Royal United Hospitals Bath
NHS Foundation Trust

Report to:	Public Board of Directors	Agenda item:	18
Date of Meeting:	31 May 2017		

Title of Report:	**Director of Infection Prevention and Control Annual Report 2016/17**
Status:	**For approval**
Board Sponsor:	**Helen Blanchard, Director of Nursing and Midwifery/Director of Infection Prevention and Control**
Author:	**Yvonne Pritchard, Senior Infection Prevention and Control Nurse**
Appendices	**Appendix 1: Director of Infection Prevention and Control Annual Report**

1. Executive Summary of the Report

The attached report provides a summary of the progress against the 2016/17 Annual Infection Prevention and Control Programme and the proposed programme for this year. Infection Prevention and Control is aligned to the priority objective of keeping patients safe and minimising harm, and the key standard of improving quality by reducing infections.

The report includes performance against national targets for MRSA and *Clostridium difficile* reduction and mandatory surveillance of other infections.

2. Recommendations (Note, Approve, Discuss)

For approval.

3. Legal / Regulatory Implications

CQC Registration 2016/17
CQC Regulation 12: Safe Care and Treatment
CQC Regulation 15: Premises and Equipment
The Health and Social Care Act 2008 Code of Practice on the prevention and control of infections and related guidance (2015)

4. Risk (Threats or opportunities, link to a risk on the Risk Register, Board Assurance Framework etc)

- 180 Insufficient isolation facilities
- 1352 Failure to achieve the annual C diff reduction target
- 1284 Risks associated with the use of Actichlor Plus for decontamination

5. Resources Implications (Financial / staffing)

Potential financial penalty if C diff target is not met

6. Equality and Diversity

None identified

7.	References to previous reports
DIPC Annual Report 2013/14 presented at Trust Board May 2015 Infection Prevention and Control Annual Report 2015/16 presented to Board of Directors May 2016.	

8.	Freedom of Information
Public	

Royal United Hospitals Bath
NHS Foundation Trust

Annual Infection Prevention and Control Report 2016/17

2.0 Executive summary

2.1 This is the annual report of the Director of Infection Prevention and Control (DIPC) and summarises the work undertaken at the Royal United Hospitals Bath NHS Foundation Trust to manage infections during the period 1 April 2016 to 31 March 2017.

2.2 The Trust is compliant with the Health and Social Care Act 2008: Code of Practice on the prevention and control of infections and related guidance which was revised in July 2015.

2.3 During 2016/17 there was 1Trust apportioned MRSA bacteraemia against a trajectory of 0. This was an improvement on the previous year's performance by 2 cases.

2.4 There were 78 cases of MSSA bacteraemia, of which 18 were diagnosed from blood cultures taken more than 48 hours after admission. In 2016/17 there were 57 cases in total, 13 of which were diagnosed 48 hours or more after admission. There is no reduction target currently.

2.5 There were 293 cases of E coli bacteraemia, this includes both Trust and non-Trust apportioned cases. There was no reduction target set during 2016/17; however a 10% reduction ambition will be set for 2017/18.

2.6 There were 40 cases of *Clostridium difficile* infection against a trajectory of 22. The total number of cases that will not count against the trajectory is 13 as it was agreed that there were no lapses of care.

2.7 There were a total of 24 wards/bays closed during the period due to norovirus outbreaks. 310 bed days were lost as a result of the closures. This is a significant reduction in lost bed days compared with 2015/16.

2.8 There were high levels of influenza between January and March 2017 which resulted in 35 bay/ward closures.

2.9 The antimicrobial stewardship programme has continued throughout the year and improvements have been made in the selection of antibiotics and prescribing. The 2016/17 CQUIN targets for prescription reviews and antibiotic consumption were met.

2.10 There has been a reduction in the number of surgical site infections reported during 2016/17. An improvement plan is in place and progress against the actions are reported to the Infection Prevention and Control Committee.

3.0 Infection Prevention and Control Team (IPCT) Structure and Arrangements

3.1 The Infection Prevention and Control Arrangements

3.1.1 The Chief Executive holds the ultimate responsibility for all aspects of infection prevention and control within the Trust.

3.1.2 The Director of Nursing and Midwifery is the designated executive lead; Director of Infection Prevention and Control (DIPC). She reports directly to the Chief Executive and the Board and she is the chair of the Infection Prevention and Control Committee (IPCC). The Director of Nursing and Midwifery is the Senior Infection Prevention and Control Nurse's line manager.

3.1.3 The Infection Control Doctor (ICD) is a consultant microbiologist who provides expert microbiological advice and supports the DIPC. The ICD has funding for five infection control sessions per week and is the deputy chair of the IPCC.

3.1.4 The Senior Infection Prevention and Control Nurse is responsible for the operational management of the Infection Prevention and Control Team (IPCT) and for ensuring that the Infection Prevention and Control Strategy is embedded.

3.1.5 The Infection Prevention and Control Nurses (IPCNs) provide expert clinical advice and support to Trust staff in the delivery of the Strategy. The team covers all sites within the Trust including the Royal National Hospital for Rheumatic Diseases and the community birthing centres.

3.1.6 The team also provide cover via a service level agreement for Avon and Wiltshire Mental Health Partnership NHS Trust (AWP). This agreement covers outbreak management and a number of educational sessions. The sites included in the agreement are Hillview Lodge and Ward 4, St Martin's Hospital which are both in Bath and Green Lane Hospital, Devizes.

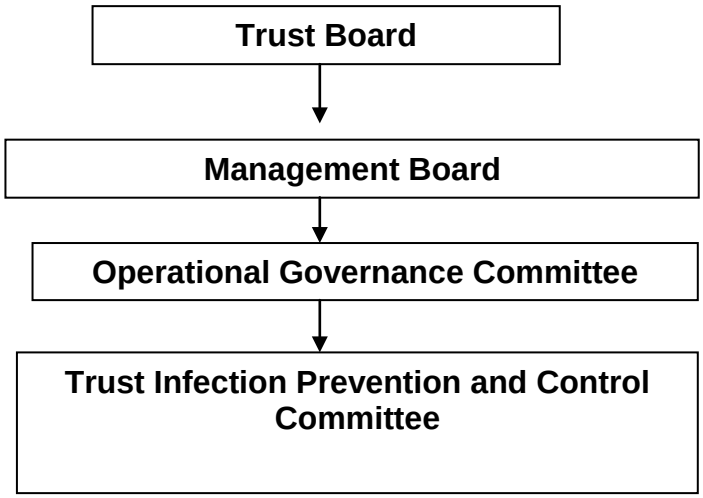
3.2 The Infection Prevention and Control Team

3.2.1 The team is made up of the following staff: as

- 1 wte Senior Infection Prevention and Control Nurse Band 8a
- 1 wte Infection Prevention and Control Nurse Band 7
- 1 wte Infection Prevention and Control Nurse Band 6
- 0.6 wte Infection Prevention and Control Nurse Band 6
- 0.5 wte Infection Prevention and Control Nurse Band 6
- 0.8 wte Personal and Information Assistant Band 3

3.2.2 The Infection Control Doctor role has been vacant throughout 2016/17 despite efforts to recruit. An appointment to the post has been made and the Consultant Microbiologist will join the Trust in October 2017.

3.3 Infection Prevention and Control Committee governance and reporting structure



Infection Prevention and Control is also represented on the following groups and committees:

- Water Safety Group
- Antimicrobial Stewardship Committee
- Divisional board meetings (as required)
- Divisional governance meetings (as required)
- Emergency planning meetings, e.g. Pandemic flu
- Outbreak meetings
- Professional Nurse Forum
- Safer Staff Group
- Senior Sisters meetings (as required)
- Cleaning Working Group
- Dress Code Policy Group
- Clinical Consumables Review Group
- HCAI Infection Control Collaborative meetings with CCGs
- Capital projects, building and refurbishment meetings
- Surgical Site Surveillance meetings
- Theatres Environment Group
- Medical Device governance and capital allocation meetings
- Influenza Peer-Vaccinator meetings
- AWP Infection Control and Medical Devices Committee meetings

4.0 Meticillin Resistant *Staphylococcus aureus* (MRSA) bacteraemia

The reporting of MRSA bacteraemia is mandatory for all NHS trusts. The Trust was given a target of zero infections for the year 2016/17.

There were a total of 6 cases reported by the Trust during 2016/17. Five were community acquired infections and one was recorded as 'Trust apportioned' as the blood cultures were taken more than 2 days after admission.

A post infection review investigation was undertaken by the IPCT for the post 2 day case whilst the community acquired cases were investigated by the relevant CCGs. Four of the five community acquired cases were assigned to a third party by NHS England as neither the CCG nor acute trust had identified any lapses in care.

The post infection review of the Trust apportioned case identified that the source was an arterial line. The patient had been an inpatient on Critical Care Services for 107 days when the infection was identified. An action plan was created from the findings of the post infection review investigation and as a result new documentation has been developed so that arterial line insertion and removal dates are clearly visible and also skin decolonisation for long stay patients has been introduced.

