

## INFECTION CONTROL REPORT

Report by Morag A Greenshields, Infection Control Manager on behalf of Heidi May,  
Executive Lead for Infection Control

**The Board is asked to:**

- **Note** the contents of the report.

### 1 Background and Summary

In August 2008 the Scottish Government published the Independent Review of Clostridium difficile Associated Diseases at the Vale of Leven Hospital (December 2007 – June 2008). This report raised a number of infection control related issues which may be applicable to other NHS Boards in Scotland. To ensure a consistent approach was adopted nationally, the Scottish Government Health Directorates issued a 'Healthcare Associated Infection (HAI) General Action Plan'.

Item 1.2 of the Action Plan – *Governance*, required all NHS Boards to implement a nationally agreed reporting template, to be used as the framework to report progress against the Healthcare Associated Infection Agenda to Board meetings on a two monthly basis. The implementation date for this reporting process was January 2009.

The key purpose of this report is to:

- Ensure visibility of HAI data and issues for Board members, facilitating awareness and action where indicated.
- Assist in creating and populating a routine NHS Board HAI data set to facilitate assurance, awareness and national reporting for various levels within the organisation.
- Placing more detailed local information on HAI's in the public domain in the context of an open Board meeting and on the Board website thereafter.

### 2 HAI Reporting Template – NHS Highland Activity

The HAI Report Template has two components (see Appendix 1 and 2). The first sets out local data in a spreadsheet by hospital and speciality/staff group. The second sets out the components appropriate to routine analysis and commentary on HAI for Board meetings as a standing item.

The report contains the following subject areas:

- Staphylococcus aureus bacteraemias (SAB)
- *Clostridium difficile* Associated Disease (CDAD)
- Surgical Site Infections (SSI)
- ITU Surveillance
- Hand Hygiene Compliance
- Cleaning Services Specification Compliance
- Significant HAI Incidents / Outbreaks, emerging threats
- Horizon Scanning
- Progress on compliance with the Scottish Government HAI Action Plan
- Progress on the national HAI Programme

The NHS activity from 1 July – 31<sup>st</sup> August 2009 is reported in Appendix 1 and 2.

### **3 Contribution to Board Objectives**

Our key objective is *“to reduce to an absolute minimum the chance of acquiring and infection whilst receiving healthcare and ensure our hospitals are clean”*. This report presents a comprehensive view of HAI data and activities for scrutiny and feedback from the Board.

### **4 Governance Implications**

#### **4.1 Staff Governance**

- As additional information is distributed more widely it will ensure staff are better informed in respect of current issues relating to Infection Control and the management of HAI in our healthcare premises - “HAI is Everybody’s Business”

#### **4.2 Patient and Public Involvement**

- The distribution of regular information to the patient / public sector will increase awareness and facilitate increased participation of patient / public representatives in the Infection Control agenda.

#### **4.3 Clinical Governance**

- By improving infection control practices, we will endeavour to provide a healthcare environment for patients that minimises the risk of HAI, improving patient safety and the patients health care experience.

#### **4.4 Financial Impact**

- By reducing the incidence of HAI in our healthcare premises, financial savings will be achieved through lower rates of infection.

### **5 Impact Assessment**

As Infection Control policies are updated they are impact-assessed for equality and diversity.

**Morag A Greenshields**  
**Infection Control Manager**  
**Corporate Services**

**25 September 2009**

## APPENDIX 2

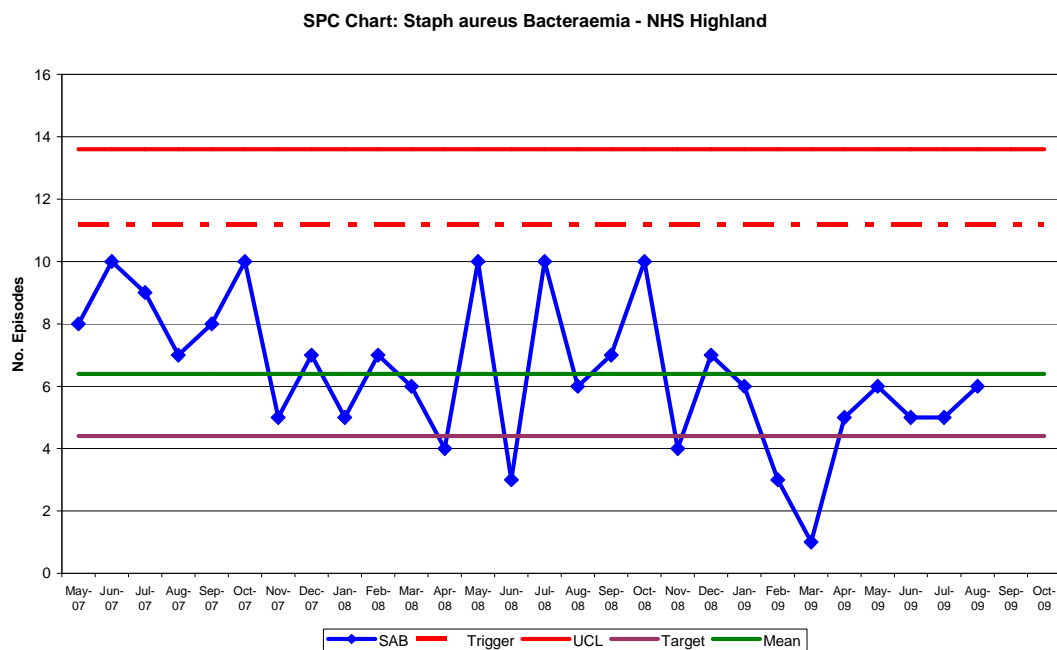
### NHS Highland HAIRT Part 2 – October 2009

#### 1 *Staph aureus* bacteraemias (SAB)

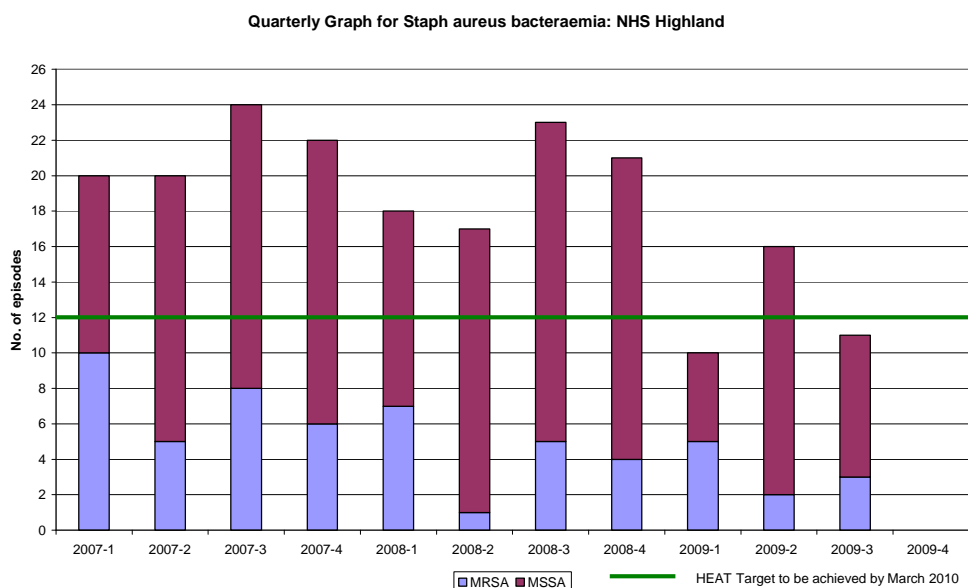
##### 1.1 Short / medium / long term trends in SAB

