University College London Hospitals
NHS Foundation Trust

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Infection Control
Annual Report

2014 – 2015

University College Hospital
National Hospital for Neurology and Neurosurgery
Eastman Dental Hospital
Royal National Throat, Nose and Ear Hospital
Heart Hospital
Royal London Hospital for Integrated Medicine

1.0 Contents

2 Executive Summary

2.1 This is the report of the Director of Infection Prevention and Control (DIPC) and summarises the work undertaken in the organisation for the period 1 April 2014 to 31 March 2015.

2.2 There were 109 cases Clostridium *difficile* in UCLH during this period against a trajectory of 71. 74 cases were successfully appealed and 35 cases were classified using the Public Health England criteria as lapses in care.

2.3 There were 3 cases of MRSA bacteraemia against a trajectory of 0.

2.4 There were 23 cases of MSSA bacteraemia during this period. The Trust's internal ambition to have less than 27 cases was achieved.

2.5 A strategy of *C. difficile* reduction, prevention and management was agreed and delivered by a task and finish group. This work reflected the findings from root cause analysis and learning from other organisations. These included optimising antibiotic stewardship, improving prompt isolation of cases of diarrhoea, environment cleaning, hand hygiene and rapid testing for *C.difficile*.

2.6 The mean hand hygiene compliance score was 95.4% and overall reporting compliance of areas was 79.4%.

2.7 The surveillance of surgical site infection (SSI) continued. Improvement was noted in caesarean section rates and knee replacement and repair of fractured neck of femur has 0% infection rate. In four areas rates of SSI prompted investigation and improvements where possible.

2.8 Mitigation and enhanced monitoring continued to control pseudomonas in tap water in high risk areas.

2.9 A brief summary of the progress made on the 2014 -15 annual plan and the plan for 2015 -16 is included in Appendix 2.

3.0 Summary of Infection Prevention and Control performance 2014-15

3.1.0 MRSA bacteraemia

3.1.1 In this year there was a reduction in the number of MRSA bacteraemia cases. (Graph 1 Appendix 3). There were 3 cases of MRSA bacteraemia against a trajectory of 0.

3.1.2 The root cause analysis of the MRSA bacteraemia cases indicated association with intravenous (IV) lines, inadequate practice in obtaining blood cultures and surgical site infection.

3.1.3 Education, training and support was provided to improve practice in IV line insertion and management, obtaining blood cultures and preventing surgical site infection.

3.2.0 Clostridium *difficile (C.diff)*

3.2.1 UCLH reported 109 hospital-attributed cases in this period (Graph 2 of Appendix 3). A subset of samples typed by Public Health England (PHE) indicated that this was not an outbreak. The 25 strains identified were diverse reflecting the distribution and carriage in the community. In addition 22 samples which were reported positive by UCLH were found to contain no detectable *C.diff* by the PHE.

3.2.2 Several factors contributed to the increase in the number of cases identified during this period. This included ascertainment as UCLH tests more cases than other trusts as early detection and treatment improves patient outcomes.

3.2.3 Of the 109 hospital acquired *C.diff* toxin positive cases, 74 were successfully appealed. The successful appeals were predominantly related to patients who required antibiotics which were prescribed and delivered in accordance with UCLH policy. 35 cases were classified as lapses in care. This included isolation delayed beyond two hours, poor completion of stool chart, stool sampling delay and sub-optimal cleaning. In some cases *C.diff* was not detected by the PHE in specimens sent for typing but this is not within the appeal criteria.

3.2.4 The root cause of most of the cases was associated with appropriate antibiotics in patients with infections which are not preventable and life threatening if not treated with antibiotics. As in previous years, many of these cases were immuno-suppressed. Reviews indicated that antibiotic prescribing was appropriate and in line with microbiological and clinical advice.

3.2.5 Laxative usage was appropriate in the cases reviewed and often related to constipation related to treatment such as pain control. >20% of cases had underlying bowel disease such as Crohns disease or previous colectomy and it was sometimes difficult to determine when they had a change in bowel pattern. Approximately 12% of the cases reported had recurrent *C.diff* infections.

3.2.6 The main learning points from the review of these cases for 2014-5 were associated with potential improvements in environment decontamination, obtaining specimens early and disseminating learning from the RCA process. A *C. diff* task and finish group facilitated the *C.diff* reduction plan based on key learning.

3.2.7 During this period the Trust undertook microbiological testing of the patient environment and found that though the hospitals appear very clean at a microscopic level micro-organisms are present in up to 20% of the environments tested.

3.2.8 There is considerable evidence that using Hydrogen peroxide vaporization (HPV) decontamination is effective in reducing the burden of environmental contamination with pathogens such as *C.diff.* During this period a trial of HPV decontamination, was evaluated

and established, although it took some time to establish this process and capacity issues restricted usage.

3.2.9 In addition a program of deep cleaning of the patient environment was re-introduced and completed across the Trust in 2014-5.

3.3.0 Meticillin Sensitive *Staphylococcus Aureus* (MSSA) bacteraemia

3.3.1 Graph 3 (Appendix 3) illustrates the trend at UCLH from 2006-2015:

3.3.2 There were 23 cases of hospital acquired MSSA bacteraemia in 2014-15. There is no national target but an internal ambition of <27 cases was achieved. The root cause of these were:

Inadequate on-going care of IV lines	6
Contaminated blood sample	5
Surgical Wound Infection (1 week of surgery)	3
Aspiration Pneumonia	2
Ventilator Associated Pneumonia	2
Unknown as PIR* not carried out	2
Chronic Wound Infection	1
IV line insertion	1
Patient likely admitted with a bacteraemia	1

*post infection review

3.3.3 The leading cause of MSSA bacteraemia is related to the on-going care of IV line care. Documentation of the care of IV devices remains a problem. The infection control team has launched an invasive device record to standardise documentation of IV line insertion and care.

3.3.4 Contaminated blood culture samples occur when the sample is not taken correctly, this was difficult to determine as documentation of the sampling was inadequate. A blood culture pack has been introduced which prompts good practice in sampling and documentation.

3.4.0 Intravenous device related infections

3.4.1 Considerable progress has been achieved since the employment of a nurse to focus on IV line insertion and follow up of bacteraemia cases. This body of work is summarised in the plan.

3.5.0 Hand hygiene compliance.

3.5.1 Education, training and promotion work continued. The Trust achieved 95% hand hygiene compliance during this period (Graph 4 Appendix 3).

3.5.2 Hand hygiene products (soap, alcohol hand gel and hand cream) were established the previous year but ensuring these products were refilled frequently was a challenge.

3.5.3 Improvements to the hand hygiene compliance system to ensure continuous improvement continued and incorporated work to remove factors which are a barrier to compliance.

3.5.4 Training in hand hygiene continued throughout the year and e-learning is mandatory on induction.

3.6.0 Surveillance and infection control audits

3.6.1 Surveillance of infection information is available on the staff intranet at ward, division and board level. Data are validated regularly by the Trust epidemiologist and any trends are identified to clinical areas for discussion and possible action.

3.6.2 Surveillance of surgical site infection (SSI) is undertaken in selected specialities. Post-operative patients are followed up for 30 days following surgery (1 year where an implant is

involved) and we report this data to PHE on a quarterly basis. This is summarised in Table 1 Appendix 3.

3.6.3 Improvement was noted in caesarean section rates which were below the national rate. Knee replacement and repair of fractured neck of femur had a 0% infection rate.

3.6.4 Rates in colorectal surgery, spinal surgery and head and neck surgery prompted further analysis and investigation with surgeons. In addition operations were observed in order to identify areas for improvement. Results have been discussed with the surgeons individually and in divisional meetings and at the Surgery Board. In many cases the complexity of the procedures and operations, on already infected patients have affected the rate of infection.

3.6.5 In addition Coronary artery surgery had been investigated and an action plan for improvement implemented before the specialty moved to Bart's Healthcare.

3.6.6 2% chlorhexidine skin preparation is now used routinely across most of the trust though some areas are yet to adopt it.

3.6.7 A number of innovations to reduce infection in surgery and improve patient outcomes have been introduced including antibacterial impregnated sutures and negative pressure wound therapy dressings.

3.6.8 An audit of NICE standards to prevent surgical site infection indicated further improvements could be made in the maintenance of the body temperature of surgical patients before during and after surgery.

3.6.9 A number of additional trust wide audits were undertaken during this period by the surveillance and infection control team including:

- Bed end point of care: placement of hand gel.
- Availability of eye protection in wards
- Cleanliness and integrity of sluices
- Cleanliness and integrity of commodes
- The availability and condition of hand hygiene facilities (soap, hand towels, taps and alcohol gel)
- Compliance with correct Isolation signage and safe management
- Compliance with correct completion of stool charts
- Compliance with correct completion of wound charts

3.6.10 Results of these audits were fed back to staff and where required education and support was provided. Where low compliance was identified re-audit was undertaken after approximately 3 months.

3.7.0 Prudent use of antibiotics

3.7.1 The Antibiotic usage committee (AUC) met monthly and reported to the Quality and Safety Committee. Compliance data and reports are available from the AUC.

3.7.2 Quarterly audits were conducted manually Trust-wide to measure compliance with the key indicators of antimicrobial prescribing.