Figure 1: MRSA bacteraemia cases 2016/17

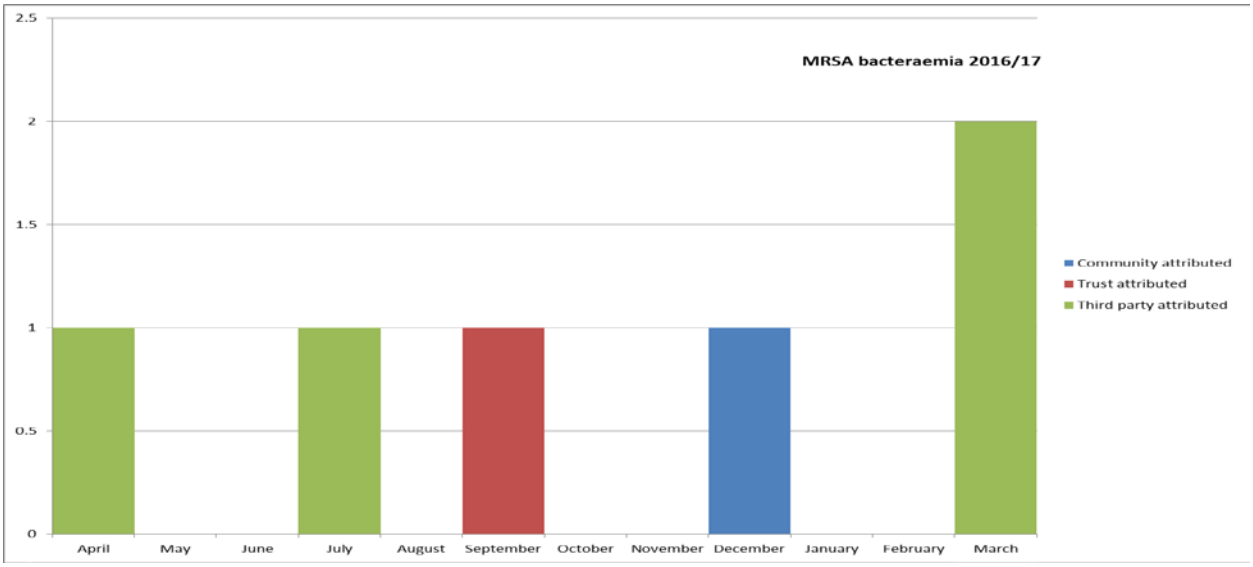


Figure 2: MRSA bacteraemia April 2011 – March 2017

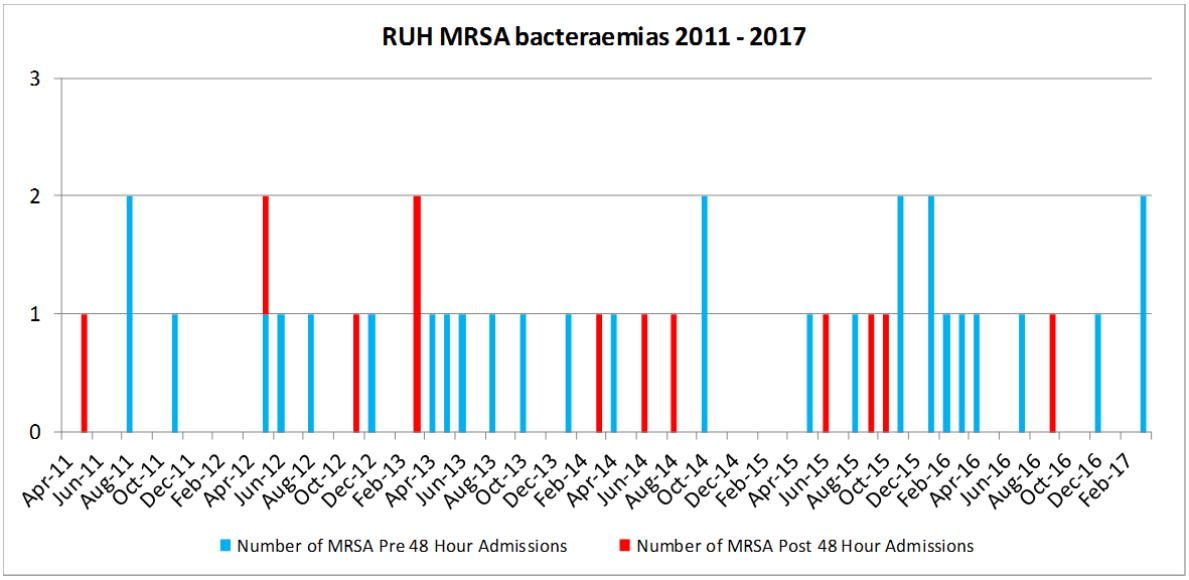
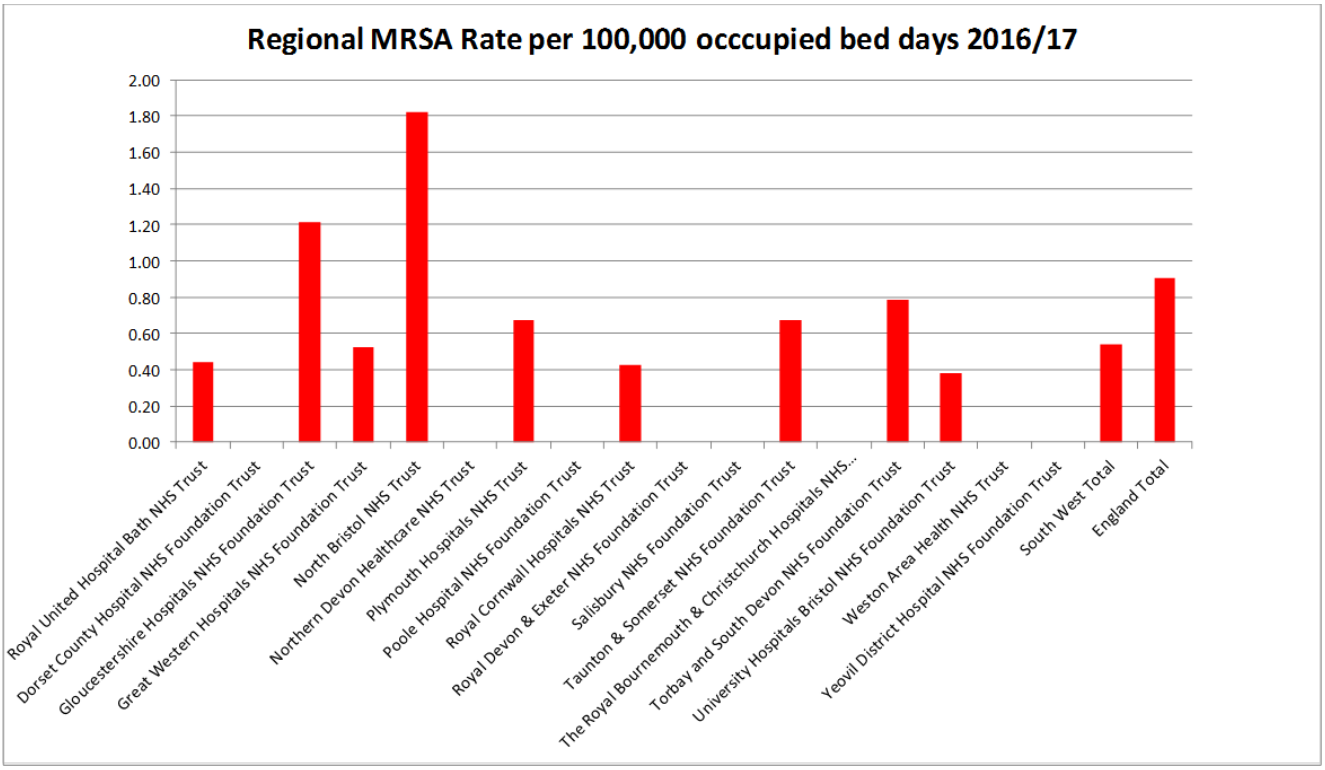


Figure 3: Regional MRSA rates 2016/17



4.1.1 MRSA screening compliance

An audit of MRSA screening compliance was undertaken during April and May 2016. The audit was separated into two categories; elective and non-elective

