



Commentary on six monthly data on MRSA, MSSA and *E. coli* bacteraemia and *Clostridium difficile* infection (April 2013 to September 2013) reported by Independent Sector Healthcare Organisations in England

April 1st 2014

1. Summary

This is the eighth publication of healthcare associated infection (HCAI) surveillance data on meticillin-resistant *Staphylococcus aureus* (MRSA) bacteraemia and *Clostridium difficile* infection (CDI) from Independent Sector (IS) healthcare organisations. This also includes the fifth publication of data on meticillin-sensitive *Staphylococcus aureus* (MSSA) bacteraemia, and the fourth publication of data on *Escherichia coli* bacteraemia.

A total of 7 cases of MRSA bacteraemia, 19 cases of MSSA bacteraemia, 78 cases of *E. coli* bacteraemia and 41 cases of CDI were reported for April 2013 to September 2013. These figures include all cases reported by the Independent Sector and do not take into account whether or not the infection was thought to be associated with the Independent Sector organisation or not. This document summarises the data and discusses key caveats. In addition the summary of key differences between the NHS and IS should be considered (Table 1).

Table 1. Summary of key differences between the NHS and IS

Independent Sector Organisations	NHS acute Trusts
Data are not “apportioned” into cases thought to have been associated with the particular IS hospital admission.	Data are categorized into “Trust apportioned” and “non Trust apportioned” cases. “Trust apportioned” cases are those thought to have been associated with a given NHS Trust during a given hospital admission.
Primarily elective patient-mix	Broad patient-mix including emergency based treatments
Constantly changing facility list	Mainly static list of providers
Large number of specialist facilities	Mainly general acute facilities
Organisations may comprise geographically diverse hospitals	Mainly local clusters of hospitals
Not all organisations/hospitals capable of reporting using the web-enabled DCS preventing capture of patient level data	All NHS Trusts capable of reporting using the web-enabled DCS
Rates calculated using bed-days plus discharges due to the high proportion of day cases compared to the NHS	Rates calculated using bed-days (occupied beds at midnight)
Cases amongst renal patients are excluded, pending a forthcoming publication	Cases amongst renal patients are not excluded

2. Introduction

Today sees the latest in a series of publications of HCAI surveillance data on MRSA, MSSA and *E. coli* bacteraemia and CDI reported by IS healthcare organisations to Public Health England (previously Health Protection Agency [HPA]). IS healthcare organisations providing regulated activities¹ undertake surveillance on HCAs and report to Public Health England (PHE) as specified in the Code of Practice². This data comprises one of several Official Statistics produced by PHE on MRSA and MSSA bacteraemia and CDI.³

Patient level data is provided to PHE via the secure Data Capture System (DCS). In addition manual returns (email notifications) are submitted to PHE by those organisations not able to access the DCS⁴. A full description of the processes of data collection can be found elsewhere.⁵ Data for this publication was extracted on March 6th 2014.

¹ see: <http://www.legislation.gov.uk/ukxi/2010/781/contents/made>

² The Health and Social Care Act 2008 (2010). Code of Practice on the prevention and control of infections and related guidance. Department of Health. Gateway Reference: 14808

³ For the other Official Statistic outputs please refer to the webpages for [Staphylococcus aureus](#) and [CDI](#)

⁴ The reasons behind this are discussed in [Commentary on Reporting of C. difficile infections and MRSA bacteraemia from the Independent Sector](#), published 2009.

⁵ [Commentary on financial year \(April 2009 to March 2010\) data on MRSA bacteraemia and Clostridium difficile infection from Independent Sector Healthcare Organisations in England](#)

3. **Presentation of data**

- Total counts of MRSA, MSSA, and *E. coli* bacteraemia and CDI are presented by IS organisation⁶ for the six month period April 2013 – September 2013.
- The modified IS denominator (bed-days plus discharges) is provided for the most recent financial year available (April 2012-March 2013) as an indication of the size of each facility. This cannot be used to calculate a rate as the numerator and denominator are for different time periods.
- The hospital type (large hospital, small hospital⁷, NHS treatment centre, diagnostic centre seeing mainly day case patients and women’s health) is listed for the hospital(s) within a group; this indicates the type of service(s) provided⁸. This is correct as at 30th September 2013 as supplied to PHE.
- The number of hospitals within an organisation is provided. This is correct as at 30th September 2013 and as supplied to PHE.