3.7.3 The AUC has a rolling agenda to produce, review and ratify all trust antimicrobial guidelines.

3.7.4 The antibiotic App is established and has been updated to reflect current guidelines and recent changes.

3.7.5 An e-learning package is now included on the UCLH learning portal for all doctors and pharmacists as 'essential for role' training.

3.7.6 Case-based discussions (CBDs) were implemented for FY1 doctors as mandatory training for year-end sign off.

3.7.7 E-prescribing was introduced during this period to some pilot areas in the UCL tower and will be rolled out throughout the trust in a planned program in 2015-6

3.7.8 A number of activities delivered for European Antibiotic Awareness Day to raise awareness of antimicrobial resistance. A study day was organised for all healthcare professionals to learn more about antimicrobial resistance and their role in antimicrobial stewardship. There was also an awareness event for pubic and staff, where information on prudent antimicrobial use was disseminated.

3.7.8 A new drug chart was implemented with a specific section for prescribing antimicrobials limiting total duration to 5 days.

3.7.9 A sub-group was set up to review the ESPAUR report and identify actions required locally. One of the actions was to audit the use of broad spectrum antibiotics.

3.7.10 Antimicrobial stewardship ward rounds – a pilot on surgical wards was conducted over 8 weeks. Results indicate a good uptake of advice by the clinical teams, however additional resources are required for continuation of ward rounds.

3.8.0 Gram negative micro-organisms

3.8.1 This includes a large number of common micro-organisms which may be responsible for Health Care Acquired Infection (HCAI). During this period a number of highly resistant gram negative micro-organisms were identified in patient samples, many of which were imported from abroad or from other health care providers. This will become a serious issue for the Trust in future years. Screening for some organisms will be mandatory in future.

3.8.2 Three graphs 5, 6, 7a in Appendix 3 illustrate the incidence of gram negative bacteraemia but not the resistance patterns in trust patients. We present recent trends of Carbapenem resistance in the two most common Gram-negative causes of bacteraemia: E coli (graph 7b) and Pseudomonas species (graph 7c) to illustrate the fact that the occurrence of multiply resistant cases depends on the organism detected in blood. Although these cases are rare among UCLH inpatients, their occurrence warrant close monitoring as most are potentially fatal. As antibiotic resistance increases it will be increasingly difficult to treat them in future. Overall the number of these cases is significantly higher than MRSA or MSSA.

3.9.0 Influenza

3.9.1 There was a peak in influenza in the first quarter of 2015 (Graph 8).

3.9.2 Staff were offered the influenza vaccine during this period and there was a 41.7% uptake in clinical staff. This is slightly lower than last year when 45.4% received the vaccine.

3.10.0 Norovirus

3.10.1 There was a late start to the peak norovirus season this year and a low level of cases are now being identified throughout the year (Graph 9).

3.11.0 MRSA screening

3.11.1 MRSA screening of selected groups of patients continued. This is no longer a mandatory requirement but is in the best interest of patients (Table 2 in Appendix 3)

4.0 Other significant issues

4.1 Estates and Planning

4.1.1 ICT continued to support and provide advice to numerous schemes to develop or create facilities and services.

4.1.2 Collaborative work with the Estates and Facilities Division continues to improve monitoring and reporting on cleaning standards and maintenance and monitoring of the estate.

4.1.3 A key issue this year has been the monitoring and eradication of *Pseudomonas* in some taps and showers. This was prompted by the potential risk to patients rather than infection as found in patients.

4.1.4 An operational Water Management group has led on mitigation and management of this issue with support from the Infection Control Team. In some areas this has led to the removal and replacement of taps and showers, chlorination and removal of pipework.

4.1.5 Enhanced water testing has been undertaken on the Neonatal Unit and more recently the hematology and Oncology areas in compliance with DH guidelines and advice. In addition an external PHE expert reviewed the results of work undertaken and commented positively on the work done and planned.

4.2.0 Outbreaks and incidents

4.2.1 There was one confirmed outbreak in the last year involving four confirmed cases of parainfluenza on T13N. This was rapidly contained with 6 bed days lost. There were no serious outcomes to patients.

4.2.2 In addition approximately 25 bed days were lost when bays/beds across the Trust were temporarily closed to admissions and transfers due to infection control concerns such as norovirus and influenza. This highlighted shortages of isolation facilities for infectious patient in some areas including hematology, Jubilee Ward and the HASU.

4.2.3 Contact tracing was undertaken in a number of instances including cases of shingles and chicken pox.

Annette Jeanes
Director of Infection Prevention and Control

Appendix 1

Infection control provision and arrangements

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1.0 The Infection Control department provides an infection control service for the University College London Hospitals NHS Foundation Trust (UCLH). A service is also provided for Harley Street @ UCH.

2.0 The Trust is required to meet the duties of the Hygiene Code, NHS Litigation Authority (NHSLA) and the Core standards of the Care Quality Commission. In addition there is a requirement to demonstrate compliance with NICE and best practice guidance.

3.0 The infection control service is delivered and facilitated by an infection control team which includes staff in different disciplines and boards. The team covers all sites of the Trust. The funded establishment[1] is currently:

- 8.0 WTE infection control nurses (ICN)
- 1.0 WTE consultant nurse
- 1.0 WTE epidemiologist
- 4.6 WTE surveillance staff
- 1.0 WTE antibiotic pharmacist
- 1.0 WTE Infection Control Co-ordinator

4.0 Other members of the team include:

- Microbiologists, virologists, Infectious diseases, environmental monitoring officers, matrons, infection control liaison practitioners, Occupational Health and sterile services.
- The neonatal and special care baby unit fund an embedded part-time infection control nurse who is supported and supervised by the infection control team.
- The UCH ITU and NHNN ITU's fund part-time infection control link nurses who are supported by the infection control team.

5.0 The Director of Infection Prevention and Control (DIPC) is the consultant nurse infection control. The job description of the DIPC contains both roles.

6.0 The core infection control service includes an infection control advisory service, proactive infection prevention work and education and training throughout the organisation. It also undertakes audit, policy formulation and advice, surveillance and epidemiology, outbreak and control management. A significant aspect of their work is advising on planning.

7.0 An advisory service is operated daily and out of hours. This is provided by the on-call microbiology and virology service. At week-ends there is an infection control nurse on-call from 09.00-17.00.

8.0 There is a daily meeting of microbiology, virology and infection control staff to review clinical information and service responses. The core infection control team meets weekly to formally review infection control issues and performance.

9.0 The Trust infection control committee (TICC) is chaired by the DIPC and meets bi-monthly with representatives from boards and key service areas. The minutes are available on the intranet. This committee reports to the QSC.

[1] This includes posts which are funded by other departments such as pharmacy

Appendix 2

Summary of progress on the UCLH infection control plan 2014-2015 This is also the on-going plan for 2015-2016

	Issue / plan	Key Actions and progress
1.	Infection control advice is required to deliver safe patient care and to prevent transmission of infection or outbreaks	Delivery of infection control advisory service An infection control nurse delivers a reactive service Monday to Friday 9-5 and an on-call service 9-5 on weekends and bank holidays. Microbiologists and virologists provide 24 hour cover for infection control. All significant incidents and outbreaks are reported at the weekly infection control team meeting, the monthly Q&S meeting and at TICC quarterly. In addition reports are sent to commissioners and Public health England as required. AAR and RCA are performed, reported and shared to identify and share lessons learnt These are summarised in the monthly Q&S report.
2	Reduce *C difficile* HCAI infection	See C.diff reduction plan
3	Improve antibiotic management and prescribing practice	• The trust Antibiotic usage committee (AUC) leads this and produces an annual report • Compliance with the trust antibiotic prescribing and management guidelines is reported quarterly to TICC and Q&S and reported on score cards. • See AUC annual report
4	Optimal insertion and management of invasive devices	See bacteraemia reduction plan
5	Improve governance and accountability of infection prevention and control	1. The Trust board are responsible for minimising and controlling HCAI as part of the overall risk management strategy, reflecting the expectations of the Health and Social care Act (2008) 2. Significant HCAI including MRSA bacteraemia and *C.difficile* are reviewed and reported. 3. A Medical Director acts as the trust board lead for infection prevention and control. 4. Evidence of changes made to practices are reported by boards and divisions including audits which will reported to area, Board Q&S and TICC 5. The Antibiotic usage committee continue to act to improve prescribing compliance with the support of Boards and clinicians and audits will be reported to Q&S. 6. Trust Infection Control committee continues to meet bi-monthly
6	Provision of infection control policies and guidance	1. Infection prevention and control department continue to review and update policies, guidelines and information in line with relevant current information. 2. Policies, guidelines and other relevant information continue to be available on the UCLH intranet on the Infection control page. 3. Additional guidance is available on the phone from the infection control department and via the on-call service.
7	Information for patients and staff will be provided	The infection control team continue to design and produce the format for infection prevention and control information for patients
8	Audit of service delivered, practice, compliance with policies, guidance and outcomes of care	In addition to surgical site surveillance audits are undertaken on key infection control issues and reported back to clinicians and managers. This process will continue and reflect new guidance and risks
9	Improve efficiency and quality of the service provided by the IC team	Recruitment and retention issues hampered progress this year but this has now improved. A key action will be to re establish the link nurse system and on-going education and training of staff including cleaners.

