1 Results

All areas except one scored green overall on the RAG rating for Infection Prevention and Control Audits (inpatient and outpatient areas CCC-W and satellite clinics) but in some areas no routine auditing has been undertaken.

- Triage area was downgraded on one occasion as the patient area had not been cleaned ready for the next patient, heavy lime scale was found on the wash hand basin tap and the soap dispenser was not working. All non-compliant elements were rectified but the area has not been formally re-audited.
- The individual amber score in outpatients was due to medical staff not bare below the elbows and in radiotherapy on the Wirral site a combination of maintenance issues, clutter and sharps safety affecting scoring. The vast majority of issues have been rectified but again the area has not yet been formally re-audited.
- All areas (with the exception of some satellite clinics) have been informally visited but some areas have not been formally audited and are recorded in the report as N/A.

10.1.2 Non-compliance Audit report between 1st March 2017 and 1st April 2018

Ward/Dept.	Hand Hygiene	ICN Audit	Total
Cardiothoracic Centre	100%	N/A	100%
Chester	100%	N/A	100%
Conway Ward	99%	93.60%	94.40%
Delamere	100%	95.60%	97.70%
Diagnostic Imaging	90%	N/A	90.10%

Halton	100%	N/A	100%
Interventional Team	100%	100%	100%
Linda McCartney	100%	93.50%	96.90%
Lymphoedema	100%	97.40%	98.90%
Marina Dalgleish	100%	N/A	100%
Mersey Ward	94%	94%	94%
Outpatients	82.30%	100%	83.00%
Southport	100%	N/A	100%
Sulby Ward	100%	94.20%	94.80%
The Clatterbridge Clinic	98.30%	N/A	98.30%
Theatre	N/A	N/A	N/A
Treatment Sets Aintree	100%	92.70%	95.00%
Treatment Sets Wirral	97.80%	81.80%	97.10%
Triage	N/A	76.90%	76.90%
Womens	100%	N/A	100%
Total	97.40%	94.10%	95.80%

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 for individual patients. All cases are investigated and findings reported to the Infection Control Committee. The Post Infection Review (PIR) is also submitted to NHS England for further review to scrutinise processes within the Trust. Any actions required are monitored by the Clostridium difficile Infection (CDI) multidisciplinary group. During 2017 these processes required review to ensure that haematology patient's infections would be also reviewed.

10.2.1. Results

The main findings from 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.

10.3. 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 February 2018.

10.3.1. Results

Nineteen (19) Wards/Departments were visited during the audit and ninety seven (97) sharps containers were noted. There were two (2) high risk faults as there were

two (2) containers that were incorrectly assembled. None (0) of the sharps containers were more than three quarters full and none (0) had protruding sharps.

Results demonstrate decline in standards of labelling in comparison with previous years and areas still requiring significant improvement include:

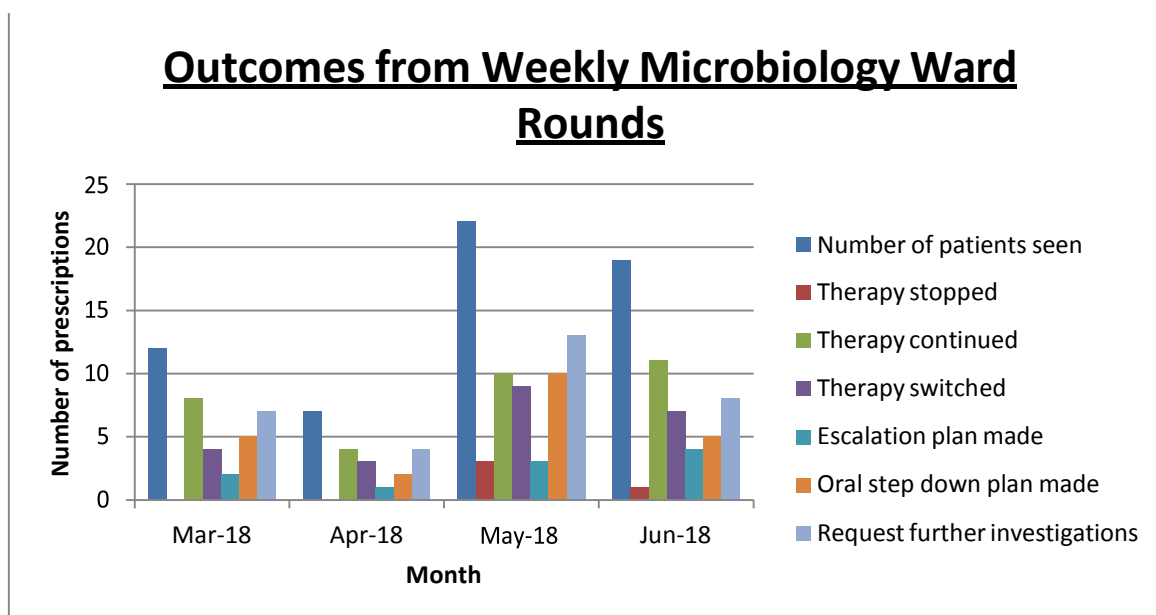
- Seven (7) bins were not dated and signed whilst in use
- Eleven (11) contained significant inappropriate non-sharp contents (e.g. packaging and gloves) – whilst this is not associated with risk to patients, it is associated with wasted resources due to the additional cost of disposing of sharps containers.
- Sixteen (16) 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 update Antimicrobial Stewardship: Start smart - then focus states that evidence based antimicrobial stewardship should be combined with a robust auditing programme to ensure appropriate use of antibiotics in secondary care.