Figure 1 illustrates the number of *Staph. aureus* bacteraemias by month from May 2007 to August 2009. This demonstrates the trend in SAB (both MRSA and MSSA) for NHS Highland, along with the baseline rate and the target (30% reduction in baseline rate). SAB numbers for February and March 2009 were below the target rate, and the last 8 points are below the mean indicating possible improvement, although overall NHS Highland is still short of the target. Note the revised June SAB figure, which has increased by one from the previous Board report.

**Figure 1**



**Figure 2: Figure 2: Division between MRSA/MSSA bacteraemias**

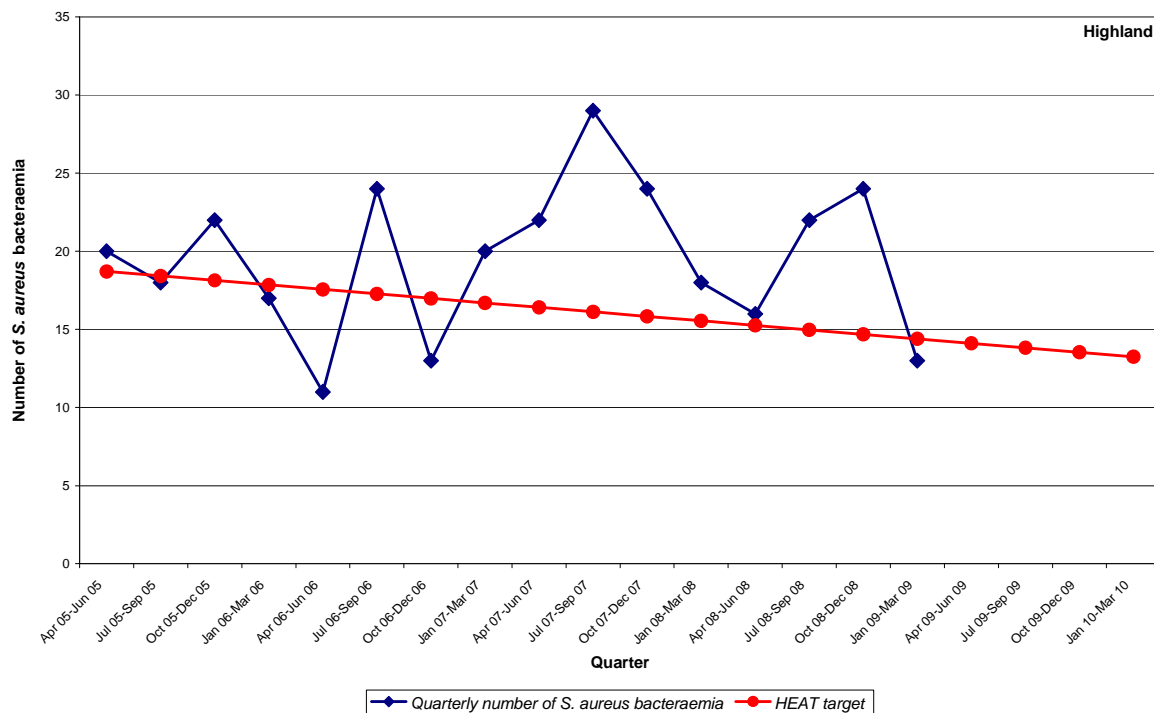


## 1.2 Current HEAT status

The annual number of *S. aureus* bacteraemia reported in NHS Highland has increased by 4.6% per year (95% CI -5.2% to 15.5%) since the HEAT baseline of 1<sup>st</sup> April 2005 to 31<sup>st</sup> March 2006. 2009 has seen a downward trend however.

The following run chart (Figure 3) demonstrates quarterly numbers of *S. aureus* bacteraemia in NHS Highland, 1st April 2005 to 31st March 2009 with HEAT target trajectory to 31st March 2010. The following quarters figures will be available for the next Board report in December.

**Figure 3**

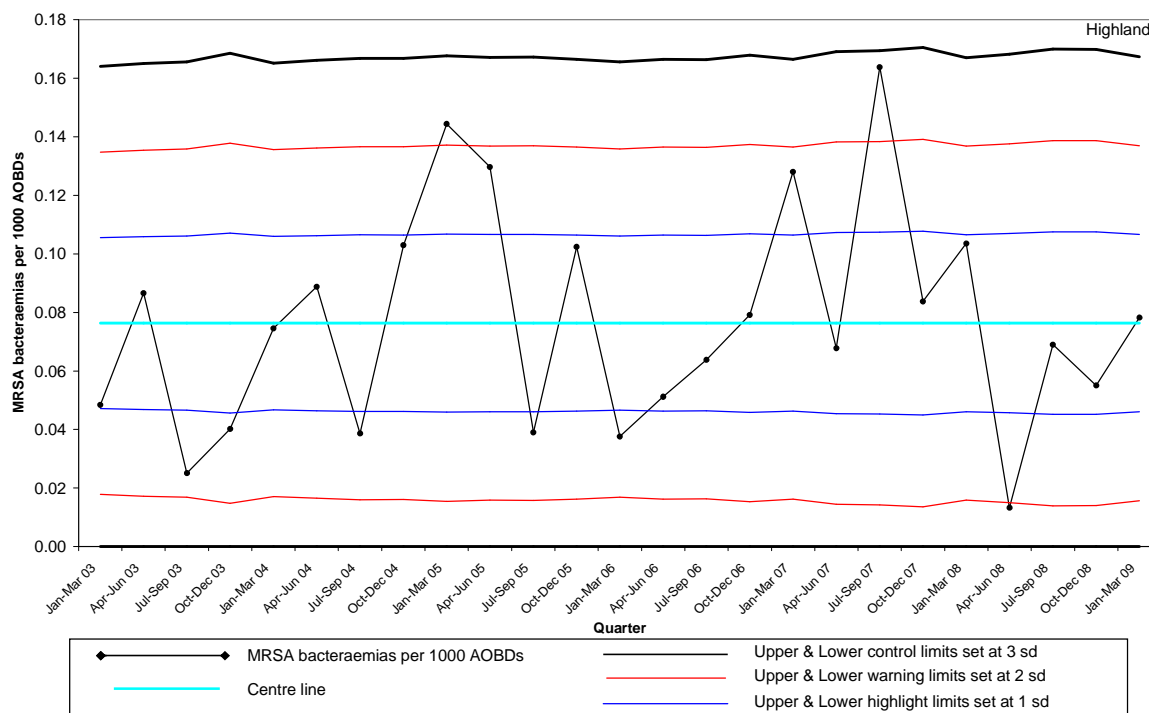


## 1.3 National context

The following SPC chart (Figure 4) shows the quarterly MRSA bacteraemia per 1000 acute occupied bed days (AOBDs) in NHS Highland, 1st January 2003 to 31st March 2009.

