ANNUAL REPORT INFECTION PREVENTION AND CONTROL

APRIL 2009 – MARCH 2010
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INFECTION PREVENTION AND CONTROL
ANNUAL REPORT 2009/2010

1. INTRODUCTION

1.1 This annual report is drawn up by the Interim Director of Infection Prevention & Control (DIPC) and Lead Infection Prevention & Control nurse, and includes contributions from departments that play key roles in the infection prevention and control agenda. The report relates to the period 1st April, 2009 to 31st March 2010 and includes all performance issues within the Trust and external inspections undertaken in this period, together with recommendations and action plans where appropriate.

The Trust retains its commitment to reducing the incidence of hospital acquired infections, to build on the previous year’s reduction and, working with the Primary Care Trust (PCT), reduce the incidence of community acquired infections.

The Trust, Infection Prevention and Control Service (IPACS) and all clinicians continue to undertake surveillance, risk analysis and root cause analysis of infections to identify issues. Measures are implemented from lessons learned to address issues identified and policies, protocols and practices are amended accordingly. These measures are reported to the Trust Board in a full and timely manner through a monthly IPACS report, prepared and presented by the DIPC.

1.2 Role of the Director of Infection Prevention & Control

Every Trust must have a senior member of staff designated as the DIPC. The DIPC liaises with key staff at both board and ward level; this includes Trust Executives, all members of the Infection Control team, Consultant in Health Protection, Clinical and nursing colleagues, DIPC’s of neighbouring organisations and the PCT.

The DIPC holds corporate responsibility for infection prevention and control throughout the Trust, as delegated by the Chief Executive; is responsible for the development of strategies on infection prevention and control and is tasked with ensuring implementation and ongoing delivery of these to maintain compliance with the Health Act, 2008.

The DIPC will oversee the local infection prevention and control policies and their implementation, and provide assurance to the Board that these policies remain fit for the purpose.

The DIPC will monitor and report performance relating to infection prevention and control issues to the Trust, and report directly to the Chief Executive and to the Trust Board.

The DIPC has authority to challenge inappropriate clinical hygiene practice and antibiotic prescribing decisions, and is required to assess the impact of existing and
new policies and plans on infection rates, and to make recommendations for change where necessary.

The DIPC contributes to the organisation’s clinical governance and patient safety teams and structures, and is responsible for producing an annual report on the state of healthcare associated infection in the organisation, which is released publicly.

He/she must act on legislation, national policies and guidance, ensuring effective policies are put in place and audited; attend Board meetings to report on infection prevention and control issues and ensure infection prevention and control consideration in other operational and developmental decisions of the Board.

The DIPC works with the Decontamination Lead to ensure that the requirements of decontamination guidance are in place and adhered to through the implementation of appropriate policies, and must lead the management of IPAC outbreaks, produce SUI reports and report to the SHA and PCT when appropriate, and ensure that the Trust remains below trajectory in its management of avoidable HCAI’s.

A key role is to provide leadership to the Infection Prevention and Control Programme in order to ensure a high profile for infection prevention and control across the organisation, and manage and support the infection control team in all its activities to ensure delivery of the programme. The management of infection control is dependent upon a cohesive and committed team which, when functioning collectively, can impact significantly on patient safety and ensure that avoidable HCAI’s are kept to a minimum.

2. THE HEALTH AND SOCIAL CARE ACT 2008

In the financial year 2009/10, the Care Quality Commission (CQC) inspected up to half of all healthcare Trusts in the UK to assess whether they were meeting the new regulations on HCAI’s and following the Code of Practice (The Health and Social Care Act, 2008) and related guidance. They reported any breaches of regulations and any requirements to address these breaches to each Trust.

2.1 Care Quality Commission Inspections – December, 2009 and February, 2010

The CQC instigated an unannounced visit by 3 inspectors on 9th and 10th December, 2009. After inspection of three wards, analysis of information on how the Trust managed infection prevention and control, examination of policies and discussion with a cross section of Trust staff, including the Chief Executive, Directors, members of IPACS, ward staff and Allied Health Professionals, they submitted their report.

The report found 13 of the 16 measures inspected were satisfactory, but 3 measures required improvement:

- The Trust should review its management systems, including the infection control programme, to ensure they are working effectively.
• The Trust should have appropriate policies for the environment that make provision for liaison between the members of the infection control team and the people with overall responsibility for facilities management.

• The Trust must ensure it uses effective arrangements for the decontamination of instruments and other equipment, and these should be detailed in appropriate policies. The Trust must take immediate action to clean dirty equipment.

The Trust was required to address the areas for improvement and implement effective arrangements for the ongoing decontamination of equipment by 29th January, 2010.

Immediate action was taken and a supporting action plan detailing the actions and deadlines for improvement was produced. The CQC Inspectors only required an informal contact which provided evidence of delivery on the improvement measures.

On the 2nd February, 2010, one Inspector arrived for an unannounced follow-up visit. He visited two wards and reviewed the evidence provided as reassurance that the three measures had been addressed. His report stated he was satisfied that measures were now in place and that issues had been addressed immediately after the initial visit.

3. DEVELOPMENT OF IPAC SERVICES

The IPAC service consists of a multi-disciplinary team, which includes Consultants, nurses and a designated pharmacist. They are supported by an auditor and secretarial staff.

3.1 Additional Staff

In August, 2009, investment into the IPAC team supported the appointment of a Band 3 Health Care IPACS Support worker. In November, 2009 a part time Band 6 nurse was appointed to replace a retiring team member. Further review of roles and responsibilities led to the regrading of the senior specialist nurse. A second consultant microbiologist was appointed in November, 2009.

3.2 Educational Development of IPAC Team members

Investment in the staff has included support to study for a BSc degree in Infection Control at the University of Hertfordshire, and NVQ training for the Band 3 IPACS support worker.
4. INFORMATION TECHNOLOGY DEVELOPMENTS

4.1 Web-Based Surveillance Software for IPACS

The IPACS Team require information in real time/near real time from the Microbiology Laboratory in order to avoid delays in management of infection control at ward level.

In October, 2009, a business case for a web-based surveillance system was agreed by the Board.