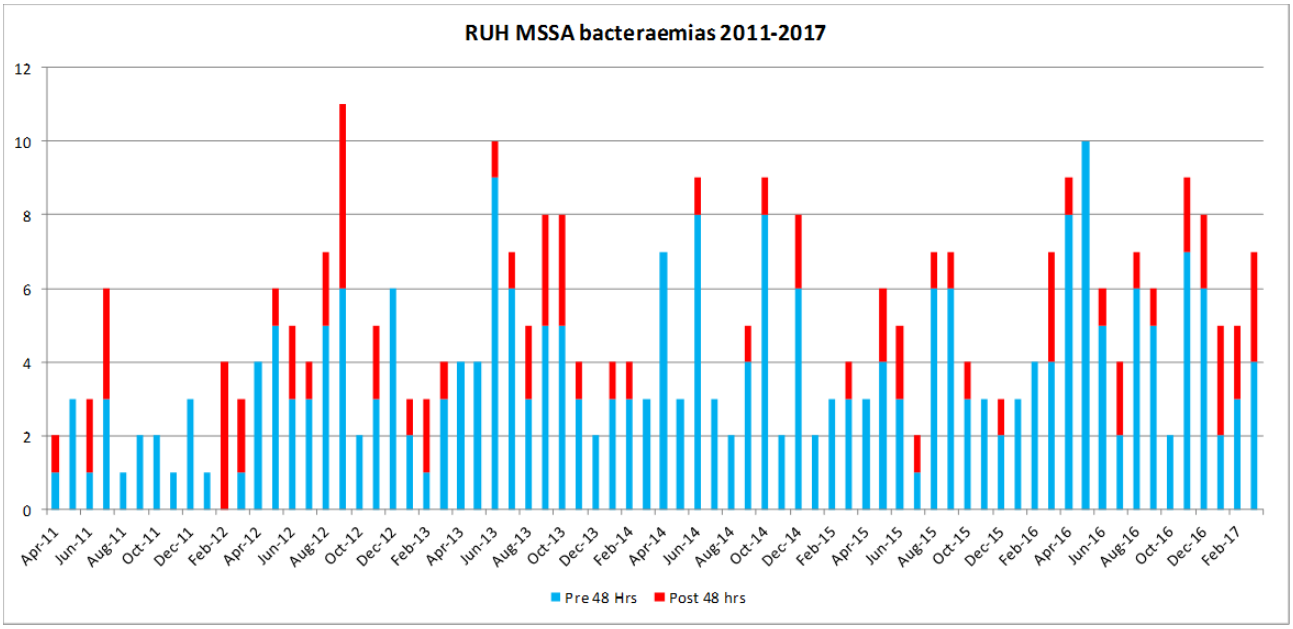
patients. Compliance with screening of elective patients was 100% and screening of non-elective patients was 98%.

The national MRSA screening guidelines have changed to reflect that the emphasis should be on high risk patients or high risk areas therefore it is intended that subsequent audits will focus on patients previously known to have MRSA or those who are admitted to high risk areas. The amended audit proforma will include compliance with decolonisation once MRSA has been identified.

5.0 Meticillin Sensitive *Staphylococcus aureus* (MSSA) bacteraemia

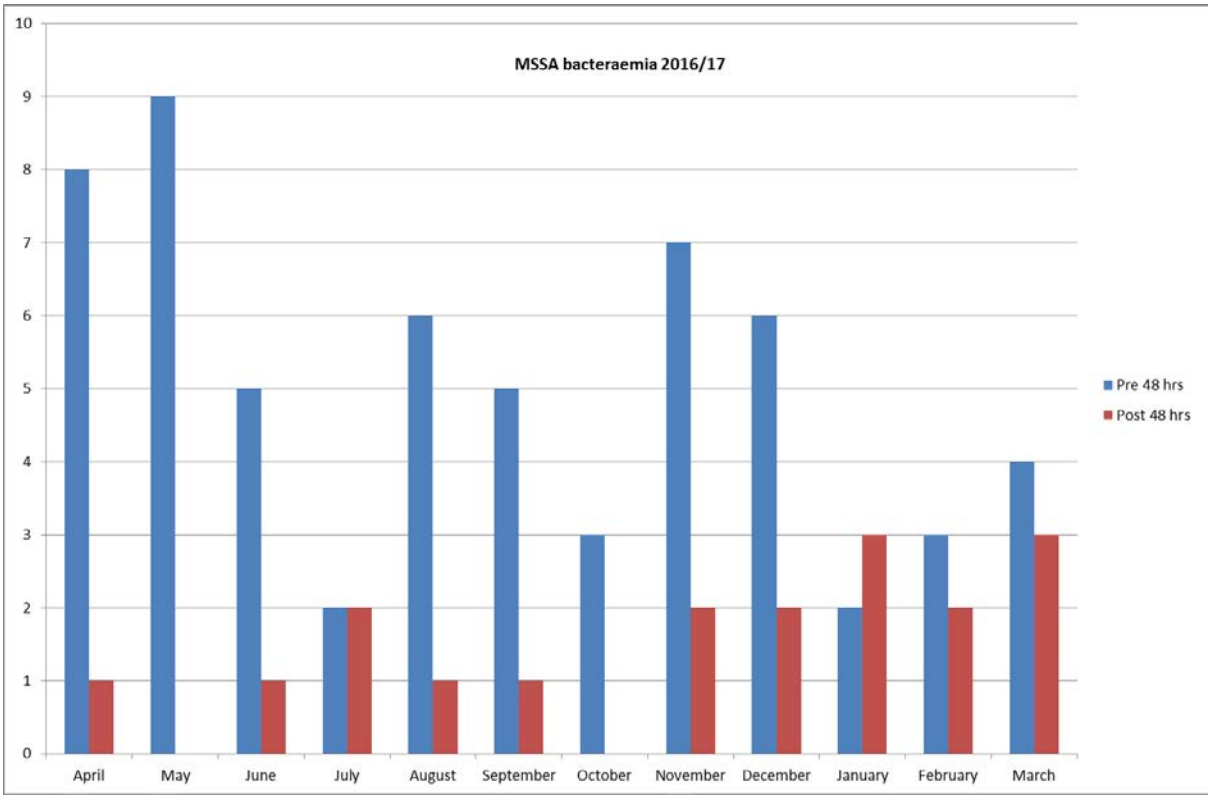
The mandatory reporting of MSSA bacteraemia commenced on 1 January 2011. There are currently no reduction targets set for this infection; Public Health England (PHE) are collating data which may act as a baseline for trajectory setting in the future. Figure 4 shows the number of cases by month since April 2011.

Figure 4: MSSA bacteraemia April 2011-March 2017



During 2016/17 there were 78 cases of MSSA bacteraemia; 60 within 48 hours and 18 cases where the blood cultures were taken more than 48 hours after admission (see figure 5).

Figure 5: MSSA bacteraemia 2016/17



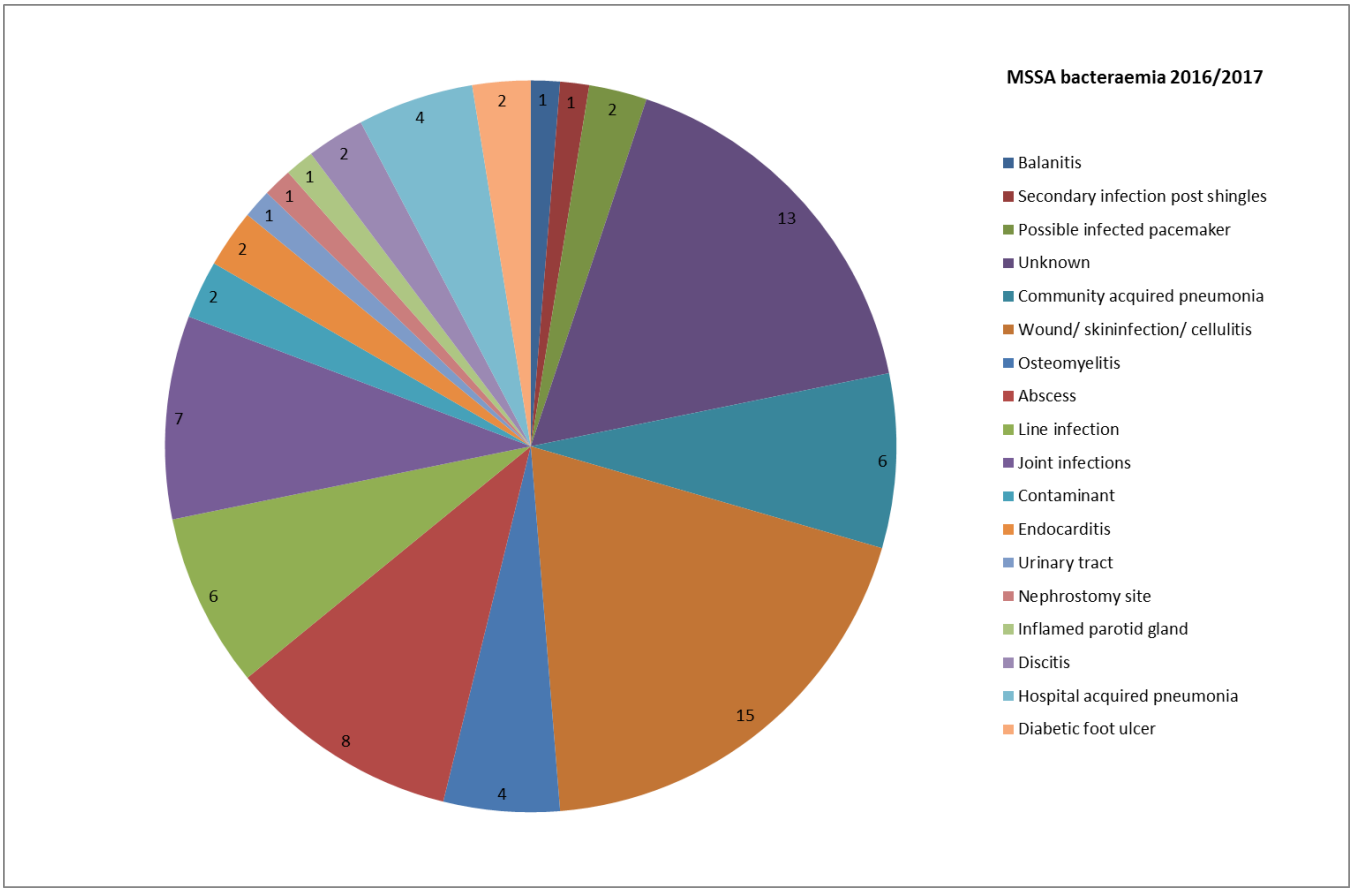
A multidisciplinary root cause analysis (RCA) investigation was carried out for all post 2 day cases. It was not possible to identify the underlying cause of infection in some cases and these were reported as an unknown source.

