INFECTION PREVENTION & CONTROL
ANNUAL REPORT
2009-2010

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Clinical Director
Infection Prevention and Control
EXECUTIVE SUMMARY

This report outlines the activities of the Southern Health and Social Care Trust relating to infection prevention and control for the year April 2009 to March 2010. It outlines how the new Trust has put in place arrangements to allow the early identification of patients with infections in hospital and takes measures to reduce the spread of infection to others. It also reviews the policies and procedures relating to infection control, audit, surveillance and education. Other key points from this annual report are:

- The DHSSPS has set Priorities for Action (PfA) reduction targets for *C. difficile* infections, Methicillin Resistant *Staphylococcus aureus* (MRSA) and Methicillin Sensitive *Staphylococcus aureus* (MSSA).
- The overall number of *C. difficile* infections in the Trust saw 77% reduction (see below), the largest reduction in the province was achieved by our Trust and we have easily achieved PfA target.
- The number of methicillin resistant *Staphylococcus aureus* (MRSA) bloodstream infections in the Trust was the second lowest in the province and the Trust has achieved PfA target for MRSA (see table 1).
- Unlike MRSA, the Trust was unable to achieve its PfA target for methicillin sensitive *Staphylococcus aureus* (MSSA) bloodstream infections. Since no other Trust in N. Ireland was able to achieve MSSA target, the DHSSPS has decided that for 2010-2011, MSSA will not be part of PfA target. However, the Trust has introduced measures to reduce *Staph. aureus* bacteraemia (both MRSA and MSSA) as part of patient safety initiatives (see page 6 for details).
- The Trust has successfully implemented Healthcare-associated infections (HCAI) ‘Care Bundles’ for Central Venous Catheter, Ventilator-Associated Pneumonia and Surgical Site Infection (Caesarean Section & Orthopaedic) and has shown significant and sustained reduction in HCAIs. (See page 7 for details).
- The Trust has successfully developed E-dashboard to give feedback on surveillance (outcome and process) on HCAI. E-dashboard has won 1st prize at the 1st Annual Regional HCAI Symposium held on the 4th March 2010.

<table>
<thead>
<tr>
<th></th>
<th>2008/09 (PfA target)</th>
<th>2009/10 (PfA target)</th>
<th>Percentage Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>C difficile</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;=65</td>
<td>164 (104 )</td>
<td>37 (99 )</td>
<td>-77%</td>
</tr>
<tr>
<td>&lt;65</td>
<td>41 (None )</td>
<td>10 (None )</td>
<td>-76%</td>
</tr>
<tr>
<td>MRSA</td>
<td>16 (17 )</td>
<td>15 (20 )</td>
<td>-6%</td>
</tr>
<tr>
<td>MSSA</td>
<td>59 (50)</td>
<td>41 (34 )</td>
<td>-31%</td>
</tr>
</tbody>
</table>
**SURVEILLANCE & MANDATORY REPORTING**

**Clostridium difficile INFECTION**

The DHSSPSNI mandatory scheme for reporting *Clostridium difficile* infection commenced in July 2005. In 2008-09, the Trust met its PfA target for *Clostridium difficile* infection. The graph below presents the quarterly rates of *Clostridium difficile* by Trust for the period 1 January 2009 – 31 March 2009, compared with annual NI and Trust rates for 2008 in inpatients ≥ 65 years. The Southern Trust has the lowest no. of *Clostridium difficile* infections in the province based on previous six quarter reports.

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**Graph Description:**
- **x-axis:** Represents the quarters from Jan-09 to Mar-09.
- **y-axis:** Represents the number of *C. difficile* infections per 1000 occupied bed days.
- **Legend:**
  - 2009 Average rate for the Trust
  - Belfast Trust Quarterly Rates
  - Northern Trust Quarterly Rates
  - Southern Trust Quarterly Rates
  - Western Trust Quarterly Rates

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**Table:**

<table>
<thead>
<tr>
<th>Quarter</th>
<th>2009 Average Rate</th>
<th>NI Average Rate</th>
<th>Belfast Trust Rate</th>
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<tbody>
<tr>
<td>Q1</td>
<td>0.5</td>
<td>0.6</td>
<td>0.4</td>
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<tr>
<td>Q2</td>
<td>0.7</td>
<td>0.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Q3</td>
<td>0.8</td>
<td>0.9</td>
<td>0.7</td>
</tr>
<tr>
<td>Q4</td>
<td>0.9</td>
<td>1.0</td>
<td>0.8</td>
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**Notes:**
- The graph compares the quarterly rates of *C. difficile* infections for the Trust and NI.
- The Trust's Southern Trust has the lowest infection rate among all regions.