ICNet was purchased and will provide the IPAC team with near real time reporting, with an average of 5 imports of results per day instead of only one a day. The system has the capability of setting alerts to notify the IPAC team of any particular information, e.g. a cluster of a particular micro-organism identified on a particular clinical area, in a given period of time, such as two or more patients identified with *Clostridium difficile* infection from the same ward.

The system will eventually interface with PAS to provide admission/discharge information within the ICNet system. When the clinical areas within the Trust are Wi-Fi compliant, the IPAC Team will be able to access results from a portable tablet. The system is supported by a training and helpdesk package. The system is planned to go live on 1st June, 2010.

5. AUDITS

Audits provide a standardised method for monitoring evidence-based clinical practice, protocols, procedures and the environment. Feeding back the audit results enables a systematic identification of areas where improvement is needed to minimise infection risks and enhance the quality of patient care.

5.1 High Impact Interventions (HII) - "Saving Lives"

"Saving Lives", a delivery programme to reduce healthcare associated infection including MRSA, was launched by the Department of Health in 2005 and revised in 2007 (*Saving Lives: reducing infection, delivering clean and safe care*). This is a delivery programme centred on a series of clinical care bundles or high impact interventions. The care bundles or high impact interventions (HII) support HCAI improvement and form an essential part of an organisations plan to implement best practice, national guidance and the latest infection prevention and control policies.

The HII’s relate to those key clinical procedures which can increase the risk of infection if not performed appropriately. They have been developed to provide a simple way of highlighting the critical elements of a particular procedure, the key actions required and a means of demonstrating reliability using compliance audit tools. The purpose of the HII’s is to minimise unwarranted variation in practice by providing a way of identifying where compliance needs to be increased and a
measure of how often all elements are performed for a given procedure. The tool is also the means by which results can be fed back to staff quickly and actions agreed and implemented. Progress of compliance can be tracked and shared to ensure that good practice is standardised and consistent.

The HII audits comprise of

- HII No 1 - Central Venous catheter care
  Areas where central venous catheter (CVC) care is predominant contribute to this audit. Elements of compliance relate to cleaning of the skin and ports when administering IV medication. New cleaning solutions have been introduced which comply with guidance. A cannulation pack was introduced in August, 2009, to assist with achieving a sterile environment when inserting a CVC.

- HII No 2 - Peripheral intravenous cannula care
  Elements of compliance relate to cleaning of skin and ports when inserting IV medication. New cleaning solutions have been introduced which comply with guidance. A cannulation pack was introduced in August, 2009, to assist with achieving a sterile environment when inserting a peripheral intravenous cannula. Peripheral cannula documentation was reviewed in August, 2009.

- HII No 3 - Renal dialysis catheter
  The Renal Dialysis Unit at the QEH is a satellite of Addenbrookes and does not come under the umbrella of IPACS, therefore it is not included in the HII at QEH.

- HII No 4 - Prevention of surgical site infection
  The elements of this HII are predominantly related to aspects of care specific to the Day Surgery Unit, main operating theatre and surgical wards. The QEH has very low surgical site infection rates, and currently monitors joint replacement and major bowel surgery (see also section 6 for greater detail).

- HII No 5 - Ventilated patients
  Critical Care and NICU undertake this HII, as ventilator-associated infections account for a high percentage of infections in intensive care units.

- HII No 6 - Urinary catheter care
  Urinary catheter associated infections are one of the most common hospital associated infections. The correct size of catheter and sterility on insertion are the main elements of this HII.

- HII No 7 - Reduce the risk of Clostridium difficile
  C. diff remains a potential risk to the elderly person both in the community and acute setting. Within the QEH, this audit is only undertaken in the Isolation Unit on Stanhoe ward.

- HII No 8 - Cleaning and decontamination of clinical equipment
  The QEH policy on Cleaning and Disinfection reflect the guidance in this HII. Assessment of tracking the cleaning of equipment continues to be reviewed.
Various methods of identifying clean equipment have been trialled. All wards and department undertake this HII.

5.2 In 2007, four additional summaries of good practice were included:

- **Antimicrobial Prescribing: a summary of best practice**
  Lead Antimicrobial Pharmacist undertakes audits to assess compliance with best practice.

- **Taking blood cultures: a summary of best practice**
  The QEH has compiled a specific HII audit to comply with this best practice.

- **Screening for MRSA colonisation: A strategy for NHS Trusts**
  Again, a specific HII audit was compiled to comply with this best practice. As the Trust introduced screening of elective surgical patients in April, 2009 and will introduce screening of emergency patients in April, 2010, this HII will require a review.

- **Isolating patients with healthcare associated infections: A summary of good practice**

  The QEH policies reflect this best practice

  The hand hygiene element to each of these HII has been incorporated into a specific care bundle and included in the monthly audit requirements.

In 2009 a dashboard reporting system was developed by the Clinical Audit Department to provide a means to share the results of HII audits, and it can be accessed Trust wide via the Clinical Audit Department web page. Each area that undertakes HII audits can view their month by month compliance against an expected compliance above 95% and compare their results with similar areas to ensure that a consistent quality of care is being delivered.

Compliance with undertaking the audits has been satisfactory; therefore to ensure compliance in completing the audits, a new booklet was introduced in January, 2010, combining all the audits together, with a set of instructions and a matrix of when each audit should be completed. This booklet was designed with the assistance of clinical staff and the Clinical Audit Department. Cross auditing of similar wards was trialled to ensure that the audits were completed. A further review of the booklet will be undertaken to simplify the audit tools even further.

5.3 **Environmental Risk Audits**

The annual Environmental Risk Assessment audits are undertaken by the IPAC team using a modified audit tool, based on the Infection Control Nurse Association - Audit tool for monitoring Infection Standards (2004). The audit includes cleanliness, decontamination procedure, hand hygiene facilities and practice, waste disposal, availability of personal protective equipment and practice.
An audit was carried out on each ward and department, unless they were in the process of reconfiguration at the time of the scheduled audit, when an alternative date was scheduled.

Each Ward/department Manager or nominated deputy is expected to accompany the member of the IPAC team during the audit, to ensure ownership of the audit and to address urgent issues that may be identified. A report is sent to the Ward/Department Manager and an action plan of any issues identified is expected to be submitted to IPACS, stating actions undertaken and date completed.

5.4 Other Audits

5.4.1 Sluice and Commode Audit by External Company

An external company undertook an annual audit of the sluice and commodes in the ward areas. A full report was submitted and distributed to each ward area and an action plan requested to address any issues.