The most prevalent identifiable causes of MSSA bacteraemia were identified as wound or skin infections and cellulitis which accounted for 15 of the cases. In most cases the affected patients were admitted with infected wounds or cellulitis.

The number of line associated infections reduced during 2016/17 however there were still 7 of these cases.

There were also two cases where it was thought that the results were likely to have been caused by contamination from the patients' own skin flora (see figure 6).

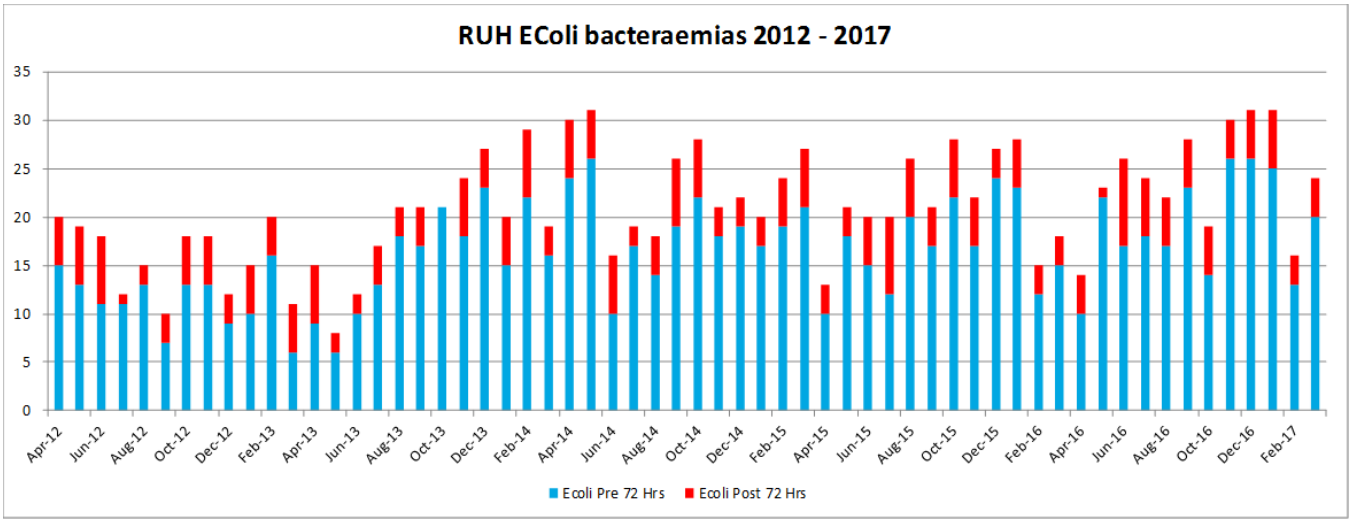
Figure 6: Causes of MSSA bacteraemia (all patients) 2016/17



6.0 *Escherichia coli* (E coli) bacteraemia

The mandatory surveillance of E coli bacteraemia commenced on 1 June 2011. PHE analyse all reports submitted and are using the data to gain a better understanding of the prevalence and causes of these infections. There are no plans currently to set reduction targets for E coli bacteraemia. Figure 7 shows the number of cases by month since April 2012.

Figure 7: E coli bacteraemia April 2012 – March 17



During 2016/17 the Trust reported a total of 297 E coli bacteraemia. PHE surveillance includes positive blood cultures taken at community hospitals in the Trust figure as the IPCT reports these on the HCAI Data Capture System on behalf of the provider organisations: Sirona Care & Health and Somerset Partnership NHS Foundation Trust. There were 4 cases at the community hospitals during the year (2 at Paulton Hospital and 2 at St Martin's Hospital). With these cases deducted from the overall total there were 293 E coli bacteraemia recorded for the Trust.

PHE does not separate community and trust acquired cases in their mandatory reporting however for the purposes of this report the remaining 269 cases have been split into pre and post 72 hour categories, see figure 8.

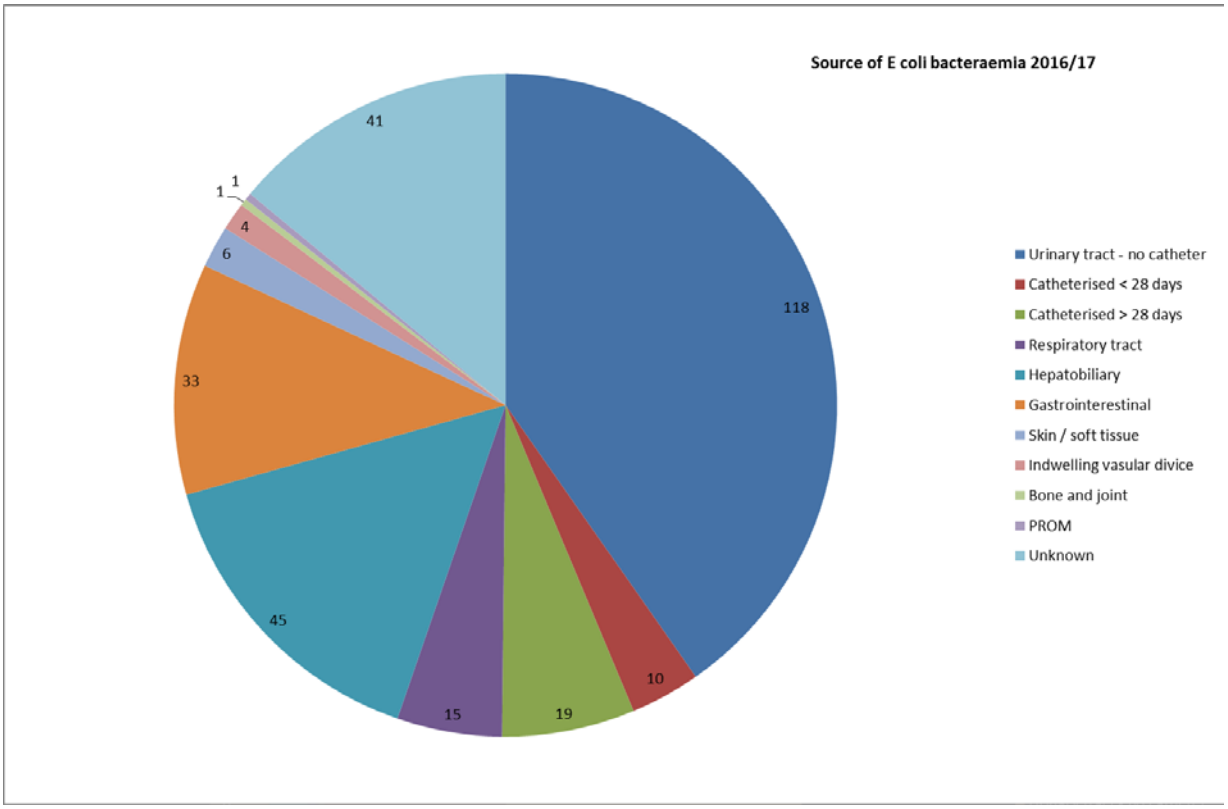
Each patient with a confirmed E coli bacteraemia is reviewed by the microbiologists and they identify the most likely source of infection based on their review of the patient and their underlying pathologies. The source or cause of infection is reported to PHE.

The most common cause of E coli bacteraemia was urinary tract infection, which accounts for 50% cases. Around 20% of these patients were catheterised, with the majority having a urinary catheter in situ for more than 28 days.

Figure 8: E coli bacteraemia 2016/17

	Pre 72 hours	Post 72 hours
April 2016	10	4
May 2016	22	1
June 2016	17	9
July 2016	18	6
Aug 2016	18	5
Sept 2016	27	5
Oct 2016	14	5
Nov 2016	26	4
Dec 2016	26	5
Jan 2017	25	6
Feb 2017	13	3
Mar 2017	20	4
TOTAL	**236**	**57**

Figure 9: Identified source of infection in patients with E coli bacteraemia 2016/17



6.1 Reducing Gram-negative Blood Stream infections

In November 2016 the Secretary of State for Health launched an ambition to reduce healthcare associated Gram-negative bloodstream infections, including E coli bacteraemia, by 50% by 2021.

