

Infection Prevention and Control Team

Annual Report April 2010 – March 2011



Plymouth Hospitals NHS Trust

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Key achievements

The key achievements for the year April 2010-March 2011 were as follows:

- Trust-apportioned MRSA bacteraemias – 4 cases (95% reduction from the baseline of 78 cases in 2003-04 and 2 under the objective of fewer than 6 cases)
- New cases of MRSA – 44 cases (93% reduction from the baseline in 2003-04 and a 29% fall from the previous year)
- *Clostridium difficile* - 32 ‘hospital- apportioned’ cases (85 under the target of 117 and a reduction of 58% on the previous year)
- Norovirus – 7 ward closures with mean ward-closure time of 6.4 days
- Hand Hygiene compliance – increase to 99% from 98% the previous year
- Excellent compliance with Saving Lives High Impact Interventions
- Patient Safety Award 2011 for work on surgical site surveillance. Wound infection rates below the national mean for most procedures
- Full compliance with the Code of Practice and the Care Quality Commission (CQC) NHS Provider Compliance Assessment Outcome 8 (Cleanliness and Infection Control).
- Delivery of a Postgraduate Certificate in Infection Prevention and Control in collaboration with the Peninsular School of Medicine and Dentistry.

Executive summary

The Infection Prevention and Control Team (IPCT) at Plymouth Hospitals NHS Trust (PHNT) has made significant progress towards modernising the service it provides and meeting the challenging new agenda being set at both local and national levels. This has led to improvements in clinical practice, with concomitant reductions in healthcare-associated infections. Since the baseline target year, 2003-04, new clinical cases of Methicillin-Resistant *Staphylococcus aureus* (MRSA) have fallen by 93%, MRSA bacteraemias have been reduced by 95% and there has also been a fall in the number of cases of Methicillin-Sensitive *S. aureus* bacteraemias. The Trust already has one of the lowest *Clostridium difficile* rates in the country and last year achieved a further 58% reduction. There were 7 ward closures due to viral gastroenteritis with a mean ward-closure time of 6.4 days. The ‘Five Moments’ hand hygiene awareness campaign continued across the Trust and hand hygiene compliance improved from 98% to 99%. Improvements in the management of medical devices were reflected by excellent compliance with the Saving Lives High Impact Interventions. Considerable work has gone into meeting compliance with national guidelines and standards, including the Code of Practice for the Prevention and Control of Healthcare Associated Infections, the CQC NHS Provider Compliance Assessment Outcome 8 (Cleanliness and Infection Control) and Clinical Negligence Scheme for Trusts (CNST). The Trust can be justifiably proud of its achievements in reducing infection rates and improving clinical practice. Considerable Trust-wide effort is required to sustain these improvements and achieve the new challenging targets for further MRSA bacteraemia and *C. difficile* reduction, as well as achieving zero tolerance of preventable healthcare-associated infections.

Progress towards achieving Key Targets, April 2010 – March 2011

- To reduce MRSA bacteraemias in line with agreed local and national targets. **Between April 2010 and March 2011, there were 4 MRSA bacteraemias (Target: less than 6 for the year).**
- To reduce cases of *Clostridium difficile* in line with agreed local and national targets. **Between April 2010 and March 2011, there were 32 cases of post-72 hour *C. difficile* (Target: less than 117 for the year).**
- To achieve a 10% reduction in all cases of MRSA. **Between April 2010 and March 2011, there were 44 new cases of MRSA compared to 62 in the same period last year (a reduction of 29%).**
- To maintain the mean ward closure time due to epidemic gastroenteritis below 7 days. **Between April 2010 and March 2011, there were seven ward closures with a mean ward-closure period of 6.4 days.**
- For all wards to perform at least a monthly Hand Hygiene audit with compliance of at least 95%. **Between April 2010 and March 2011, the overall Trust hand hygiene compliance was 99%.**
- For all wards to perform at least monthly Saving Lives High Impact Intervention audits for in use medical devices and score 100%. **Data available.**
- For all wards to achieve an average infection control clinical audit score of 90%. **Data available on Balanced Scorecard.**
- For the availability of alcohol hand gel in clinical areas to be maintained as close to 100% as possible. **Between April 2010 and March 2011, the availability of alcohol hand gel in clinical areas was 98%.**
- To continue to surgical site surveillance, including post-discharge surveillance, on all major procedures. **Majority of procedures now covered.**
- In collaboration with the Peninsula School of Medicine and Dentistry, to deliver a Postgraduate Certificate in Infection Prevention and Control. (the only postgraduate professional qualification in infection control available in the peninsula). **Two-module PGCert to run in spring and summer 2011.**
- To continue to develop and update the infection control website. **Completed.**
- To comply with national legislation and guidance including the Health and Social Care Act (Code of Practice for the NHS on the Prevention and Control of Healthcare Associated Infections and Related Guidance), NHS Litigation Authority, Standards for Better Health, Winning Ways and national guidance on the management of MRSA and *Clostridium difficile*. **Compliance reviewed and evidence folders updated.**

Introduction

This Annual Report details the activities undertaken by the Infection Prevention and Control Team (IPCT) during the period 1st April 2010 to 31st March 2011 and should be read in conjunction with the Infection Control Annual Programme of Work and quarterly reviews for the same period. The report has been compiled according to guidelines issued by the Department of Health (<http://www.dh.gov.uk/assetRoot/04/10/25/52/04102552.pdf>) and will be presented to the Trust Board in June 2011.

The aim of the IPCT, through the compilation and achievement of a robust Annual Programme of Work, is to devise, implement and evaluate strategies to reduce hospital-associated infection by working in collaboration with each Directorate. The IPCT performs a number of activities that minimise the risk of infection to patients, staff and visitors, including:

1. Providing advice on all aspects of infection control
2. Managing outbreaks of infection
3. Conducting programmes of education
4. Undertaking audit and targeted surveillance
5. Formulating policies and procedures
6. Interpreting and implementing national guidance at local level
7. Involvement with refurbishment, new building and equipment projects.

The IPCT now has a far more proactive approach, with a greater emphasis on clinical work and the direct management of patients with hospital-associated infections. The enhanced presence of the IPCT in the clinical environment has greatly increased their accessibility for guidance and advice and has improved the management of hospital-associated infection across the Trust.

Reporting line to the Trust Board

The IPCT meets on a daily basis to discuss current infection control issues and formulate the day-to-day working programme for the Team. A formal weekly meeting allows review of these issues and monitors progress of control processes, as well as progress against objectives. The Infection Control Committee (ICC) meets quarterly, is chaired by the DIPC, and reports via the Clinical Governance Steering Group to the Board. There is representation on the ICC from members of each Directorate and senior management, as well as external groups such as the Health Protection Agency (HPA), Primary Care Trusts and patient and public involvement groups. External links are well maintained with the Consultants for Communicable Disease Control for Devon and Cornwall, who are also members of the ICC. The IPCT collaborates extensively with other Trusts across the South-West Peninsula and participate in the activities of local and national groups (e.g. Hospital Infection Society, South West Infection Control Forum and Infection Prevention Society). The lead Consultant Medical Microbiologist for antimicrobial stewardship is a member of the Drugs and Therapeutics Committee.

Significant infection control issues are also dealt with at the monthly Infection Prevention Board, which is chaired by the Chief Nurse. All MRSA bacteraemias, cases of *C. difficile* and other serious Healthcare-Associated Infection (HCAI), as well as recent audit results are reviewed at this meeting. The results of RCAs are reported to the Board and appropriate recommendations made. Action Plans arising from RCAs are reviewed at subsequent meetings. Matrons report on infection control to the Infection Prevention Board on a quarterly basis. Progress on infection prevention and control objectives is also reported on a quarterly basis to the Clinical Governance Steering Group and the Healthcare Governance Committee.

The Board member with responsibility for infection control is the Medical Director, Dr Alex Mayor, and the non-executive member is the Chairman, Steven Jermy. The DIPC meets monthly with the Medical Director and the Chief Nurse. The Department of Health document 'Winning Ways' states that the DIPC will 'report directly to the Chief Executive and the Board and not through any officer'. The DIPC meets regularly with the Chief Executive and reports to the Trust Board as required.

Trust-wide reporting of HCAs is through a balanced scorecard of reporting that is produced and circulated to all clinical areas, Directorates and the Trust Board. This includes surveillance and outbreak data, audit results, compliance with policy, link practitioner activity and information on antimicrobial prescribing. The scorecard is produced on a monthly basis for Directorates and quarterly for Departments, and is incorporated into the Trust Board and Directorate performance management process.

The IPCT is represented on the following committees:

- a) Healthcare Governance Committee
- b) Clinical Governance Steering Group
- c) Water Action Group
- d) Decontamination Steering Group
- e) Patient Environment Action Team
- f) Clinical Leaders Forum
- g) Daily Operational Team Meeting
- h) South West Infection Control Forum
- i) Devon Health Advisory Group
- j) Cornwall and IOS Community Infection Control Meeting
- k) Devon Community Infection Control Meeting
- l) Plymouth Cross-Community Infection Control Committee.

Infection control arrangements

1. Budget and staffing

The IPCT provides an infection control service for PHNT (~1050 beds) and last year had annual pay and non-pay budgets of £461,961 and £12,123 respectively. Income of £76,626 was generated through service level agreements with other local healthcare providers (approximately 500 community beds).

2. Team development

The IPCT has expanded over recent years and the compliment of staff now includes Staff Nurses and Health Care Assistants (HCAs).

The increase in the establishment reflects the change in both workload and increased focus on the prevention of infection. This approach to workforce development has led to unique skill mix within the Team, which has allowed effective working at different levels across the Trust. This approach also permits personal development and succession planning within the Team. The latter has been illustrated by the promotion of members of staff within the Team. The revised and innovative establishment has broadened the scope of opportunity to specialise in infection control, whilst enhancing the IPCT performance through an increased range of knowledge, skills and experience. The IPCT is been divided into three teams to effectively cover the Directorates, with each team consisting of a Sister, Staff Nurse and a HCA.

Given the expansion of the Team and the different training requirements, the personal development of individual team members remains a key priority. The IPCT at PHNT is unusual in the skill-mix it and developing training programmes for all members of the Team is led by the Lead Nurse Claire Hail and Dr Peter Jenks. These include regular clinical supervision sessions to reflect and discuss the management and approach to recent clinical issues for post-registration healthcare professionals and a City and Guilds accredited course for Healthcare Assistants. In addition, the Team runs a Postgraduate Certificate in Infection Prevention and Control, which provides the only post-graduate infection control training in the region. All members of the Team received Individual Performance and Development Reviews last year. Over the next 12 months, personal objectives will be integrated into the Annual Programme of Work to develop ownership of Trust objectives and facilitate achievement of key outcomes.

Over the last year, Claire Hail completed the Postgraduate Certificate in Infection Prevention and Control, and Marie Whitley and Sally Fletcher attended Module 1 of this course. Three abstracts were accepted for poster presentations at the annual Infection Prevention Society (IPS) Conference and Susan Hunt attended the conference to present the three poster presentations on behalf of the team. The poster presentations were on the Management of Diarrhoea and Vomiting Outbreaks, Audit process and Trust-wide implementation of the 'My 5 moments' Hand Hygiene campaign. Gemma Parker completed the City and Guilds Infection Prevention and Control accredited course. Members of the Team are actively involved with the Infection Prevention Society, with regular attendance at conferences. Dr Peter Jenks is a member of the Department of Health Expert Advisory Group on MRSA and *C. difficile*. These groups have produced national guidelines on MRSA screening and surveillance, as well as on *C. difficile* reduction. He is a member of the Council, Grants Secretary and Chair of the Scientific Development Committee of the Healthcare Infection Society. He was also a member of the Healthcare Infection Society Working Party for Facilities for Minor Surgical Procedures. He was an Expert Microbiology Advisor to NHS South West Review of Health Community Management of Norovirus, 2011, and is a member of the National Institute for Health and Clinical Excellence Topic Expert Group for Healthcare Associated Infection.