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**Graph Analysis:**
- The Trust met its PfA target for *C. difficile* infection in 2008-09.
- The Southern Trust has the lowest *C. difficile* infection rate based on previous six quarter reports.
Methicillin-resistant *Staphylococcus aureus* (MRSA)

The DHSSPSNI mandatory scheme for reporting MRSA blood stream infections commenced in April 2001. The Southern Trust has the second lowest no. of MRSA bloodstream infections in the province based on previous six quarter reports. In 2008-09, the Trust met its PfA target for MRSA bloodstream infections.
Methicillin-sensitive *Staphylococcus aureus* (MSSA)

The DHSSPSNI mandatory scheme for reporting MSSA blood stream infections commenced in April 2001. Like all the other Trusts in the province, our Trust was unable to meet the PfA target by the end of 2009-10. The DHSSPSNI has decided that, in line with Trusts in England, MSSA bacteraemias will not be part of PfA for 2010-11.
MRSA & MSSA BACTERAEMIA REDUCTION PLAN

The Trust has taken a very proactive approach to reduce *Staph aureus* bacteraemias as part of patient safety. Based on the Root Cause Analysis of *Staph aureus* bacteraemias (MRSA and MSSA), we have identified that peripheral IV line infection is one of the contributing factors. As a result, the Trust has started a pilot project for the management of peripheral IV lines. £10,000 funding for the pilot wards has been secured from the Public Health Agency and the pilot will start from April 2010 in four wards (medical and surgical) both in Daisy Hill and Craigavon Area Hospital.

The aim of this unique project in the province is to implement best practice guidelines both for insertion and maintenance of peripheral IV lines with aim to:

- Reduce unnecessary insertion of peripheral IV lines
- Provide mandatory training of both medical and nursing staff, both for insertion and maintenance of IV lines
- Introduce daily IV line monitoring form to detect and prevent complications at an early stage
- Introduce single IV line pack to standard education and training

At the end of the project, findings and recommendations will be presented both to Clinical and Strategic Forum for further action to standardise and improve practice within the Southern Trust.

CARE BUNDLES TO REDUCE HCAI

Care Bundles are a defined number of elements which, if performed correctly, have been proven to reduce the risk of healthcare–associated infections. The risk of infection reduces when all elements within the clinical process are performed every time and for every patient.

Care Bundles have been introduced into the Trust for Central Venous Catheter, Ventilator-Associated Pneumonia and Surgical Site Infection (Caesarean Section & Orthopaedic). The data is reported to the Trust Board, PMSID of the DHSSPS & the HSC Safety Forum monthly, as well as posted on the Institute for Healthcare Improvement (IHI) Extranet. The Southern Trust has shown consistent improvement in reducing HCAIs (see Fig below).
### Southern HSC Trust

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Current Q SSI rate</th>
<th>Current Q Number</th>
<th>Last 4 Q SSI rate</th>
<th>Last 4 Q Number</th>
<th>NI Last 4Q SSI rate</th>
<th>NI Last 4Q Number</th>
<th>NI=Northern Ireland</th>
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<tr>
<td>Hip Protheses</td>
<td>0.0</td>
<td>31</td>
<td>0.0</td>
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<td>0.9</td>
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<td>177</td>
<td>0.6</td>
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<td>20</td>
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<td>Amputation</td>
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<td>0</td>
<td>0.0</td>
<td>1</td>
<td>2.2</td>
<td>46</td>
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<tr>
<td>Other nervous system</td>
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<td>0</td>
<td>---</td>
<td>0</td>
<td>2.0</td>
<td>51</td>
<td></td>
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<tr>
<td>Laminectomy</td>
<td>---</td>
<td>0</td>
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<td>0</td>
<td>0.0</td>
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<tr>
<td>Spinal Fusion</td>
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<td>0</td>
<td>---</td>
<td>0</td>
<td>7.8</td>
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<tr>
<td>Skin graft</td>
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<td>0</td>
<td>---</td>
<td>0</td>
<td>9.5</td>
<td>21</td>
<td></td>
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<tr>
<td>Other open reductions of #</td>
<td>0.0</td>
<td>26</td>
<td>1.8</td>
<td>112</td>
<td>1.5</td>
<td>815</td>
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<tr>
<td>Total Procedures</td>
<td>0.0</td>
<td>155</td>
<td>0.3</td>
<td>669</td>
<td>0.9</td>
<td>9406</td>
<td></td>
</tr>
</tbody>
</table>