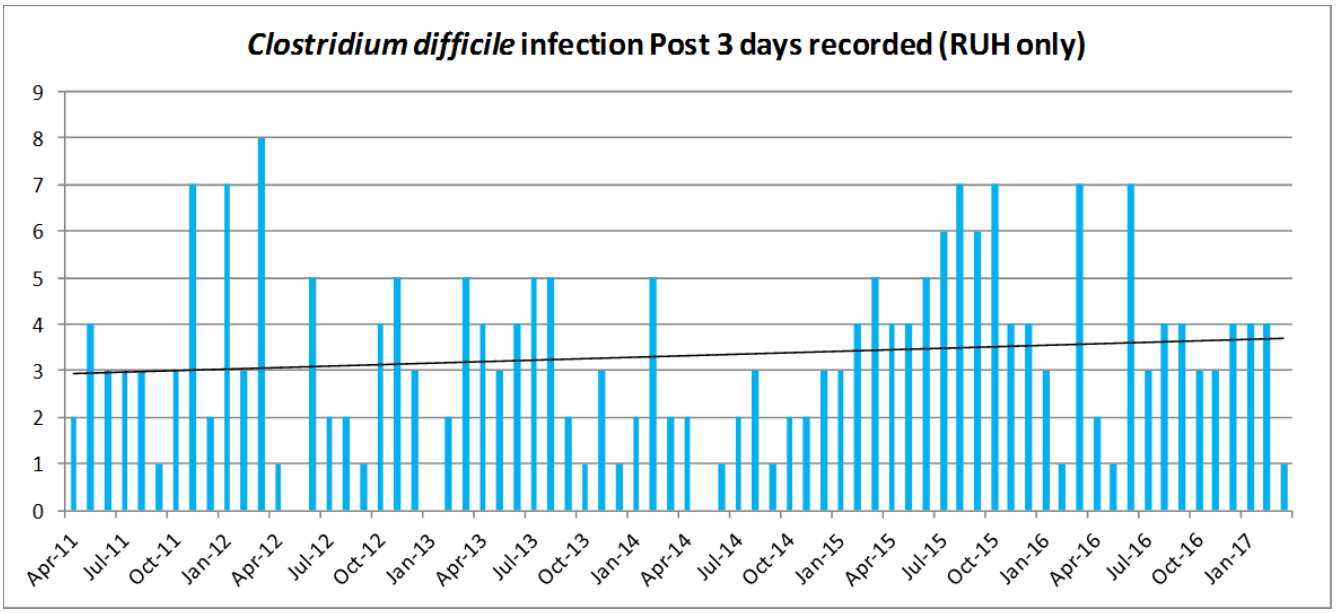
A 10% reduction in E coli bacteraemia has been included in the 2017/18 Quality Premium for Primary Care. This reduction target will include infections acquired both in the community and in secondary care. BaNES, Swindon and Wiltshire STP will be working with community and acute care providers to agree a plan of action in order to identify and reduce risks at pace within the local health economy. A planning event will be held in June 2017.

From April 2017 *Klebsiella sp*. and *Pseudomonas aeruginosa* bacteraemia will also be included in mandatory surveillance. The data will be captured by the Infection Prevention and Control Team and reported to PHE via the database.

7.0. *Clostridium difficile* infections

The reporting of the number of cases of *Clostridium difficile* (CDI) infections is mandatory for all NHS Trusts. All cases over 2 years of age must be reported and those identified 3 days or more after admission are allocated as Trust acquired.

Figure 10: CDI performance April 2011-March 2017 (post 3 day cases only)

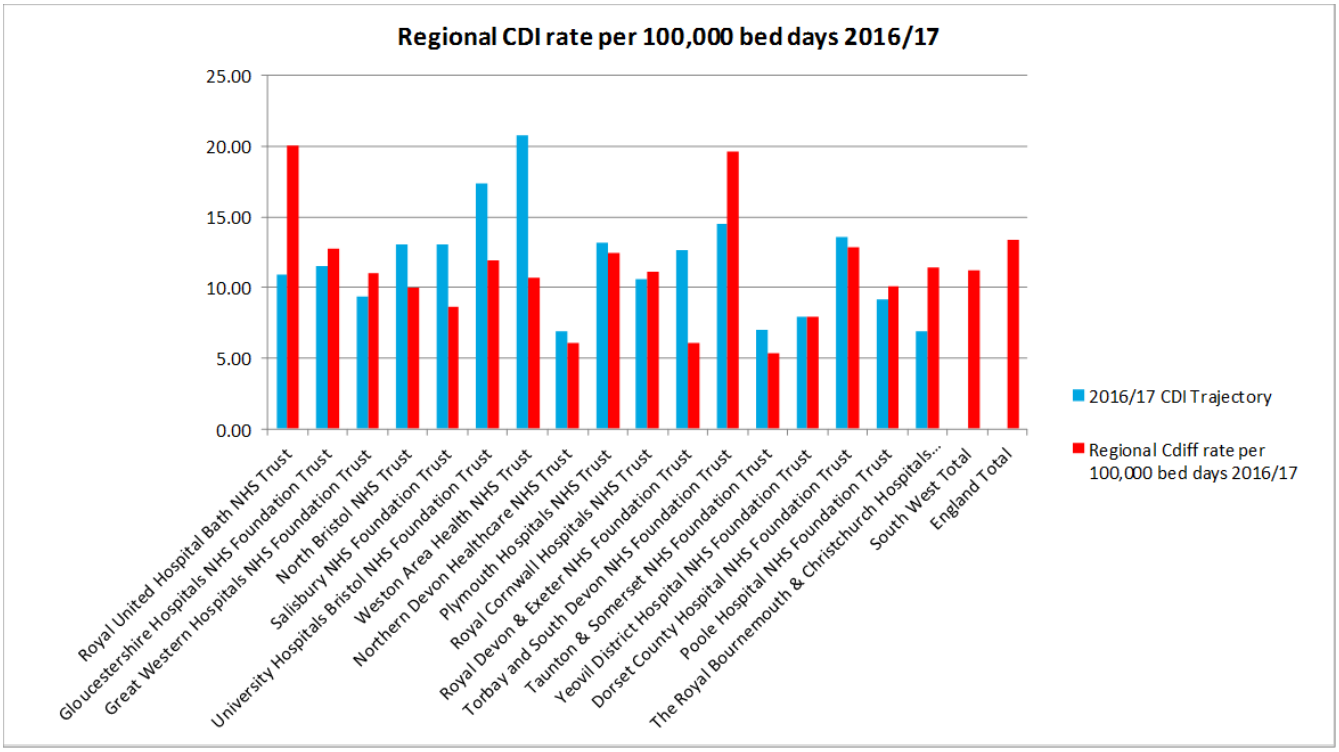


For 2016/17 the Trust was set a target of 22 cases. The total number of Trust apportioned cases reported at the end of March 2016 was 40. There were 27 cases where lapses of care had been identified. 13 cases were presented to the CCGs who confirmed no lapse of care and there was agreement that these cases would not count against the trajectory although they remain as recorded cases.

Figure 11 shows the Trust *Clostridium difficile* rate against other trusts within the region.

The Trust remains an outlier within the region however rates have reduced in comparison with the same time frame last year.

Figure 11: Regional *Clostridium difficile* infection rates 2015/16



7.1 During 2016/17 a C diff reduction action plan was implemented and a number of new initiatives were introduced including:

- On-site PCR testing of stool samples for Clostridium difficile and norovirus. This has reduced the turnaround times from sending the sample to receiving the result and has helped to provide speedier diagnosis and treatment with improved utilisation of side rooms.
- A trial of disinfectant and sporicidal wipes to provide a higher level of decontamination with products that are easy to and safer for staff to use.
- Antimicrobial prescribing e-learning is available. Compliance in March 2017 was reported as 54% with 360 of the 667 eligible staff having completed the course.
- Roll-out of a C diff staff workbook.
- A revised process for investigation of cases of C diff so that learning can be identified and shared in a timely fashion.
- C diff Champions training.
- A ‘C-less C diff’ month of infection prevention and control activities and training which is taken to all wards.
- A C diff Collaborative commenced in September 2016. Staff from areas with the highest incidence of C diff infection were involved and some changes to practice within their departments were introduced using improvement methodology.
- A C diff alert letter to GPs and patient held cards have been developed and these will be rolled out during Q1 2017/18.