This year the Team were a winner of a National Patient Safety Awards 2011 (Infection Control and Hygiene Category). The Award was the culmination of work that had taken place since we expanded our Surgical Site Infection Surveillance Service two years ago. This service determines wound infection rates for most major surgical procedures performed at Plymouth Hospitals NHS Trust. Feeding such back infection data is a crucial component of a quality improvement programme and is known to reduce post-operative wound infection rates. We knew that the surveillance programme had been successful, as we had seen impressive reductions in post-operative infections where surveillance was well established. We felt that entering the Patient Safety Awards was an important opportunity to highlight the impact and outcomes of this initiative, and also to facilitate the development of similar systems by other hospitals through dissemination of learning and experience. Winning the Award was great news for our Team, our Trust and, most of all, our patients, because it was national recognition that what we were doing was of a very high standard and was improving the quality of care we give to those people who come into our hospital. It was a real accolade to have been selected as a finalist, especially given the number of entries this year.

Figure 1. Patient Safety Awards 2011 Winners, PHNT Infection Prevention and Control Team



Surveillance

1. Background

Surveillance of healthcare-associated infection can be defined as the systematic recording of infections using agreed definitions, with analysis, interpretation and

dissemination of the results so that appropriate action can be taken. Surveillance is necessary to monitor trends in infection rates over time, detect outbreaks, provide information for the planning of services and allocation of resources, and to evaluate the impact of any interventions aimed at reducing infection risks. By targeting appropriate interventions, surveillance contributes significantly to reducing rates of infection and is recognised as an important contributor to good infection control practice.

In October 2000, the Department of Health announced that some aspects of surveillance would be compulsory. In April 2001, a mandatory scheme for reporting Staphylococcal bacteraemias (including MRSA) commenced and the results of that surveillance are published regularly. In an attempt to account for variations in hospital activity, absolute numbers of MRSA bacteraemias are converted into a rate using the bed availability and occupancy (KH03) annual return. From 1st September 2003, Acute Trusts have also had to report bacteraemias due to glycopeptide resistant enterococci (GRE) and since January 2004, alert organism surveillance was extended to *C. difficile*. Reporting of bacteraemias due to Meticillin-Sensitive *Staphylococcus aureus* (MSSA) was added to the scheme in January 2011 and bacteraemias due to *Escherichia coli* will be reportable from 1st June 2011. The national surveillance scheme also includes orthopaedic surgical site infections and the reporting of 'serious untoward incidents associated with infection'. The infection rates for PHNT are published in comparison with other Acute Trusts.

2. Mandatory surveillance reporting

Plymouth Hospitals NHS Trust complies fully with the mandatory surveillance system for healthcare-associated infections including staphylococcal (including MRSA and MSSA) and GRE bacteraemias, *C. difficile* and orthopaedic surgical site infections. All 'serious untoward incidents associated with infection' are reported to the Strategic Health Authority (SHA) and HPA. Monthly surveillance reports are circulated to all clinical areas, Directorates and the Trust Board, and reports are also produced on a quarterly basis for Departments. The reports include surveillance and outbreak data, audit results, compliance with policy, link practitioner activity and information on antimicrobial prescribing. As well as being incorporated into the Trust Board and Directorate performance management process, they are also reviewed at the Infection Prevention Board via the ICC and Clinical Governance Steering Group. In addition, the IPCT also produces monthly reports that include surveillance data on new cases of MRSA, MRSA bacteraemias, all other hospital-acquired bacteraemias, *C. difficile*, gentamicin- and quinolone-resistant gram-negative infections, GREs and ESBL-producing coliforms.

3. New clinical cases of MRSA

As well as mandatory reporting of MRSA bacteraemias, all new cases ('first isolates') of MRSA are also recorded. These can be divided into 'infections', where MRSA is isolated from clinical specimens, and 'colonisation', where MRSA is isolated from screening swabs from patients who are harmlessly carrying the organism. Many hospitals use such data as a useful marker of the overall burden of MRSA.

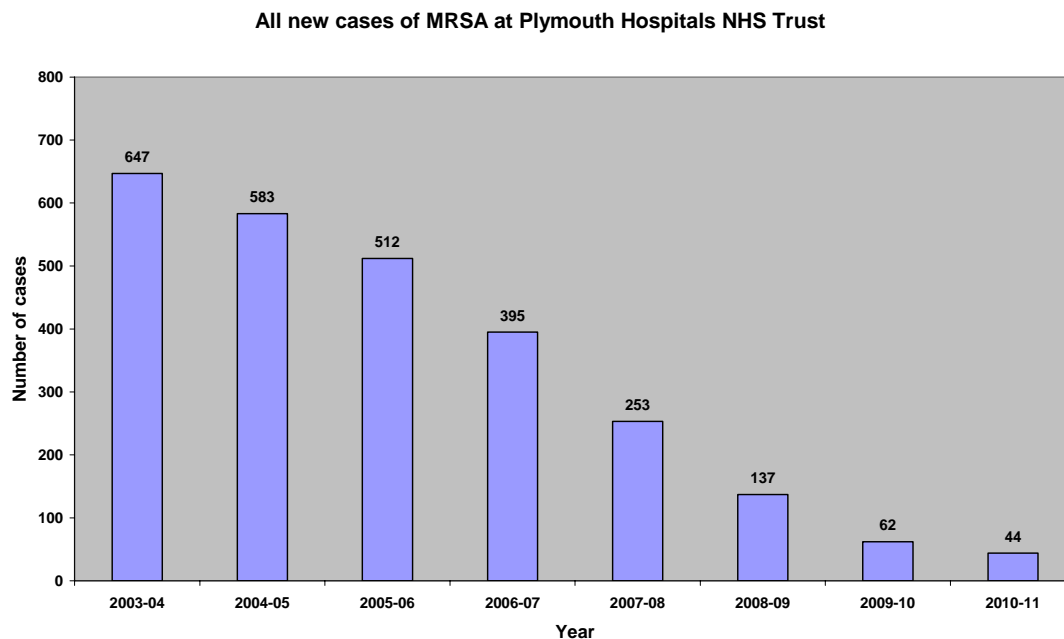
Patients admitted to PHNT who are known to be colonised with MRSA are identified by an alert on their electronic record and in their clinical notes. These patients, as well as all newly identified inpatient cases, are visited by the IPCT who instigate appropriate infection control measures and prescribe topical MRSA suppression therapy through a Patient Group Direction.

In line with the Code of Practice for the Prevention and Control of Healthcare Associated Infections, all elective and emergency admissions to PHNT are screened for MRSA. In addition, targeted screening and suppression of MRSA currently occurs in the following high-risk patient groups:

1. Patients transferred from other hospitals or long term healthcare facilities, including nursing homes
2. Patients know to be previously colonised with MRSA
3. Admissions to and discharges from the Critical Care Unit
4. Haemodialysis patients every three months.

Plymouth Hospitals NHS Trust reported a total of 44 new ‘infections’ due to MRSA between April 2010 and March 2011, compared to 62 the year before. This represents a fall of 93% since 2003-04 and 29% over the last 12 months (Figure 2).

Figure 2. New cases of MRSA, April 2003 – March 2011



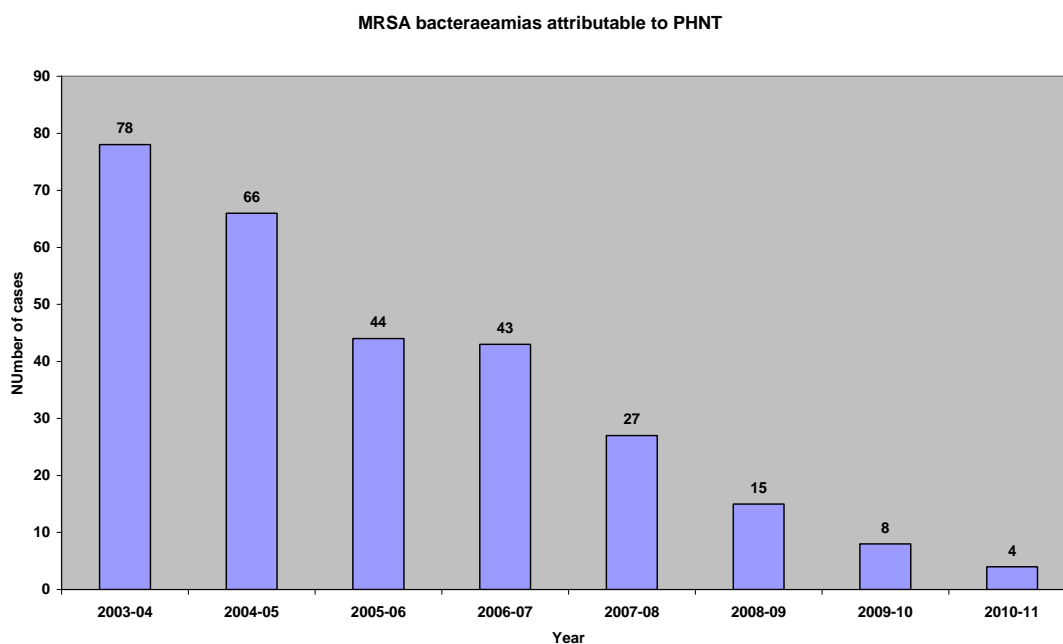
The total number of new MRSA isolates (i.e. those isolated from screening samples as well as clinical specimens) was 390, compared to 446 cases recorded during the previous year and 703 the year before that. A much higher proportion of cases, 346 (89%), were identified by screening patients on admission to hospital.

4. MRSA bacteraemias

The objective for PHNT for 2010-11 was to record fewer than 6 Trust-apportioned MRSA bacteraemias (cases occurring 48 hours or more after admission to the Trust). The Trust is also expected to achieve year-on-year reductions in MRSA.

Plymouth Hospitals NHS Trust reported a total of 4 MRSA bacteraemias between April 2010 and March 2011 (Figure 3). This is 2 cases under target, is a year-on-year reduction, is the lowest number recorded by the Trust and represents a 95% reduction against the baseline year of 2003-04.

Figure 3. MRSA bacteraemias attributable to Trust, April 2003 – March 2011



Root Cause Analysis is carried out on all MRSA bacteraemias at PHNT and is performed by the clinical team caring for the patient with support from the IPCT. The results of these RCAs are reported to the Infection Prevention Board and series of recommendations made. Monitoring of actions arising from RCAs is also monitored by the Infection Prevention Board.

The four cases of MRSA bacteraemia were reported from the Critical Care Unit, a cardiothoracic ward (Bickleigh), the Planned Investigation Unit and The Neonatal Intensive Care Unit. Two were associated with infection of a peripheral vascular catheter (compared to two episodes the previous year) and in two cases the source was unclear. There were no cases arising from surgical site infections or secondary to urinary tract infections associated with an indwelling urinary catheter.