10.	Isolation improvements	Delays in isolation continue due to limited capacity and a measure of 'time to isolation' based on the national target of within 2 hours of request. Isolation practice and capacity continue to be monitored, intermittently audited and reported. The trust is building and planning additional isolation facilities.
11.	HCAI surveillance	Surveillance and reporting of infections is established • Work to automate collection and upload data; simplify data and make it more accessible and useful; provide timely reports to clinicians and other key stakeholders . • Reports continue to be produced for Q&S and quarterly for the TICC. This is accompanied by relevant statistical and epidemiological information.
12	Reduction of surgical site and wound infection	Surgical wound infection surveillance is established. Work to improve surgical wound management continues to focus on areas with rates above national reported rates of SSI.
13	MRSA screening of selected high risk patients	Screening will continue to be delivered to reduce the risk of infection.
14	Optimal Hand hygiene and Infection Control compliance	• Auditing and reporting is already established and will continue. • A new quality improvement tool has been developed and is being introduced. • The Hand hygiene policy was revised . • An e-learning module is mandatory for clinical new starters.
15	Compliance with national decontamination guidance across the Trust	Work continues to ensure compliance with recommended practice.
16	Prevention of sharps injuries. In compliance with national and EC guidance which increases the requirement to prevent needle stick and other sharps injuries.	The established system for reporting and managing NSI and splash injuries will continue and is led by OH. The Trust has already introduced a range of safer devices and this will continue.
17	Provision of expert Infection control advice on planning, building, renovations and other developments	• Infection control will continue to provide advice and support.
18	Facilitate and support the optimal cleaning of the environment and equipment	• HPV decontamination is established and will be further utilised . • Other systems such as UV will be trialled • Work to improve education and support of cleaning and maintenance staff in infection control will be undertaken. • Monitoring of cleaning has been modified and further work to improve standards achieved will be undertaken in conjunction with E&P and HMU. • Improving the fabric and condition of the building will improve possible standards and this will be a focus of work this year.
19.	Facilitate and support the delivery of environmental controls including water and ventilation	• Continue to support effective monitoring and controls.
20.	Specific environmental improvements to reduce the risk of HCAI	With Facilities and matrons continue to promote support cleanliness and support initiative to improve cleanliness
21.	Provision of education and training in infection prevention and control	• Continue to provide e-learning at induction and at updates. • The link person system will be re-established • Study days delivered in 2014-5 included IV, and antibiotics. Plan for 2015/6 will repeat the same.

Healthcare associated bacteraemia reduction plan 2014-15

Updated 1/4/15

Project	Detailed Actions	Success measures	Progress
1. Provision of optimal insertion and management of intravenous devices			
	IV line insertion training will be delivered including all new medical recruits and other relevant staff	IV nurse in post and undertaking work planned	IV nurses in post and work in progress
	Blood culture sampling will be delivered including all new medical recruits and other relevant staff		
	An IV study day will be provided in 2014.	Delivery and evaluation	Delivered and positive evaluation
	The trust IV interest group will continue to meet monthly	Monthly IV interest meetings	Interest group established and participating in product evaluation, teaching and policy review
	Standardise central line insertion practice	Reduce delay in referral to insertion time	Project unifying standards and surveillance commenced and will report in September 2015
	All IV related MRSA bacteraemia and where possible other significant bacteraemia will be followed up by the IV nurse and lessons learnt disseminated	Reduction in bacteraemia	All MRSA and MSSA bacteraemia are now followed up with a RCA/PIR. Report and learning routinely produced and shared trust wide.
	Acutely ill patients requiring medium/long term IV lines to be considered for OPAT or UCLH at home	Increase in appropriate referrals to OPAT and UCLH at Home	Infection control IV team supporting the outpatient services. OPAT team inserting medium term lines.
	Policies and guidelines revised and adapted	Updated policies	Policies updated and work now underway to standardise local policies to share best practice.
2. Improve IV to oral switch of antibiotics and reduce length of courses			
	Business case for antibiotic support post Recruit and employ person Introduce antibiotic Synbiotix system to the organisation	Person in post and working	Synbiotix system purchased but not rolled out but IV oral switch compliance increased anyway.
3. Reduce unnecessary IV line insertion, IV drug and fluid administration			
	Audit to establish this is still a problem and if so where and why IV line guideline to ensure patients get referral for optimal IV access within 24 hours of admission Educate staff in reducing reliance on IV access	Reduction of or no unnecessary IV lines, drugs or IV fluids	This work was undertaken by the IC IV team and forms part of the IV line follow up work undertaken. Any instances identified are escalated and rectified.
4. Auditing and monitoring of IV line insertion and subsequent care			
	Synbiotix system used to collect the basic IV related metrics at ward level	Increase valid data input	Some areas are collecting this data, but no resource was available to support the roll out

	Support and co-ordination of system including modification and update		and support the system. However a new manual documentation tool was introduced in January 2015, it is envisaged that this will become part of the electronic patient record in future.
	Additional systems used to collect data on central lines	Standard data set across the organisation	System designed and developed for central line surveillance by IC now in use across many areas of the trust. However a new national system is about to be introduced.
5. Governance and accountability			
	Significant HCAI including MRSA bacteraemia will be reviewed via an RCA or PIR process and reported. Action plans reported and monitored at boards	Reports in minutes of divisional and board meetings Acton plans delivered and learning shared	DH PIR and RCA reported to the divisions, boards and executive. Lessons learnt shared across the trust.
6. Rationalisation and standardisation of products of IV related products and blood culture sets.			
	Review and standardisation of safety engineered peripheral cannula across the trust	Standardised safe products in use	Safety products already in place and use in compliance with European guidance. Now reviewing new products and trials in progress
	Review and standardisation of blood culture packs		Complete and being implemented - new policy completed
7. MRSA screening of all relevant admissions and long term patients in high risk areas			
	This was introduced in April 2010 and will continue to be delivered to reduce the risk of infection although changes in guidance are imminent.	>80% screened on admission	UCLH continues to screen patients with a significant risk. No screening target in place in line with DH guidance.
8. Optimal hand hygiene compliance			
	Auditing and reporting is already established and will continue. Additional changes will be made to how compliance is monitored this year including modifications to some departments compliance monitoring tools	Continuous improvement of hand hygiene compliance	>95% compliance currently 33% of trust has now been trained in use of new tool
	The Hand hygiene policy will be revised in line with changes		Complete
	Training and education will continue and an e-learning module is mandatory for clinical new starters.		Work based training in place
	Standardisation of hand towel provision and signage around sinks		Signage complete-Hand towels yet to be standardised across the trust

Progress report C. DIFFICILE REDUCTION ACTION PLAN 2014/2015

	Project	Detailed Actions	Progress
1	**Improve governance, management and delivery of plan to reduce C.Diff HCAI**	Agree and develop board and ward level dashboard	In place
1.1		Provide and share regular update reports	Reports produced and received
1.2		Develop and disseminate learning from investigations of C.difficile cases in the Trust	Key causes of preventable CDT reported and discussed at divisions and boards. Sharing of learning across the organisation requires improvement
1.3		Creation and implementation of standardised data collection tool for C.diff cases to be used for all reporting and appeals	Data base in place but time consuming to complete. An alternative database was developed but not implemented.
2	**Reduce the risk of patients acquiring C.difficile whilst in the care of UCLH**	Reduce the risk of C.difficile by optimal antibiotic prescribing and management: Antimicrobial management committee reviews all antibiotic policies regularly and in line with latest guidance.	Audits demonstrate high level of compliance with trust policies and national guidelines for specialities. Audits are paper based and undertaken 1/4ly.
2.1		Improve training of antibiotic prescribers using e-learning package	Record of prescribers participating in the on-line training in place
2.2		Improve access to prescribing information by providing an App and accessible advice via information or access to an expert	This is established and regularly updated
2.3		Continue to promote key issues such as 48 hour IV oral switch, challenging inappropriate antibiotic prescriptions, PPI and laxative usage	Quarterly audits and RCA findings indicate improvement in this area
2.4		Regularly audit compliance with antibiotic prescribing.	Currently dependant on a manual data collection but this will improve with Electronic prescribing
2.5		Establish trust wide antibiotic rounds	Pilot project completed but not continued due to lack of staff. This will recommence when the number of microbiology registrars increases.
3	**Provide optimal cleaning and decontamination of environment and equipment:**	Improve and consolidate monitoring of standards of cleanliness in the environment including the microbiological testing of surfaces instead of ATP	A new and standardised microbiological methods was trialled and has now been adopted replacing ATP which has been phased out.