A small team from NHS Improvement were invited to the Trust as a supportive measure during February 2017. Feedback was given at the end of the visit and a draft report has been received. Recommendations included:

- Trust to encompass the wider patient safety agenda, to include antimicrobial resistance, diarrhoea, urinary tract infections and catheter associated infections.
- Review of Antibiotic Prescribing policy and antimicrobial stewardship, this may require external expertise.
- Review of the role of the antimicrobial pharmacist and explore the potential for additional resource.
- Review the deep clean process and ensure it is clear, standardised and covers all the necessary elements.
- Review and standardise the systems and processes for cleaning of equipment for which the nursing staff have responsibility.
- Review of the audit process; consider the option of instituting patient pathways audit as the current audits are not providing assurance.
- Review of the Antimicrobial stewardship action plan to establish key risks and deliverable actions.
- Clinical Microbiologist to attend the CDI RCA meetings to offer expert advice and challenge to antimicrobial prescribing and the CDI working Group.
- Focused input /support to wards following a single case of CDI

These recommendations will be used to focus the C diff reduction work during 2017/18 and will be part of the Infection Prevention and Control work plan.

8.0 Norovirus outbreaks

Norovirus is estimated to cost the NHS in excess of £100 million per annum in years of high incidence. Approximately 3000 people are admitted to hospitals in England with norovirus each year and this infection spreads very quickly placing a huge burden on health care services.

In order to reduce the spread of norovirus prompt isolation of infected patients is essential. If patients are not isolated the virus, which is very infectious, can spread to neighbouring patients. The most effective way of managing an outbreak is to isolate the area where symptoms have occurred and prevent other patients from being admitted until symptoms have ceased. This can be a bay or a whole ward depending on the layout of the area and the number of patients involved.

The Trust takes part in voluntary surveillance of norovirus outbreaks; these are reported to Public Health England via a database. This information is used to show regional trends in norovirus infection and helps with predicting when major outbreaks are likely to occur. Norovirus often occurs in cycles and it is recognised that there will be peaks of infection every few years.

When a ward or bay is closed due to an outbreak the Infection Prevention and Control Team visit the area twice a day to document and monitor the severity of symptoms. During the winter months the team provide an on-call service for weekends and bank holidays so that closed wards can continue to be monitored and decisions to reopen wards can be made without having to delay until the next working day. Outbreak meetings are held at least once a day during the week if there are areas closed and plans for reopening the areas are made in consultation with divisional staff, the Site Team and Hotel Services.

During 2016/17 there were a total of 24 areas closed at some time due to outbreaks of diarrhoea and vomiting. These comprised of 15 full wards and 9 bay/partial ward closures. There were a total of 310 bed days lost as a result of these closures and a total of 74 confirmed cases of norovirus. No causative organism was identified during two of the outbreaks. The number of bed days lost and the number of confirmed norovirus cases was significantly lower than in 2015/16.

Based on the average cost of a bed day being £250 the estimated cost of the outbreaks during 2016/17 is £77,500 compared with the figure of £161,700 last year.

The decrease in the number of bed days lost is almost certainly linked to the introduction of on-site PCR testing for norovirus as we now have results on the same day that the sample is sent. Prior to the introduction of on-site testing it could take up to 5 days to receive a norovirus result by which time there would have been significant spread of infection.

It is not possible to provide any comparative data with other local trusts as the voluntary reporting of outbreaks to PHE is not undertaken by all neighbouring trusts.

9.0 HCAI associated deaths

All deaths where HCAI is recorded on the death certificate in part I, the primary cause, are reported as Serious Incidents (SIs) by the Trust. For each SI a root cause analysis investigation is carried out in order to identify possible causes and actions to be taken to prevent similar incidents. These incidents are also reported on the Strategic Executive Information System (StEIS).

During 2016/17 there were a total of 6 HCAI associated deaths reported. These comprised of 5 cases where *Clostridium difficile* was reported as the primary cause and 1 where MRSA bacteraemia was cited.

9.1 *Clostridium difficile* associated death

Clostridium difficile was given as one of the primary causes of death in 5 patients during the year 2016/17. One patient acquired C diff infection prior to admission and this death was investigated by BaNES CCG. The other 4 cases were investigated by consultant physicians and senior nurses. C diff infection was

identified as unavoidable in all cases however lessons learned were shared at the Operational Governance Committee and at divisional governance meetings.

9.2 MRSA bacteraemia associated death

MRSA bacteraemia was given as the primary cause of death in one patient during 2016/17. The patient was admitted with the infection and the investigation was undertaken by BaNES CCG. No lapses of care were identified within the community services or at the acute trust and the case was attributed to a third party. The underlying source of infection was osteomyelitis.

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10.0 Influenza

There was a rise in the number of cases of Influenza A H3N2 during Quarter 4 2016/17. This was noted throughout the South West region. As a result of the number of cases there were 35 bay/ward closures within the Trust during this period. There were also a number of local care homes and schools reporting outbreaks of flu-like illness during the same period.

The turnaround time for reporting on viral swabs can be up to 5 days if the swabs are sent to the PHE laboratory so in order to reduce this time a trial of on-site testing took place during February and March 2017. This reduced the turnaround time significantly as results were received on the same day that the swabs were taken. The reduced time for receiving results also assisted with allocation of side rooms however it did not have such an impact on the length of time that areas were closed as the incubation period can be up to 5 days therefore once patients have been in contact with someone who has flu they have to be isolated for this length of time until we are certain that they have not developed symptoms.

There were 260 bed days lost due to influenza bed closures, see figure 12, the cost of which was approximately £65,000 based on the cost of an average bed day.

We have not experienced multiple area closures due to influenza previously as the majority of patients with suspected flu should be isolated immediately however the pressure on beds and patient flow during Q4 resulted in a lack of side rooms and also delays in isolation.

10.1 Deaths associated with influenza

There is a multidisciplinary mortality review underway of influenza associated deaths of frail elderly patients who were admitted during these months, a proportion of whom had contact with others who had the virus prior to admission.

Figure 12: Ward/bay closures due to suspected or confirmed Influenza A January – March 2017

Month	Area affected	Bed days lost	Total number of cases
January 2017	Respiratory Bay 4	10	1
	ACE Area B	0	0
	Forrester Brown B Bay 6	1	0
	Cheselden Bay 2	4	0
	Combe Bays 1 & 2	5	6
	Cheselden Bay 3	5	1
	Cardiac Bay 5	8	4
	Cardiac Bays 1 & 2	8	4
	Parry Bay 2	7	2
	Combe Bays 3 & 4	2	0
	Midford Bay 1	5	1
	Cardiac Bay 6	4	4
	ACE Area C	14	1
	MSS	9	1
	Forrester Brown A Bay 1	0	1
	Parry Bay 2	4	3
	Parry Bay 1	6	4
	SSSU	4	1
	MAU Area A	8	1
	Cardiac Bay 5	7	1
February 2017	ACE Area A	4	1
	ACE Area B	5	2
	Cardiac Bay 4	8	2
	MSS	8	1
	MAU Area C	0	1
	Combe Bay 2	5	1
	Respiratory Bay 2	9	2
	Midford Bay 3	0	1
	Cheselden	85	12
	ACE Area C	3	1
	Combe Bay 3	0	1
March 2017	ACE Area C	4	1
	Forrester Brown B Bay 7	5	1
	Cardiac Bays 1 & 2	9	4
	MSS female bay	4	0
TOTALS		**260**	**67**

11.0 Antimicrobial Stewardship

An Antimicrobial Stewardship Programme is a key component in reduction of HCAIs and forms part of the quality improvement strategy for patient safety to reduce inappropriate prescribing and optimise antibiotic use. The RUH is committed to following the principles outlined in the DoH guidance "Antimicrobial Stewardship: Start Smart then Focus"

11.1 Antibiotic Stewardship ward rounds

A ward focused antimicrobial team (consisting of a Consultant Microbiologist with support from an Antimicrobial Pharmacist) do structured daily ward rounds on ITU. This team also meet weekly, along with an infection control nurse, and undertake a ward round to review all patients currently being treated for *Clostridium difficile*. With a recent increase in staffing resource it is planned that more ward rounds will be undertaken across the site, particularly focussing on admission settings.and areas with a high incidence of *Clostridium difficile*.

11.2 Antibiotic Audits

11.2.1 Trustwide antimicrobial audits

Trustwide antimicrobial compliance audits have been carried out quarterly, revieiwng the following criteria:

- Whether indication for antibiotics is documented
- Whether a stop or review date is doucmented
- Whether antimicrobials are prescribed as per guidelines/microbiology advice

A summary of trustwise results are shown in figure 13.
A detailed breakdown of results by ward and consultant team are shared with medical and nursing teams.

Figure 13: Summary results of Antibiotic compliance audits

	Number of wards audited	Number of prescriptions sampled	Indication documented	Within guidelines	Review date on chart
Quarter 1	23	197	99.3%	93.4%	85.3%
Quarter 2	23	163	98.2%	91.7%	73.0%
Quarter 3	23	209	93.1%	83.1%	83.7%
Quarter 4	23	306	99.7%	98.1%	84.4%

There has been a national CQUIN on review of empiric antibiotic prescriptions within 72 hours, (i.e what happened at start of treatment course for that infection) as defined in "Start Smart then Focus", leading to one of five outcomes:
Stop, switch to oral, change agent, continue, OPAT (outpatient parenteral antibiotic therapy)

Target to achieve the CQUIN payment were 25%, 50%, 75%, 90% for quarters 1,2, and 4 respectively.
Summary results are shown in figure 14. All quarterly targets were achieved and we expect to receive the full CQUIN payment.