10.4.1. Weekly Antibiotic Ward Rounds



Weekly microbiology ward rounds take place at CCC-Wirral on the 3 inpatient wards every Thursday morning. The team comprises of a consultant microbiologist, an infection control nurse and an antimicrobial pharmacist. Medical and ward nursing staff put forward patients for review on the ward round at the morning handover meeting. Notes, results and medications are reviewed to allow the microbiology team to provide appropriate advice on the management of these patients. The ward round has been met with positive feedback from medical staff and has had 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. Also an overview of the activity of the

weekly ward rounds between March 2018 and June 2018 can be seen on the previous graph.

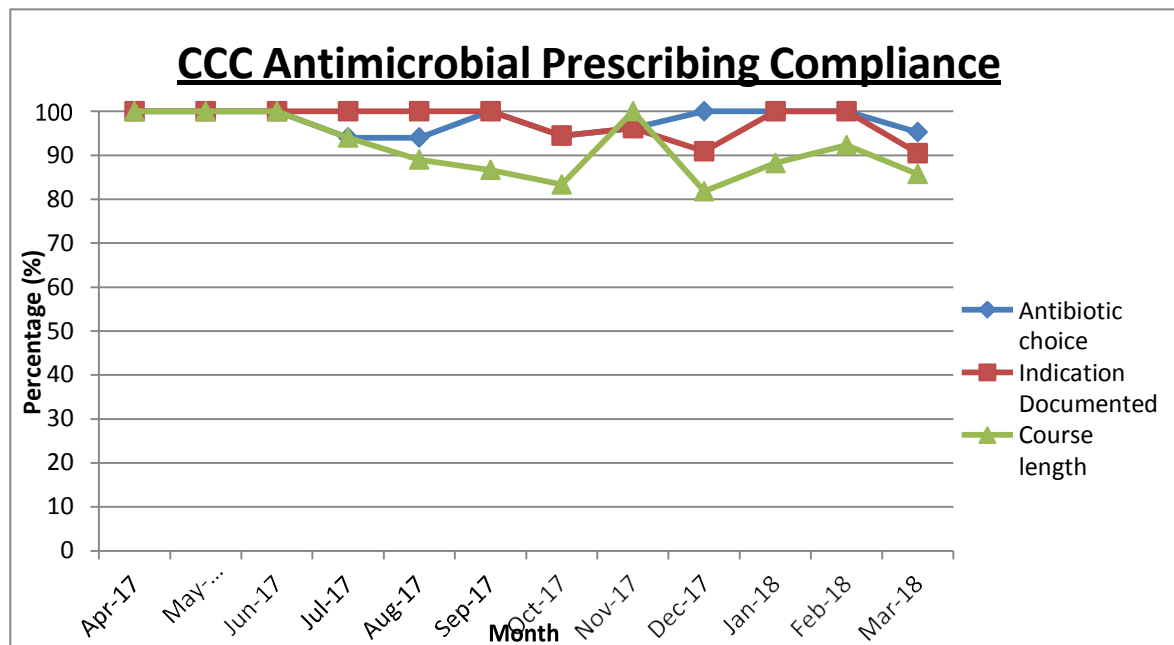
10.4.2. Antibiotic Audits

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. All antimicrobial prescriptions for acute infections are reviewed by ward pharmacists on a designated date each month (CCC - Wirral) or on alternate months (CCC-Liverpool) to determine the appropriateness of agents prescribed within the Trust. Specifically, the pharmacists assess the prescriptions for the following:

- Choice of antimicrobial in line with the Trust's antibiotic formulary
- Evidence of documentation of the indication of treatment
- Evidence of documentation of the intended treatment duration or review

Results are escalated via the Antibiotic Stewardship group on a quarterly basis and via Drugs and Therapeutics Group.