This statistical process control chart suggests that the MRSA bacteraemia rate in NHS Highland remained stable throughout the period 1st January 2003 to 31st March 2009 with no quarterly rates out with the control limits

**Figure 4**



#### 1.4 Current / new initiatives to reduce cases

- NHS Highland continues to implement the SAB action plan detailed in the January 2009 Board report. Focus continues on addressing SAB levels in Raigmore Hospital where the majority of episodes of infection occurs - as anticipated with its case mix of patients (though actual numbers of infections remain very low). This is overseen by the Raigmore Control of Infection Committee. CHP/Raigmore SAB Action Plans reflect the actions in Raigmore and progress is similarly monitored by the CHP Infection Control Committees. Progress against the recommendations is detailed below:-
- Education on how to prevent SAB. Includes development of bacteraemia self teaching package- 321 front line staff have now completed this package.
- Surveillance of SAB with feedback to frontline staff-*ongoing*.
- Promotion of hand hygiene including use of alcohol gel (highly effective in killing *Staph aureus*) - Progress on hand hygiene is detailed later in this report.
- Implement Health Protection Scotland (HPS) central venous catheter (CVC) insertion checklist.-Undertaken within ITU. A further meeting has been held with the paediatricians on the implementation of the checklist within the neonatal unit. The Infection control team are currently investigating the possibility of supporting a surveillance programme for line infections within the neonatal unit.
- Implement Scottish Patient Safety Programme (SPSP) CVC maintenance bundle.- Implemented within ITU.
- Implementation of the peripheral venous catheter (PVC) bundle-ongoing within the initial pilot sites. Compliance of the bundle is currently being tested within an additional three wards in Raigmore in accordance with the SPSP methodology. Regular audit of compliance with all aspects of the bundle is being undertaken in these areas.

1.5 Pan-Board, hospital or specialty specific problems identified

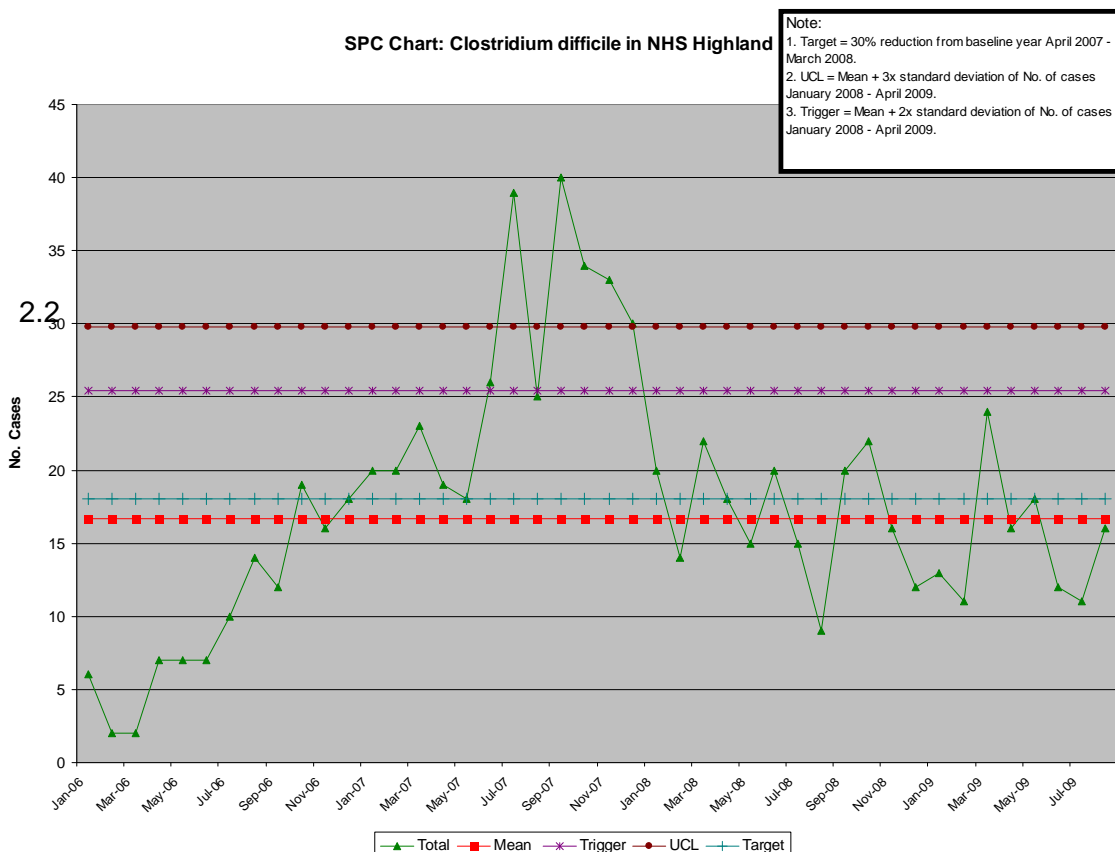
- The Sterets H pre-injection swab used for skin disinfection prior to cannulation or venepuncture has been discontinued by the manufacturer. Alternatives have been identified, led by the Raigmore Infection Control Team and a report taken to the September Control of Infection Committee for discussion. All Boards are facing the same problem and consideration is being given to the development of a national contract which will improve value for money for the preferred option. An alternative product is being used in the interim. A cost pressure is associated with the use of an interim product and is likely in the adoption of any long term product. Lead Nurses (CHP/Raigmore Infection Control Leads) have been asked by the NHS Control of Infection Committee to flag this up to the local General Managers to facilitate and support local management.

2 **Clostridium difficile Infection (CDI)**

2.1 Short / medium / long term trends in CDI

- In 2008 NHS Highland achieved a significant reduction in CDI cases from the previous year and this low level has been maintained in 2009.
- Figure 5 shows the monthly numbers of new cases of *Clostridium difficile* plus repeat episodes >28days plotted on a Statistical Process Control (SPC) chart.

Figure 5



2.2 Current HEAT status

Table 1 below shows NHS Highlands position re CDI rate against the national picture (based on the period April 2008 to March 2009). The table shows that NHS Highland is on target to meet the HEAT target.