This audit identified sluice issues such as poor storage, high stock levels and soiled or defective commodes.

The same auditor has undertaken this audit for the last two years and has noted that issues previously identified have been addressed.

5.4.2 Waste Disposal Audit

IPACS and the Waste Manager undertook an annual waste audit to identify areas of concern. Issues regarding the broken locks of waste bins and appropriateness of collection times were identified and addressed.

5.4.3 Kitchen Audit

IPACS undertook an annual audit of the kitchens and produced a report for the Hotel Service Manager. The issues identified reflect the quarterly report produced by the Environment Health Office, which mainly regards issues within the fabric of the kitchen.

5.4.4 Peripheral Cannula Audit

In addition to the routine cannulation HII audit, the more detailed Peripheral Cannula Audit is undertaken by the IPAC Team on a bi-annual basis. This specific audit is prospective over a two day period on all the clinical wards, and undertaken by two members of the IPAC Team. This ensures the data collected is specific and consistent, and produces data that can be compared with previous audits.

From previous audits, issues were identified regarding documentation and Visual Infusion Phlebitis (VIP) scoring. The audit in August, 2009 was undertaken and coincided with the launch of cannulation packs and the new documentation.
An increase with compliance was expected in the audit undertaken in March, 2010. There was very little increase in the overall compliance, which reflected the general feedback from nursing and medical staff regarding the documentation, the availability and the ease of completion.

Both the documentation and the cannulation packs have been reviewed by the Venous Access Group (VAG) and reconfigured to include suggestions by nursing and medical staff. The changes are expected to be in place by September, 2010.

**Results from Peripheral Cannula Audit - August, 2009 and March, 2010**

<table>
<thead>
<tr>
<th>Observation</th>
<th>August/2009</th>
<th>March/2010</th>
</tr>
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<tbody>
<tr>
<td>Cannula has been used in the last 24 hours</td>
<td>80%</td>
<td>86%</td>
</tr>
<tr>
<td>Cannula to be used in the next 24 hours</td>
<td>75%</td>
<td>77%</td>
</tr>
<tr>
<td>Cannula Assessment Record in use</td>
<td>32%</td>
<td>35%</td>
</tr>
</tbody>
</table>

**DOCUMENTATION DETAILS ARE AVAILABLE FOR**

| Insertion of cannula                                  | 19%         | 45%        |
| Removal of cannula                                    | 16%         | 13%        |
| Resite of cannula                                     | 18%         | 6%         |
| Date on cannula dressing                              | N/a         | 45%        |
| Coloured label with appropriate day displayed         | N/a         | 40%        |

**DRESSING INSPECTION**

| Dressing opaque                                       | 100%        | 0%         |
| Dressing intact                                       | 98%         | 98%        |
| Dressing clean and dry – no obvious moisture          | 84%         | 85%        |

**POSITION OF CANNULA SITE**

| Wrist                                                 | 29          | 20         |
| Back of Hand                                          | 42          | 57         |
| Forearm                                               | 56          | 18         |
| Cubital Fossa (Elbow)                                 | 36          | 26         |
| Other: please state                                   | 26          | 0          |
| IV Site appears healthy                               | 139         | 123        |
| Current VIP score present                             | 52          | 106        |
| Current VIP score                                     |             |            |
| Action taken in line with VIP score                   | 130 (79%)   | 1 (0.8%)   |
6. SURGICAL SITE INFECTIONS

A national surveillance system for Surgical Site Infections (SSI) was established in 1997 and eventually evolved into the Surgical Site Infection Surveillance Service (SSISS). Surveillance of SSI in orthopaedic surgery became mandatory for all NHS Trusts in England in April, 2004.

The aim of SSISS is to enhance the quality of patient care by encouraging hospitals to use data obtained from surveillance to compare their rates of SSI over time and against a benchmark rate, and to use this information to review and guide clinical practice. Each Trust is required to participate for a minimum of one surveillance period (three months). Most Trusts choose to undertake the total hip and knee prosthesis category. The number of participating Trusts has increased year on year.

The Queen Elizabeth Hospital has participated in the mandatory reporting of total hip replacements, hip hemi-arthroplasty, knee replacement prosthesis and also contributed to surveillance on large bowel surgery surgical site infections since April, 2004. The collection and reporting of this data has been undertaken by the Clinical Audit and Effectiveness Department, using the Health Protection Agency (HPA) Surgical Site Infection System. The annual results have been reported to the Trust Board through the Infection Prevention and Control Annual Report.

Although the Trust was unable to contribute to all four quarters in 2008 to 2009, the issues have now been addressed in Clinical Audit and Effectiveness to allow future submission of data for all quarters.

The infection rates in the three orthopaedic procedures and large bowel surgery have consistently been below the national average.

<table>
<thead>
<tr>
<th>April, 2009 - March, 2010</th>
<th>The Queen Elizabeth Hospital NHS Trust</th>
<th>All Hospitals</th>
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<tbody>
<tr>
<td>Procedure</td>
<td>Operations April, 2009 - March 2010</td>
<td>% Infected</td>
</tr>
<tr>
<td>Total Hip Replacement</td>
<td>193</td>
<td>0.5</td>
</tr>
<tr>
<td>Repair of Neck of Femur (replaces Hip Hemi-arthroplasty)</td>
<td>84</td>
<td>1.2</td>
</tr>
<tr>
<td>Knee Replacement</td>
<td>158</td>
<td>0.0</td>
</tr>
<tr>
<td>Large Bowel Surgery</td>
<td>98</td>
<td>2.0</td>
</tr>
</tbody>
</table>
7. METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS

7.1 Staphylococcus aureus is a bacterium that is a common coloniser of human skin and mucosa. Staphylococcus aureus can cause disease, particularly if there is an opportunity for the bacteria to enter the body.

Illnesses such as skin and wound infections, urinary tract infections, pneumonia and bacteremia (bloodstream infection) may then develop if the bacteria enter the body. Most strains of this bacterium are sensitive to many antibiotics, and infections can be effectively treated. Some S. aureus bacteria are resistant to the antibiotic meticillin, termed meticillin-resistant Staphylococcus aureus (MRSA).