In order to further reduce MRSA at PHNT, the following strategies are planned:

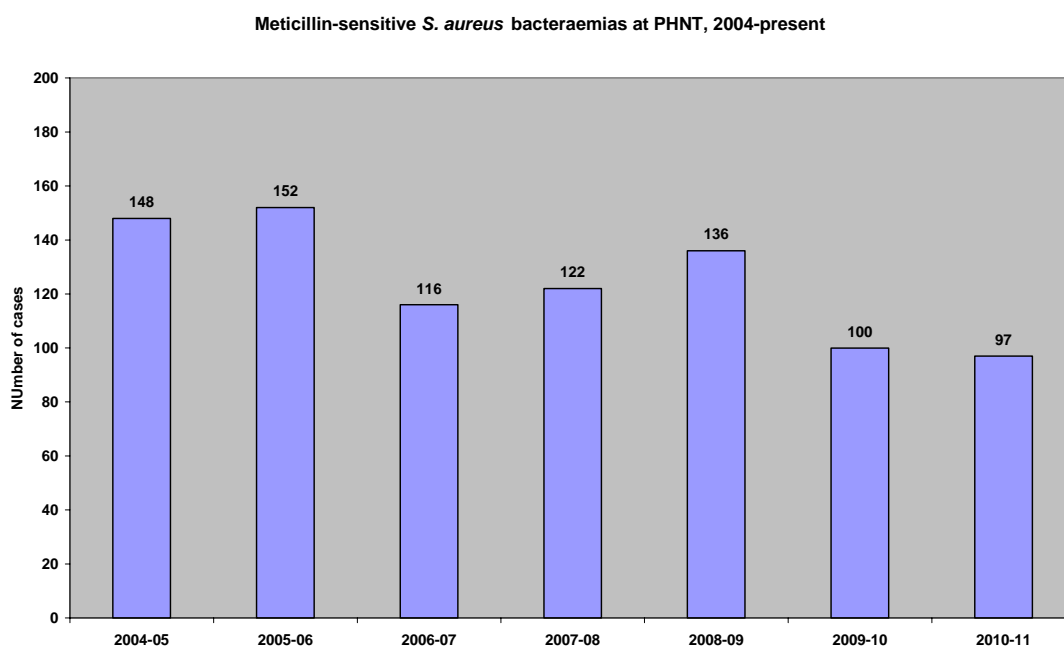
1. Continue universal MRSA screening of all admissions

2. There will be continued effort to reduce the number of infections associated with medical devices, including intravascular and urinary catheters
3. The surveillance of post-operative wound infections, including post-discharge follow up, will continue for most surgical procedures performed at PHNT
4. Root Cause Analysis (RCA) will be performed on all MRSA bacteraemias and hospital-acquired cases of MRSA, with the results of these investigations and their recommendations will be monitored by the Infection Prevention Board

5. Meticillin-Sensitive *S. aureus* (MSSA) bacteraemias

Between April 2010 and March 2011, PHNT recorded 97 bacteraemias due to MSSA, a reduction of 3 from the previous year (Figure 4). Reporting of MSSA bacteraemias became mandatory on 1st January 2011. Between January and March 2011, the Trust recorded 16 cases, of which 5 were Trust-apportioned.

Figure 4. MSSA bacteraemias, April 2004 – March 2011



6. Hospital-Acquired Bacteraemias

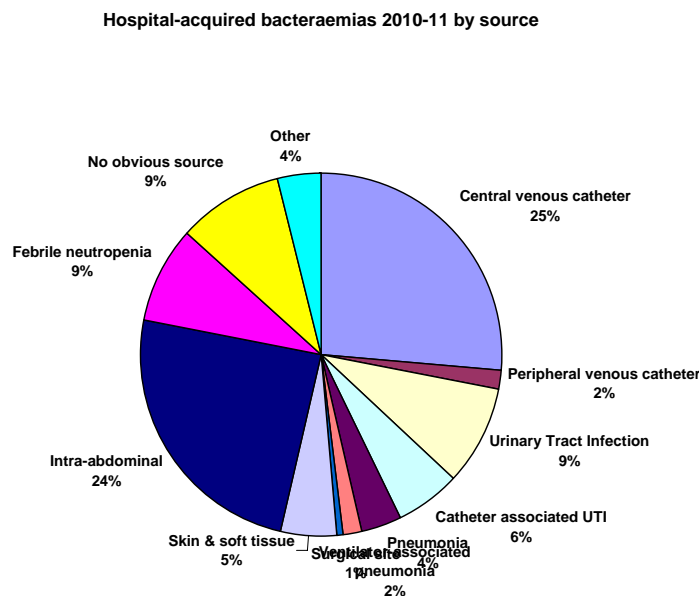
Over the last 12 months, there has also been surveillance of all hospital-acquired bacteraemias. Patients with a bacteraemia were identified by daily review of all positive blood cultures, followed by clinical confirmation using standard definitions. The main criterion for a bacteraemia to be recorded as hospital-acquired is that it was taken more than two days after admission. Information from patients with bacteraemia was collected by the IPCT, reviewed by a Consultant Microbiologist and included demographic, infection and risk factor data.

Between April 2010 and March 2011, 15,573 blood culture sets were taken at PHNT. Once repeat isolates were removed, 266 patients were considered to have developed one or more episodes of hospital-acquired bacteraemia, which is equivalent to 2.3 patients per 1,000 admissions (compared to 2.2, 2.6 and 2.8 per 1,000 admissions for the last three years). Over the 12-month period, 292,018 patient-days were reported for the Trust, giving a mean pooled rate of 0.91 bacteraemia per 1,000 patient-days (compared to 1.35 bacteraemia per 1,000 patient-days last year). A national surveillance study of hospital-acquired bacteraemias in English hospitals covering 3 million patients between 1997 and 2002, reported 3.5 patients with bacteraemias per 1000 admissions and a mean rate of 0.6 bacteraemias per 1,000 patient-days.

The majority of hospital-acquired bacteraemias occurred in the Critical Care, Haematology and Oncology, Gastroenterology, and Cardiothoracic Directorates. This is likely to reflect factors that influence risk of bacteraemia such as severity of illness, immunosuppression and invasive devices.

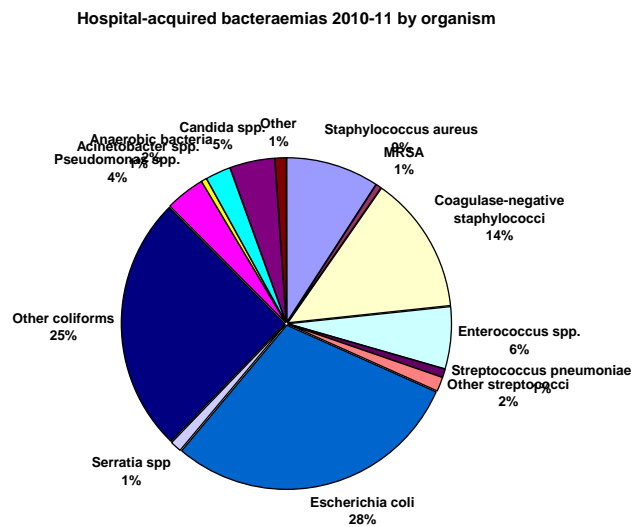
The underlying sources of hospital-acquired bacteraemias for the whole hospital are shown in Figure 5. Central venous catheters remained the commonest source and the number of cases was similar to that recorded the previous year. There was a significant reduction in the number of bacteraemias secondary to peripheral lines, reflecting the work done to improve the management of these medical devices. Although the number of bacteraemias due to underlying soft tissue infection was virtually unchanged, there were fewer cases secondary to surgical site infections than the baseline year of 2007. This is likely to be due to the expansion of the Surgical Site Surveillance Service, with feedback of infection rates to Directorates and individual surgeons.

Figure 5. Sources of hospital-acquired bacteraemia, April 2010 – March 2011



Information on the micro-organisms causing hospital-acquired bacteraemias is given in Figure 6. The commonest individual species was *Escherichia coli*, which accounted for 29% of cases. Other coliforms and *Serratia* spp. were responsible for a further 26% of cases. Staphylococci accounted for 23.3% of cases, with 9% due to MSSA, 0.8% due to MRSA and 13.5% due to coagulase-negative staphylococci.

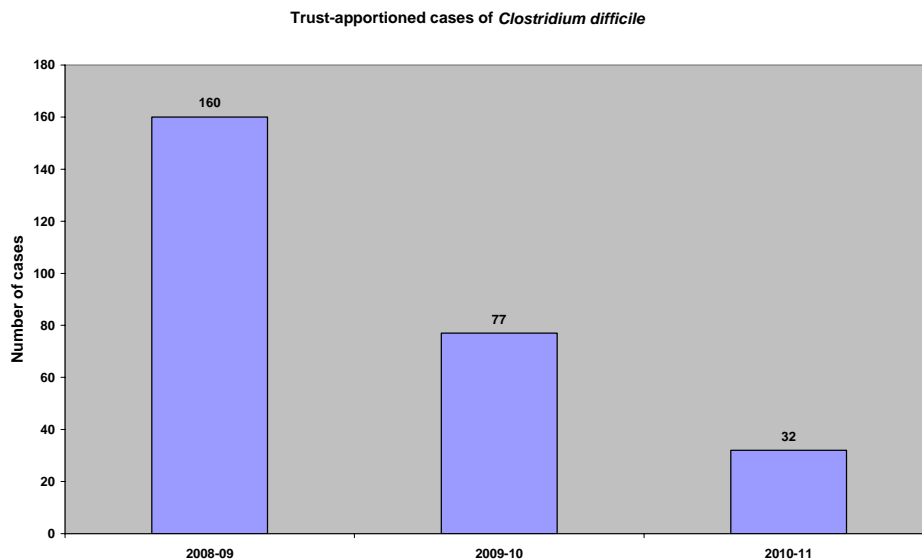
Figure 6. Micro-organisms causing hospital-acquired bacteraemia, April 2010 – March 2011



7. Cases of *Clostridium difficile*

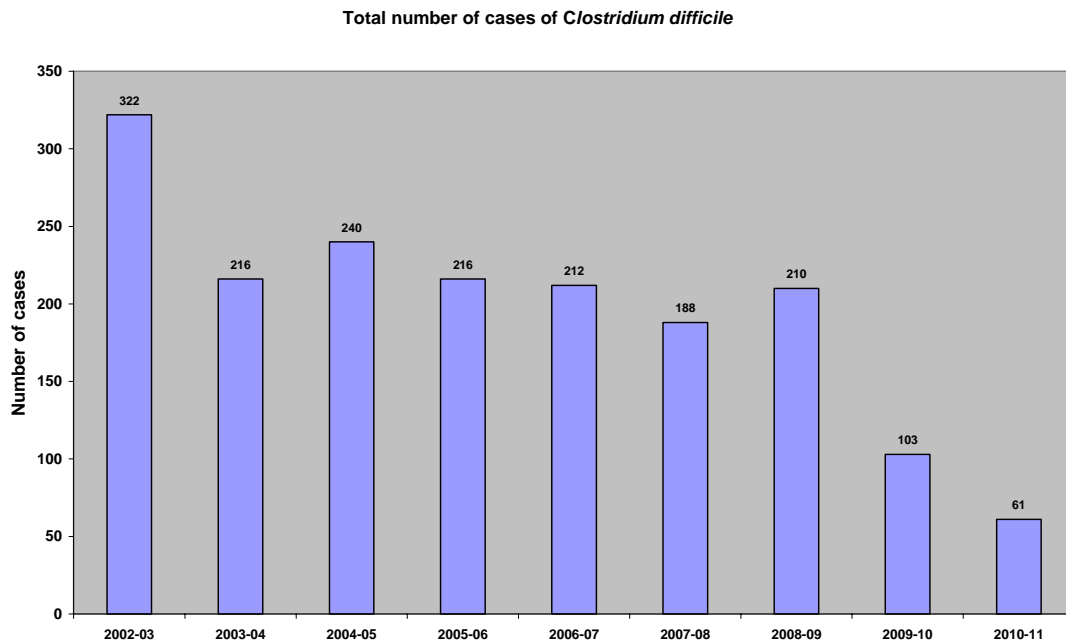
Between April 2010 and March 2011, PHNT recorded 32 Trust-apportioned cases *C. difficile* (cases occurring 72 hours or more following admission) against an objective of fewer than 117 cases (Figure 7). This was 85 cases under trajectory and a 58% reduction on the 77 cases that had been recorded the year before.