3.1		Standardised cleaning methodology agreed and in place in the organisation: including use of sporicidal disinfectant and green, amber and red cleaning	This has been established
3.3		Environmental audit to be completed following each C.diff case identified and action plan produced	This was part of the RCA and was subsumed into matrons workload
3.4		Establish hydrogen peroxide vaporisation system in the organisation to ensure optimal decontamination of patient facilities	This was completed but business case required evidence of efficacy which delayed introduction
3.5		Provide an annual deep cleaning programme across all patient care areas in UCH for 2014/2015.	Annual deep clean cycle delivered and completed but there were delays due to lack of capacity to decant
3.6		Undertake microbiological environmental sampling of environments exposed to C.Diff, including after cleaning to ensure efficacy	This was undertaken and indicated >20% of environments tested had some contamination following standard cleaning
3.7		Oversight of environment by matrons, ward sisters, ,managers of cleaning and escalate any inadequate practice rapidly:	Matrons undertaking more environmental reviews and inspections
3.8		Wards and departments tidy and uncluttered and accessible for cleaning	Ad hoc inspections demonstrate general compliance
4	**Prompt isolation of diarrhoea and C.diff cases and appropriate use of personal protective equipment**	Isolate all diarrhoea cases within 2 hours of identification.	No reliable mechanism currently to monitor time to isolation but RCAs indicate delay is not common and most diarrhoeas are isolated quickly
4.1		Isolate all C. Diff toxin positive and antigen positive patients for >72 hours following last diarrhoeal stool	All patients identified with C.diff are isolated for >72 hours as a standard practice
4.2		Review and produce a report with recommendations on side room requirement, use and capacity.	Included in reports to Q&S and EB. Trust is including increased provision in development plans such as phase 5
4.3		Appropriate use of personal protective equipment for cases of diarrhoea	Audit demonstrates compliance
5	**Improve outcomes of patients with C.difficile toxin and antigen**	Continue to review patients identified as Ag +'ve after 24 hours to ensure treatment has been started by Micro/IC	Though these patients are reviewed by ICNs follow up and review could be improved.
5.1		Commence RCA process (within 48 hours) of all C.Diff toxin +'ve and analysis of antigen +'ve cases initiated by ICN and Microbiology and ward teams primarily accountable for local action plans	RCA for C.diff toxin commenced within 48 hours but delays in completion at the end of this period due to capacity issues. It was not possible to undertake RCAs on antigen positive cases.
5.2		Microbiologist Doctor input into each C.Diff case within 72 hours	Achieved for C.diff toxin cases
5.3		Improve CDR Format to include automated Infection alerts status of all HCAI's	This is currently inserted manually - IT solution required to produce an automated alert

5.4 **5.5**		Collate and summarise learning from RCA and investigations of C.diff cases and distribute to key clinicians and managers Improve liaison and interface activity related to patients with C.difficile diagnosis	Summary of RCA learning was regularly distributed until that last few months of this period Regular liaison with CCG continued throughout the year
6	**Ensure appropriate testing, diagnosis and surveillance of all diarrhoea cases**	Test all cases of diarrhoea in line with 2014 PHE guidelines i.e. types 5-7 on Bristol stool chart, first or soonest instance of diarrhoea	All cases of diarrhoea are tested for C.difficile and other appropriate tests including norovirus
6.1		Send C.diff toxin positives and antigen positives for typing to ensure there has not been an outbreak and to identify transmission – data to be recorded on C Diff Database for review and analysis	Typing undertaken as planned for toxin positive patients. Results indicated wide distribution of types and no evidence of outbreak
7	**Improve hand hygiene of staff and patients using soap and water in cases of diarrhoea**	Improve education and training / Improve patient information / Monitor compliance	Hand hygiene compliance data indicates high level of compliance
8	**Improve education on C.diff prevention and management of all Trust staff including managers**	Provide comprehensive education and communication on C.difficile	Training undertaken locally and key learning cascaded
8.1		Finalise and launch Beat C.diff campaign	Campaign rolled out

C. difficile reduction plan for 2015/6

This year we will again reflect the current national guidance in our plan which promotes identification and learning from lapses in care as well as a drive to reduce overall numbers. Several actions are already established and many will continue throughout the year.

C. *DIFFICILE* PREVENTION & REDUCTION ACTION PLAN 2015/2016

	Action	Details	Success Measures
1	Further improvements in Antibiotic stewardship	a. Policies and practice in antibiotic prescribing will be monitored and led by the antibiotic usage committee which meets monthly and reports to the Quality and Safety committee. b. The roll-out of electronic prescribing across the trust. c. Participation with 'Start Smart and then Focus' continues. d. Audits of prescribing in compliance with antibiotic guidance will continue. e. The antibiotic App will continue to be available and will be regularly updated. f. Induction training on antibiotic prescribing for junior doctors delivered	a. Compliance with policies audited (yet to agree process via electronic prescribing) b. As above c. As above d. As above e. Evaluation of feedback and review of teaching to optimise best practice. f. Evaluation of feedback to improve information provided
2	Improved monitoring of stools using the Bristol stool chart	Further education and support and audits will be undertaken by the Infection Control Team	Reduction in the number of poorly completed stool charts and documentation in the trust found on review for C.diff RCA and local review of C.diff antigen cases
3	Rapid stool sampling and testing in the presence of diarrhoea.	Monitoring of samples sent with feedback and training will continue via the laboratory and Infection Control Team.	Reduction in the number of late samples sent in C.diff cases Reduction in the number of repeat specimens sent unnecessarily
4	Isolation in a single room until a cause is found or the infection risk has ceased to be a risk.	a. Work is already underway to increase the provision of single rooms in some parts of the organization. b. A 'time to isolation' performance target will be explored if a workable IT solution can be identified. c. Work with staff allocating beds and emphasize the relative priority of patients with *C.difficile*. d. Continues the use of the trust isolation prioritization system which completed daily and monitored by ICNs	a. Increase number of single rooms with en-suite b. Established system for time to isolation c. Improve understanding of staff allocating single rooms d. Compliance with Isolation prioritisation system

5	Optimal use of personal protective equipment (PPE) and hand-washing.	This will continue and will be coordinated by the Infection Control Team.	Quarterly audits to measure compliance
6	Appropriate and timely treatment and support of patients with CDT and antigen positive CD.	a. Antibiotic treatment and support in line with national guidance related to the severity of disease in place and will continue. b. Review of patients with *C.difficile* toxin positive within 24 hours of the test result will continue. c. The use of Fidaxomicin and faecal transplant will continue d. Changes to the policy on the use of fidaxomicin will be sought for recurrent infection to give this drug earlier	a. Regular audits to measure compliance b. Monitored at time of RCA. c. Regular audits will be undertaken d. To be agreed
7	Rationalization of the use of Proton pump inhibitors and other drugs which may contribute to the development of *C.difficile*.	Audits will continue. Results will be fed back to prescribers, AUC and boards.	Bi-annual audits to measure usage
8	Improved cleaning of the environment and equipment.	a. A deep cleaning program will again be undertaken throughout the trust in 2015-6 b. HPV will be utilized to decontaminate facilities which may be contaminated with C.diff spores or other infectious organisms c. UV decontamination will be trialed and implemented where possible d. All cleaning staff will be given training in infection control and the use of disinfectants. e. All cleaning staff will have skills and competency checked and where necessary additional training in cleaning will be given f. Cleaning standards will be monitored and the efficacy of cleaning interventions will be monitored with environmental microbiological sampling. g. Additional training for managerial staff will be developed and delivered to understand how to identify gaps or omissions in cleaning.	a. A report will be delivered on deep cleaning progress by E&F at the TICC b. A report will be delivered on HPV progress by E&F at the TICC c. A report will be delivered on UV progress by E&F at the TICC d. A record of training will be maintained by IC and E&F e. A report will be delivered on skills and competency of cleaners by E&F at the TICC f. These reports will be sent to relevant managers and a summary report will be produced for the TICC g. A record of training will be maintained by IC and E&F

9	Information and education of staff, patients and visitors will continue	This will include the BEAT C.diff campaign and will particularly emphasis the actions patients can take e.g. careful cleaning of hands after using the toilet.	Feedback will be sought from patients
10	Review and improve Root cause analysis (RCA) process	a. Establish project to improve process and learning (see 2) b. Work with CCG to improve process and optimize learning c. The learning will continue to be fed back to staff.	Review outcomes of RCA regularly and monitor turnaround time to identify delays or improvements
11	Board level awareness and support of *C.difficile* reduction efforts.	This will continue and progress will be regularly reported. A C.diff task force will be re-established, led by a medical director and report to the trust executive team.	This will be documented in board papers