The Health Protection Agency and Association of Medical Microbiologists state that 1 in 3 healthy people carry Staphylococcus aureus, with an estimated 1:100 of the healthy population in the community being colonised with MRSA (Grundmann 2002).

7.2 Screening for MRSA

In 2008 the Department of Heath (DH) issued a strategy and summary of best practice where Trusts would be expected to screen all elective admissions for MRSA by 1st April, 2009. There were some exclusions within this strategy of admissions that did not require screening. Each Trust was expected to provide assurance that they could supply evidence of MRSA screening of elective cases.

Measures were put in place within the Trust to ensure that all elective admissions within the criteria were screened prior to their admission with effect from 1st April, 2009. Compliance rates are reported to each Division monthly, so areas of non-compliance can be identified.

The Strategic Health Authority (SHA) issued guidelines that Trusts within East of England (EOE) complied with the DH guidelines that all emergency admissions required screening on admission, with the exception of children and pregnant women, unless they had risk factors, e.g. chronic illness, transfer from other hospitals or cannula and wounds.
QEH put into place plans to commence screening of emergency admission by 1st April, 2010.

7.3 Reporting of MRSA Bacteraemia

A bacteraemia is when there is a presence of bacteria in the blood. This is detected by culturing the blood sample in the Microbiology laboratory. Blood taken for blood culture must be taken with care to prevent contamination by the taker or by the patient’s own skin flora.

MRSA bacteraemia is a key indicator of performance with regard to hospital acquired infections. Every Trust is required to submit its MRSA Bacteraemia data to the Health Protection Agency (HPA) each month and have it signed off by the Chief Executive. A quarterly summary is published comparing each Trust to their set monthly and annual ceilings, set by the Strategic Health Authority (SHA).

The reporting criterion is that the Microbiology laboratory must declare all positive MRSA blood cultures. Therefore, the reported figure for the Trust would include all blood samples that were obtained on admission, or within the first two days of admission, which are deemed to be community acquired. This criterion is being reviewed by the SHA for the financial year 2010-2011 so that the Acute Trust is responsible for the Bacteraemias that are apportioned to them.

The Trust has seen a reduction in MRSA Bacteraemia since the financial year 2004/05. In 2008-2009 the annual ceiling was 12. The performance threshold for that period was 8. The ceiling for 2009-10 was set at 7 MRSA Bacteraemias. The performance threshold achieved for this period was 6. All 6 were obtained within the first 2 days of admission (Graph 1 below).

A root cause analysis, which is a method of problem-solving to identify the root cause of problems or incidences, is undertaken on all MRSA Bacteraemias by IPACS
and other contributing professionals, e.g. Medical staff, Nursing, Allied Health Professionals (AHP), other hospitals and PCT, where appropriate. A multidisciplinary meeting is held to identify issues and recommend actions, where applicable. Issues identified and actions taken are listed below.

### 7.4 Cases of MRSA Bacteraemia at QEH

One case was reported that was due to contamination of skin during the procedure of taking blood culture, this is reported against the Trust but was not a bacteraemia as it was related to skin preparation technique.

To prevent contamination of the blood sample and introduction of skin microorganisms into the blood vessel, it is recommended that a preparation of 2% Chlorohexidine and 70% alcohol is used to clean the skin prior to undertaking a clean procedure when obtaining blood for blood culture or insertion of a cannula (Epic2, 2007 and DH Saving Lives, 2007). The current practice in the Trust was to use either an alcohol wipe or 0.5% Chlorohexidine spray and 70% alcohol.

IPACS had been working towards a change in practice and recruited the assistance of the Venous Access Group, which was set up to address issues regarding cannulation and documentation, and began the process of introducing 2% Chlorohexidine and 70% alcohol into the Trust in early 2009. The initial problem was that there was only one product on the market which had a licence to clean skin, called Chloraprep. This product was more expensive compared with those which did not have a licence. It had advantages over the other products, in that the delivery of the solution via an applicator reduces the risks of contamination of the site during the procedure, as well as a comprehensive training programme and a post implementation compliance and audit programme. The Patient Safety Committee and the Trust Board both agreed that, for patients' safety, the more expensive licensed product was the product of choice.

Chloraprep was introduced in April, 2009, with a fully supported training programme by the company and follow-up audit of usage and compliance, with the audits continuing annually. The product has been well received by staff, with many of the new medical staff being familiar with the product from other Trusts.

### 7.5 Introduction of Skin Micro-organisms via Cannula during Insertion

The Venous Access Group was tasked with introducing sterile packs for cannulation to ensure the procedure would be undertaken in a clean or sterile manner. Packs were sourced and costed, and a business case made. They were implemented in the Trust in August, 2009. The medical staff were informed via the Practice Development Nurses (PDN) and IPACS mandatory training.

Coinciding with the introduction of the cannulation packs, the Venous Access Group reviewed the documentation process of cannulation and recording of the Visual Infusion Phlebitis scoring (VIP). The lack of documentation and VIP scoring had been highlighted as part of the Root Cause Analysis (RCA) undertaken for the
MRSA Bacteraemias. A review of the new documentation was planned in six months.

At the end of this period, feedback regarding the poor compliance of completing the documentation and comments from medical staff has prompted the documentation to be reviewed with a plan to identify an alternative method of recording insertion. At the time of writing this report an alternative, which is hoped to increase compliance, has been identified and is in the process of being implemented.

8. CLOSTRIDIUM DIFFICILE ASSOCIATED DISEASE

_Clostridium difficile_ associated disease (CDAD) is a common cause of hospital-acquired diarrhoea. _Clostridium difficile_ (C.diff) is an anaerobic bacterium that is present in the gut of up to 3% of healthy adults and 66% of infants. However, _C.diff_ rarely causes problems in children or healthy adults as it is kept in check by the normal bacterial population of the intestine.

When certain antibiotics disturb the balance of bacteria in the gut, _C.diff_ can multiply rapidly and produce toxins which cause illness. CDAD ranges from mild to severe diarrhoea to, more unusually, severe inflammation of the bowel known as pseudo-membranous colitis. People who have been treated with broad spectrum antibiotics (those that affect a wide range of bacteria), people with serious underlying illnesses, and the elderly are at greatest risk – over 80% of CDAD’s reported are in people aged over 65 years.