The data tables only include data from those IS organisations which have reported at least once (either submitted a case(s) or have signed off their data as correct) for the reporting period (April 2013 to September 2013). Not all IS organisations included in the data tables have been reporting for the entire period and data is provided for hospitals which may have opened or closed during the reporting period. The publication is therefore not a comprehensive list of IS organisations. Cases amongst renal patients have been excluded pending a separate publication.

4. **Duplicate reporting between the IS and NHS**

Data entered onto the DCS by the NHS and IS are collected in two parallel systems. A description of the de-duplication process can be found elsewhere.⁹

⁶ An IS organisation can comprise a group of hospitals owned by one company or a single hospital. It is possible to identify a group versus a hospital using the “number of hospitals in organisation” field.

⁷ Large hospital: >=50 beds, small hospital: <50 beds

⁸ Where a group comprises more than one hospital type, all types are listed

⁹ [Commentary on financial year \(April 2009 to March 2010\) data on MRSA bacteraemia and *Clostridium difficile* infection from Independent Sector Healthcare Organisations in England](#)

5. Interpreting the data

5.1 What the data shows

- Table 1. Total counts of MRSA bacteraemia reported by Independent Sector Healthcare Organisation; April 2013 to September 2013.
- Table 2. Total counts of *Clostridium difficile* infection reported by Independent Sector Healthcare Organisation; April 2013 to September 2013.
- Table 3. Total counts of MSSA bacteraemia reported by Independent Sector Healthcare Organisation; April 2013 to September 2013.
- Table 4. Total counts of *E. coli* bacteraemia reported by Independent Sector Healthcare Organisation; April 2013 to September 2013.

5.2 What the data do not provide

- The data do not provide a basis for comparisons between different IS organisations due to their variable size and range of patients seen.
- The data do not provide a basis for reliable comparison of data on MRSA, MSSA or *E. coli* bacteraemia and CDI between the IS and NHS

A full discussion of these issues is presented elsewhere.¹⁰

6. Specific Data Caveats

Below is a list of specific caveats to be considered in relation to the published data:

Data quality

- Not all IS organisations have signed off their data or submitted data for the reporting period therefore we cannot be certain that data presented for these organisations is accurate. IS organisations that have incomplete data for the time period are indicated in the data tables with a blue highlight.

Duplicate entries

- Data have only been de-duplicated against the NHS dataset for cases reported via the DCS. It is possible that cases reported via report forms also represent duplicate reports with the NHS. Additionally, NHS number, which is one of the variables used to de-duplicate records, is

¹⁰ [Commentary on financial year \(April 2009 to March 2010\) data on MRSA bacteraemia and *Clostridium difficile* infection from Independent Sector Healthcare Organisations in England](#)

not always known for patients treated in the IS so potential duplicate records entered onto the DCS may not be identified.

Organisational Changes

- Some IS organisations included in the data tables may have not been open for the entire reporting period, whilst others may have closed over this time. This may reduce the count of MRSA, MSSA and *E. coli* bacteraemia and CDI in such IS organisations compared to those which have been open for the whole period. However they will also reduce the denominator information provided so any rate calculated still has validity over the shorter period.
- Some IS organisations who previously had access to the DCS have not been able to access the online system to enter cases and sign off data. Where PHE is aware of this problem such organisations are offered email notification as an alternative form of reporting.

7. Summary of the Data

- Data was extracted on March 6th 2014.
- 24 organisations have reported at least once for the time period, 11 of which are groups of more than one hospital and the remaining 13 single hospitals.

MRSA bacteraemia (Table 1)

- A total of 7 MRSA bacteraemia cases were reported from April 2013 to September 2013 by the following organisations: BMI Healthcare (GHG) [2 cases]; BUPA Cromwell Hospital [1 case]; Glenside Hospital for Neuro Rehabilitation [1 case]; HCA International [2 cases]; SERCO Ltd [1 case].
- All cases were reported via report form.

