*Staphylococcus aureus* (MRSA and MSSA) bacteraemia mandatory reports, 2014/15

Summary of the Mandatory Surveillance Annual Epidemiological Commentary, 2014/15
About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

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Published July 2015
PHE publications gateway number: 2015167
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Summary

Meticillin resistant (MRSA) and Meticillin sensitive *Staphylococcus aureus* (MSSA) bacteraemia data have been published (9 July, 2015) as part of the Department of Health's mandatory surveillance programme for healthcare-associated infection.

Newly published data include:

- Annual (April 2014 to March 2015) counts and rates of MRSA bacteraemia by acute Trust and Clinical Commissioning Group (CCG).
- Annual (April 2014 to March 2015) counts and rates of MSSA bacteraemia by acute Trust and Clinical Commissioning Group (CCG).

**Summary points on *Staphylococcus aureus* bacteraemia (patients of all ages)**

A total of 10,628 *S. aureus* bacteraemias were reported to Public Health England in 2014/15 through both the meticillin resistant *S. aureus* (MRSA) bacteraemia and meticillin susceptible *S. aureus* (MSSA) bacteraemia mandatory surveillance schemes. This represents a 4.7% increase on the *S. aureus* bacteraemias reported in 2013/14 (n=10,152) and 7.5% overall increase since 2011/12 (n=9,883 *S. aureus* bacteraemia reports).

Since 2011/12, the percentage of annual *S. aureus* bacteraemia reports associated with MRSA has decreased from 11.3% (n=1,116 of 9,883) to 7.5% (n=801/10,628) in 2014/15.

The following sections will describe the epidemiology of the MRSA and MSSA in England separately.

**Summary points on MRSA bacteraemia (patients of all ages) [1]**

Counts and rates of MRSA bacteraemia continue to fall across the NHS.

**Total reports**

A total of 801 cases of MRSA bacteraemia were reported by English NHS acute Trusts between 1 April 2014 and 31 March 2015 (2014/15). This represents a reduction of 7.1% in the number of cases reported in 2013/14 when 862 cases were reported, and an overall reduction of 82.0% from the number of cases reported in 2007/08 (4,451 cases).
Trust assigned reports†

Since 1 April 2013, MRSA bacteraemia has been reported by the assignment outcome of the Post Infection Review (PIR) process (see Notes below for more details). Between 1 April 2013 and 31 March 2014, this separated cases into two groups either Trust or CCG assigned. From 1 April 2014, an additional category was added to the PIR process (assignment to a “Third Party”). Prior to the introduction of PIR, MRSA cases were reported grouped by the Trust apportioning algorithms which groups cases by their time of onset in relation to inpatient admission (April 2008 to March 2013).

Of the 801 cases in FY 2014/15, 320 MRSA bacteraemias were assigned to an acute Trust (0.9 per 100,000 bed days) and 384 were assigned to a CCG (0.71 per 100,000 population) while the remaining 97 MRSA bacteraemias were assigned to a Third Party, equivalent to 0.2 per 100,000 population.

When data are considered in terms of the previously utilised Trust apportionment algorithm there were 287 Trust apportioned MRSA bacteraemias in FY 2014/15. This is slightly lower than those found to be Trust assigned cases; however, this difference reflects the change in reporting methodology rather than any change in infection rates.

The rate of Trust apportioned cases per 100,000 bed days has been included in Figure 1b from FY 2008/09 to FY 2014/15 for historical context. We have not provided the Trust assigned rates over time in a figure (please see Annual MRSA tables or Annual Epidemiological Commentary for more details) as the time series has been disrupted; the additional categorisation of Third Party assignment for all cases with a specimen date from 1 April 2014 onwards, means that the Trust assigned data for 2013/14 are not truly comparable to the Trust assigned data for 2014/15, as further declines in Trust assigned cases may be an artefact of the change in methodology rather than a true decline.

Observed increases in MSSA bacteraemia numbers have been apparent for some time and is in fact why Public Health England (PHE), the Department of Health and the NHS initiated more in-depth surveillance on these infections. PHE are currently working with the Advisory Committee on Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) to identify suitable healthcare interventions to reduce these infections.
Staphylococcus aureus (MRSA and MSSA) bacteraemia mandatory reports, 2014/15

Figure 1: Trends in rates of MRSA bacteraemia

**Fig. 1a. All reported cases rate (2007/08 to 2014/15*)**

**Fig. 1b. Trust apportioned rates (2008/09 to 2014/15*)**

NB: Figure 1b presents Trust apportioned data from FY 2008/09 to FY 2014/15, provided for historical context. Trust assigned rates have not been presented graphically for 2013/14 and 2014/15 due to changes in the methodology, meaning that there is a twice disrupted time series. Data for Trust assigned rates can be found in Table S1b of the Annual Epidemiological Commentary and shall not be presented graphically until there are several data points available.