Figure 14: Summary results of CQUIN audits of review of empiric antibiotics within 72 hours

	No of prescriptions	No (%) with review within 72 hours	Desicion at 72 hours (number of prescriptions)					Not reviewed
			Stop	Switch	Change	Continue	OPAT	
Qtr 1	161	143 (88.8%)	5	16	22	100	0	18
Qtr 2	163	152 (93.3%)	4	19	16	113	0	11
Qtr 3	178	172 (96.6%)	4	32	59	77	0	7
Qtr 4	271	264 (97.4%)	8	35	62	157	2	7
Total	773	731 (94.6%)	21	102	159	447	2	43

11.3 Antibiotic consumption

A national CQUIN aiming to reduce total antibiotic consumption and certain broad spectrum antibiotics was in place during the year. This is measured by Defined Daily Doses (DDD) per 1000 admissions and a 1% reduction compared to usage in 2013/14 was required to achieve the CQUIN payment. There were three parts to this CQUIN indicator:
- Total antibiotic consumption (i.e. all antibiotics)
- Total consumption of carbapenems (i.e . Meropenem, Ertapenem)
- Total consumption of piperacillin-tazobactam (Tazocin®)

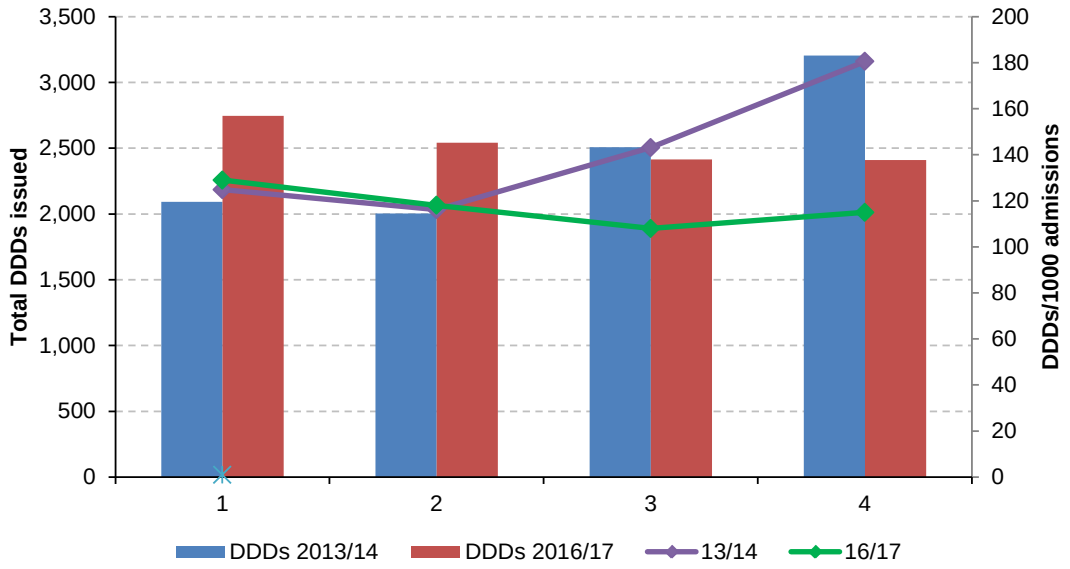
Results are shown in figure 15.Although actual amounts of antibiotics dispensed was higher in 2016/17, when the increased activity is taken into account the percentage reduction was achieved.

Figure 15:Summary of antibiotic consumption measured as DDDs/1000 admissions

	2013/14			2016/17			% reduction
	DDDs issued	No of adm	DDD /1000 adm	DDDs issued	No of adm	DDD /1000 adm	
All antibiotics	395,401	69,267	5,708	437,052	86,104	5,076	11%
Piperacillin-tazobactam	9,808	69,267	142	10,111	86,104	118	17%
Meropenem	6,464	69'267	93	6,439	86,104	75	19%

Reducing consumption of of Piperacillin-Tazobactam was one of the priorities as usage in quarters 1 and 2 2016/17 was significantly higher than 2013/14. Figure 16 demonstrates quarterly usage in 2016/17 compared to 2013/14.
A reduction in usage was achieved during the year through guideline review and awareness campaigns with prescribers .

Figure 16 : Quarterly use of Pipipeacillin-Tazobactam 2016/17 compared to 2013/14



11.4 Antibiotic Stewardship Team

A multidisciplinary Antimicrobial Stewardship Team is in place to ensure engagement on antimicrobial quality improvement projects across the RUH. The team meets quarterly and has nursing, medical, sugical and pharmacy representation. The group currently report to the Drugs Policy Group.

11.5 Microguide app

The microguide app was launched in November 2014 and contains all of the trust's antibiotic guidelines. The app has improved the accessibility of the guidelines and has received very positive feedback and high usage.

12.0 Surgical Site Infection Surveillance (SSIS)

The Trust takes part in the mandatory surveillance of surgical site infections which involves the reporting of infections post-operatively in patients undergoing certain types of Orthopaedic surgery. This includes surveillance of patients prior to and post discharge and also patients who are readmitted with post-operative infections. If the infection has occurred within 30 days of the surgery or in the case of implant surgery within one year the incident will be reported as a surgical site infection.

The surveillance nurses are employed by the Surgical Division, and during 2016/17 they reported on surgical site infections in patients who had undergone hip replacement (THR), knee replacement (TKR) and repair of a fracture to the hip. The Surveillance nurses have also collected and reported data for the 12 month period on certain types of Breast surgery, this is not mandatory.

It was noted during the previous year that the Trust had reported a higher than average rate of infection in patients who had total hip replacements (including revision surgery). High outlier letters have been received from PHE following each quarter's submissions of hip replacement surgery and knee replacement surgery in 2016 to highlight this. We have seen a significant decrease in the number of hip and knee surgical site infections but as the previous 5 periods/ Quarters data are taken into account we have continued to have a total higher than average.

In response to the increase in surgical infections the Surgical Site Infection Surveillance working group continues to meet monthly to identify how further infections could be prevented and changes monitored. The group meets monthly and the membership includes a consultant orthopaedic surgeon, Estates manager and theatre staff, Head of Nursing, Infection Prevention and Control Team, Cleaning Manager, Matron for Trauma and Orthopaedics and Breast and Ward Sisters. Actions were identified and have been put into place as follows:

- An environmental working group for theatres has been established to manage ongoing environment and maintenance and continues to meet monthly.
- High level cleaning in theatres has been re-introduced and continues on a quarterly schedule
- Laminar flow maintenance and air flow monitoring schedule in place
- Theatre etiquette standards introduced by Orthopaedic clinical lead
- 2 members of staff have attended the SSIS training with Public Health England
- Pre-operative skin wash has been introduced for 5 days pre surgery of all patients having total hip and knee replacement. This commenced in August 2016 and we have seen a significant reduction in infection since the introduction of the skin wash
- Following a trial of pre-operative skin wash it was introduced for certain high risk breast procedures
- Progress is reported to the Infection Prevention and Control Committee.

- All reported infections have a SBAR investigation and review completed by consultant surgeon

The working group will continue to meet monthly whilst actions are being taken forward.

As one common theme/cause has not been identified several pieces of work are being undertaken to look at the pathway as a whole to optimise the surgical patient pathway .

Figure 17 shows the variable picture during the year, the peaks in infection have been investigated extensively and no identifiable causes or links were found that would explain why there is an increase in infections during certain months. Patient reported infections have not been included in the graph as these were not confirmed infections.

Figure 17: Surgical Site Infections 2016/17 – by month reported to PHE when infection identified.