_C.diff_ is usually spread on the hands of healthcare staff and other people who come into contact with infected patients or with environmental surfaces (e.g. floors, bedpans, toilets) contaminated with the bacteria or its spores. Spores are produced when _C.diff_ bacteria encounter unfavourable conditions, such as being outside the body. They are very hardy and can survive on clothes and environmental surfaces for long periods.

CDAD is a significant risk factor for the elderly and vulnerable population, both in the community and within the Healthcare environment. The Health and Social
Care Act, 2008 (Code of Practice) highlights C.diff as a specific alert organism and instructs NHS organisations to have in place a policy and provision for prompt diagnosis, isolation and cohort nursing of infected patients, infection control procedures, environmental decontamination and antibiotic prescribing.

### 8.1 Reducing CDAD

The Trust and PCT were set a ceiling by the East of England Strategic Health Authority for year 2009 to 2010 – this was 119 cases. This ceiling included all the positive samples, both community and hospital-acquired cases. The definition of community acquired cases were where the sample was obtained within the first 2 days of admission. If the sample was obtained after the two day period, it was then deemed to be hospital acquired. The ceiling for the Trust included both community and hospital acquired cases.

Stanhoe C. diff Isolation Unit was opened in the previous year (March, 2008) and was one of the contributing factors to reducing infection as patients were isolated as soon as a positive sample was found. This, together with a review of antibiotic prescribing, has led to a dramatic decrease in both hospital acquired cases and deaths due to CDAD, with this trend continuing.

<table>
<thead>
<tr>
<th>Month</th>
<th>Apr-09</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>QEH total positive specimens</td>
<td>7</td>
<td>2</td>
<td>9</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>8</td>
<td>7</td>
<td>13</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>QEH positive specimens &gt; 2 days post admission</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>QEH positive specimens &lt; 2 days post admission</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

**Episodes of positive Clostridium difficile - 2009/2010**

- **QEH total positive specimens**
- **QEH positive specimens > 2 days post admission**
- **QEH positive specimens < 2 days post admission**
9. GLYCOPEPTIDE RESISTANT ENTEROCOCCI BACTERAEMIA

Enterococci are bacteria that are commonly found in the bowels of most humans. There are many different species of enterococci, but only a few have the potential to cause infections in humans. More than 95% of infections due to enterococci are caused by just two species, *Enterococcus faecium* and *Enterococcus faecalis*.

Glycopeptide-Resistant Enterococci (GRE) are enterococci that are resistant to glycopeptide antibiotics (vancomycin and teicoplanin). GRE were first detected in the United Kingdom (UK) in 1986 and have subsequently been found in many other countries. GRE are sometimes also referred to as VRE (Vancomycin-Resistant Enterococci). GRE commonly cause wound infections, bacteraemia (blood poisoning) and infections of the abdomen and pelvis.

The Trust reports the incidences of GRE Bacteraemias to the HPA every month. For the year 2009/2010, the QEH had no GRE bacteraemia within the Trust, compared with 1 in 2008/2009 and 1 in 2007/2008.

10. NOROVIRUS

The disease is also known as “winter vomiting disease” due to its seasonality and typical symptoms. It is caused by a small round-structured virus (SRSV) or Norwalk-like virus.

Outbreaks of Norovirus gastroenteritis are common in semi-closed environments such as hospitals, nursing homes, schools and cruise ships. When an outbreak occurs in a hospital it is often necessary to close affected wards to help control the outbreak. It is vital that anyone who is feeling unwell with gastrointestinal symptoms, vomiting and/or diarrhoea, should not visit hospitals as this increases the risk of spreading the infection to patients and staff.

Norovirus is highly infectious. Particular attention to good hygiene measures should be observed during outbreaks.
The Health Protection Agency (HPA) reported in April, 2010 that the total number of laboratory reports in this season (week 27 to week 10) was 8631, which is 34% higher than the total for the same period last year, 6453 (week 10 was end of March 2010). The number of people infected by Norovirus fluctuates each year. Laboratory reported cases represent only a fraction of the true number of cases that occur.

The QEH ended the winter season of 2008/09 in 5th May, 2009, but had an unseasonal outbreak starting the 6th June to 24th June, 2009 causing 4 wards to close and 25 staff to report sick.

The season of winter 2009/2010 commenced on Marham ward on 11th December, 2009. It continued over the Christmas period into the New Year. Early January saw the start of a new outbreak, which continued for two weeks, followed by another outbreak which started the 17th February, 2010 to the 17th April, 2010. Below are grafts of symptomatic and asymptomatic patients for this period, and the number of wards affected. 117 members of staff who reported sick in this period.