* FY 2014/15 population data (used in the rate calculations) had not been published at the time this analysis was performed and so 2013/14 population data were used as a proxy for 2014/15. In addition, the 2014/15 bed-day total is of an aggregate of quarter one-quarter three of 2014/15 and quarter 4 of 2013/14, as at the time this analysis was performed, quarter 4 2014/15 data had not been published.

Summary points on MSSA bacteraemia (patients of all ages) [2]

MSSA bacteraemia rates continue to increase across the NHS.

Total reports

A total of 9,827 cases of MSSA bacteraemia were reported across the NHS in England between 1 April 2014 and 31 March 2015 (2014/15). This represents an increase of 5.8% on the number of cases reported in 2013/14 when 9,290 cases were reported, and an increase of 12.1% on the number of cases reported in 2011/12 (8,767 cases). The associated national rate also increased from 16.5 to 18.2 cases per 100,000 population over this time period (Figure 2a).

Trust apportioned reports†

Of the 9,827 cases reported in FY 2014/15, a total of 2,795 (28.4%) were Trust apportioned across the NHS. This represents a 3.7% increase compared to the number of Trust apportioned cases in 2013/14 (n=2,696) and is the first increase in Trust
apportioned MSSA bacteraemias since its inclusion in the mandatory surveillance scheme. Similarly, the rate of Trust apportioned MSSA bacteraemia has also increased between 2013/14 and 2014/15 from 7.9 per 100,000 bed days to 8.1 per 100,000 bed days, respectively (Figure 2b).

**Figure 2: Trends in rates of MSSA bacteraemia (2011/12 to 2014/15*)**

Fig. 2a. All reported cases rates  
Fig. 2b. Trust apportioned rates

* FY 2014/15 population data (used in the rate calculations) had not been published at the time this analysis was performed and so 2013/14 population data were used as a proxy for 2014/15. In addition, the 2014/15 bed-day total is of an aggregate of quarter one-quarter three of 2014/15 and quarter 4 of 2013/14, as at the time this analysis was performed, quarter 4 2014/15 data had not been published.
Notes

This publication forms part of the range of Official Statistics outputs routinely produced by PHE. Further detailed epidemiological analyses of MRSA bacteraemia, MSSA bacteraemia, *E. coli* bacteraemia and CDI data can be found in both the Quarterly Epidemiological Commentaries [3] and the Annual Epidemiological Commentary, 2014/15 data [4]. The Annual Epidemiological Commentary for FY 2014/15 contains additional analyses to previous years, including counts and rates per financial year by age, sex and region (NHS England Area Team). In addition, trends in time to onset and source of bacteraemias are also reported.

‡ MRSA Trust assigned reports:

Since 1 April 2013, MRSA bacteraemia has been reported by the assignment outcome of the Post Infection Review process. Between 1 April 2013 and 31 March 2014, this separated cases into two groups either Trust or CCG assigned. From 1 April 2014, an additional category was added to the PIR process (assignment to a “Third Party”), taking into consideration the increasingly complex nature of MRSA bacteraemias being reported. Prior to April 2013 MRSA cases were reported grouped by the Trust apportionment algorithm; categorising cases by their time of onset in relation to patient admission and the location of the patient.

The PIR process was introduced to support the delivery of zero tolerance on MRSA bacteraemia, as set out by NHS England in the Planning Guidance *Everyone counts: Planning for Patients 2013/14*. A PIR is undertaken on all MRSA bacteraemias with the purpose of identifying how a case occurred, to identify actions which will prevent a reoccurrence and to identify the organisation best placed to ensure improvements are made.

† MSSA Trust apportioned reports: includes patients who are (i) in-patients, day-patients, emergency assessment patients; AND (ii) have had a specimen taken at an acute Trust; AND (iii) specimen is 3 or more days after date of admission (admission date is considered day ‘1’).

Further details of how the denominators are derived and rates calculated can be found in the Appendix of the 2014/15 Annual Epidemiological Commentary.
References

[1]. Financial year results from the mandatory surveillance of MRSA bacteraemia. Published 9 July 2015.

[2]. Financial year results from the mandatory surveillance of MSSA bacteraemia. Published 9th July 2015.

[3]. Quarterly Epidemiological Commentaries on MRSA, MSSA and \textit{Escherichia coli} bacteraemia and \textit{Clostridium difficile} infection.