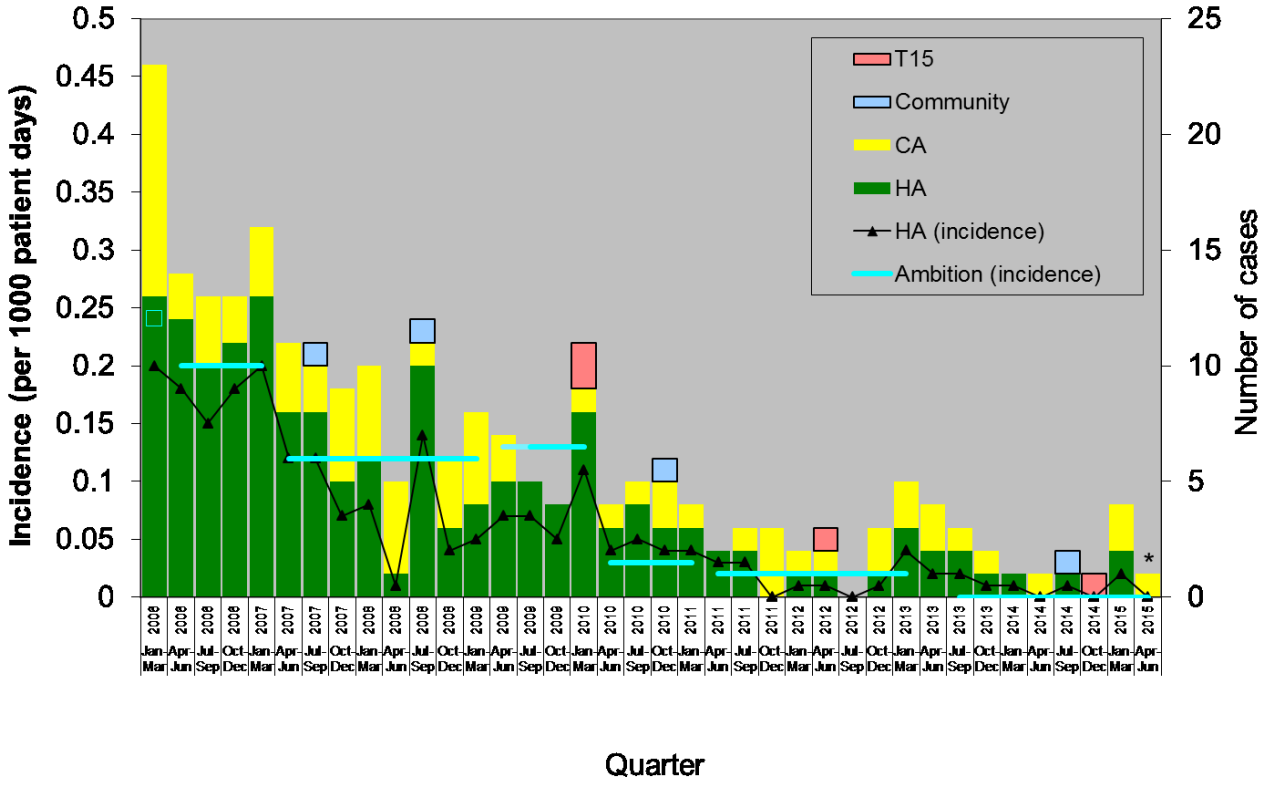
DoH UK Five Year Antimicrobial Resistance Strategy 2013 to 2018

Actions required from NHS organisations		Progress at UCLH (April 2015)
Improve the knowledge and understanding of AMR by:		
1	Incorporate antimicrobial resistance awareness, responsible prescribing, dispensing and administration practice in undergraduate and postgraduate curricula for human medicine, nursing, pharmacy, dentistry and other professionals	Requires input from national level. Locally have training for FY1 doctors and pre-reg pharmacists. E-learning package for all doctors and pharmacists included on UCLH learning portals as 'essential for role' Contribution to development of AMSportal (in collaboration with RPS, UCL and NCL hospitals) which signposts resources and information to promote learning
2	Continue raising awareness of antimicrobial resistance	As part of AUC work plan
3	Participate in European Antibiotic Awareness Day (EAAD) each year	Study day and celebration Of European Antibiotic Awareness Day in Nov 2014
Conserve and steward the effectiveness of existing treatments by:		
4	Ensure adherence to evidence-based guidelines, including improving the uptake of NICE guidance throughout the NHS	As part of AUC work plan. NICE guidelines reviewed at AUC and implemented as needed. Antibiotic App implemented and updated Antibiotic drug chart (limiting prescribing) implemented Electronic prescribing being rolled out Trust wide
5	Audit prescribing practices and assess outcomes of antimicrobial stewardship programmes	As part of AUC work plan
6	Provide clinical leadership and improved collaborative working between senior management and infection prevention and control (IPC) teams	Part of overall HCAI reduction plan
7	Prioritise antimicrobial stewardship and adherence to best practice in IPC	As part of AUC work plan
8	Widen the use of interventions, such as *Start Smart then Focus*, to support appropriate antimicrobial prescribing	Included in FY1 training, e-learning and CBDs Antibiotic drug chart (limiting prescribing) implemented Antibiotic App implemented and updated Electronic prescribing being rolled out Trust wide
9	Implement effective antimicrobial stewardship quality measures	KPIs in place

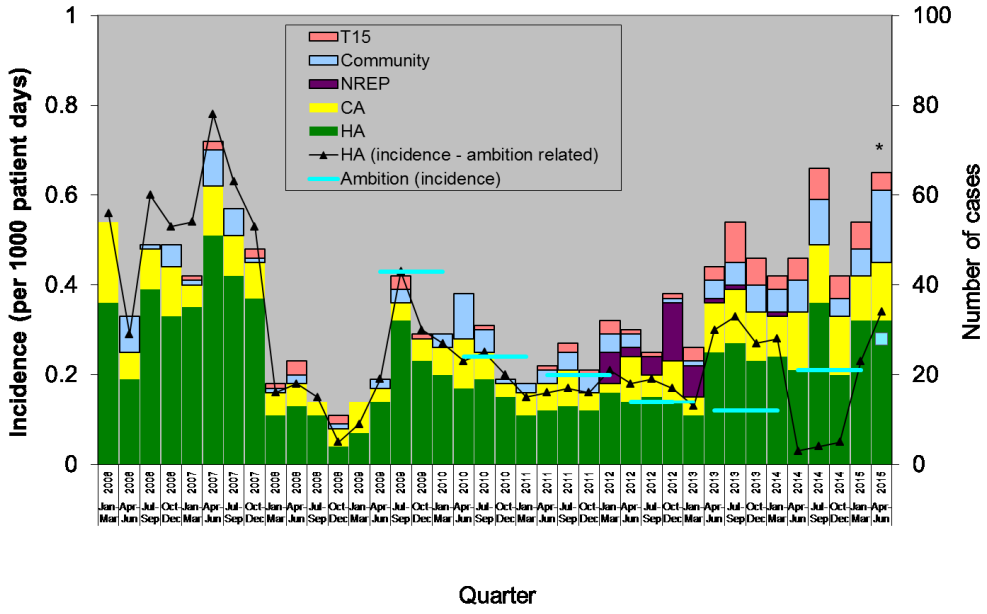
10	Increase point-of-care diagnostics to identify where antimicrobials required and re-assess appropriateness of diagnosis and treatment	Part of the joint venture work
11	Improve surveillance and analysis of antimicrobial use, resistance and clinical outcomes	Annual review of antimicrobial consumption Annual review of resistance patterns Electronic prescribing being rolled out Trust wide Sub-group set up to review ESPAUR report and actions needed at UCLH. Audit on carbapenem use completed. Need to introduce new agents on formulary to use in place of carbapenems.
Stimulate the development of new antibiotics, diagnostics and novel therapies by:		
12	Take advantage of genomic technologies and point-of-care diagnostics in the NHS	National Strategy Group set up to review and implement this action
13	Implement new immunisation programmes as recommended by JCVI and improving vaccination coverage by those groups with traditionally low uptake	Flu Strategy Group monitor influenza vaccine uptake