**Outbreak 17th February, 2010 to 17th April, 2010 – Symptomatic and Asymptomatic Patients**

```markdown
<table>
<thead>
<tr>
<th>Date</th>
<th>Numbers</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>24/02/2010</td>
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<tr>
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<td>10/03/2010</td>
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<td>17/03/2010</td>
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<td>24/03/2010</td>
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<td>31/03/2010</td>
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<tr>
<td>14/04/2010</td>
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</tbody>
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**Symptomatic and asymptomatic patients**

- **Symptomatic**: Blue bars
- **Asymptomatic**: Red bars
- **Total Number of Patients**: Pink bars

**Date**

17
Numbers of Wards Affected

<table>
<thead>
<tr>
<th>Date</th>
<th>Number</th>
<th>Other</th>
<th>Surgical</th>
<th>Medical</th>
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<td>21/02/2010</td>
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<td>23/02/2010</td>
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<td>01/03/2010</td>
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<td>05/03/2010</td>
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<td>07/03/2010</td>
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<td>09/03/2010</td>
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<td>15/03/2010</td>
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<tr>
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<td>13/04/2010</td>
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<tr>
<td>19/04/2010</td>
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</tbody>
</table>
Issues that have arisen over the Norovirus period and are currently being reviewed are:

- Visitors Policy
- Cohort ward
- Decontamination of equipment and environment
- D&V documentation
- Norovirus testing

The HPA had predicted that the Norovirus strain had altered and expected that cases would be seen much later in the year than usual. The QEH experienced these late cases when an outbreak commenced towards the end of May, and continued to see smaller numbers of cases through to the end of July.

11. GROUP A STREPTOCOCCUS CLUSTER

Group A streptococcal (GAS) infections are caused by *Streptococcus pyogenes*, a bacterium that is commonly found on skin and in the upper respiratory tract (nose and throat). The most common infection caused by GAS is a mild sore throat (strep throat), skin infections such as impetigo and cellulitis and also Scarlet Fever. Sometimes a GAS infection can be life threatening when the bacterium gets into parts of the body where not usually found, blood, muscle and lungs. This is known as invasive GAS (iGAS). A severe, but rare, form of iGAS is necrotising fasciitis (an infection below the skin which can cause the soft tissue to die).

In February, 2010, over a 12 day period, 3 patients and a nurse linked to the same bay on a surgical ward had the micro-organism identified from drain sites in two patients, and blood sample in the third patient and the nurse.

An outbreak was declared as per policy and cases reported to the Health Protection Agency (HPA). A multi-disciplinary outbreak meeting was held. Immediate actions taken were:-

- Ward closed to admissions and transfers
- Deep cleaning of ward commenced
- Throat swabbing of all existing patients undertaken to rule out further cases
- Throat swabbing of all nursing, allied health professionals and medical staff associated with the ward undertaken
- Information leaflets distributed to existing patients explaining GAS and symptoms to look out for and what to do
- Leaflets distributed to staff who were associated with the patients, i.e. ITU and Theatre
- Programme undertaken to track whereabouts of patients who had been discharged from the ward in a period recommended by HPA; HPA informed these patients by letter
- Communication was released to the press to gain proactive information to the public which co-ordinated with the recall exercise of discharged patients
• Additional audits were undertaken at ward level, e.g. Hand Hygiene High Impact Intervention, aseptic technique and environmental risk assessment audits.

It is not possible to identify the source of the infection, but it may have been transmitted from patient to patient, patient to staff, staff to patient or incidences of two or more modes of transmission.

The HPA were complementary regarding the management and communication strategy undertaken by the Trust, and asked if they could use the experience as an example to guide another Trust in the region who was experiencing a similar situation.

12. **FLU & PANDEMIC INFLUENZA PREPAREDNESS**

Working in conjunction with the PCT, SHA and the Health Protection Agency (HPA), the QEH developed a series of robust plans to deal with the local management of an expected outbreak of pandemic ‘flu. Although the ‘flu outbreak fulfilled the definitions of a pandemic outbreak, it did not occur to the levels initially predicted, both pertaining to numbers as well as severity of those affected.

Local plans included the stockpiling of essential supplies in anticipation of possible disruption to transport links. Staff training for protective mask fitment and use, and a vaccination program was commenced on a large scale. Detailed plans were prepared, with input from all departments, for the provision and staffing of additional intensive care beds, and a designated influenza admission area was identified.

Fortunately, it did not become necessary to implement these plans as the pandemic did not impact on the hospital service as feared.

13. **WIDER INFECTION CONTROL SERVICE**

13.1 **Off site Support**

The IPAC Team provides infection prevention and control advice to an outreach facility for ophthalmics and a local hospice.

13.2 **Ophthalmic Services at St. Georges Medical Centre, Littleport**

The IPAC Team provided infection prevention and control advice in the setting up of the service in Autumn, 2008. The team provides:

(i) Annual environment risk assessments
(ii) Additional advice regarding future developments within the outreach service
13.3 Private Sector

The Trust was approached with a request to supply infection prevention and control advice to a local hospice. The team provides:

1. Biannual environmental risk assessments
2. Biannual teaching session
3. Telephone support for Link nurse
4. Assistance in compiling IPAC policy

The Service Level Agreement commenced 1st December, 2009, for a period of one year.

14. THE ANNUAL JACKIE REES AWARD FOR INFECTION PREVENTION AND CONTROL PRACTICE AND INNOVATION

Jackie Rees had been an Infection Control Nurse at the QEH for 14 years, much of it single handed prior to her semi retiring and working for West Norfolk PCT for two years, when she finally retired.

Sadly, she was diagnosed with cancer and passed away after a short illness. Her family was keen to mark the contribution to the Trust in someway, and have kindly offered an annual award of £100 for Infection and Control Practice and Innovation.

Jackie always championed those who went above and beyond the call of duty, much like herself. Therefore, the IPACS and DIPC were keen to see this award as both a memorial to Jackie and her good work, and recognition of the valuable contribution members of staff make in their daily working lives that may be considered to be outside their normal role.

The first recipient of the award July, 2009 was a housekeeper from a medical ward, who continually keeps her nursing, medical and AHP colleagues on her ward “on their toes”, for example, reminding them to clean equipment between patients, decontaminate their hands and of policies and protocols if their ward is closed due to an outbreak. She is a quiet spoken lady, but knows when things must be done correctly for the benefit of the patients and, for this, she was the unanimous winner.

All the nominees, who were nominated by their managers or colleagues, were awarded with a certificate at the ceremony by Jackie’s husband, Dr. John Rees, a retired Director of Public Health in King’s Lynn, in recognition of all their contributions. Dr. Rees plans to continue his monetary contribution annually.