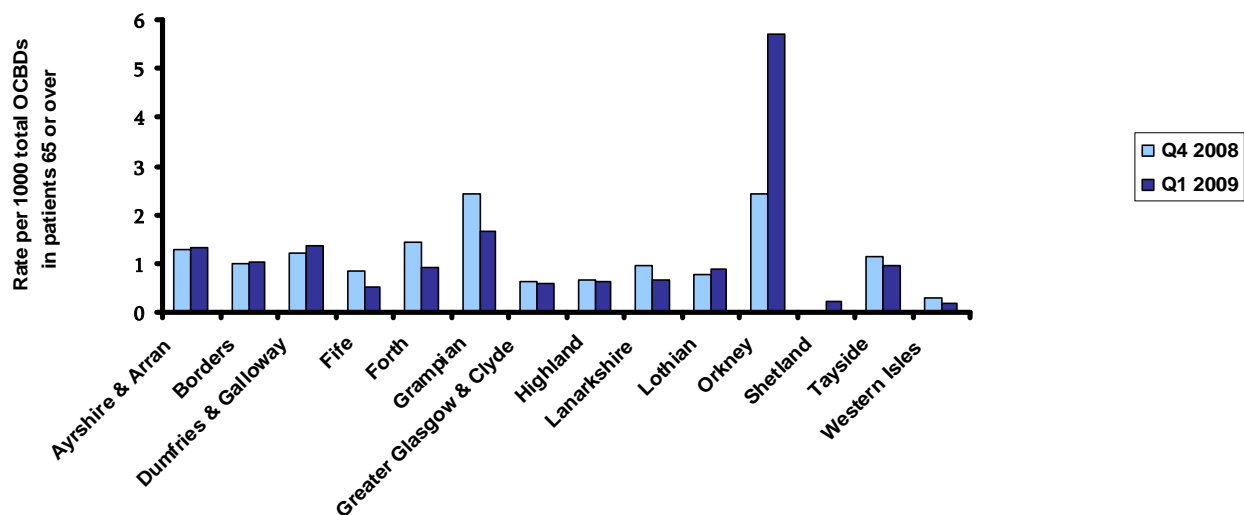
Table 1

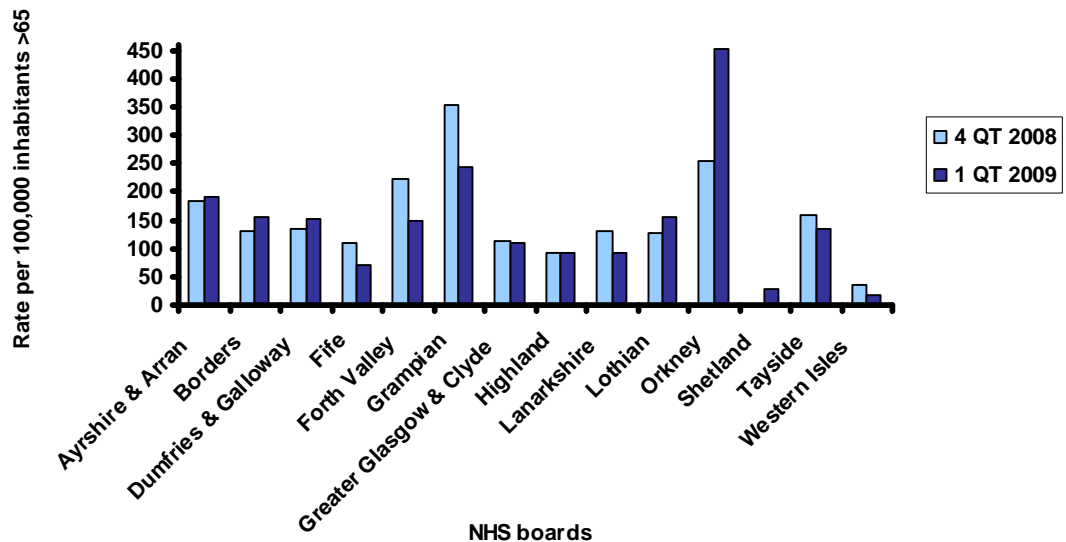
NHS Board/Scotland	Overall annual CDI rate (Apr 08-March 09)	HEAT target (March 2011)
Highland	0.67	0.77
Total Scotland	1.09	0.90

2.3 National context – most recent HPS quarterly national report

Figure 6 shows Rates of CDI per 1000 total OCBDs in acute and non-acute hospitals in 14 NHS boards in Scotland.

Figure 6





**Figure 7**

Figure 7 above shows the national picture of CDI rate per 100,000 inhabitants over the age of 65.

#### 2.4 Current / new initiatives to reduce cases of CDI

An update against the Boards current 9 point CDI Action Plan is as follows:

- Ceftriaxone use remains low throughout Raigmore and the Rural General Hospitals, with each prescription subject to scrutiny. Overall the proportion of preferred antibiotic use against that of antibiotic use associated with *Clostridium difficile* infection continues to improve. A survey of antimicrobial use across Raigmore and the Rural District General Hospitals showed 27% of patients were prescribed antibiotics; all antibiotics used were part of the Highland Drug Formulary with 68% compliance with Formulary recommendations. The results of this survey are being fed back to individual prescribers in all areas for discussion and action.
- Hand hygiene (with emphasis on the importance of hand washing) - Progress on hand hygiene is detailed later in this report.
- A comprehensive gap analysis for NHS Highland against the Vale of Leven Action Plan has been completed and the first progress report re actions completed submitted to the September Control of Infection Committee. NHS Highland is very keen to learn lessons and improve practice through local and national learning.
- 16 Steam Cleaners have been commissioned with the support of government funding to improve deep cleaning procedures. Training of staff to use the cleaners is nearing completion ready for use of the cleaners.
- Setting triggers for CDI – The ICT have developed triggers for CDI for all acute and community hospitals in NHS Highland. A trigger is said to be breached when cases (of CDI) occur at a rate exceeding the normal baseline rate for the facility (unit, ward) during a specified time period or when the disease occurs at increased severity. Monitoring of these triggers will provide an early warning of possible breakdown in infection control systems, warranting investigation.

- NHS Highland has submitted a progress report against the draft recommendations made by Health Facilities Scotland (HFS) following their visit to Caithness General Hospital in response to a heightened number of CDI cases earlier in the year. Progress against the recommendations is good with no areas giving cause for concern. There has been no feedback yet from HFS.
- As part of the recommendations made by HFS in the above draft report is the recommendation that bed spacing be increased to the current HFS recommendations. A piece of work is under way led by Douglas Seago, to measure the impact of this recommendation on NHS Hospitals.