Appendix 3

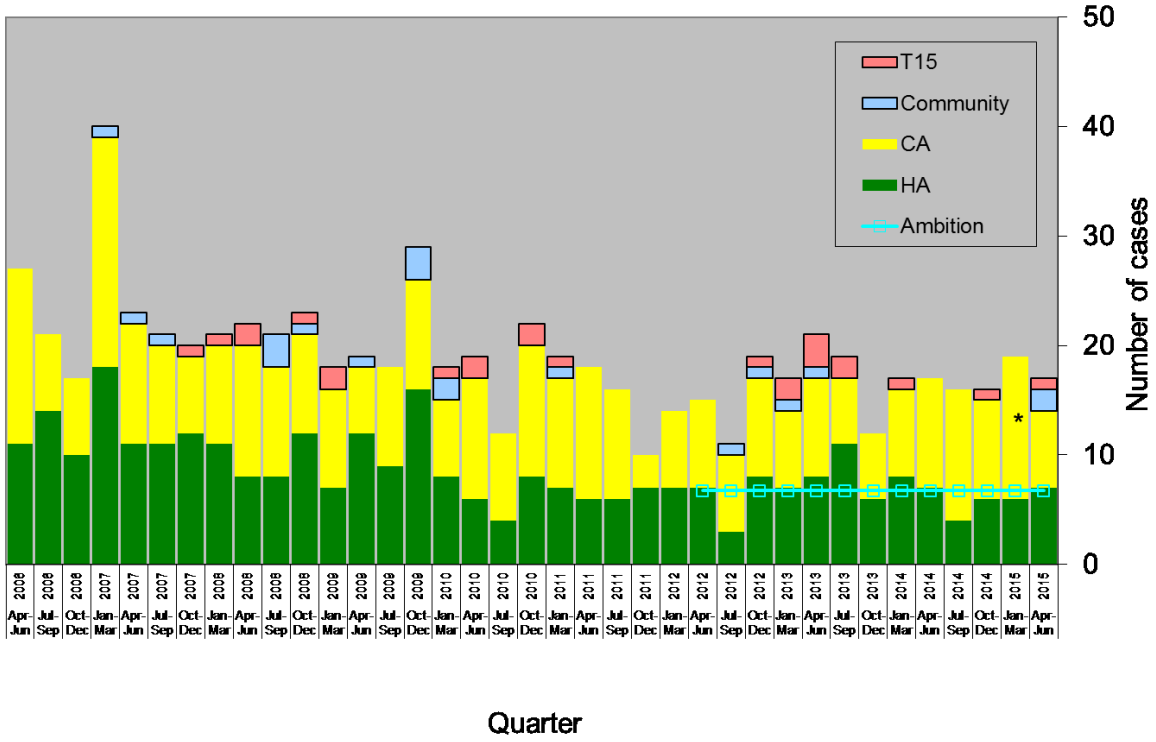
Graph 1 MRSA bacteraemia cases



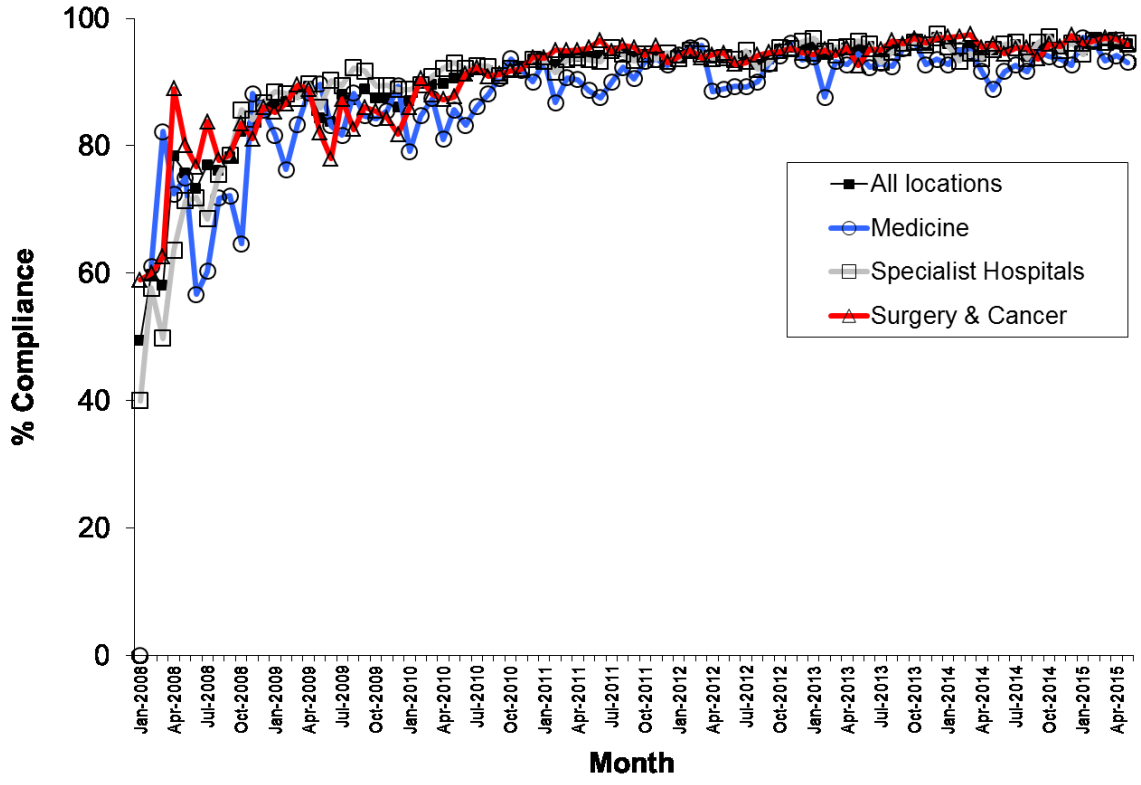
Graph 2: Clostridium *difficile* cases; HA = hospital-acquired (detected 3+ days after admission, includes lapses in care, successful appeals and pending appeals), CA = community-acquired (detected within 3 days of admission), T15 as in Graph1; NREP = not reportable (because the illness was attributable to factors other than C difficile [HPA/PHE guidelines]). The HA incidence (black line with triangular markers) reflects the subset of HA cases relevant to the ambition – the increase at the end of the year is a reflection of the changes in appeal methodology enforced by the CCG in February 2015. The Apr-Jun 2015 (*) quarter is incomplete as it is based on data from the months of April and May 2015 only.



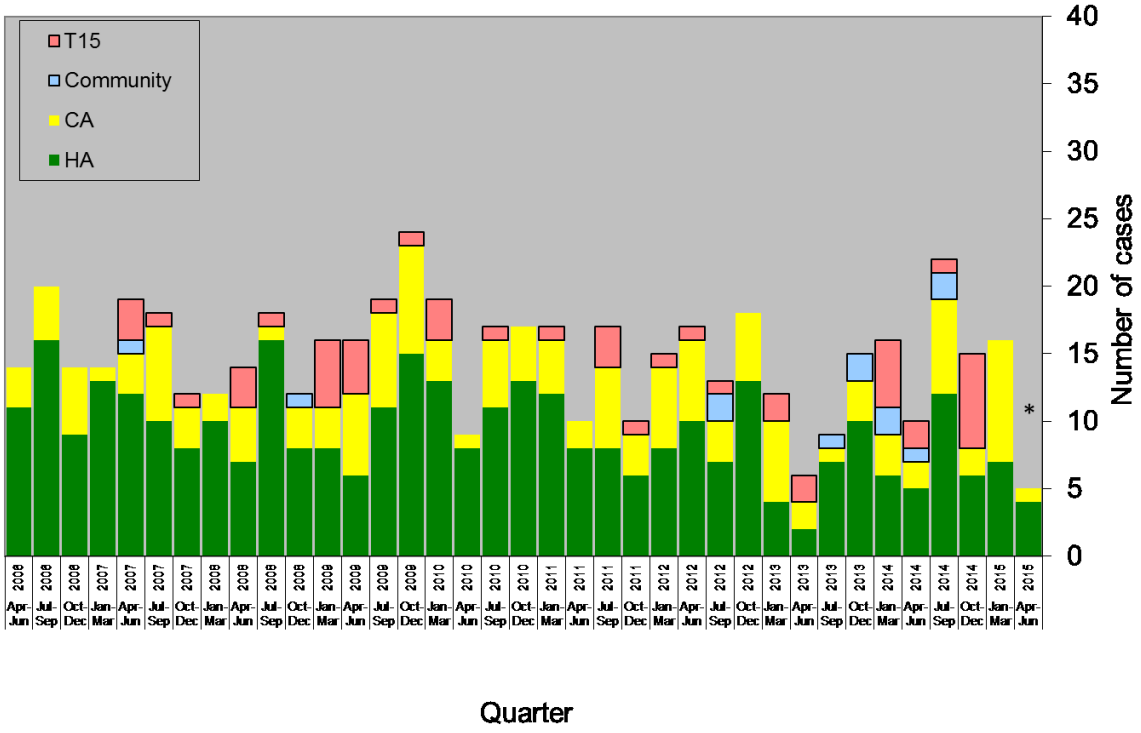
Graph 3: MSSA bacteraemia cases; HA = hospital-acquired (detected 2+ days after admission); CA = community-acquired (detected within 2 days of admission); T15 is a private patient's ward. The Apr-Jun 2015 (*) quarter is incomplete as it is based on data from the months of April and May 2015 only.