CCC-W Audit Data

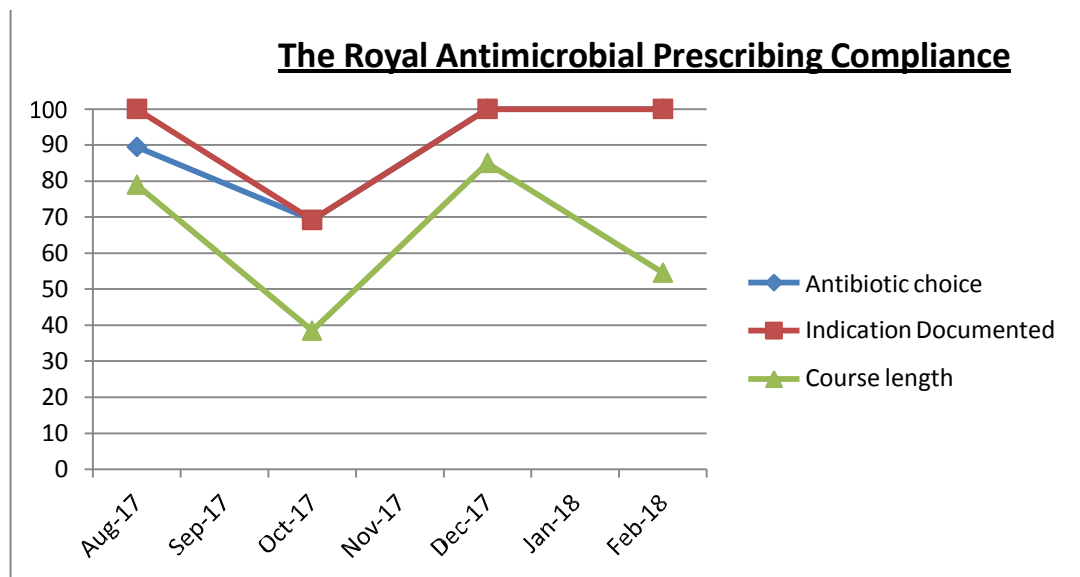


This shows an initial improvement (Jan-Feb 2018) followed by a slight reduction (Mar 2018) in the level of antibiotic stewardship on the wards compared to the previous quarter. The most common reason for this was a lack of documentation of indication and course length/reviewing of oral fluconazole and nystatin. This was also identified in the last quarter. Weekly antibiotic ward rounds continue, supported by the microbiology consultant, antibiotic pharmacist and infection control nurses.

In recent months we have seen a slight reduction in the antimicrobial prescribing practice compliance in all 3 areas of auditing:

- Antibiotic choice compliance with formulary falling to 95% in March 2018 after the previous 2 months being fully compliant at 100%
- Indication documented fell to 90% in March 2018 after the previous 2 months being fully compliant at 100%.
- Course length documentation falling to 86% in March 2018 after initial improvement to 88% and 92% in January and February 2018 respectively.

Haematology Audit Data



It had been noted that there was significant reduction in antimicrobial prescribing compliance on the haemato-oncology wards in the previous quarter. These were escalated to the Clinical Director of Haematology and Microbiology at the Royal as well as the Medical Director here at CCC - Wirral.

- The antimicrobial stewardship has improved since then in areas of antibiotic choice and indication documentation; however course length/review compliance still requires further improvement.

11. Water Safety

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. The copper and silver ionisation system has been fully installed and commissioned at CCC-W and water outlet testing was extended to include *Legionella* species in addition to existing testing for *Pseudomonas* species. The ionisation system was shown to be dosing good concentrations of copper and silver. Despite this, the metal results around the outlets (taps) were poor, after running the outlets for 10 minutes. The engineers suggested this may be due to relatively low water consumption in some areas especially over the weekend. An alternative explanation is that the ions are being trapped at some point between the tank and the outlet.

11.1 *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 2017 -2018 *Pseudomonas* was detected in a shower on Sulby Ward, shower hose and shower head were replaced and increased flushing introduced. Subsequent tests were negative.