2.5 Pan-Board, hospital or specialty specific problems identified and solutions:

**Figure 8**

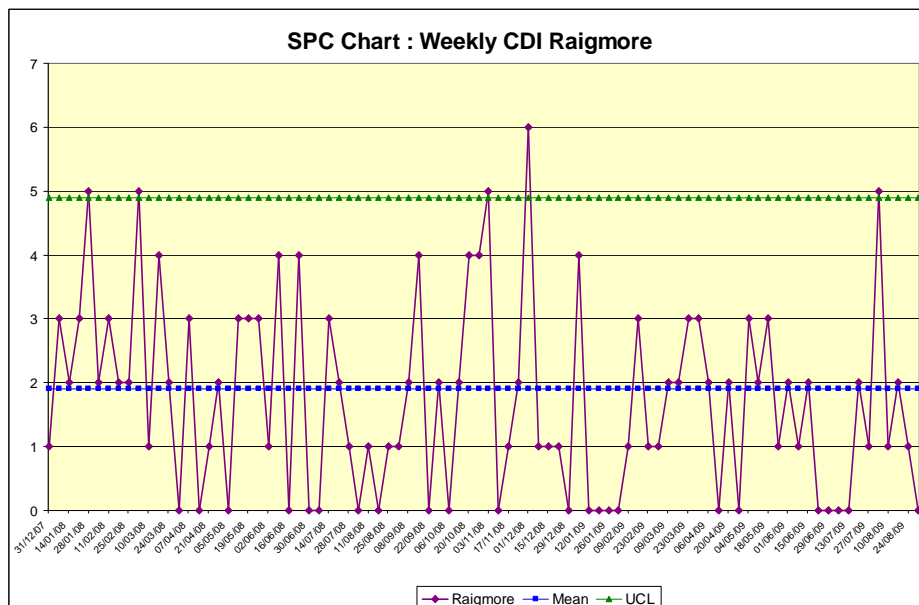


Figure 8 demonstrates that the upper control limit for CDI within Raigmore Hospital was breached week commencing 3<sup>rd</sup> August when five patients were identified as *Clostridium difficile* positive in liquid stool samples submitted to the microbiology laboratory. These cases were investigated and no linkage was found and the patients have all since recovered.

### 3 Surgical Site Infections (SSI)

#### 3.1 Surgical Site Infection Numbers by Hospital and Clinical Setting

NHS Highland participates in the mandatory national Surgical Site Infection (SSI) surveillance programme, in line with Health Protection Scotland methodology. Operation categories include hip replacement, knee replacement, repair of fracture neck of femur, elective caesarean section, abdominal hysterectomy and major vascular.

Table 1 and figures 9-13 illustrate the rates of surgical site infection for the various procedures carried out in Raigmore Hospital. These results have all been reported to the August Raigmore Management Team meeting.

Changing requirements for national surveillance have led to a review of surveillance activities within NHS Highland. From 1<sup>st</sup> October 2009 the surveillance team will commence SSI surveillance of emergency Caesarean sections. In addition, the surveillance team will participate in surveillance of empiric antimicrobial prescribing in acute hospitals, a national supporting indicator for HEAT CDI target. In order to accommodate these new activities, the surveillance team will no longer perform SSI surveillance on the following non-mandatory procedures: - abdominal aortic aneurysm and total knee replacement. These changes were approved by the NHS Highland Area Control of Infection Committee.

**Table 1**

	<b>Abdominal Aortic Aneurysm (AAA)</b>		
<b>Year</b>	<b>No. of ops</b>	<b>SSIs</b>	<b>SSI Rate</b>
<b>April 04 – March 05</b>	28	1	3.6
<b>April 05 – March 06</b>	38	1	2.6
<b>April 06 – March 07</b>	39	1	2.6
<b>April 07 – March 08</b>	38	0	0.0
<b>April 08 – March 09</b>	29	1	3.4
<b>April 09 – June 09</b>	7	0	0.0

NB. Not all AAA procedures undertaken within Raigmore Hospital were surveyed during 2008/2009 due to resource issues within the surveillance team.

**Figure 9**

Percentage Infection Rate for Caesarean Sections (inc. post-discharge) in Raigmore from January 2004 - June 2009