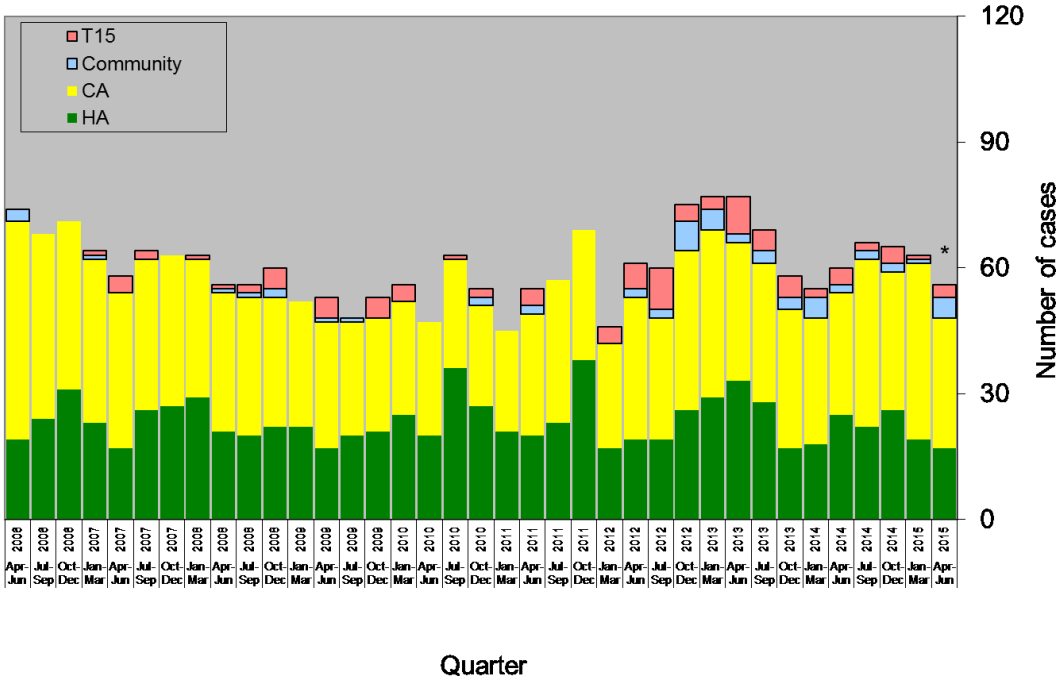
Graph 4: Hand Hygiene compliance



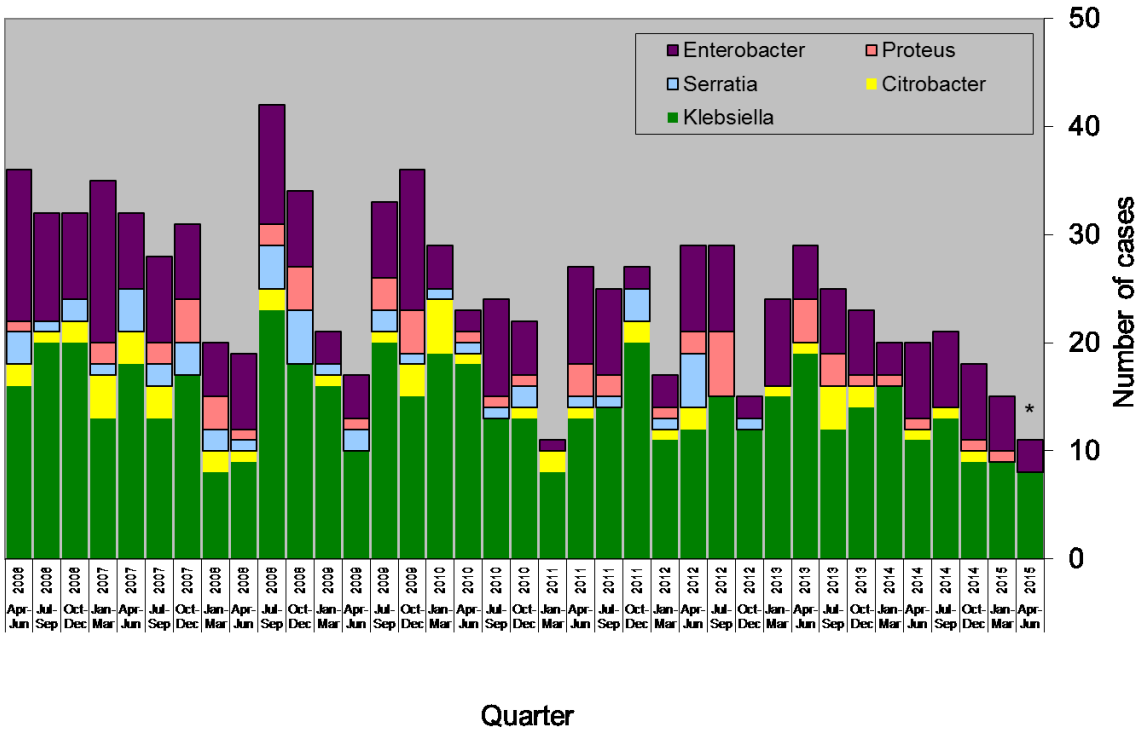
Graph 5 *Pseudomonas aeruginosa* bacteraemias; HA = hospital-acquired (detected 2+ days after admission); CA = community-acquired (detected within 2 days of admission); T15 is a private patient's ward. The Apr-Jun 2015 (*) quarter is incomplete as it is based on data from the months of April and May 2015 only.



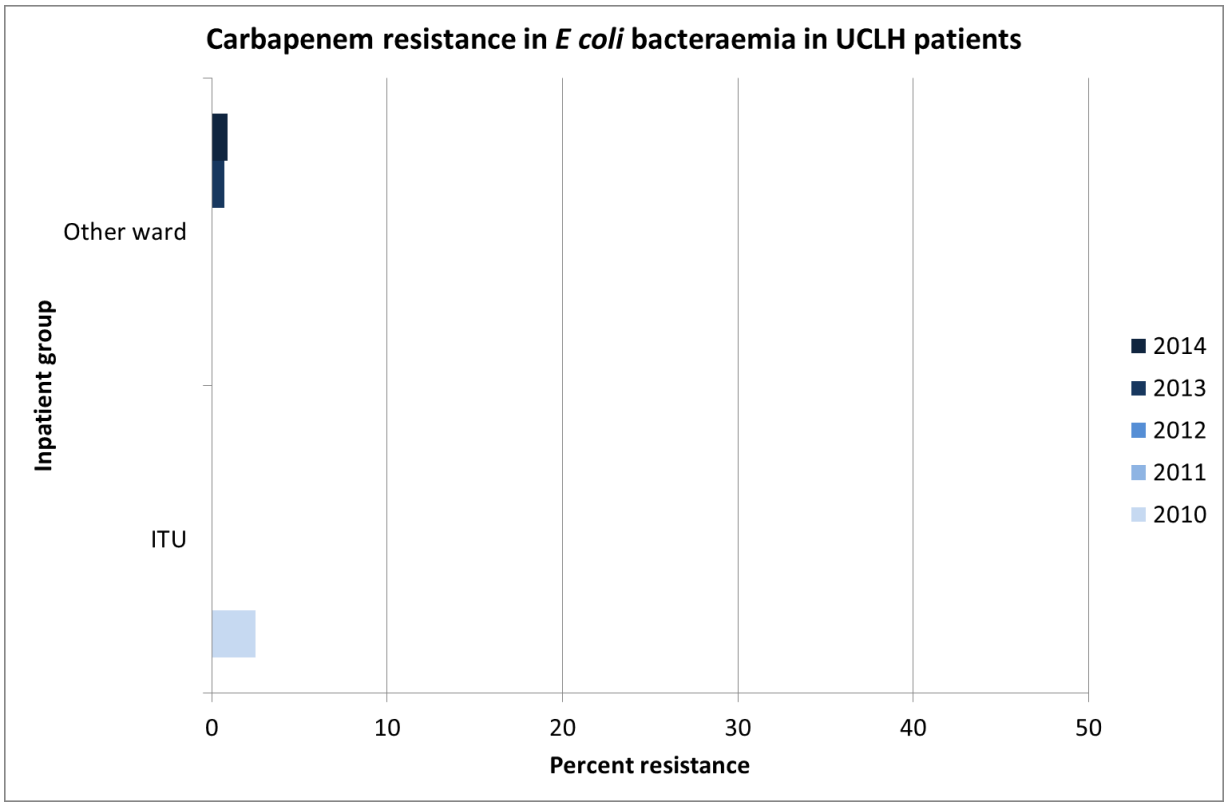
Graph 6 *E coli* bacteraemia;
HA = hospital-acquired (detected 2+ days after admission); CA = community-acquired (detected within 2 days of admission); T15 is a private patient's ward. The Apr-Jun 2015 (*) quarter is incomplete as it is based on data from the months of April and May 2015 only.



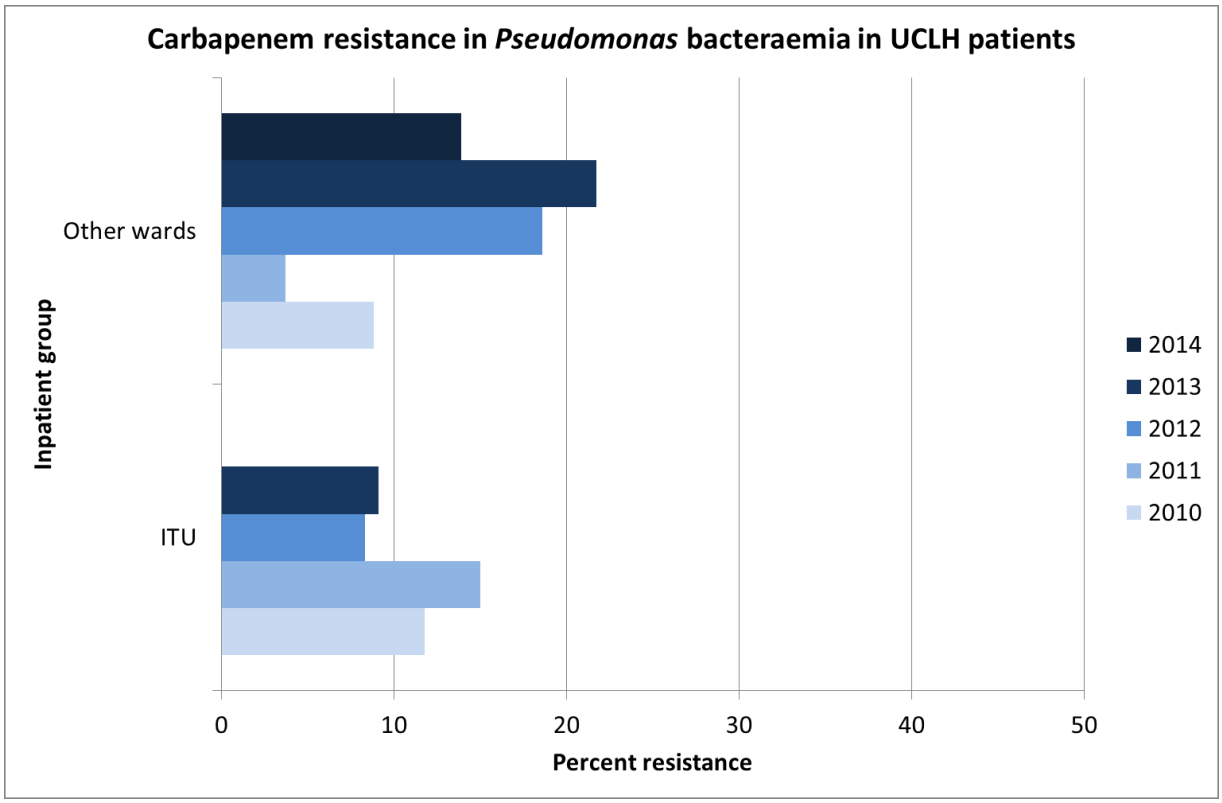
Graph 7a Other gram negative bacteraemia (hospital-acquired only, i.e. detected 2+ days after admission). The Apr-Jun 2015 (*) quarter is incomplete as it is based on data from the months of April and May 2015 only.