Figure 7. Trust-apportioned cases of *Clostridium difficile* infection, 2008-11



Total number all cases of *C. difficile* occurring at any time during admission to PHNT is also recorded and this allows comparison with a longer historical period. Between April 2109 and March 2011, there were 61 cases, which was the lowest figure on record and represented a reduction of 41% on the previous year (Figure 8). This is likely to be due to the significant efforts to reduce *C. difficile* that were introduced in March 2009, including multidisciplinary review of all cases, joint management with Gastroenterology, improved diagnosis, RCA of all cases and continuing antibiotic controls.

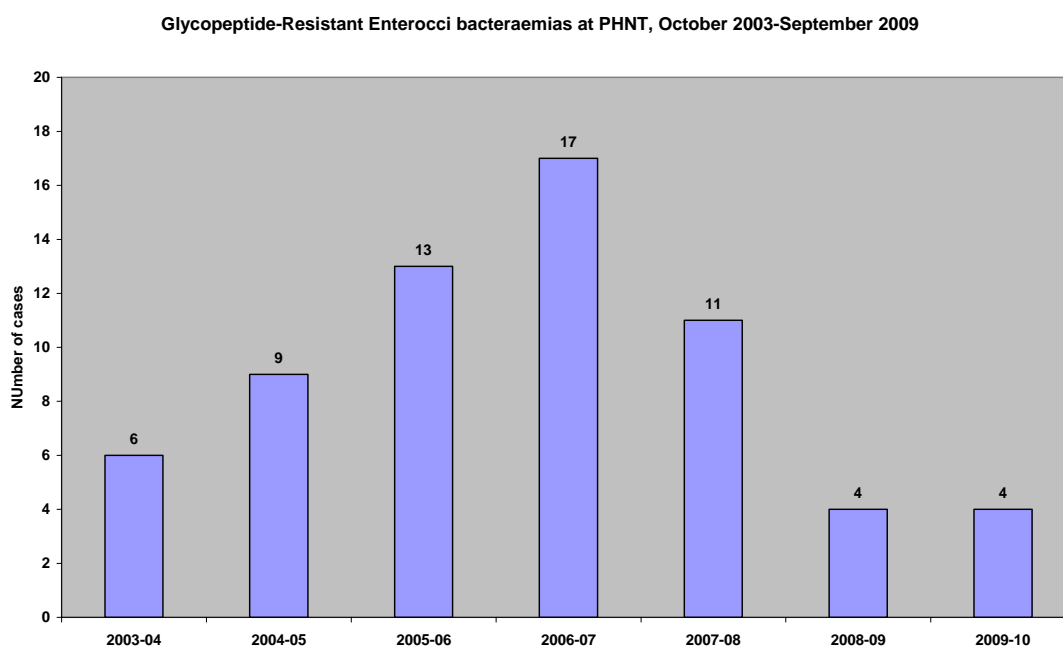
Figure 8. Cases of *Clostridium difficile* infection, 2002-11



8. Glycopeptide-Resistant Enterococci bacteraemias

Glycopeptide-Resistant Enterococci (GRE) bacteraemias occur mainly in specialist clinical areas, particularly transplantation, renal, haematological malignancy and critical care units. For the last year that data has been published (October 2008 - September 2009), PHNT reported 4 GRE bacteraemias, compared to 11 the previous year (Figure 9). This was the lowest number of cases on record. Although the figures are still to be validated, between October 2009 and September 2010 PHNT also recorded 4 cases. The numbers of GRE reported by any Trust is small and caution should be used when comparing individual Trusts.

Figure 9. Glycopeptide-Resistant Enterococci bacteraemias at PHNT, 2003-09



9. Orthopaedic and other surgical site infections

The Surgical Site Infection Surveillance Service (SSISS) assesses speciality-specific surgical site infections on a quarterly basis. Plymouth Hospitals NHS Trust has participated with this scheme since its introduction in 1997. Standard case definitions and surveillance methodology are provided to enable comparable rates to be produced. Although the reporting of orthopaedic surgical site infections has recently become compulsory, other components of this scheme remain voluntary.

Over the last year surgical site surveillance has been performed on all major surgical procedures carried out at PHNT. Post-discharge surveillance is carried out for all procedures using a standard questionnaire that is returned 28 days after the procedure with telephone follow up of selected cases. Reports are produced and fed back to individual surgeons and Directorates on a quarterly basis. Feeding back infection data is a crucial component of a quality improvement programme and is known to reduce post-operative wound infection rates. Significant reductions in surgical site infections have been achieved at PHNT in those surgical procedures for which surveillance has been established for some time (notably in cardiac and vascular surgery). There were no MRSA bacteraemias associated with surgical site infections and there have been reductions in all hospital-acquired bacteraemias (i.e. not just due to MRSA) attributable to surgical site infections since the service commenced. The cumulative infection rates at PHNT for all surgical specialities are compared with the cumulative national rates in Table 1.

Table 1. Surgical site infection rates during initial admission or on readmission

Operation	PHNT rate	National rate
Coronary Artery Bypass Graft	2.1	5.2
Vascular surgery	0.8	3.5
Limb amputation	1.7	6.4
Total Hip Replacement	1.1	1.0
Total Knee Replacement	0.4	0.8
Repair of neck of femur	0.7	2.0
Reduction of long bone fracture	1.0	2.2
Large bowel surgery	6.5	10.8
Small bowel surgery	3.7	8.4
Cholecystectomy	1.8	1.7
Bile duct, liver, pancreatic surgery	4.9	10.9
Gastric	1.6	7.1
Abdominal hysterectomy	1.5	2.3
Lower Segment Caesarean Surgery	0.9	1.1
Breast Surgery	0.8	4.5
Spinal surgery	1.0	1.1
Cranial surgery	0.8	NA

Because so few hospitals performed post-discharge surveillance, benchmarking all infections (inpatients, readmits and post-discharge) is more difficult. However, the rates at PHNT for all procedures are similar to or lower than the national rate. Of note the PHNT rate for Total Hip Replacement is 1.4% and the national rate is 1.6%.

The Trust's work on Surgical Site Infection Surveillance was recognised in the Patient Safety Awards 2011, in which the IPCT won the Infection Control and Hygiene Category (please see above).

Untoward incidents including outbreaks

1. Outbreaks of Diarrhoea and Vomiting

Between April 2010 and March 2011, 7 wards were closed due to outbreaks of vomiting and diarrhoea at PHNT (Table 2). The operational impact of this was well managed and in contrast to other hospitals in the South West there was relatively little disruption. A total of 135 patients and 13 healthcare workers were affected. Stool samples from all 7 wards were positive for norovirus. These outbreaks accounted for 45 ward-closure days (defined as one ward closed for one day) with a mean period of ward closure of 6.4 days (range 4-12 days). A further 19 wards had a bay restricted or closed for periods that ranged from 1-8 days.

Table 2. Outbreaks of diarrhoea and vomiting, April 2010 – March 2011

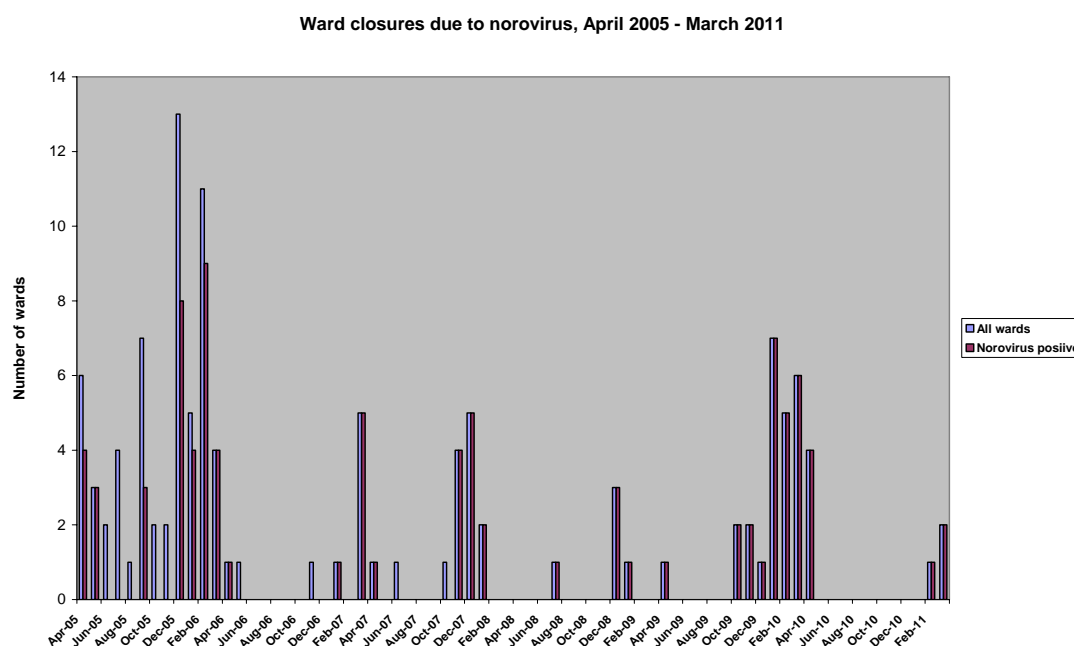
Month	Wards	Patients	Staff	Norovirus positive	Days
April 2010	4	81	7	4	22
May 2010	0	0	0	0	0
June 2010	0	0	0	0	0
July 2010	0	0	0	0	0
August 2010	0	0	0	0	0
September 2010	0	0	0	0	0
October 2010	0	0	0	0	0
November 2010	0	0	0	0	0
December 2010	0	0	0	0	0
January 2011	0	0	0	0	0
February 2011	1	16	0	1	6
March 2011	2	38	6	2	17
Total	7	135	13	7	45

The management of outbreaks by the IPCT has been greatly facilitated by the introduction of rapid diagnostic technology (Polymerase Chain Reaction, PCR). Whereas previously wards were closed as a precaution as soon as patients developed symptoms of diarrhoea and vomiting, it is now possible to determine on the same day whether norovirus is implicated or not. When the PCR test is positive, wards are normally closed and standard control measures put in place (see below). When the test is negative, it has been safe to leave wards open. Consequently, the number of unnecessary ward closures has been dramatically reduced, with substantially less disruption to the operational running of the hospital (Figure 10).