“I was surprised to be nominated, let alone win. If a job is worth doing, it is worth doing well. I do my job to the best of my ability as I care what people think of the ward and the well being of the patients”

- Award winner Martine Mitchell, Housekeeper, Oxborough Ward

15. ANTIMICROBIAL STEWARDSHIP

During 2009-2010 regular ward-based audits have been conducted (both retrospective and prospective), with reports presented to the Control of Infection Committee and the Antimicrobial Stewardship Committee.

A newsletter is being developed with a launch planned for May 2011 - this will include reports of all the audits conducted on a routine basis (included on IPACS website)

New guidance and documents have been developed by the antimicrobial prescribing pharmacist in close collaboration with the Consultant Medical Microbiologists and Dr. Siva (for CDI-related guidance):

- Gentamicin Monitoring Form (February, 2010, latest version)
- Pharmacy Department Pandemic Flu Policy (2009, latest version)
- Continual input for The QEH and NHS Norfolk PCT (2010) antimicrobial guidelines in all directorates at the QEH e.g., Women and Children (2009), Medicine and Surgical guidelines (April, 2010, latest version).

Several Audits have been conducted by the antimicrobial pharmacist including:

- Flamazine® Audit (January, 2010)
- Ward-based Audits of antibiotic prescribing, 2009
- Clostridium difficile Isolation (CDI) patients - 2008 to 2010. This shows management of the CDI patients and the results will be presented at European Congress of Clinical Microbiology & Infectious Diseases (ECCMID) 2010, and
included in the Trust Newsletter and COI and Antimicrobial Stewardship Committee reports (Table 1)

- Price list of all antibacterial agents (includes specific forms and pack sizes) generated January, 2010
- Database of significant patient cases since 2008 and risk-categorised (currently being finalised).
- Database of all CDI positive patients admitted to Stanhoe Isolation Unit with relevant characteristics recorded e.g. antibiotic history, age, gender, co-morbidities, PPI's, from 2008 to present day (currently being maintained electronically).

The antimicrobial pharmacist has maintained a national profile including speaking at conferences and several publications:

- Micallef C, Siva V, Liebowitz LD. Factors associated with severe *Clostridium difficile* infection in a cohort of patients. 20th European Congress of Clinical Microbiology & Infectious Diseases. (ECCMID), Vienna, Austria. 10-13th April 2010. P1478.

Table 1: CDI Isolation patients 2008-2010

<table>
<thead>
<tr>
<th>Parameter</th>
<th>2008 (10mo)</th>
<th>2009(12mo)</th>
<th>2010 (6mo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>59.3%</td>
<td>54.5%</td>
<td>52.4%</td>
</tr>
<tr>
<td>Age &gt;= 80</td>
<td>53.9%</td>
<td>69.7%</td>
<td>59.5%</td>
</tr>
<tr>
<td>Co-amoxiclav</td>
<td>51.7%</td>
<td>39.4%</td>
<td>50%</td>
</tr>
<tr>
<td>PPIs</td>
<td>42.9%</td>
<td>40.9%</td>
<td>42.9%</td>
</tr>
<tr>
<td>CVD</td>
<td>71.4%</td>
<td>66.7%</td>
<td>78.6%</td>
</tr>
<tr>
<td>Cancer</td>
<td>23.1%</td>
<td>13.6%</td>
<td>19%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>20.9%</td>
<td>28.8%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Gastrointestinal Disease</td>
<td>42.9%</td>
<td>24.2%</td>
<td>40.5%</td>
</tr>
<tr>
<td>Respiratory Disease</td>
<td>35.2%</td>
<td>16.7%</td>
<td>38.1%</td>
</tr>
<tr>
<td>Renal dysfunction</td>
<td>78%</td>
<td>80.3%</td>
<td>81%</td>
</tr>
</tbody>
</table>
16. **ESTATES AND IPAC**

16.1 The Estates Department works very closely with the IPAC’s team, both on a day to day and project basis, ensuring that any work takes account of the potential impact of works on infection prevention and control. During the year many new estates developments have been discussed with the IPAC team to ensure minimal infection risk. Successful projects that have been tendered, work started or completed include:

- Eliminating mixed sex accommodation (EMSA)
- Additional new wash hand basins to the wards
- Wash hand basins installed in all domestic cupboards
- Additional en-suite showers to Stanhoe Ward
- New ward (Tilney)
- Disabled toilet in to PGMC corridor
- Feltwell out to tender
- MLBU/NICU design in progress
- Aseptic Suite now in construction phase – due to be completed April 2011

During outbreaks Estates worked alongside IPAC and domestic staff by providing plastic screens to areas for cleaning/decontaminating, and radiator cover removal for cleaning.

Estates have a seat on the Control of Infection Committee and are actively involved in taking and receiving new and informative data to and from the departments.

The following new standards have been introduced:

- Going forward, replacement of conventional radiators with radiant ceiling panels that can be easily cleaned. These were initially trialled on CDU (Feltwell will be the first ward to receive the new panels).

- A silver based paint (anti-bacterial) has been adopted as standard to give maximum protection to walls throughout the hospital.

- All future clinical hand wash basins will be fitted with “no touch” taps to assist in the fight against infection.

17. **DOMESTIC SERVICES AND IPAC**

17.1 During the past year the Domestic Services department have been working closely with the Infection Prevention & Control team, nursing staff and the Estates team to ensure that the Trust meets the needs and expectations of the patients, public and staff in terms of cleanliness of the hospital. To achieve this, these departments have been looking at ways of improving the environment, as well as monitoring systems to ensure the required high quality cleaning standards are met at all times.
The past year has been increasingly busy for the Domestic Services department with a variety of building projects being undertaken, including the installation of a new ward on site. The process has worked better this year with the department being involved with all projects from the start. This has allowed cleaning costs for the whole project to be factored in as it progresses, as well as provide information on the ongoing cost of routine cleaning once the area is complete and in use.

The official PEAT inspection took place on the 28th January, 2010, which included involvement from an external verifier, and the “good” status for standard of cleanliness was maintained. Staff are always striving to attain a status score of “excellent” and there are many areas that obtain the score rating of 5. The requirement for refurbishment is often a factor that lets the scoring down, but now that a programme to redecorate 4 wards a year has been instigated it is hoped that improvements can be made in this area. The condition of the flooring in the corridors is also an issue, and is related to the amount of time it has been in place. Three internal PEAT inspections are undertaken throughout the year, which provide the opportunity to monitor the Trust status continually and prepare for the official inspection.

There has been a consistent increase in requests for Infection Control terminal cleans for side rooms and cubicles in A&E, and these are often required during the evening/night which puts additional pressure on the evening/night Domestic Assistants.

Authorisation has been given to recruit some afternoon Domestic Assistant positions from March, 2010, so this will enhance the ward cleaning as staff will then be available from 7 am to 1 pm, 12 pm to 6 pm and 5 pm to 9.30 pm (evening cleaning with departments).

Domestic Services staff have now been trained to remove radiator covers, so this can be done every time a deep clean is undertaken.

All existing Domestic cupboards have been refurbished to ensure hand washing sinks are available, but there are still issues with regards to each ward having a designated Domestic cupboard. Areas have been identified for this purpose but funding is needed to complete this.

Norovirus outbreaks continue to put additional pressure on the Domestic Services department. The Trust is currently looking into obtaining funding for a designated team to be implemented into the service to provide assistance during outbreak periods to ensure the process runs as smoothly as possible.