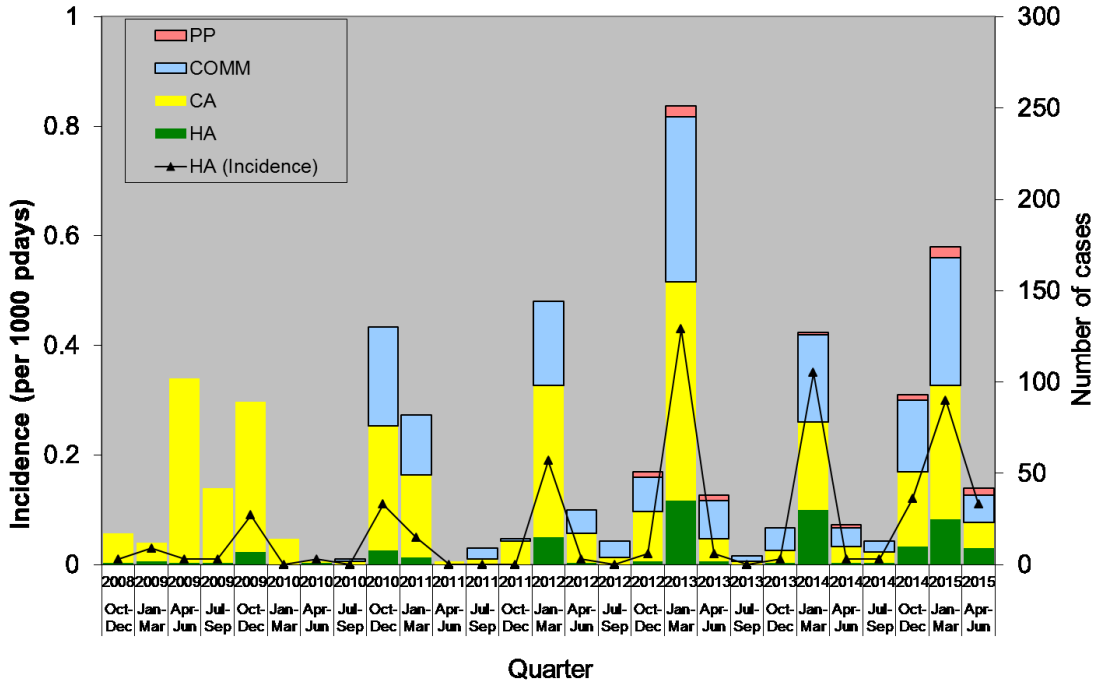
Graph 7b Percent Carbapenem resistance in *E coli* bacteraemias (all inpatients regardless of when detected, i.e. hospital- and community-acquired cases).



Graph 7c Percent Carbapenem resistance in *Pseudomonas* species bacteraemias (all inpatients regardless of when detected, i.e. hospital- and community-acquired cases).



Graph 8 Influenza cases. HA = hospital-acquired (detected 2+ days after admission); CA = community-acquired (detected within 2 days of admission); T15 is a private patient's ward. The Apr-Jun 2015 (*) quarter is incomplete as it is based on data from the months of April and May 2015 only.



Graph 9: Norovirus cases. HA = hospital-acquired (detected 5+ days after admission); CA = community-acquired (detected within 5 days of admission); T15 is a private patient's ward. The Apr-Jun 2015 (*) quarter is incomplete as it is based on data from the months of April and May 2015 only.

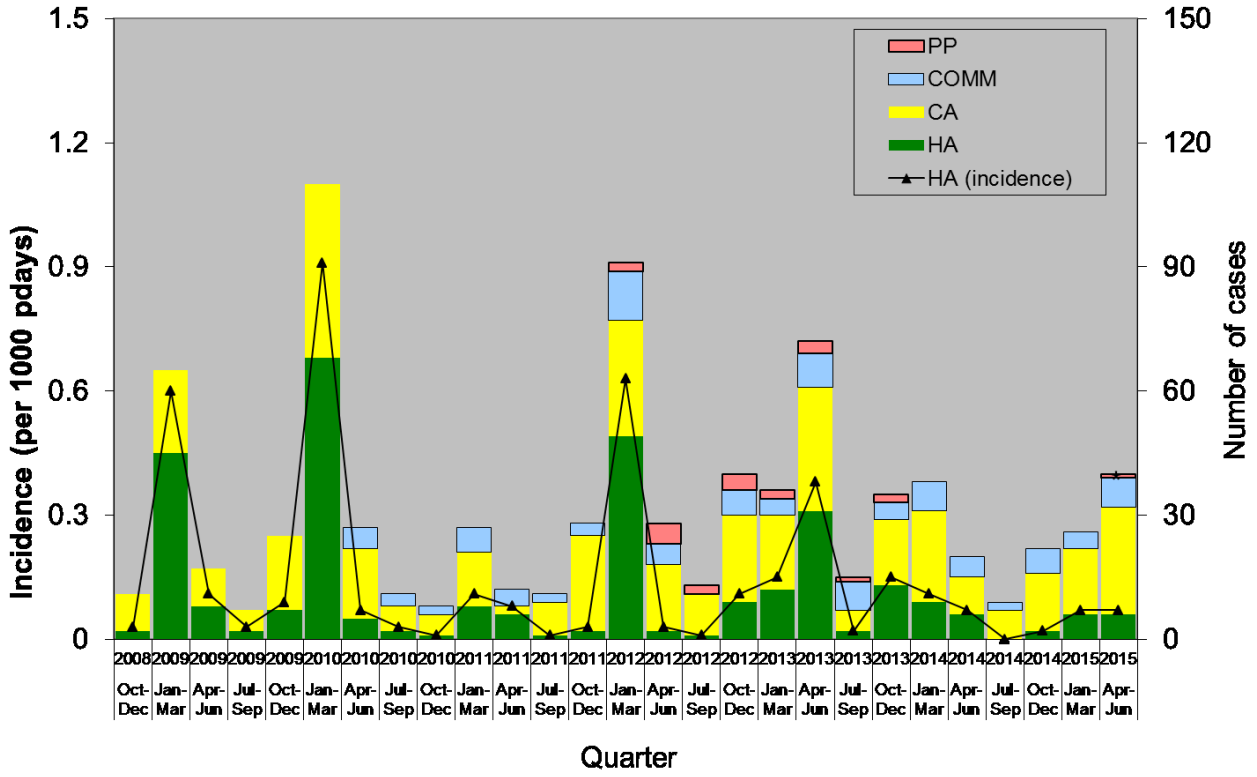


Table 1 Surgical operations carried out at UCLH during 2014; N f-up = number followed up by the SSISS team; N Inf = number of infections detected in hospital among followed-up surgeries (HPA/PHE definitions);

Category of surgery	Number of operations	N f-up (%)	N Inf. (%)	National %‡
Caesarean section	2073	448 (22)	4 (0.89)	3.77 (*)
Cardiac (non-CABG)†	506	467 (92)	8 (1.71)	1.20
CABG†	538	514 (96)	22 (13.0)	4.28
Cranial	1376	642 (47)	9 (1.40)	1.36
Knee replacement	266	130 (49)	0 (0.00)	0.53
Large bowel	243	213 (88)	42 (19.7)	10.2 (*)
Limb amputation	11	3 (27)	1 (33.0)	3.19
Repair of neck of femur	107	55 (51)	0 (0.00)	-
Small bowel	229	204 (89)	30 (13.7)	7.07 (*)
Spinal	1034	608 (59)	10 (1.64)	1.14
Total hip replacement	404	139 (34)	2 (1.44)	0.59
Vascular	121	50 (41)	1 (2.00)	2.74
Urology	3181	440 (14)	18 (4.09)	-

†CABG = Coronary Artery Bypass Graft; ‡Comparisons with national rates use the subset of data collected nationally between April 2010 to March 2015 where that exclude patient-reported infections (PHE guideline); and there is no attempt to control for case-mix in this comparison. (*) = statistically significant difference (Chi-square test for proportions – highlighted only where the UCLH sample size is greater than 10 operations).

Table 2: MRSA screens at UCLH 2014-15.

Month	Year	N screenable	N screened	% screened	MRSA positive (%)
Apr	2014	5329	3999	75.0	43 (1.08)
May	2014	5781	4383	75.8	32 (0.73)
Jun	2014	5501	4100	74.5	33 (0.81)
Jul	2014	5170	3800	73.5	32 (0.84)
Aug	2014	5261	3847	73.1	42 (1.09)
Sep	2014	5302	3853	72.7	57 (1.48)
Oct	2014	6006	4294	71.5	61 (1.42)
Nov	2014	5577	3887	69.7	82 (2.11)
Dec	2014	5483	3694	67.4	47 (2.27)
Jan	2015	4492	3140	69.9	38 (1.21)
Feb	2015	5390	3670	68.1	35 (0.95)
Mar	2015	5871	3718	63.3	40 (1.08)