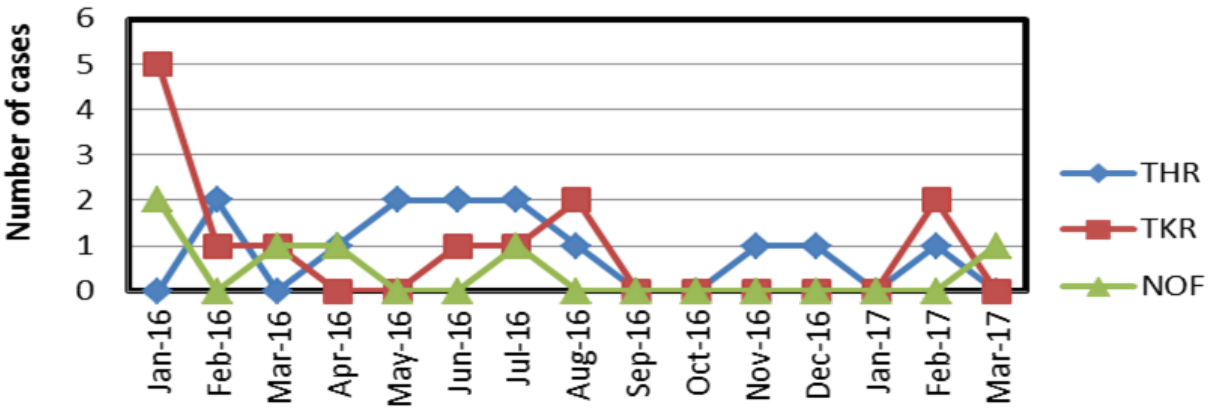
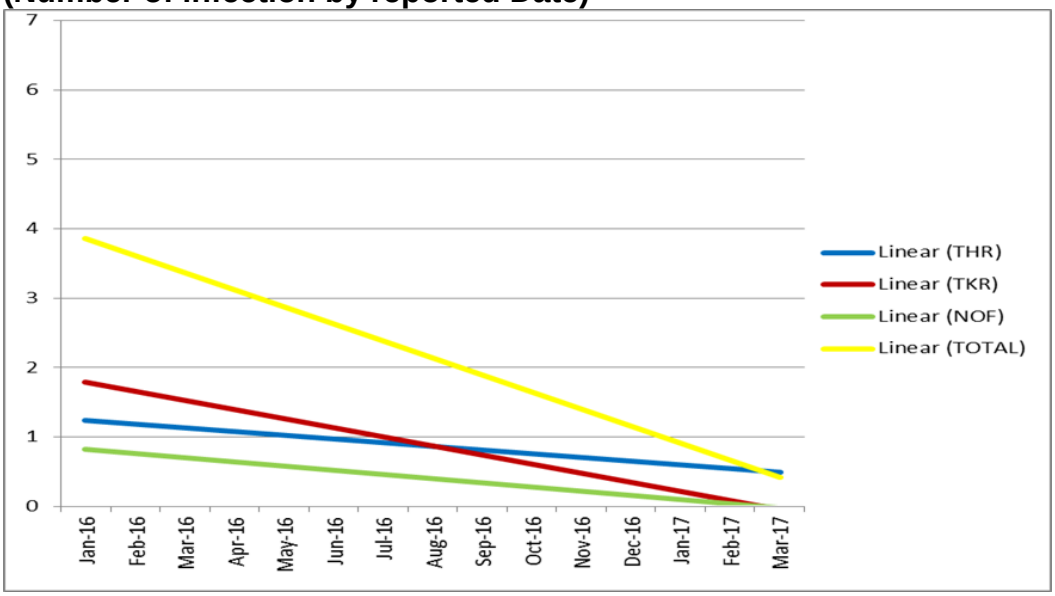


Figure 18: Surgical site infections 2016/2017 – Trend line (Number of infection by reported Date)



13.0 Collaborative Working with the Cleaning Team and PLACE Assessment

The Infection Prevention and Control Team continue to work closely with the Cleaning Team. Following a review of Hotel Services; a new role of Deputy Head of Hotel Services has been created with senior responsibility for cleaning services. The Deputy Head of Hotel Services is a member of the Infection Prevention and Control Committee and there is IPCN representation at the monthly Cleaning Working Group.

The Cleaning Action Plan and minutes of the Cleaning Working Group are discussed at the IPCC meeting to ensure that progress is being made in cleaning recruitment, cleaning policy and procedures review, purchasing of new equipment, de-cluttering of clinical and public areas and importantly the detailed monitoring of clinical and public area cleaning standards audit scores.

13.1 Cleaning audits 2016/17

For compliance with national standards of cleanliness there is a requirement to routinely audit clinical and non-clinical areas of the hospital. Very high risk areas require a weekly audit. High risk areas require a monthly audit. Significant risk areas require an audit every 13 weeks. This equates to 2160 audits per year, of which 90% were completed in 2016/17.

Cleaning audit targets are:

- Very High Risk 98% - 67% of audits completed achieved 98%
- High Risk 95% - 71% of audits completed achieved 95%
- Significant Risk 85% - 98% of audits completed achieved 85%

13.2 PLACE Inspections 2016

The annual Patient Led Assessment of the Care Environment (PLACE) inspection was carried out in April 2016. The IPCNs were involved with the assessment along with senior managers and patient representatives from Wiltshire Healthwatch, Trust Public Governors and Friends of the RUH Volunteers.

Inspection teams consist of two members of Trust staff together with two patient representatives. A minimum of 11 wards and 9 out-patient departments are inspected as well as the emergency department, communal areas and external grounds and gardens.
All scoring is completed by the patient representatives to ensure this process is a completely independent assessment of the hospitals cleanliness and environmental condition.

The PLACE assessment includes inspections of the following criteria:

- Cleanliness of clinical and public areas,

- Condition and maintenance of clinical and public areas
- Infection control arrangements for clinical areas

The Trust received the following scores for 2016:

	RUH	RNHRD	National Average
Cleanliness	98.76%	98.22%	98.06%
Condition/Appearance	89.37%	90.57%	93.37%

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There was a good improvement in the condition and appearance scores from 2015 following ward redecorations and refurbishments (Forester Brown Ward and Waterhouse). Replacement of damaged ceiling tiles across the hospital and new flooring in cardiac ward, the emergency department and corridors.

14.0 Collaborative Working with other trusts, CCGs and Public Health England

HCAI Collaborative meetings continue to be held every two months and are chaired by the Director of Nursing from NHS BaNES. The standing agenda items include reporting of HCAI surveillance by provider organisations, discussions on antimicrobial prescribing and a sharing of prescribing practices within the local area.

CCG and Public Health England representatives are also invited to the Trust Infection Prevention and Control Committee meetings.

During 2016/17 the RUH Infection Prevention and Control Team worked with NHS BaNES to deliver training on flu preparedness to care home staff. This was well received and future collaborative events have been planned.

The Team have also delivered training sessions to the AWP Infection Control Link Practitioners as part of the SLA.

15.0 Key progress against objectives 2016/17

- Whilst the *Clostridium difficile* target was not met there was a reduction of 23% in Trust attributed cases compared with the previous year.
- Increased *Clostridium difficile* training has been achieved through the introduction of the C diff workbook, a focussed C-less C diff week and C diff champions sessions.
- Trial of sporicidal wipes for commode cleaning and disinfectant wipes for general cleaning was initiated and is ongoing.
- Link practitioner training days took place and were well attended. The attendees spent time in clinical areas carrying out audits of practice.
- Revision and ratification of procedural documents was completed.

- IPCT were involved in the commissioning of a number of building and refurbishment projects including the new pharmacy building and theatre 9C.
- C diff alert letters and cards for patients who have C diff infection have been introduced so that other health care providers are aware that antibiotics need to be used cautiously.
- Antibiotic Stewardship meetings continued with extended membership to include BaNES CCG representatives.
- Revision of C diff and MRSA patient information leaflets.
- C diff Collaborative and support for ward projects to reduce the incidence of C diff infection.
- Fit test training for FFP3 masks Trust wide was undertaken.
- On-site testing for C diff and norovirus was introduced.
- Trial of on-site testing for influenza completed.
- C diff 'swarm' proforma has been introduced and used on wards when cases are identified.

16.0 Risk register

The following risks related to infection prevention and control are currently on the Trust risk register:

- 180 Lack of isolation facilities (tolerated risk) due to insufficient single side rooms and en-suite facilities
- 1352 Failure to achieve the annual C diff reduction target
- 1284 Risks associated with the use of Actichlor Plus for decontamination.

There are a number of existing controls in place to mitigate these risks and there will be actions taken to reduce the risks further. Improving isolation is the most difficult issue to address as major capital investment is required however the Infection Prevention and Control Team will continue to ensure that isolation is a high priority and that it is considered during refurbishment and new build projects. There are also competing priorities for isolation, for example end of life care, and the IPCT are collaborating with staff to ensure that patient experience and safety are not compromised.

17.0 Infection Prevention and Control Training

In accordance with the Hygiene Code all staff must receiving training in infection prevention and control. During 2016/17 the IPCT provided training on the Trust Induction and Core Skills courses throughout the year. E-learning modules are also available for staff if they are unable to attend formal classroom sessions. Completion of the face to face or online sessions are recorded on the STAR system.

Training is divided into two levels; Level 1 for non-clinical staff (delivered every 3 years), Level 2 for clinical staff (delivered every 2 years). The compliance target for training is 90%.

Compliance rates exclude staff on maternity or adoption leave and those taking career breaks; however staff on long term sick leave are included.

In 2016/17 the Trust did not achieve the 90% target for Level 2 IPC training and there was a 1.21% difference between the Q1 and Q4 compliance. There were occasions during Q4 where clinical staff were unable to attend mandatory training sessions due to increased activity and escalation within their departments however it is anticipated that these staff will rebook and complete their training during Q1 2017/18.

A review of mandatory training is being undertaken and the use of e-learning will be more widely publicised in order to increase training compliance.

Figure 19: RUH Infection Prevention and Control training compliance 2015/16

	Q1	Q2	Q3	Q4
Level 1	95.13%	94.55%	94.19%	94.77%
Level 2	87.48%	85.4%	85.02%	86.27%