The outbreaks were controlled by containment, enhanced infection control procedures, and environmental cleaning and decontamination. The following control measures were taken:

1. Outbreak meetings were convened and were generally attended by ‘key players’, including representatives from the cleaning contractor, affected wards, the operational team as well as the IPCT. The IPCT regularly attends the daily operational meetings
2. Information was disseminated throughout the Trust via daily ‘Ward Closure’ and ‘Outbreak Update’ emails.
3. Symptomatic patients were isolated or cohorted
4. Staff movements were restricted
5. Enhanced infection control measures were implemented
6. Symptomatic staff remained off work until 48 hours after their last symptoms
7. Enhanced environmental cleaning and decontamination was implemented in affected areas. Wards were deep-cleaned 48 hours after the last symptoms were reported.

Figure 10. Monthly ward-closures, April 2005 – March 2011



A comparison with other years is given in Table 3.

Table 3. Outbreaks of diarrhoea and vomiting, September 2004 – March 2011

Year	Wards	Patients	Staff	Norovirus positive	Days	Mean days
2004-05*	43	658	208	28	252	5.9
2005-06	60	878	168	35	320	5.3
2006-07	9	150	52	7	48	5.3
2007-08	14	204	36	12	69	4.9
2008-09	5	84	25	5	26	5.2
2009-10	24	410	123	24	124	5.2
2010-11	7	135	13	7	45	6.4

* Note this is a part year (September 2004 – March 2005)

The mean period of ward closure has fallen from 7.8 days in 2003-04 to 6.4 days. Data from the 2003-04 norovirus outbreak indicate that across the South-West Region, wards were closed for a mean of 15 days (range 5-23 days).

The epidemiology of the outbreaks is highly suggestive of multi-focal outbreaks with the virus being brought into the hospital on numerous different occasions. Similar outbreaks were observed over the same period in other Trusts in the region and also in the community.

During the year, there continued to be effective collaboration between the Operational and IPCT which led to prompt and successful containment. All wards that were closed or restricted remained closed to discharges and/or admissions as recommended by the IPCT. All ward closures and other Serious Untoward Incidents are reported to the HPA and SHA.

2. Other infection-related incidents

There were 22 other infection-related incidents dealt with by the IPCT between April 2010 and March 2011 and these are outlined in Table 4. All ward closures and other Serious Untoward Incidents are reported to the Health Protection Agency and Strategic Health Authority as part of the mandatory surveillance of Healthcare Associated Infection. Reports on these incidents are available from the IPCT.

Table 4. Infection-related incidents, April 2010 – March 2011

Month	Incident
April 2010	MRSA on Stannon ward
February-April 2010	<i>Staphylococcus aureus</i> cases on Brent ward
April-July 2010	<i>Clostridium difficile</i> on Lyd ward
May 2010	<i>Candida albicans</i> on Torrington CICU
July 2010	Member of staff with possible shingles
June 2010	Infectious tuberculosis, Hexworthy ward
February-July 2010	<i>Staphylococcus aureus</i> cases on Brent ward
July-August 2010	<i>Clostridium difficile</i> on Brent ward
July-August 2010	<i>Clostridium difficile</i> on Hound ward
August 2010	MRSA on Hound ward
August 2010	MRSA on Crownhill ward
August-September 2010	<i>Clostridium difficile</i> on Wolf ward
August-September 2010	<i>Clostridium difficile</i> on Honeyford ward
September 2010	MRSA case on Freedom Unit
August-October 2010	<i>Clostridium difficile</i> on Hembury ward
October 2010	Cluster of pneumonia cases post-cardiac surgery
October-November 2010	MRSA on Braunton ward
November 2010	<i>Clostridium difficile</i> on Wolf ward
November 2010	MRSA on Crownhill ward
December 2010 – March 2011	MRSA on Honeyford ward
February-March 2011	<i>Clostridium difficile</i> on Bracken ward
January-February 2011	MRSA on NICU

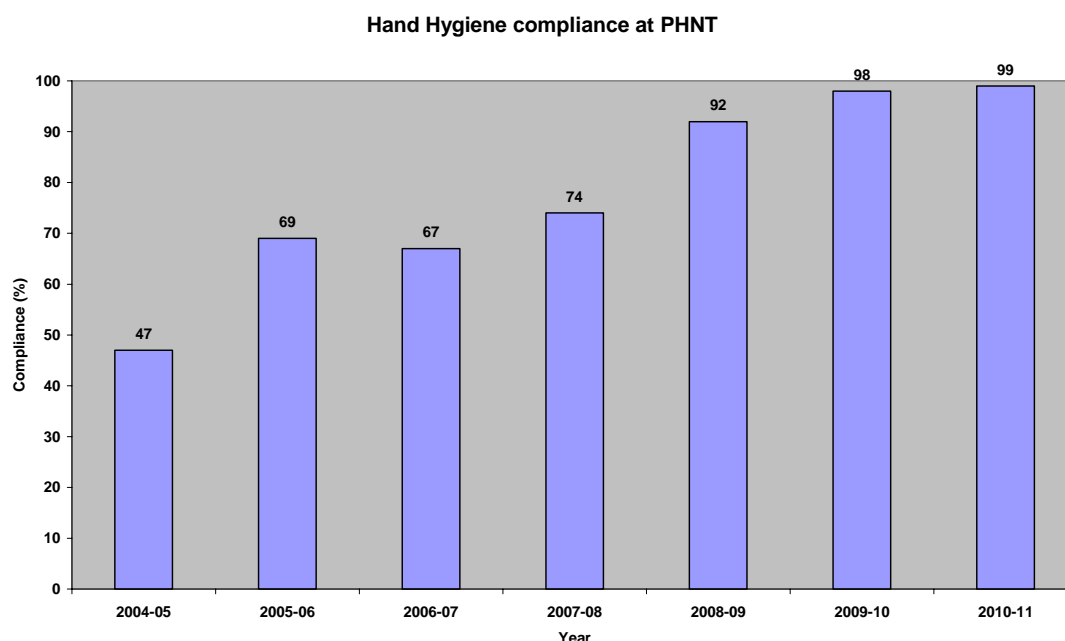
Hand hygiene and aseptic protocols

1. Audit of compliance with hand hygiene

During the year, all clinical areas were audited on a monthly basis. The ward Infection Control Link Practitioner performs 2 audits per quarter with the third being carried out by a member of the IPCT. Each audit involves observation of the frequency and quality of hand hygiene in clinical areas. The pass mark for hand hygiene audits was 95% and wards failing to achieve this are expected to perform weekly audits until they consistently achieve this standard. Between April 2010 and March 2011, the overall Trust compliance was 99%. The Trust's overall mean Hand Hygiene compliance for the year compared to previous years is shown in Figure 11. This sustained improvement in hand hygiene compliance reflects the high priority given to

hand hygiene by the IPCT as well as the impact of the cleanyourhands, 'Five Moments' and other campaigns (see below).

Figure 11. Annual hand hygiene compliance, 2004-11



Each clinical area also received a qualitative audit that examines hand-washing technique the GloBox. These training sessions have also been used to raise staff awareness of contact dermatitis. In addition, hand hygiene audits are performed in Departments on a quarterly basis, with two per year performed by the IPCT. All audit results have been reported back to medical and nursing staff working in the areas in order to improve practice and are also included on the balanced scorecard of reporting and on the IPCT display cabinet in the main foyer. Immediate verbal feedback is given at the time of the audit and areas also receive a written report. Wards are encouraged to display the results of hand hygiene and other audits at their entrance or on a dedicated infection control notice board.

The IPCT purchased four new GloBoxes during the year. This activity concentrates not so much as the 'when' to decontaminate hands, but on the 'how'. It demonstrates in a very visual way just how effective an individual applies hand gel and how effective their hand washing technique is. It promotes the Alyffe technique, a seven-step guide to decontaminating hands. A GloBox was donated to the Royal Eye Infirmary, where their very proactive band of Infection Prevention and Control Link Practitioners make sure it gets plenty of use. The GloBox has played an active part in many successful Infection Prevention and Control Awareness activities as well as the the Local involvement network (LINK) at the Healthy Plymouth Event in the City Centre in October.

2. Cleanyourhands and 'Five Moments' campaign (report by Susan Hunt)

The Cleanyourhands campaign was launched by the National Patient Safety Agency (NPSA) following Patient Safety Alert 04 (2nd September 2004). The programme was

designed to improve hand hygiene compliance and reduce hospital-acquired infection. The NPSA reissued the Patient Safety Alert in September 2008. The alert applied to all providers of NHS care in all healthcare settings throughout England and Wales.

The NPSA announced their support for the World Health Organisation (WHO) campaign 'Five Moments' and adopted it as the theme for the fifth year of the Cleanyourhands campaign. The Five Moments approach has been developed to reduce unnecessary hand hygiene, to stress the importance of the correct location and time for hand hygiene, and to ensure the chain of transmission is broken by hand hygiene and thus prevent the transmission of infection. 'Five Moments' linked with the cleanyourhands campaign in the following ways:

- The WHO guidelines on hand hygiene in healthcare formed the central clinical source for the campaign
- Within the campaign, the 'Five Moments' approach to hand hygiene formed the framework for informing staff when and why hand hygiene should be performed
- This will ensure other information, about how to perform hand hygiene for example, will have an impact on practice

The cleanyourhands campaign has historically been quite prescriptive and led by the NPSA. The 'Five Moments' campaign has been designed so that individual Trusts take ownership and develop their own strategy for cascading responsibility for raising awareness and training. The PHNT Infection Prevention and Control Team rose to the challenge and developed and delivered a comprehensive and successful Action Plan around the message of the 'Five Moments'.

It has recently been announced that in the future the NPSA will no longer be leading on the cleanyourhands campaign or providing promotional materials. Individual Trusts will take their own responsibility for strategies around promotion of effective hand hygiene practice. The PHNT IPCT will continue to deliver the message of the 'Five Moments' and 'At the Point of Care'. Indeed, the 'Five Moments' is now incorporated in Trust 'Hand Hygiene Policy' and forms the template for the hand hygiene audit tool.

3. Annual Schools Poster Competition

Local Schools were invited again this year to enter the annual poster competition. The theme, as usual, was around the message of good hand hygiene. The winning entries were printed, laminated and displayed outside Wards and Departments throughout PHNT. Dr Peter Jenks presented the winners with an enlarged, framed copy of their poster and a fine set of colouring pencils. The event was held on the main concourse and local press and radio attended and photographed and interviewed pupils from Montpelier Primary School and St Andrews C of E Primary School. The IPCT treated all the entrants, Teachers and Parents to a tea party after the event.

4. Talking poster frames

To further raise awareness of the importance of hand hygiene, talking poster frames have been installed at the main entrance and outside all wards in the hospital. The frames contain a hand-washing poster and are triggered by a motion sensor that immediately plays an audio track, reminding staff and visitors to decontaminate their hands. They are designed to grab the attention of the passer by, making sure they take notice of the poster and also use the gel which is also available at the ward entrances. Signs have been installed in the hospital reception, outside wards and in other key locations across the Trust reminding staff, patients and visitors of the importance of hand hygiene and asking them to use the alcohol gel outside the ward areas. The signs are activate intermittently to maximise the effect of their impact.