In conjunction with Infection Control policy, all Domestic Services staff members now wear aprons and gloves when working on the wards in order to provide further protection to themselves and patients.

Quality reports of the domestic service should be submitted to the Trust Board on a regular basis. This is the guidance received from NPSA, and it is planned that the Trust will be compliant this year.
18. DECONTAMINATION, STERILE SERVICES AND IPAC

18.1 Sterile Services Department

The Sterile Services Department has had accreditation with the Lloyds register Quality Assurance group (LRQA) since May, 2007 to the standards: ISO 13485:2003 and MDD 93/42/EEC. The unit had its last re-certification audit from the 19th-21st May, 2010 and achieved re-certification until May, 2013.

The department is responsible for the decontamination of all medical devices within the Trust that require high level decontamination. The department also offers this service to other service providers.

The department has a structured training program in place which includes operator training to the relevant HTM standards, instruments recognition, knowledge and understanding of all departments’ quality policies and procedures, and completion of training manuals. Trainee technicians undertake a minimum of two years’ training prior to an assessment and attaining the qualifications necessary to become a qualified Technician. All Technicians have completed the NHS Estates e-learning in Decontamination. All staff attended relevant mandatory training, including infection control training and hand hygiene.

The Sterile Services Department is still waiting to Implement the IMS (Instrument Management System) supported by CSC and “Connecting for Health”, to have an electronic tracking and traceability system to track trays of instruments. This is hoped to go live in the early part of 2011.

The unit presently uses a manual tracking system which encompasses all aspects of the SSD and allows manual labels to be attached to patients’ notes. As a business contingency it is planned to maintain this system when we go live with the IMS.

18.2 The Decontamination Committee

The Decontamination Committee was established in July, 2009 and will enable the Trust to have a mechanism to:

- Endorse all decontamination policies, procedures and guidance on the cleaning and sterilisation of medical devices.

- Provide advice and support on the implementation of policies.

- Monitor the progress of the annual Decontamination Program.

- Review the age, condition and fitness for purpose of decontamination facilities and equipment, and record any actions being taken to address issues of immediate potential risk to patients and staff.
• Undertake a comprehensive review of all aspects of the overall process of decontamination and use this to complete a baseline self-assessment, and to develop an action plan against the controls assurance decontamination standard.

• Undertake to work with PCT, Chief Executives and Clinical Governance leads, where appropriate, ensuring that independent contractors, including GP’s, dentists, pharmacists and optometrists who work in partnership with the Trust are aware of and understand their responsibilities for ensuring compliance with the contents of relevant standards, and are encouraged to review their own practice.

• Obtain a picture of decontamination provision across the Trust to inform medium-term action plans. This will include effective management control systems.

• Review decontamination processes to ensure they remain fit for purpose. The overall decontamination process includes purchasing and acquisition, cleaning and disinfection, packaging, sterilisation, transport, storage and disposal.

• Scope a number of health and safety issues associated with decontamination.

• Undertake a comprehensive review of decontamination processes.

• Ensure that traceability systems are in place to allow sets of surgical instruments to be tracked through decontamination processes in order to ensure that the processes have been carried out effectively. Systems should also be implemented to enable the identification of patients on whom instrument sets have been used. This is important so that relevant patients can be identified in the event of exposure to a potential risk, and is relevant to both the primary and secondary care sectors. This requirement for traceability of instruments sets is in addition to the measures for identification and tracing of flexible endoscopes set out in HSC1999/178.

19. MICROBIOLOGY LAB AND IPAC

The Microbiology Laboratory has seen a large expansion in HCAI and other Infection Control testing in recent years. This has been shown particularly with relation to MRSA, C.difficile, Norovirus and, in addition this year, Swine Flu.

Extra resources have been allocated to the department both in terms of staff, equipment and consumable funding, and these have been further increased to take account of the need for the screening of emergency admissions in 2010-11. In addition, a Consultant in Infectious Diseases has been appointed.
19.1 MRSA

A programme of weekly screening of patients on “at risk” wards has been taking place for some time now. This amounts to around 10,000 screens per annum. In April, 2009 the Trust began screening all elective admissions for MRSA, which generated an extra 12,090 tests.

The department also performed another 13,000 MRSA tests, making a total of 34,796 in the year. In 2010-11 it is anticipated that there will be at least a further 20,000 tests as a result of emergency admission screening.

QEH MRSA Tests 2005/6 to 2009/10

19.2 CLOSTRIDIUM DIFFICILE

The numbers of tests for C.difficile has also been increasing; this year, 3,701 tests were performed. The protocol for testing was changed in February to try and reduce the numbers of false positives.

An initial screening test was introduced, a GDH (Glutamate dehydrogenase) test, which screens directly for the presence of the organism. Only those specimens which tested positive were then screened for C. difficile toxin.
19.3 NOROVIRUS

Requests for Norovirus tests rose considerably this year with 569 screens being performed.

Following discussions the present ELISA test has been discontinued due to lack of sensitivity. The recommendation is that a molecular technique should be used. Currently these are only available off-site and have an unsatisfactory turn-around time. The department is actively looking for a molecular test which can be done in-house to provide same day testing, at least Monday-Friday.
19.4 **SWINE FLU**

The Trust was also hit by the Swine Flu epidemic this year, and although only around 150 tests were done and testing was not done on site, it still generated a large amount of work for the department in packing & posting. At £27.00 per test, plus courier charges, this increased the budget pressure on the department still further.

The department is planning that any molecular testing introduced will be versatile enough to screen for Norovirus and other important viruses, such as Swine Flu, where a rapid turn around time is essential.

20. **CONCLUSIONS**

The year 2009-2010 has been a challenging time with the risk of pandemic flu, implications of Norovirus and the need to reduce HCAI. The IPAC team have worked hard to support clinical departments across the organisation and, together, the rates of HCAI have dropped. Investment in microbiology has seen the work of the department rise and the implementation of MRSA screening for elective cases generated further potential to reduce HCAI where ever possible.

All staff across the Trust have contributed to the maintaining of good infection control practice and the subsequent reduction in HCAI. The coming year will continue to be a challenge and further work will needed to meet the necessary reduction in HCAI, the impact of Norovirus and the still possible risk of a pandemic.

21. **REFERENCES/USEFUL LINKS**

Association of Medical Microbiologists - the facts about MRSA  
[www.amm.co.uk](http://www.amm.co.uk)


Health Protection Agency, MRSA information for patients  www.hpa.org.uk