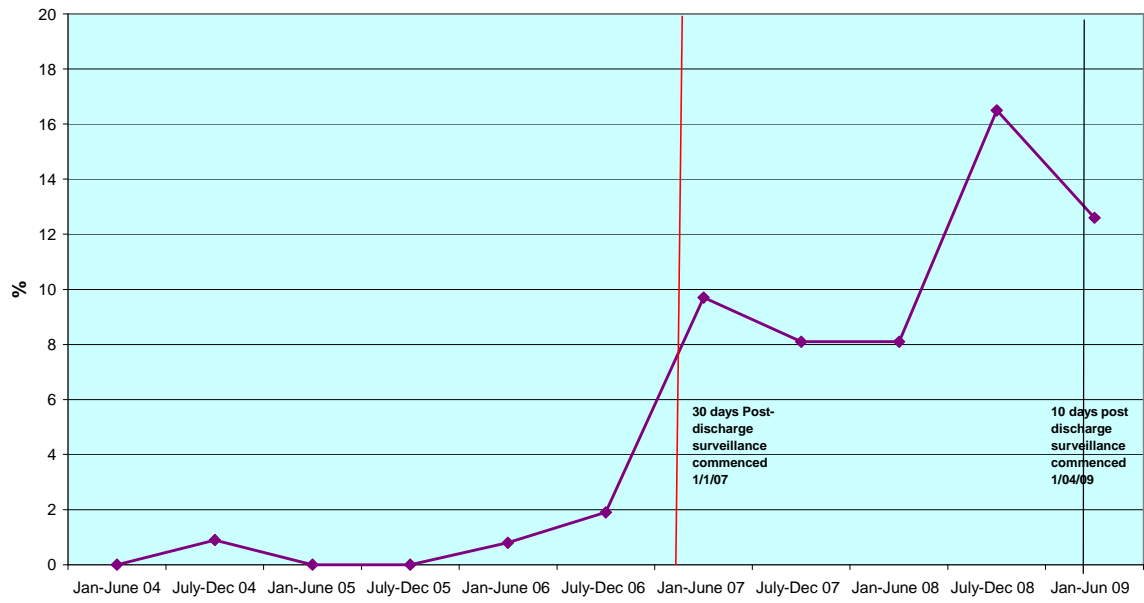


Figure 10

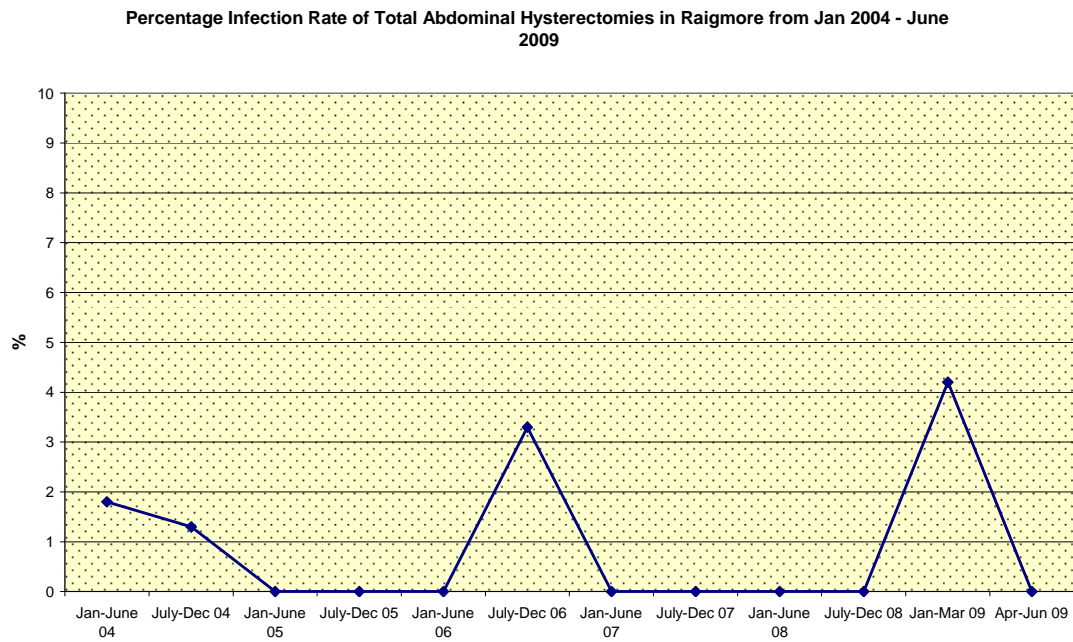
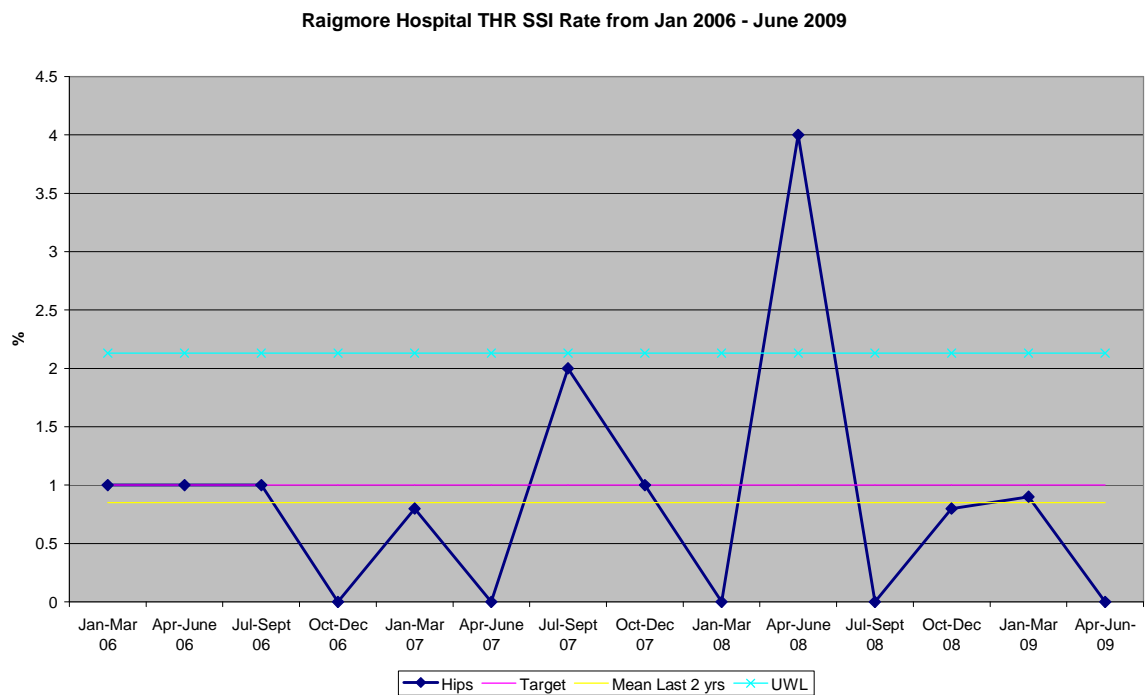
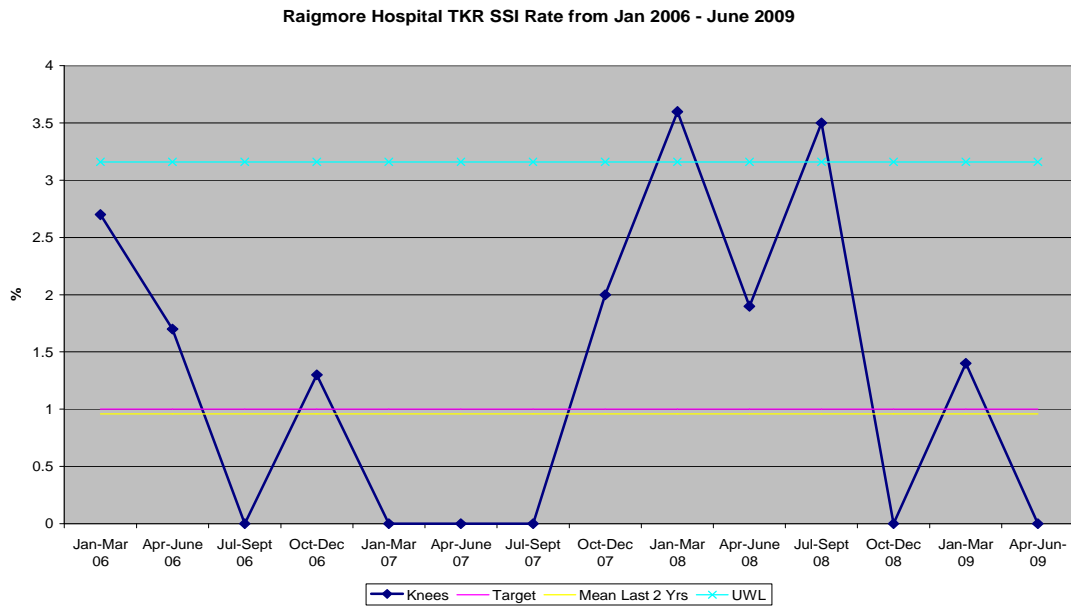