5. Management of medical devices and Saving Lives

A key strategy to reduce hospital-associated infection is to reduce the infection risk associated with the use of catheters, tubes, cannulae, instruments and other medical devices. 'Saving Lives: a delivery programme to reduce Healthcare Associated Infection including MRSA' was published by the Department of Health in July 2005. This document includes a self-assessment toolkit and a series of High Impact Interventions (HII) designed to focus staff on core clinical practices that impact on reducing Healthcare Associated Infections. A pilot scheme to implement the HII was performed in June 2006 and a Trust-wide roll-out began in January 2007. As from April 2008, all clinical areas completed monthly audits, with close monitoring by the Matrons. Audits returned from wards with patients with peripheral and central lines and urinary catheters are reported Trust-wide in monthly balanced scorecard and most areas display these results at the ward entrance. Considerable improvements in the management of these devices have occurred and there has been a reduction in the number of infection-related complications associated with these devices.

Audit

1. Audit of clinical areas

Regular audit of clinical areas is performed using a standardised tool supplied by the Infection Prevention Society, which examines aspects of the environment, facilities, individual staff knowledge and clinical practice. As well as covering specific areas, such as hand hygiene, decontamination of patient equipment, sharps, linen, waste management, clinical practice, the environment and ward/department kitchens, the tool can also be used to focus on specific policies, procedures and practice. All clinical areas are audited over a 12-month period. If a clinical area fails to reach this score a plan of action is drawn up and the area is re-audited to check compliance with recommendations.

Following the successful audit programme undertaken in 2009-10 the IPCT adopted the same structured approach in 2010-11. The first audit undertaken was a Prevalence Survey of HCAs in which all adult inpatient areas were surveyed to help ascertain the

prevalence and type of HCAs within the Trust. The results from this helped plan the audit programme for the rest of the year. The audits undertaken were:

1. Operating Departments – environment and clinical practice
2. Isolation facilities – practice and facilities
3. Hand Hygiene – practice and facilities
4. Decontamination of flexible endoscopes
5. Clinical departments – environment and clinical practice
6. Urinary Catheter care and management
7. Sharps
8. Manual cleaning of Endoscopes

The IPCT worked closely with clinical staff during the audit process, and feedback audit results to individual areas. Re-audits were undertaken when action plans were required following poor results. Audit results were reported on the balanced scorecard and monthly audit reports were produced, with agreed action logs for trust wide issues. These were presented to Infection Prevention Board and monitored until the actions were completed.

2. Compliance with policies and procedures

A number of audits have been performed to assess compliance with the comprehensive range of infection control policies and procedures, including:

- a) Hand Hygiene compliance
- b) Availability of alcohol hand gel in clinical areas
- c) Compliance with MRSA policy
- d) Compliance with *Clostridium difficile* policy
- e) Compliance with Resistant Gram-Negatives policy
- f) Compliance with Glycopeptide-Resistant Enterococci policy
- g) Management of intravascular catheters
- h) Management of urinary catheters
- i) Management of Sharps
- j) Decontamination of endoscopes
- k) Management of Diarrhoea and Vomiting in a Clinical Area/Outbreak Policy
- l) Linen services
- m) MRSA screening
- n) Antibiotic use
- o) Use of isolation facilities.

The results of these audits are available from the IPCT. The programme of audit for the next 12 months is outlined in the Annual Programme of Work for April 2011 – March 2012.

Training and education

1. Education (report by Claire Hail)

Education is essential to promoting safe practice, and is integral to the overall delivery of an effective infection control service. Each year, an Annual Education Programme is produced to outline Trust-wide training programmes for medical and nursing, allied health professional, cleaning and estates, as well as administrative, clerical and managerial staff, and volunteer staff. The Plan includes an assessment of the training needs of different staff groups and is designed to meet local and national educational needs and requirements

Infection control was included as an integral part of Induction Training, as well as Mandatory Update Training. Links with the Trust's Education Department continues with the inclusion of the subject of infection control in the Trust Preceptorship and HCA Level 1, 2, and 3. The IPCT also advised on the content of education sessions for Serco staff on infection prevention and control, with special reference to cleaning the environment and appropriate use of cleaning products.

The increase in linking practice to academic recognition has resulted in a City and Guilds accredited course for non-registered staff. 12 staff completed the course this year and HCA and support workers who had completed the 'In House' course last year were given the opportunity to complete the additional elements to achieve the City and Guilds award. Last year six staff achieved the Post Graduate Certificate in Infection Prevention and Control, which was run in partnership with the Peninsula School of Medicine and Dentistry.

The NHS Core Learning Unit (National Infection Control Training Programme) had been re-instated and available to all NHS staff. A further 90 users logged on with a total of 1500 modules studied.

The IPCT continues to provide education in different ways to meet the needs of a very busy organisation. It is often difficult to release staff from their duties and to this end the IPCT are increasingly delivering training at ward level. The Planned investigation Unit, Neurosciences, Cardiology, Gastroenterology, Healthcare of the Elderly, Critical Care and Respiratory Unit Directorates were supported to run Infection Control Weeks to increase awareness of infection control issues and practices. Some of the activities undertaken during the awareness weeks were featured in the PHNT IPC 2011 calendar.

The Annual Infection Control Study day was held in held May 2010 and was attended by 93 participants. The IPCT also held open forums throughout the year in the main concourse and ran a school poster competition. Information for relatives and visitors is also provided on a notice board in the concourse and on the infection control website.

2. Infection Control Link Practitioners (ICLPs – report by Cathy Ford)

Infection prevention and control link practitioners (ICLP's) are nominated by each clinical area to be the link between the IPCT and that clinical area. Many areas have chosen to have more than one staff member sharing the role. A range of different clinical disciplines is now represented as ICLP's thus successfully reinforcing the message that infection control is everyone's responsibility.

The link practitioners are a vital resource for the trust in the overall strategy to reduce infection. A requirement of the role is that protected time of at least 2 hours per week is allocated to them in order that they are able to carry out their infection control related duties.

The ICLP's play a key role in informing, educating and supporting their colleagues in the clinical areas. They also undertake frequent audits of key aspects of clinical practice. Where audit scores are less than optimal the ICLP will instigate an action plan to address areas needing improvement.

As last year, many ICLPs have organised infection control awareness events in their own areas this year. They have come up with effective and novel ideas for raising awareness of issues pertinent to their clinical practice. A number of ICLP's have presented their work to the Infection Control Committee in order to share best practice and receive acknowledgement for the work they have put in.

The IPCT designate specific team members to link with individual clinical areas so that a consistent level of support can be provided to them. As well as this individual support, bi-monthly ICLP meetings are held. These serve both an educational purpose and as a means to keep the ICLP's updated with relevant issues. They also provide a forum for exchanging ideas and for discussion around key issues. A number of ICLP's were able to spend some time working with the IPCT last year. We always welcome this opportunity to offer one to one support, education and insight into the trust-wide issues that our service covers.

The ICLP's are provided with a professional portfolio, which they maintain as evidence of their commitment to the prevention and control of infection. This enables them to document and reflect on their activities in order to develop within the role.

Compliance with National Guidance and Standards

1. Code of Practice for the Prevention and Control of Healthcare Associated Infections and Related Guidance/CQC Outcome 8

The Health Act approved by Parliament in October 2006 contains a Code of Practice for the Prevention and Control of Health Care Associated Infections (HCAI). The Code places a statutory duty on Trusts to 'ensure patients are cared for in a clean environment, where risk of HCAI is kept as low as possible'. A revised version of the Code of Practice on the Prevention and Control of Infections and Related Guidance was published in 2008 and was updated in December 2010. Compliance with the Code is assessed by the Care Quality Commission (CQC) and is a requirement for

NHS Provider Compliance Assessment Outcome 8 (Cleanliness and Infection Control).

Under the Code of Practice, the Trust must ensure that:

1. so far as is reasonably practicable, patients, staff and other persons are protected against risks of acquiring HCAI, through the provision of appropriate care, in suitable facilities, consistent with good clinical practice
2. patients presenting with an infection or who acquire an infection during treatment are identified promptly and managed according to good clinical practice for the purposes of treatment and to reduce the risk of transmission.

The Trust is expected to have systems in place sufficient to apply evidence-based protocols and comply with the relevant provisions of the basic Code so as to minimise the risk of HCAI to patients, staff and visitors. The systems for the prevention and control of HCAI are expected to address:

- management arrangements to include access to accredited microbiology services
- clinical leadership
- application of evidence based protocols and practices for both patients and staff
- the design and maintenance of the environment and medical devices
- education, information and communication.

Currently, the Trust has full, unconditional registration with the CQC. The IPCT has collated documentary evidence for the assessment of compliance for the infection control elements of the Code of Practice/CQC Outcome 8 and these files are available for external assessment when required. Ongoing overall compliance is reviewed on a monthly basis by the DIPC and Lead Nurse for Infection Prevention and Control (IPC) and this is reported to the Infection Prevention Board. In addition to the overall review, the DIPC and Lead Nurse for IPC will meet with an individual lead each month to review in detail their evidence folder.

2. Clinical Negligence Scheme for Trusts (CNST)

The documentary evidence for the assessment of compliance of infection control within the CNST standards (level 1) achieved the required standard during the external review. The evidence files are held electronically with in the CQC Outcome 8 and will be updated as required for any future assessments.

3. Saving Lives

As part of the process of assessing compliance with the Code of Practice, the self assessment tool of Saving Lives has been completed. The IPCT has the required policies, procedures and processes in place to meet the required standards.

Decontamination (report from Peter Heard on behalf of Andy Nevill, Decontamination Lead designate)

Richard Best, Director of Operations, chairs the Decontamination Steering Group (DSG) and reports to Dr Alex Mayor, Medical Director as Executive Lead. The DSG oversees the programme of improvements for the decontamination of medical devices for the trust. From May 2010 it reported to Safety and Quality Board but from May 2011 will report to the Performance Board.

The decontamination of medical instruments at PHNT is carried out by the Sterilisation and Decontamination Unit (SDU) and centralised services within the Trust.

The Endoscopy Department currently decontaminate their own endoscopes using automatic washer-disinfectors within their department. Work is in progress to convert a room in SDU to centralise the decontamination of flexible endoscopes

Highlights of the last year have been:

- The introduction of a SDU Information Technology system to replace an antiquated and at times unreliable stand alone system. The replacement system will track and trace instruments to a patients and instruments to subsequent patients. Among other functions the system will bill customers and tell where in the system the instruments are. Further developments are expected and will include individual instrument identified to specific trays
- The introduction of touch screens and bar code readers in SDU to improve the checking of instrument sets is well on the way to being introduced in June 2011

Work continues this year on all aspects of the decontamination programme.

Cleaning services

1. Cleaning services

2010-2011 was the first complete year of the trust's new Hotel Services contract and presented the opportunity to build on the early changes that had been made to the cleaning services.

The ward domestic establishments proposed in the contract bid did not work quite as well as anticipated so were reviewed in order to increase the cleaning hours on the wards.

The semi-disposable and fully disposable microfibre cleaning systems implemented in the early stages of the contract were changed to premium quality microfibre for routine cleaning with appropriately colour coded and launderable dolly mops for enhanced/infection cleaning.