### Craigavon Area Hospital

#### 2. Other Musculoskeletal SSI rate

- **Q4 2008**: Northern Ireland, Hospital, Trend line
- **Q1 2008**: Northern Ireland, Hospital, Trend line
- **Q2 2008**: Northern Ireland, Hospital, Trend line
- **Q3 2008**: Northern Ireland, Hospital, Trend line
- **Q4 2008**: Northern Ireland, Hospital, Trend line

#### 3. Hlip Prothesis SSI rate

- **Q4 2008**: Northern Ireland, Hospital, Trend line
- **Q1 2008**: Northern Ireland, Hospital, Trend line
- **Q2 2008**: Northern Ireland, Hospital, Trend line
- **Q3 2008**: Northern Ireland, Hospital, Trend line
- **Q4 2008**: Northern Ireland, Hospital, Trend line

#### 4. Hemiarthroplasty SSI rate

- **Q4 2008**: Northern Ireland, Hospital, Trend line
- **Q1 2008**: Northern Ireland, Hospital, Trend line
- **Q2 2008**: Northern Ireland, Hospital, Trend line
- **Q3 2008**: Northern Ireland, Hospital, Trend line
- **Q4 2008**: Northern Ireland, Hospital, Trend line

#### 5. Other Open Reduction of # SSI rate

- **Q4 2008**: Northern Ireland, Hospital, Trend line
- **Q1 2008**: Northern Ireland, Hospital, Trend line
- **Q2 2008**: Northern Ireland, Hospital, Trend line
- **Q3 2008**: Northern Ireland, Hospital, Trend line
- **Q4 2008**: Northern Ireland, Hospital, Trend line
### Northern Ireland Healthcare-Associated Infection Surveillance Centre (HISC)

#### Southern HSC Trust

<table>
<thead>
<tr>
<th></th>
<th>Current Q</th>
<th>Last 4 Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Ireland procedures</td>
<td>1858</td>
<td>7634</td>
</tr>
<tr>
<td>Northern Ireland compliance (%)</td>
<td>74.9</td>
<td>69.6</td>
</tr>
<tr>
<td>Northern Ireland SSI rate*</td>
<td>12.0</td>
<td>13.8</td>
</tr>
<tr>
<td>CAH procedures</td>
<td>324</td>
<td>1292</td>
</tr>
<tr>
<td>CAH compliance (%)</td>
<td>67.3</td>
<td>50.2</td>
</tr>
<tr>
<td>CAH SSI rate*</td>
<td>8.3</td>
<td>10.2</td>
</tr>
<tr>
<td>DHH procedures</td>
<td>154</td>
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<tr>
<td>DHH compliance (%)</td>
<td>74.0</td>
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</tr>
<tr>
<td>DHH SSI rate*</td>
<td>4.4</td>
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<tr>
<td>SHSCT procedures</td>
<td>478</td>
<td>2000</td>
</tr>
<tr>
<td>SHSCT compliance (%)</td>
<td>69.5</td>
<td>54.5</td>
</tr>
<tr>
<td>SHSCT SSI rate*</td>
<td>6.9</td>
<td>8.5</td>
</tr>
</tbody>
</table>

*Based on compliance rate

#### Craigavon Area & Daisy Hill Hospitals

1. **CAH C-Section SSI Rate**
   - Q4 2008: 20, Q1 2009: 15, Q2 2009: 12, Q3 2009: 10, Q4 2009: 8

2. **CAH Compliance**
   - Q4 2008: 80, Q1 2009: 75, Q2 2009: 70, Q3 2009: 65, Q4 2009: 60