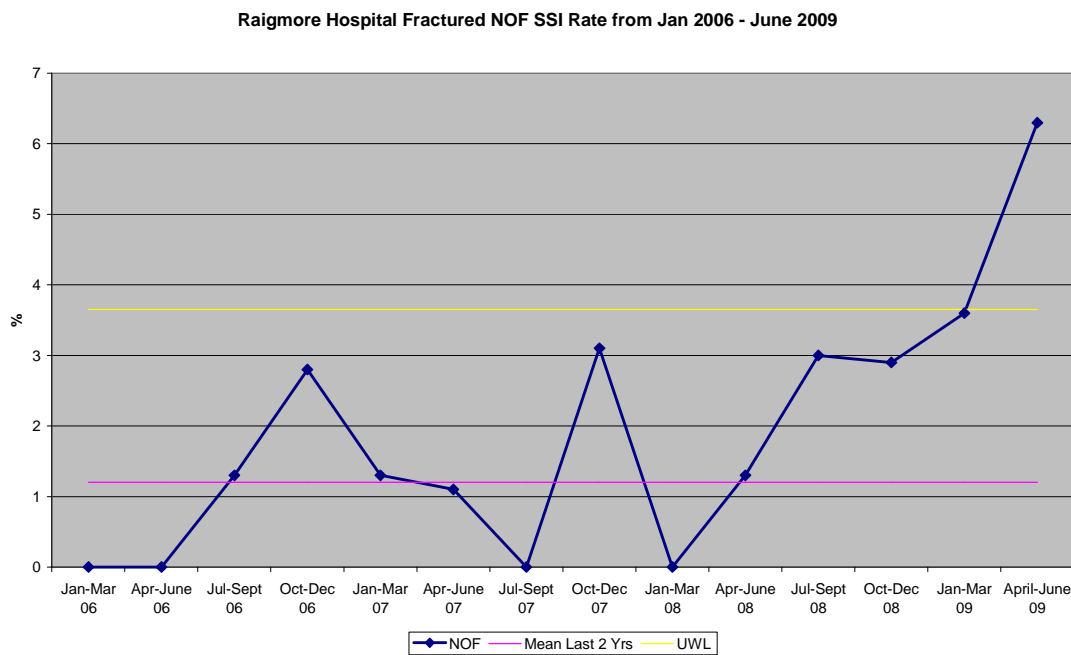
Figure 11



**Figure 12**



**Figure 13**



**3.2 Pan Board, hospital or speciality specific problems identified and solutions**

NHS Highland received a Scottish Surveillance of Healthcare Associated Infection Programme (SSHAIP) SSI Surveillance Quarterly Exception Report for the 2<sup>nd</sup> quarter of 2009 in relation to Hip Arthroplasty. HPS reported that the in-patient SSI rate for NHS Highland appears high in comparison with other NHS Boards in Scotland for the periods April 2009 to June 2009 and is higher than would be expected for a board with this number of operations and case mix.

HPS have recommend that this exception report is reviewed locally; that data for this period and procedure category are examined in order to identify any local issues that may be contributing to a

high SSI rate, in particular any changes in practice during the period April 2009 to June 2009 which may have contributed to a rise in the SSI rate.

This information has been analysed by the Infection Control Team, and fractured neck of femur procedures identified as the issue rather than total hip replacements. This information has been discussed with the Orthopedic Unit by Dr Andrew Hay, and an action plan is being developed by the multidisciplinary team. This situation will be monitored through the Raigmore Control of Infection Committee and progress reported to the NHS Highland Control of Infection Committee.

Action plans for the reduction in post elective caesarian sections infection rates in Raigmore Hospital and Caithness General Hospital are being progressed. These action plans have been discussed with and agreed by HPS with no further actions at this point suggested. With the introduction of the revised surveillance around emergency caesarian section infection rates this may in the future impact on the current figures.

#### 4 Intensive Therapy Unit (ITU) Surveillance

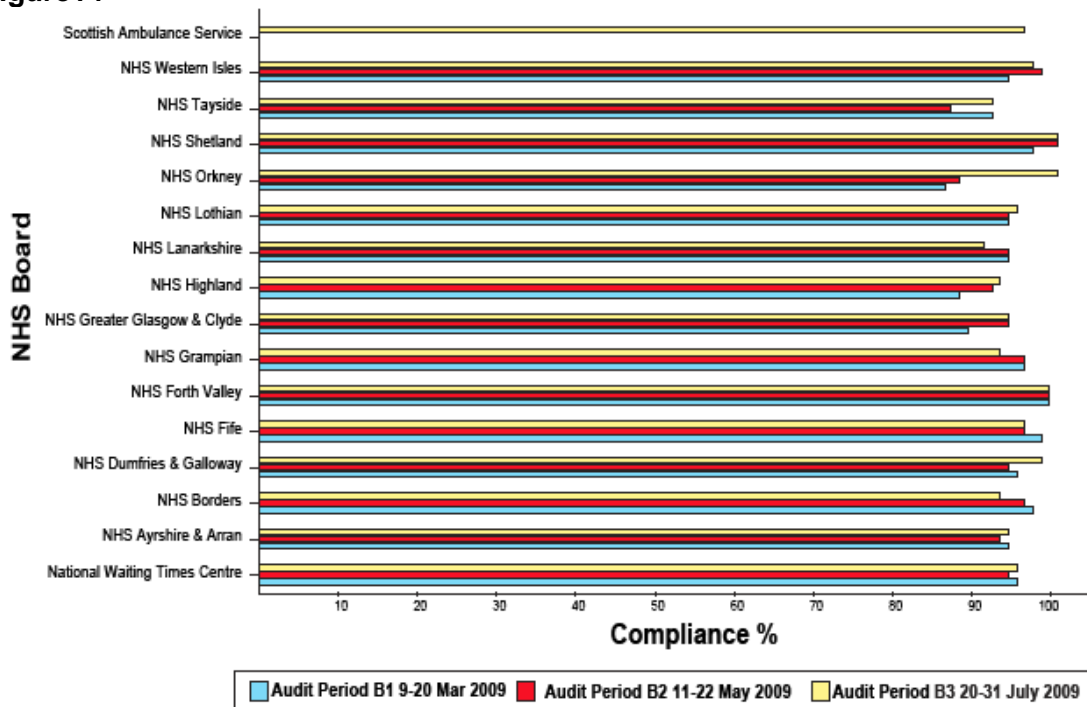
- ITU surveillance within NHS Highland is undertaken for both Central Venous Catheter (CVC) infections and Ventilator Associated Pneumonia (VAP).

ITU surveillance, which is undertaken by the Infection control surveillance nurses, provides high level outcomes measurements for Raigmore as part of the Scottish Patient Safety Programme.

#### 5 Hand Hygiene (HH) Programme

5.1 The graph below denotes the Boards performance in the National Hand Hygiene Audits during 2009.

Figure14



## 5.2 National context – most recent Health Protection Scotland national report

The national hand Hygiene compliance rate in the 3<sup>rd</sup> Bi-monthly Audit Report was 93%. NHS Highland achieved a compliance rate of 92%.

## 5.3 NHS Highland Rolling Audit Results

CEL 5 (2009) requires Boards to report on the compliance with hand hygiene across all clinical areas and ensure that audits are undertaken on a minimum monthly basis. The August rolling audit results are detailed in Appendix 1: One hospital did not achieve the minimum 90% compliance rate and 2 hospitals failed to undertake any audits in the period. The reasons for this are currently being investigated.

It has been necessary to develop a rolling programme on a phased basis to enable each ward across NHS Highland to have an auditor trained in the use of the Audit Tool to secure consistency of approach and therefore results. A number of wards have still to implement the audits. A target date for full compliance has been set for January 2010. Progress is being monitored through the Hand Hygiene Sub Group chaired by Una Lyon.

## 5.4 Visitor Hand Hygiene Compliance

The North CHP recently involved the Patients' Council in Hand Hygiene activities, one of which was an observational exercise of Hand Hygiene compliance at the entrance to wards. This was considered to be a beneficial exercise and provided interesting feedback.

Mid Highland CHP and Raigmore Patient Councils will undertake a similar exercise. Thereafter the methodology will be reviewed and refined where necessary. Thereafter a programme of audits will be developed and implemented pan Highland, through the Pan Highland Hand Hygiene Action Group, chaired by Una Lyons, Lead Nurse, Raigmore Hospital.