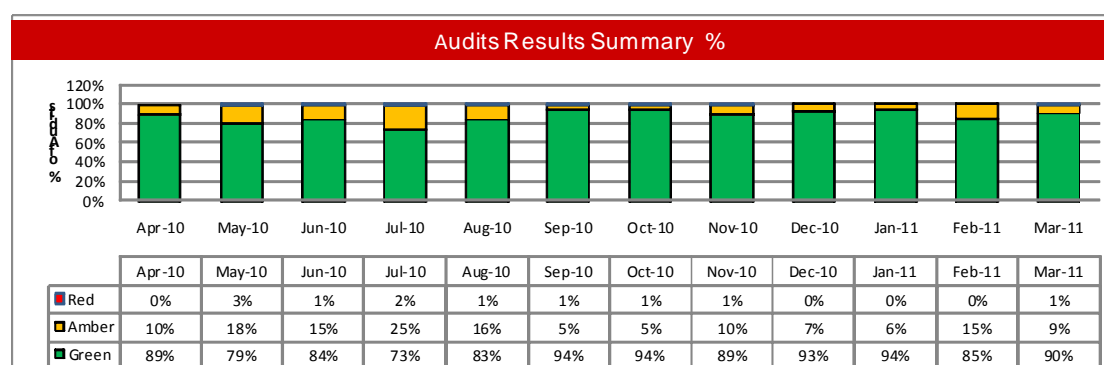
During the later part of the year, the trust agreed the first variation to contract which changed the risk category of 13 wards from High to Very High Risk. The wards selected for the change were those requiring a high volume of ad hoc enhanced cleans. Changing the risk category in this way increased the cleaning frequencies.

The cleaning standards in all areas of the hospital are required to be audited to the frequency laid down in the National Specification for Cleanliness in the NHS and as per the designated risk categories, i.e. :-

Very High Risk	98%
High Risk	95%
Significant Risk	93%
Low risk	90%

The audit programme involves between 110 and 145 audits to be carried out each month, some of which are jointly conducted with a member of the Site Services team. The Audit Results Summary below illustrates the monthly percentage of audits achieving the required standards (green), those just failing to meet the required standard (amber) and those failing outright (red)

2. Audit Results – percentage summary



3. Patient Environment Action Team (PEAT) 2011

The annual PEAT (Patient Environment Action Team) self assessment was conducted in February 2011. The audit was led by the Chief Nurse, supported by the Deputy Chief Operating Officer and representatives from Infection Prevention and Control, Matrons, Site Services, Serco with two shadow FT governors taking the role of patient representatives.

The audit was conducted over two consecutive days in order to cover a substantial sample of wards, departments and public areas.

Preliminary scoring conducted immediately after the audit suggested that the trust had improved on the Cleanliness and Environment results of the 2010 assessment,

comfortably retaining the Good status, narrowly missing the required percentage to warrant Excellent status.

Other activities

1. Policies and procedures

The IPCT recognises the importance of evidence-based policies and procedures in ensuring effective compliance with national infection control standards. All policies comply with the Trust Policy on Policies and are available in all clinical areas in paper format as well as on the trust email system. At renewal, all policies are examined to ensure compliance with the National Service Framework for Children and the Trust's Equality and Diversity Policy.

The following policies have been updated in accordance with the continuous process of rolling policy review:

- a) Guidelines for the Management of MRSA
- b) Guidelines for Aseptic Technique
- c) Policy for Admissions, Transfers and Discharges
- d) Guidelines for Cystic Fibrosis
- e) Guidelines for *Clostridium difficile*
- f) Guidelines for PVL-producing Staphylococcal infections
- g) Guidelines for Glycopeptide-Resistant Enterococci
- h) Guidelines for Resistant Gram-Negatives
- i) Guidelines for Cleaning of Respiratory Equipment
- j) Disinfection and Cleaning Policy
- k) Roles and Responsibility for Infection Prevention and Control
- l) Hand Hygiene Guidelines
- m) Infection Prevention and Control Framework
- n) Guidelines for the Management of the Infected Patient
- o) Guidelines for the Management of Central Lines
- p) Linen Services Guidelines
- q) Control of blood-borne virus/inoculation in injuries.

2. Communication with staff, patients and relatives

Communication with staff at PHNT is facilitated by a quarterly IPCT Newsletter, 'Infectious'. Updates on ward closures due to outbreaks is provided through Trust-wide emails and on the main infection control notice board in the main concourse. All infection control policies are now available on the Trust email system and the infection control website has been further developed over the last year. The display on the main infection control notice board is changed on a regular basis and includes education and surveillance data. There is a regular infection control contribution to the weekly electronic newsletter (Vital Signs) and the quarterly magazine (Cascade) that are distributed to all staff at PHNT.

The DIPC has attended meetings of the Health Overview and Scrutiny Panels of Plymouth City Council, as well as the Hospital Medical Staff Committee. A representative of the recently disbanded Plymouth Hospitals Patient and Public Involvement Forum is a member of the ICC.

This year, members of the IPCT taught hand washing technique at local schools using the GloBox.

3. Design, construction and renovation (report by Claire Hail)

The IPCT continues to contribute to the design, construction and renovation projects across the Trust, particularly the significant environmental initiatives including the replacement of clinical wash hand basins, Kitchen Refurbishment Programme, floor replacement programme, Ward and department refurbishment project and the Productive Ward Project advising on product approval and room specifications. For each project, method statements have included dust control measures as advised by IPCT and compliance has been monitored throughout the works. Surveys of the clinical environment have been undertaken prior to works commencing and have been most successful when performed together with clinical staff, the Estates Department and planning teams.

The successful upgrade on the Interventional X-ray department, and the reconfiguration of Primrose Breast Unit and Brach-therapy unit to provide improved facilities and service to patients were completed without significant disruption to the day-to-day running of the affected units, reflecting the effective working relationship with the Project Team, which included contractors, the Estates Department, Matron and staff from the Departments and Serco as well as the IPCT. Norfolk and Argyll wards have been re-furbished as have the Children's wards on level 12, and a further two wards have been assessed ready for refurbishment during 2011. The Clinical Decisions unit now has improved facilities for patient ablutions to meet the privacy and dignity agenda.

The IPCT advised on the Level 4 Theatre Project group and performed microbiological testing for a further 14 theatres included in the Theatre Annual Closure Programme at Derriford and Royal Eye Infirmary.

The IPCT continues to advise and monitor dust controls during the refurbishment of the sluices across the Trust and work with Estates on their pre-planned maintenance programme.

The policy for Infection Control Input into Design, Construction and Renovation Projects will be reviewed in April 2012.

The IPCT have been involved with the design specification and risk assessment for the Plymouth Dialysis Unit due to be opened during 2011

4. Antibiotic management (report by Dr J Greig)

The Antibiotic Control Team (ACT) consists of the lead Microbiologist for antimicrobial prescribing (Dr J. Greig) and the antimicrobial pharmacist (Nicola Joyce). Herein is described the activities of the ACT for the year to June 2011

4.1. Training and Education

The ACT has led varying training and educational sessions. These include structured delivery of talks on the use of antibiotics to various professional groups including Senior Doctors on the annual update programme, F1 Doctors as part of their programmed training, ad hoc training at ward level and directorate specific educational sessions for Junior and Senior Doctors. The Directorate specific sessions have been particularly successful in the last year with many Directorates inviting the Team to talk about antibiotic use. An Antibiotic Newsletter is periodically produced for both primary and secondary care and brief Email messages containing information on prudent antibiotic use distributed every 1-2 months.

4.2. Prospective audit with intervention and feedback and monitoring Trust antibiotic use

The ACT carries out prospective audit with intervention and feedback to individual directorates. These results are incorporated into the Trust Infection Control Balanced Score Card and feedback to Directorates on a quarterly basis. In the last year over 2000 patients were audited of which one third were on antibiotics and nearly 800 individual antibiotic courses reviewed. Overall compliance was 85% with the majority of non compliances being of a minor nature. Less than one prescription in 30 had a serious omission. The results of the audits are used to identify areas of poor practice and allow targeted interventions and education.

Total in patient antibiotic consumption is reviewed on a monthly basis to look for trends and changes in the overall use of antibiotics in the Trust. The data is formatted into easy to understand consumption data and total Trust use is periodically disseminated. A collaborative project looking at benchmarking antibiotic use across the Region is in progress and hopes to yield local results in the coming year.

4.3. Review of use of restricted antibiotics

The ACT continues to be informed on a daily basis of new prescriptions of certain restricted antibiotics, which were reviewed on twice weekly ward rounds. Other problems with the use of antibiotics are highlighted by Ward Pharmacists and these patients are also regularly reviewed. In the past year nearly 1400 prescriptions have been reviewed and on 40% of occasions this led to an intervention, usually to stop the antibiotic or convert to the oral route. The more targeted approach to quinolone use has led to an 87% compliance with Trust guidelines. Areas of poor quinolone use are identified using this data and where possible further controls are put in place

4.4. Guidelines

General treatment guidelines (full and abridged) are freely available on Trustnet. Annual update and review is the ideal where time permits. In many cases guideline review is purposely delayed to coincide with national updates. All guidelines are updated at least biennially. Abridged versions of the guidelines are available as handy laminated cards which were distributed at induction, at scheduled educational sessions and opportunistically on the wards. Directorate specific guidance has been updated and expanded upon. Use of Surgical antibiotic prophylaxis has been audited in Vascular, Neurosurgery and orthopaedic trauma and the results used to highlight areas of sub optimal practice.

4.5. *Clostridium difficile*

The ACT reviews all hospitalised patients with *C. difficile* and advises on the antibiotic management of this disease in particular advising on stopping or changing precipitating antibiotics and advising on which treatment antibiotics to use. The antibiotic pharmacist attends the daily *C difficile* management meetings. The antibiotic causes of all *C. difficile* cases was reviewed and the information has been used to identify possible further preventative strategies.

5. Vascular Access Team (report by Carol Pollard)

The Vascular Access Nursing Team consists of one full time Band 7, and 0.3 WTE Band 6 nurses. We offer advice and support to enable healthcare professionals to care for patients with a Central Venous Access Device (CVAD) safely and effectively, with the aim to minimise any infectious or other complication associated with these high risk devices, and to increase patient satisfaction and confidence with their care.

5.1. Training and assessment

Working with the Workforce Development Team, the vascular access nurses continue to support competency-based CVAD training for Trust staff.

- It is expected that all Registered staff undergoing the Trust IV training will be trained in CVAD management, and that competency assessment will be done at ward or department level by the trained assessors now in each area.
- Aseptic technique assessment will be required for staff in areas that do not have these devices. This will be undertaken by the Clinical Skills Department, who will continue to collate this information along with the names of those assessed as competent in CVAD care.

5.2. Advise and co-ordinate line insertions Trust-wide

The nurse delivered ultrasound guided PICC and Midline insertion service introduced in May 2009 continues. There has been a steady increase in referrals, although the number of lines placed continues to be limited by nursing time and access to

appropriate clinical space. Complication rates are low, and successful cannulation rates are high compared to other techniques.

The main aims of this aspect of the service are:

- To replace short-term lines with PICC or midline catheters, which are associated with a reduced risk of infection, are more acceptable to the patient, and can facilitate early discharge or prompt transfer to onward care
- To reduce the numbers of tunnelled lines (Hickman lines) placed for medium term intravenous therapy. PICC lines have a number of advantages over Hickman lines, including fewer resources required for insertion (staff and theatre time), involve a less invasive insertion technique, and with fewer potential complications. Also, unlike a tunnelled line, there no requirement for minor surgery to remove the line when treatment completed.