CDI (Table 2)

- A total of 41 CDI cases were reported from April 2013 to September 2013 by the following organisations: BMI Healthcare (GHG) [6 cases]; BUPA Cromwell Hospital [2 cases]; Glenside Hospital for Neuro Rehabilitation [2 cases]; HCA International [13 cases]; Nuffield Health [3 cases]; Ramsay Health Care UK [1 case]; Spire Healthcare [7 cases]; The Horder Centre [1 case]; The Hospital of St John and St Elizabeth [1 case]; The London Clinic [5 cases].
- 34 cases were reported via report form.

MSSA bacteraemia (Table 3)

- A total of 19 MSSA bacteraemia cases were reported from April 2013 to September 2013 by the following organisations: BMI Healthcare (GHG) [5 cases]; BUPA Cromwell Hospital [2 cases]; HCA International [7 cases]; Nuffield Health [3 cases]; The London Clinic [2 cases].
- 15 cases were reported via report form.

***E. coli* bacteraemia (Table 4)**

- A total of 78 *E. coli* bacteraemia cases were reported from April 2013 to September 2013 by the following organisations: Aspen Healthcare [2 cases]; BMI Healthcare (GHG) [11 cases]; BUPA Cromwell Hospital [8 cases]; Glenside Hospital for Neuro Rehabilitation [1 case]; HCA International [25 cases]; King Edward VII Sister Agnes [2 cases]; Nuffield Health [3 cases]; Ramsay Health Care UK [1 case]; Spire Healthcare [5 cases]; The Hospital of St John and St Elizabeth [3 cases]; The London Clinic [17 cases].
- 60 cases were reported via report form.

APPENDIX 1: HOW TO CALCULATE BED DAY PLUS DISCHARGE DENOMINATOR

The denominator we intend to use, which is more appropriate for shorter stay hospitals is

Bed days in year + discharges in year

Instead of counting the number of midnights the patient was resident for, this counts the number of different days on which they were in the hospital. A day case will count 1, a one night stay in the year will count 2.

Bed days in the financial year 2012/13

This is the sum of the number of occupants in a bed each midnight during the year:

Those in a bed at midnight *at the end of the day* 1 April 2012 +

...+ those in a bed at midnight *at the end of the day* 31 March 2013

If it is being derived from admission dates and discharge dates, you work out the contribution that each patient makes to the year's bed days by a formula.

The only patients who can contribute a bed day to the year are those who are admitted *strictly before* 1 April 2013 and discharged *strictly after* 1 April 2012. That is, the latest date they could have been admitted was 31 March 2013 and the earliest date they could have been discharged was 2 April 2012.

For these we work out

Discharge date or 1 April 2013, whichever is earlier

MINUS

Admission date or 1 April 2012, whichever is later

then add up over all the patients.

This counts the number of bed days the patient contributes to the year.

If the patient is still in hospital and does not yet have a discharge date then the first expression should be taken as 1 April 2013.

Discharges in the financial year 2012/13

This is the number of patients with a discharge date between 1 April 2012 and 31 March 2013 i.e.

number of patients discharged on 1 April 2012 + ... + number discharged on 31 March 2013

It should include any day cases that took place during the year.

Examples of bed day and discharge calculations

If a patient was admitted on 17 March 2012 and discharged on 1 April 2012 they will contribute

Bed days in 2012/13 Zero
Discharges in 2012/13 One

If a patient was admitted on 17 March 2012 and discharged on 2 April 2012 they will contribute

Bed days in 2012/13 One
Discharges in 2012/13 One

If a patient was admitted on 17 March 2012 and discharged on 1 April 2013, they will contribute

Bed days in 2012/13: 365
Discharges in 2012/13 Zero

If a patient was admitted on 23 April 2012 and discharged on 23 April 2012 they will contribute

Bed days in 2012/13 Zero
Discharges One

If a patient was admitted on 1 March 2013 and is still in hospital today (19 June 2013) they will contribute

Bed days =

Minimum of (discharge date, 1 April 2013) - maximum of (admission date, 1 April 2012)

= 1 April 2013 - maximum (1 March 2013, 1 April 2012)

= 1 April 2013 - 1 March 2013

= 31 Days

Discharges Zero

Figures should be provided aggregated for each organisation (where an organisation owns more than one hospital or facility) or for the individual hospital if an organisation comprises one hospital or facility.