## 5.5 Current / New initiatives in promoting Hand Hygiene

There is a range of activities that are on-going within NHS Highland in respect of Hand Hygiene.

- The Hand Hygiene Policy has been revised to reflect changes in national guidance and learning points identified locally in the course of the National Hand Hygiene Campaign. This was approved at the Control of Infection Committee on the 9<sup>th</sup> September 2009.
- The official launch of the NHS Highland Zero Tolerance Policy will commence on 1<sup>st</sup> October 2009. An implementation strategy has been developed to ensure Highland wide coverage. This is being led by the Hand Hygiene Action Group.
- A training and education framework is being developed by the Hand Hygiene Action Group. This will define three levels of Hand Hygiene training and explicitly state what is mandatory and the required frequency of updates. A blended learning approach will be applied using a combination of audio visual, written and practical techniques.
- Audible signage has been purchased and will be installed in a number of hospitals across Highland in the near future. The impact of the signage will be monitored by the Pan Highland Hand Hygiene Action Group

- The Cleanliness Champion Programme “Hand Hygiene” and the NES stand alone hand hygiene short course “Promoting Hand Hygiene in Healthcare” have been updated to align with national guidance.
- The initial focus of the National Hand Hygiene Campaign was on acute healthcare settings. The campaign will be extended into non-acute settings e.g. community health clinics, providing healthcare to NHS patients. From an NHS Highland perspective, the Board has actively involved both acute and community healthcare settings in the national campaign from the outset and will continue to participate in any new national developments in this regard.

#### 5.6 Pan-Board, hospital or staff group specific problems identified and solutions

None identified since previous report.

### 6. **Cleaning Services Specification Compliance**

#### 6.1 Short / medium / long term trends in compliance – number/graphical presentation

**Figure 13** – Extract from the Health Facilities Scotland quarterly national report

Health Board	2 <sup>nd</sup> quarter July – Sept 2008 / 2009 Total % Pass	3 <sup>rd</sup> quarter Oct-Dec 2008 / 2009 Total % Pass	4 <sup>th</sup> Quarter Jan – March 2008 / 2009 Total % Pass	1 <sup>st</sup> Quarter April – June 2009 / 2010
<b>Scotland</b>	<b>96.0</b>	<b>95.5</b>	<b>95.7</b>	<b>95.9</b>
<b>Highland</b>	<b>95.3</b>	<b>95.5</b>	<b>95.6</b>	<b>95.0</b>

#### 6.3 Current / new initiatives in improving cleaning.

- The new steam cleaning equipment has been received by the Board, and initial familiarisation and training for staff is nearing completion, when the equipment will be put to full use.
- A bid has been submitted at the Governments request for additional cleaning staff to support the Board; confirmation of date of release of funds is awaited.

### 7 **Significant HAI incidents / outbreaks, emerging threats**

#### 7.1 Norovirus

There have been no outbreaks of diarrhoea and vomiting within NHS Highland over July and August 2009

## 7.2 HAI Related Deaths or Severe CDAD Cases

The routine surveillance programme for July/August identified one case where a patient had died within 30 days following diagnosis of *Clostridium difficile* Infection. *Clostridium difficile* appeared on the death certificate as 1b – probable cause. Health Protection Scotland has been notified and all of the appropriate documentation completed.

A second patient who developed *Clostridium difficile* symptoms on the day of transfer from an Argyll and Bute CHP Hospital to a Greater Glasgow and Clyde hospital also died within 30 days of diagnosis, with “Colitis under investigation” appearing as a secondary cause on the death certificate. This patient’s death has been recorded in the Greater Glasgow and Clyde figures.

## 8.0 **Horizon scanning**

- Additional funding from SGHD has enabled the Raigmore laboratory to extend surveillance of CDI to include all diarrhoeal stool samples from patients >15 years of age from 1<sup>st</sup> April 2009.
- The Infection control team and the microbiology laboratory continue to work towards implementing additional MRSA screening initially within renal, vascular surgery, dermatology and care of the elderly in accordance with the NHS Scotland Pathfinder Programme Summary Interim Report.
- Over the past two months the infection control team has spent a considerable amount of time preparing for pandemic flu, including providing advice and fit testing staff for FFP3 respirators.
- Revised HAI SCRIBE (Health Care Associated Systems for Controlling Risk in the Built Environment) requirements for existing buildings are anticipated from Health Facilities Scotland. It is expected that in the first instance Boards will be expected to benchmark themselves against the requirements. It is likely that this will in time create an additional cost pressure across the Board given the number of hospitals in NHS Highland

## 9 **Progress on compliance with National HAI programme**

### 9.1 ‘PRAG’ status on Scottish Government Health Department HAI Action Plan

	<b>Actions</b>
PURPLE (complete)	20
GREEN (on track to complete by the deadline)	1
AMBER (substantially complete but either awaiting national materials or with some possibility of slippage beyond the deadline)	0
RED (unable to complete by the deadline)	3

### 9.2 Compliance with National HAI Programmes – outstanding issues

- Healthcare Associated Infection System for Controlling Risk in the Built Environment (HAI SCRIBE) – National Guidance is awaited regarding existing buildings, see section 8 above.

- All staff to have HAI objective in annual professional development plans – NHS Highland is about to undertake a local audit to assess compliance with this.
- Progress with the implementation of the recommendations from the Charge Nurse Review - Leading Better Care is well underway in Highland, with the project on target to complete by December 2010. .
- Death Certificate Completion – A policy document will be prepared to incorporate relevant national guidance, with training and awareness sessions put into place to support implementation. A draft document has been prepared however national guidance is awaited.
- The Infection Control Education Programme requires to be reviewed in line with the Quality Assurance Framework for the Delivery of HAI education in NHS Scotland (2005) NES. Proposed completion date of the review was May 2009. There is slippage against this objective due to other pressures

## Acronyms

AOBD	Acute Occupied Bed Days
CDAD	<i>Clostridium difficile</i> Associated Disease
CDI	<i>Clostridium difficile</i> Infection
CVC	Central Venous Catheter
HAI	Hospital Associated Infection
HAI SCRIBE	Healthcare Associated Infection System for Controlling Risk in the Environment
HEAT	<b>H</b> ealth Improvement; <b>E</b> fficiency; <b>A</b> ccess to Services; <b>T</b> reatment appropriate for patient
HH	Hand Hygiene
HFS	Health Facilities Scotland
HPS	Health Protection Scotland
MRSA	Meticillin resistant Staphylococcus aureus
MSSA	Meticillin Sensitive Staphylococcus aureus
PPE	Personal Protective Equipment
PVC	Peripheral venous catheter
PRAG	<b>P</b> urple, <b>R</b> ed, <b>A</b> mber , <b>G</b> reen
QIS	Quality Improvement Scotland
SAB	Staphylococcus aureus bacteraemia
SGHD	Scottish Government Health Directorate
SPSP	Scottish Patient Safety Programme
SSI	Surgical Site Infection