3. **DHH C-Section SSI Rate**
   - Q4 2008: 25, Q1 2009: 20, Q2 2009: 15, Q3 2009: 10, Q4 2009: 5

4. **DHH Compliance**
   - Q4 2008: 90, Q1 2009: 85, Q2 2009: 80, Q3 2009: 75, Q4 2009: 70

5. **Trend line**

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*Northern Ireland: Green line, Hospital: Black line, Trend line: Red line*
ZERO TOLERANCE TO CVC INFECTIONS

Central Venous Catheters are essential for the care of critically and chronically ill patients requiring long-term vascular access for chemotherapy, parenteral nutrition etc. In October 2008, the Trust implemented an intervention programme to prevent central line infection based on the Institute of Healthcare Improvement (100,000 Lives Campaign). Since the introduction of the programme, both Craigavon and Daisy Hill Hospital have seen a substantial and sustained reduction in bloodstream infections related to Central Venous Catheters (see Fig below). As a result of this success, the Clinical Director of IPC has been appointed Chairman of GAIN to develop ‘Guidelines for Insertion and Maintenance of Central Venous Catheters in Children and Young People’. In addition, Clinical Teams from Malta and Croatia are planning to visit ICU at Craigavon Area Hospital in August 2010 to see the successful implementation of CVC bundle as part of the European Union Project to reduce HCAI.

![Figure showing substantial and sustained reduction of Central Venous Catheter infections since October 2006.](image-url)
E-DASHBOARD

Timely feedback of information has been highlighted as having a direct inverse correlation with rates of healthcare-associated infections. To address this, in-house tools were developed in the format of an E-dashboard. As a result, compliance of individual staff groups can also be examined and managers can access this information to help improve performance and address issues in a timely manner. Since the introduction of E-dashboards HCAI data is collated in a single easy-to-use form. The relevant information is available in a timely manner, via the Trust intranet, on compliance with hand hygiene, commode cleanliness, bare below elbow and antibiotic prescribing. In addition, HCAI rates are also available on *C. difficile*, MRSA and CVC line infections.

Since the introduction of this tool, we have seen a gradual and sustained improvement both in the compliance rate and subsequent reduction of HCAI rates as departments do not want to feature as an ‘outlier’. The E-dashboard, developed by Stephen Wallace, has won 1st prize at the first Annual Healthcare Acquired Infection Symposium held on the 4th March 2010 at the Green Mount College, Antrim.

COMPLIANCE AUDITS

HAND HYGIENE AUDITS
The Trust uses the World Health Organization Hand Hygiene Compliance tool which measures compliance of hand hygiene across the multidisciplinary team. Training on the audit tool was provided and compliance has been in place since October 2008. The audits are carried out on a weekly basis by the clinical sister or a senior nurse on the ward/department. Recommended compliance rates are 90%, if compliance falls below 90% audits are increased to daily until 90% compliance is achieved again. Non-compliant wards/departments for hand hygiene are reported to SMT on a weekly basis.

COMMODE AUDITS
The Trust has been regularly involved in commode audits since October 2008. Recommended compliance rate is pass or fail. We expect that all commodes must be clean; even if one commode is dirty, the ward is reported as a fail in the commode audit. Non-compliant wards/departments for commodes are reported to SMT on a weekly basis.

ANTIBIOTIC COMPLIANCE AUDITS
Antibiotic usage trends continue to be monitored. The Trust Antibiotic Guidelines were introduced with the aim to reduce the number of broad spectrum antibiotics in use in the hospitals and increase the use of narrow spectrum antibiotics instead, as use of broad spectrum antibiotics is associated with infections such as *C. difficile*. The Trust pharmacists audit selected antibiotic prescriptions in each ward. Additional data is gathered by the consultant microbiologist and antimicrobial pharmacist on a
weekly basis both in medical and surgical ward rounds in Daisy Hill Hospital and medical ward round in Craigavon Area Hospital.