5.3. National Patient Safety Agency monitoring

The standard measure of CVAD-related infections is a rate reported as the number of infections per 1000 catheter days. Data collection by the Michigan Project team has been temporarily suspended, although this data set continues to be collected by all Critical care areas (the Neonatal Unit continue to return their data separately).

The process of self-reporting of the central lines in situ on a daily basis by each clinical area is fairly well established now, and compliance with this process is becoming increasingly good. This information is collated and a report is circulated monthly.

5.4. Review of Central Line Related Blood Stream Infections (CLABSI) – using lessons learnt to inform clinical practice

The Vascular Access Lead Nurse will continue to review all CLABSI using the RCA process, alongside the relevant clinical team, to establish any areas for improvement. Previous reviews have led to a number of improvements in clinical practice. The aim in this area is -

- To continue to work collaboratively with medical, nursing and other colleagues across the Trust on this continuous improvement process.
- Continue current close links with the Infection, Protection and Control Team, and Outreach /Emergency Care Teams

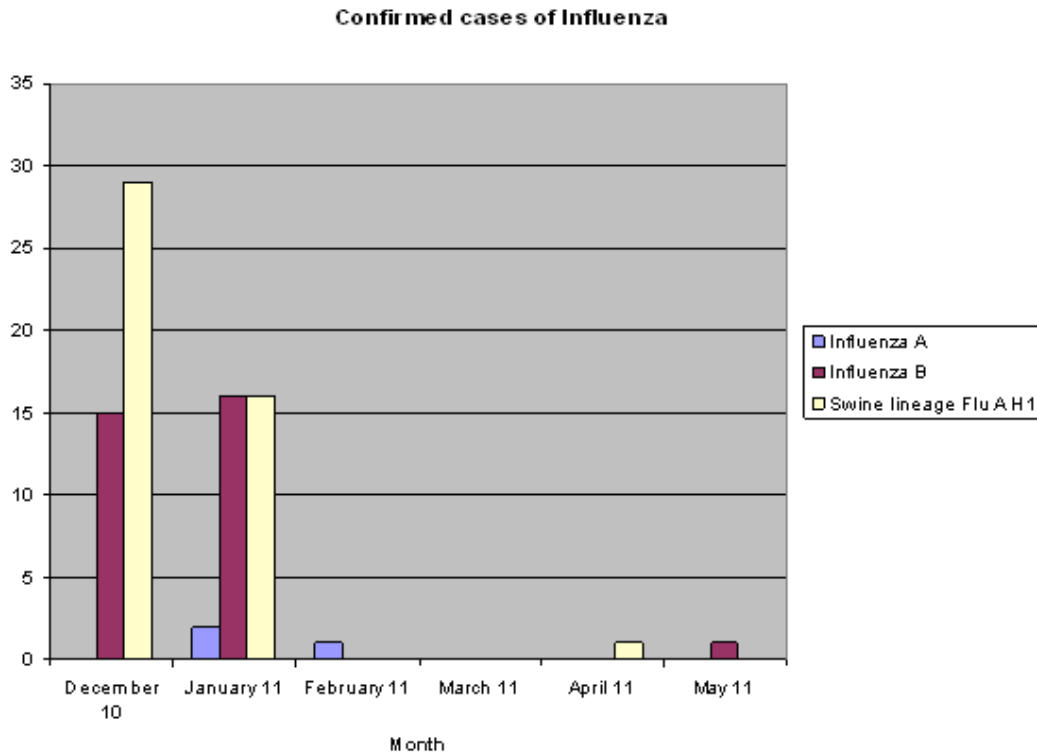
6. Influenza Planning Group (report Claire Hail)

Although the Pandemic Influenza Planning Group has now been stood down, the Trust's Emergency Planning and Liaison Officer continues to oversee the monitoring of cases, review of response to date and the development of future arrangements. Meetings were held to review the Trusts preparedness and IPCT were actively

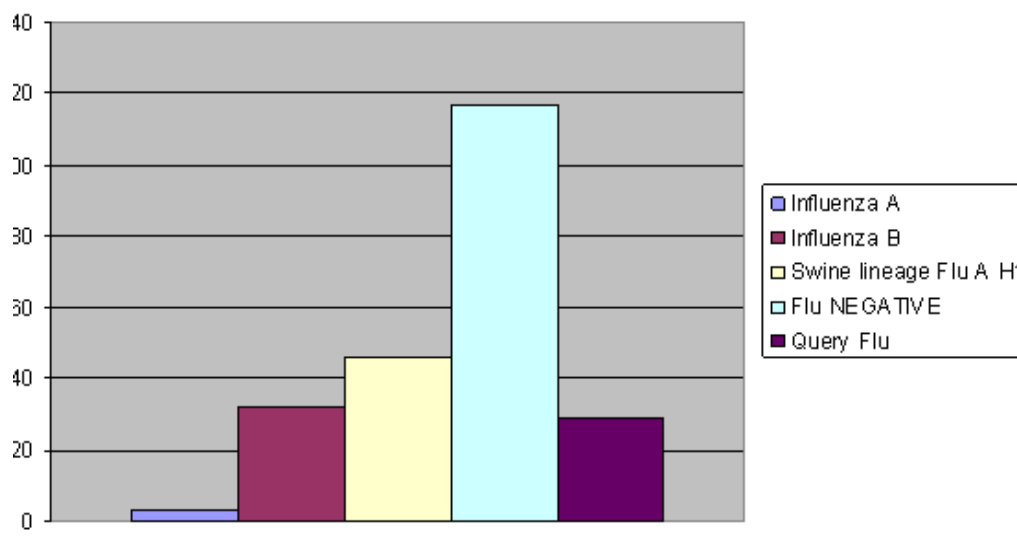
involved in supporting the co-ordination of the arrangements for patients admitted with seasonal influenza., whilst ensuring that the potential spread of infection was minimised the Pandemic Influenza planning group meet to ensure plans were in place should it be necessary to escalate should this years Seasonal influenza cases increase.

Between December 2010 and May 2011 there were 227 suspected or confirmed cases of seasonal influenza (Flu A, Flu B or H1N1) reported to IPCT. Information based on the National guidance was issued in Vital signs and the daily communications bulletin and an Infection Control Nurse attended the daily Operational meetings to provide information on the current in-patient situation in term of numbers of suspected/confirmed cases and location with in the hospital. This information was reported to the SHA on a daily basis.

Once the clinical teams reported the suspected cases to IPCT the wards were supported by an infection control nurse visit to provide advice on the infection control measures required. Medical advice was provided between the Consultants in Emergency Medicine and Microbiology.



Breakdown of all cases of Influenza



ALL CASES = 227

7. Infection Control ward round

Since November 2004, all new patients with MRSA, *C. difficile* and norovirus have been reviewed individually on the Infection Control Ward Round. The approval and implementation of a Patient Group Direction allows prescribing of MRSA eradication therapy by the Infection Control Nurses. Parallel to this, new documentation and care plans for the management of MRSA, norovirus and *C. difficile* diarrhoea have been introduced. All patients with MRSA are subsequently reviewed once a week and those with *C. difficile* every day. The ward round also reviews patients colonised with GRE, *Serratia* spp, *Acinetobacter* and ESBL-producing coliforms. This approach has improved the management of these patients as well as compliance with infection control policies and procedures. In addition, the enhanced presence of the IPCT in clinical areas greatly increased their availability for advice and guidance and improved communication with patients and relatives.

8. Infection Control Nurse Directorate working

The IPCT has worked hard to move towards providing a more clinically-orientated service, with each Directorate having a designated team of Infection Control Nurses. This system facilitates communication between the IPCT and Directorates and allows a 'tailor-made' service to be developed for each area. By working closely with the ward manager and ICLP to improve practice and feedback of surveillance data, it is hoped that individual area will develop 'ownership' of infection control. The programme has been extremely successful in improving practice and reducing rates of hospital-associated infection areas. Infection control is a standing item on the Agendas of most Directorate meetings which are now attended by the IPCT.

9. Research

The IPCT has been involved in the implementation and assessment of the impact of rapid diagnostic tests for MRSA and norovirus. Two research papers have been published on this and one further article is in preparation.

The following articles have been published by the IPCT in the last five years:

Jones G, Matthews R, Cunningham R, Jenks P. Comparison of automated processing of flocked swabs for the detection of nasal carriage of *Staphylococcus aureus*. Journal of Clinical Microbiology 2011, in press.

Jog S, Cunningham R, Cooper S, Wallis M, Marchbank A, Vasco-Knight P, Jenks PJ. Impact of preoperative screening for MRSA by real-time PCR in patients undergoing cardiac surgery. Journal of Hospital Infection 2008; 69: 124-130.

Cunningham R, Dial S. Is over-use of proton pump inhibitors fuelling the current epidemic of *Clostridium difficile* associated diarrhoea? Journal of Hospital Infection 2008; 70: 1-6.

Greig J, Edwards C, Wallis M, Jenks P, Cunningham R, Keenan J. Carriage of methicillin-resistant *Staphylococcus aureus* among patients admitted with fractured neck of femur. Journal of Hospital Infection 2007; 66: 187-189.

Cunningham R, Jenks P, Northwood J, Wallis M, Ferguson S, Hunt S. Effect on MRSA transmission of rapid PCR testing of patients admitted to critical care. Journal of Hospital Infection 2007; 65: 24-28.

Brown NM, Lee SD, Duerden BI, Gillanders SA, Cookson B, Neville L, Jenks P, Catchpole C, Wright P, Spencer RC. MRSA in non-clinical areas of hospitals. Journal of Hospital Infection 2006; 64: 402-403.

Greig J, Jenks P. Treatment of MRSA in community acquired pneumonia. British Medical Journal 2006; 332: 1334.

Cunningham R. Antibiotic prescribing in the ICU. Anaesthesia and Intensive Care Medicine 2006; 7: 147-8.

Cunningham R. Proton pump inhibitors and the risk of *Clostridium difficile*-associated disease: further evidence from the community. Canadian Medical Association Journal 2006; 175: 757-8.

Conclusions and priorities for 2011-12

The infection prevention and control service at PHNT has made significant progress towards modernising the service it offers and meeting the challenging new agenda being set at both local and national levels. The IPCT has dramatically changed the way it has worked in order to deliver a more clinically-orientated and relevant service. This approach has been effective in both improving clinical practice and reducing rates of hospital-associated infection. There have been significant improvements hand hygiene compliance and clinical practice audit scores, such as the Saving Lives HII, have also improved. Infections due to MRSA, MSSA and *C. difficile* have fallen, as have rates of surgical site infection. Considerable Trust-wide effort is required to maintain and continue these improvements, particularly if the Trust is to continue to the MRSA bacteraemia and *C. difficile* reduction targets.

Priorities for the following year include:

- Achieve the local and national targets as outlined in the Annual Programme of Work, April 2011-March 2012
- Comply with current and new national mandatory surveillance requirements (to report Meticillin-Sensitive *Staphylococcus aureus* (MSSA) bacteraemias from January 2011 and *Escherichia coli* bacteraemias (from June 2011))
- Continue to deliver a high-class Surgical Site Surveillance Programme
- Ensure continued compliance with Code of Practice/CQC Outcome 8 and other national guidelines
- Perform RCAs on all serious HCAIs
- Sustain the use of the 'Saving Lives' HII across the Trust
- Continue to embed infection control at all levels across the Trust
- To continue to provide up-to-date information available on the Infection Control website
- To continue to develop the Postgraduate Certificate in Infection Prevention and Control.