11.2 *Legionella*

Legionella serogroup 2 was detected in several infrequently used outlets but not in any showers or in high risk areas. Ward and department managers ran affected taps daily to maintain/encourage the copper and silver levels and to

avoid biofilm formation. Additional instructions included to not run the taps at excessive force or directly into the plug hole to reduce the risk of creating aerosols.

Contaminated outlets are retested and monitored as engineers suggested that biofilm may have been formed in a thermostatic mixer valve, which could be seeding Legionella to other areas of the water system and would also account for absorbing the copper and silver in the water leading to the low readings. Estates have implemented required maintenance solutions e.g. tracing the pipework and removing any potential sources such as rubber lined hoses /rubber fittings, system dead ends, and/or dirty mixing valves (if present).

12. Infection Control Training

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

12.1. Training undertaken by the Infection Control Team

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.

We have had significant staffing issues due to long-term sickness and medical retirement of the ICN. A new part-time ICN was recruited in August 2017 and has received on the job training and taught aspects of specialist infection prevention and control. The ICN has a background in critical care and has taken on additional responsibilities to focus on clinical elements and coordinating our approaches to sepsis management at CCC. The additional hours have been funded from the existing vacancy.

12.2. 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.

12.2.1. 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.

Level 1 Compliance 89%
Level 2 Compliance 60% (All)
Level 2 Compliance 71% (CCC-W)

Some staff groups have a considerably lower level of compliance.

Haematology staff based at RLUH undertake on-line training as per The Royal Liverpool and Broadgreen University Hospital NHS Trust. Level one training is available for admin and clerical staff on a three yearly basis. Level two training for all clinical staff is completed annually. All training is available via the training hub.

All CCC-W staff 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 at CCC-W to allow more focused individual training and content is updated in response to issues identified by incidents, audit, surveillance or feedback. This also allows an element of practical skills training especially in correct use of personal protective equipment.

12.2.2. '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, UV-C decontamination, sharps safety, sepsis and urinary catheter care. This coming year, back by popular demand, we will focus on Bristol Stool Charting and use of audit devices

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 2017/2018 Infection Control week was promoted and combined with Hand Hygiene awareness in May. 'Let me watch you wash your hands to win a prize' was repeated and skin hydration assessments undertaken. Other subjects covered included hydration diarrhoea and Bristol Stool Charts as well as the 'Trolley dash' mobile road shows.

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 required review to reflect changes in practice and/or to take account of process changes due to the introduction of Meditech and haematology.

14. Patient Information

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 Leaflets

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

Information contained within the leaflets remains valid and up to date but all are due for revision and will need to incorporate haematology services. 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 2017-2018. Nevertheless, service has focussed on addressing risks and maintaining safety in high risk areas.

15.1. Key Performance Indicators for 2018/2019

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 - 4 cases – No Lapse in Care
- 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
- 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 2018-2019

The majority of essential planned actions from the programme of work for 2017-2018 were completed and many of the service improvements have been incorporated into routine practice for the Infection Control Nurses and will continue. One or two areas remain in progress and it has not been possible to undertake anything from our 'wish list' due to temporary reduction in IPC staffing.

Incomplete actions are included in the new programme of work for 2018/2019 and particular emphasis will be required to:

- Form an Infection Prevention and Control Operational group (IPCOG) and clarify escalation processes to HICC
- Include haematology in all developments and develop formal systems for information exchange with the Infection Prevention and Control Team at The Royal Liverpool University Hospital
- Reassess and realign Infection Prevention and Control processes within the Trust to clarify responsibilities
- Work collaboratively with regional groups in Liverpool, Wirral and other Cancer Centres to achieve the reduction in gram negative blood stream infections:
 - In-depth review of all Klebsiella bacteraemia
 - Work with clinical teams to improve hydration messages and fluid balance and stool charting.

- Continue to promote the Sepsis Working Group and appropriate management of sepsis
- Continue roll-out and training of new audits on hand-held devices
- Allocate existing ICN audit devices to share between Matrons covering all areas.
- Reinforce screening requirements and review our audits and monitoring processes and ensure CPE screening is appropriately undertaken.
- Continue to highlight incidents to 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 PropCare to ensure Estates and Facilities Management include infection prevention and control strategies including microbiologically safe water and that plans for the new cancer centre promote best practice in infection prevention and control.
- Prepare patient information leaflet pertaining to respiratory viruses and prepare publicity campaign for flu season.

The following will be added to the wish list

- Devise an audit to monitor communication of screening results to patients.

References

Public Health England Quarterly epidemiological commentary Mandatory MRSA, MSSA, Gram-negative bacteraemias and C. difficile infection data (up to January to March 2018)
June 2018