Antibiotic stewardship has been very successful with an estimated saving of over £200,000. As a result, we have achieved:

- 7% overall reduction in overall consumption of antibiotics
- Increased use of narrow spectrum and cheap antibiotics
- 46% cost reduction due to removal of cephalosporins and reduction in use of Ciprofloxacin in adults

### HCAI RELATED DEATHS

The Trust receives a weekly submission of death related data from the Business Services Organization, through their collaborative work with the NI Statistics & Research Agency. Emphasis has been placed on those deaths where MRSA and *Clostridium difficile* have been mentioned on the death certificate. This information is summarized monthly and monitored on an ongoing basis by the HCAI Strategic and Clinical Fora, as well as through the Trust’s performance management arrangements. In addition, arrangements are in place in a number of key clinical areas to discuss hospital deaths, as recommended by the National Confidential Enquiry into Patient Outcomes and Death (NCEPOD). These discussions include hospital deaths, irrespective of whether or not HCAI was recorded on the death certificate. The Trust is continuing to develop these processes and progress on this is monitored by the HCAI Strategic Forum.

There were 16 HCAI deaths in the Trust in 2009/10. Seven deaths were MRSA related and nine deaths were *Clostridium difficile* related. HCAI was recorded as the primary cause of death in six cases, all of which occurred within a hospital setting.
Number of NI deaths with *Clostridium Difficile* mentioned and recorded as the underlying cause on death certificate:

April 2009 – Mar 2010\(^P\) (unvalidated)

- **Primary 1a**
- **Primary 1b**
- **Primary 1c**
- **Secondary**

Classification of CDFF on death certificate

- **Northern (n=18)**
- **Southern (n=9)**
- **South Eastern (n=23)**
- **Western (n=18)**
- **Belfast (n=23)**
- **All Other Places (n=12)**


Source: NI Stats & Research Agency and Central Services Agency / Business Services Organisation, combined weekly submission of HCAI death related data

SHSCT has the lowest number of deaths where *Clostridium Difficile* was recorded on the death certificate – 3.1% of all HCAI deaths in NI.

Definition of primary cause of death has been reclassified to include 1a, 1b and 1c, as approved by the HCAI Clinical Forum.

- Where MRSA and *Clostridium Difficile* were both recorded on the death certificate, these are included in both graphs (double counted), in line with the Registrar General’s reporting processes – this does not apply to any cases in SHSCT.

**NB:** All other places – excludes SHSCT for the purpose of this graph
Number of NI deaths with MRSA mentioned and recorded as the underlying cause on death certificate:

April 2009 – March 2010\(^p\) (unvalidated)

- Provisional data pending publication of the Registrar General’s Annual Report for 2009
- Source: NI Stats & Research and Central Services Agency/ Business Services Organisation combined weekly submission of HCAI death related data
- SHSCT has recorded 18% of all MRSA deaths.
- Where MRSA and Clostridium Difficile were both recorded on the death certificate, these are included in both graphs, in line with the Registrar General’s reporting processes – does not apply to any cases in SHSCT.
- NB: All other places – excludes SHSCT for the purpose of this graph

\(^p\) - Provisional data pending publication of the Registrar General’s Annual Report for 2009
OUTBREAK MANAGEMENT
IPCT across the Trust was involved in the management of 26 outbreaks of gastroenteritis and in the majority of cases, norovirus was the main causative organism. The average duration of outbreak was about 5 days (range 2 to 11 days) with no mortality.

INFECTION CONTROL LINK PERSON
The Infection Control Link Person training programme is ongoing on a Trust wide basis which involves a 2 hour training session 6 times annually. The aim is to communicate and educate ward managers in relation to HCAIs.

DRESS CODE
Dress Code is an important element in addressing HCAI and the Medical Director is leading the ongoing promotion and implementation of the policy. It has been made available to all staff in the workplace and is also available via the Trust's intranet. There are regular communications in relation to the requirements and there are regular audits. The trust has carried out a scoping exercise to identify the implications of the policy in terms of:

- Adequate supplies of uniforms
- Short sleeved white coats - all coat sleeves now shortened
- Changing facilities for staff who need to change and emergency supply of uniforms
- Laundry services to meet staff need

There are financial constraints which may limit the works which can be carried out.

HEALTHCARE ACQUIRED INFECTION SYMPOSIUM
The Trust IPCT participated actively in the First Annual Healthcare Acquired Infection Symposium held on the 4th March 2010 at the Green Mount College, Antrim. The Trust Clinical Director IPC gave an oral presentation entitled *Infection Control - measuring, auditing and improving* and presented four posters: