

Commentary on quarterly epidemiological data on *Clostridium difficile* infection (CDI) and *Staphylococcus aureus* bacteraemias (SAB) in Scotland

October to December (Q4) 2014

Clostridium difficile infection (CDI) data and commentary

- During Q4 2014, 310 new CDI cases in patients aged 65 years and above were reported to Health Protection Scotland (HPS). In the previous quarter there were 333 cases. This corresponds to an incidence rate of 34.7 cases per 100 000 total occupied bed days (TOBDs) compared to 38.7 per 100 000 TOBDs in the previous quarter ([Table 1](#)).
- Yearly trends in patients aged 65 years and above (comparing 2013 with 2014) increased¹ in NHS Fife, NHS Forth Valley and NHS Grampian ([Table 2](#)).
- During Q4 2014, 132 new CDI cases in patients aged 15-64 years were reported. In the previous quarter there were 151 cases. This corresponds to an incidence rate of 37.2 cases per 100 000 acute occupied bed (AOBDs) days compared to 42.1 cases per 100 000 AOBDs in the previous quarter ([Table 3](#)).
- No decreasing or increasing yearly trends in patients aged 15-64 years were observed comparing 2013 with 2014 ([Table 4](#)).
- No NHS boards were outliers this quarter in the funnel plot analysis for patients aged 65 years and above ([Figure 1](#)).
- NHS Lothian was an outlier this quarter in the funnel plot analysis for patients aged 15-64 years ([Figure 2](#)).
- No NHS boards were above normal variation (in either age group) this quarter when analysing long-term trends over the past three years (see [Appendix](#)).
- Seasonality has been observed, whereby the pattern in overall quarterly rates in both age groups in 2014 and in the previous four years shows rising incidence rates in Q2 and Q3 followed by a drop over Q4 and Q1 ([Figure 3](#)). Despite the observed seasonality, the overall pattern of year-ending rates shows a steady decline in Scotland in both age groups over the same period ([Figure 4](#)).
- In the clinical surveillance typing scheme (covering severe cases and outbreaks), ribotype 002 (15.2%) was the most common ribotype isolated, followed by 005 and 014 (both at 11.1%), then ribotypes 015 and 078 (both at 5.1%).
- In the snapshot surveillance (which reflects on the general distribution of ribotypes among all CDI cases), ribotype 005, 014 and 078 (all at 13.1%) were the most common ribotypes isolated, followed by 015 (9.8%) and 020 (6.6%). All isolates tested (snapshot and clinical) were susceptible to metronidazole and vancomycin.

1. Note: Any use of the term increase or decrease in the context of this report denotes a statistically significant change.

Clostridium difficile infection (CDI) tables and figures

Table 1: CDI cases and incidence rates (per 100 000 TOBDs) in patients aged 65 years and above: Q3 2014 (July to September 2014) compared to Q4 2014 (October to December 2014).

NHS board	Q3 Cases	Q3 Bed days	Q3 Rate	Q4 Cases	Q4 Bed days	Q4 Rate
Ayrshire & Arran	36	63 531	56.7	23	66 107	34.8
Borders	6	21 641	27.7	1	22 225	4.5
Dumfries & Galloway	9	24 854	36.2	11	26 688	41.2
Fife	20	49 557	40.4	16	49 868	32.1
Forth Valley	8	43 060	18.6	9	46 533	19.3
Grampian	33	74 497	44.3	22	76 560	28.7
Greater Glasgow & Clyde	79	221 164	35.7	78	230 413	33.9
Highland	19	44 412	42.8	19	44 074	43.1
Lanarkshire	33	84 713	39.0	33	86 444	38.2
Lothian	65	147 249	44.1	62	154 503	40.1
National Waiting Times Centre	0	6 916	0.0	0	6 902	0.0
Orkney	0	1 837	0.0	1	2 508	39.9
Shetland	1	2 298	43.5	0	2 484	0.0
Tayside	20	69 543	28.8	31	72 027	43.0
Western Isles	4	4 646	86.1	4	4 955	80.7
Scotland	333	859 918	38.7	310	892 291	34.7

Table 2: CDI cases and incidence rates (per 100 000 TOBDs) in patients aged 65 years and above: 2013 compared to 2014. Bold outline denotes statistically significant changes.

NHS board	2013 Cases	2013 Bed days	2013 Rate	2014 Cases	2014 Bed days	2014 Rate
Ayrshire & Arran	127	277 146	45.8	101	269 562	37.5
Borders	26	85 173	30.5	16	86 317	18.5
Dumfries & Galloway	33	95 345	34.6	36	104 233	34.5
Fife	41	211 138	19.4	69	199 541	34.6
Forth Valley	19	188 565	10.1	38	181 706	20.9
Grampian	61	326 826	18.7	106	308 638	34.3
Greater Glasgow & Clyde	324	948 367	34.2	287	942 699	30.4
Highland	45	174 716	25.8	65	177 495	36.6
Lanarkshire	138	333 566	41.4	122	338 899	36.0
Lothian	278	607 291	45.8	273	609 019	44.8
National Waiting Times Centre	0	27 501	0.0	1	28 008	3.6
Orkney	2	11 400	17.5	4	9 299	43.0
Shetland	5	10 832	46.2	3	10 087	29.7
Tayside	127	293 353	43.3	101	294 924	34.2
Western Isles	20	19346	103.4	13	20 736	62.7
Scotland	1 246	3 610 565	34.5	1 235	3 581 163	34.5

Note: Any use of the term increase or decrease in the context of this report denotes a statistically significant change.

Table 3: CDI cases and incidence rates (per 100 000 AOBs) in patients aged 15-64 years: Q3 2014 (July to September 2014) compared to Q4 2014 (October to December 2014).

NHS board	Q3 Cases	Q3 Bed days	Q3 Rate	Q4 Cases	Q4 Bed days	Q4 Rate
Ayrshire & Arran	10	24 728	40.4	8	22 861	35.0
Borders	3	4 094	73.3	2	4 043	49.5
Dumfries & Galloway	6	7 818	76.7	4	7 600	52.6
Fife	3	16 168	18.6	5	16 804	29.8
Forth Valley	4	14 720	27.2	4	14 609	27.4
Grampian	10	36 053	27.7	8	34 169	23.4
Greater Glasgow & Clyde	33	109 718	30.1	36	112 181	32.1
Highland	7	17 483	40.0	5	15 625	32.0
Lanarkshire	21	32 440	64.7	15	36 205	41.4
Lothian	41	57 390	71.4	33	57 021	57.9
National Waiting Times Centre	0	5 770	0.0	0	5 034	0.0
Orkney	2	632	316.5	0	570	0.0
Shetland	1	953	104.9	0	979	0.0
Tayside	9	29 374	30.6	12	26 459	45.4
Western Isles	1	1 129	88.6	0	991	0.0
Scotland	151	358 470	42.1	132	355 151	37.2

Table 4: CDI cases and incidence rates (per 100 000 AOBs) in patients aged 15-64 years: 2013 compared to 2014.

NHS board	2013 Cases	2013 Bed days	2013 Rate	2014 Cases	2014 Bed days	2014 Rate
Ayrshire & Arran	30	92 662	32.4	32	93 333	34.3
Borders	8	17 801	44.9	8	16 361	48.9
Dumfries & Galloway	23	30 360	75.8	20	30 288	66.0
Fife	9	60 317	14.9	17	64 503	26.4
Forth Valley	13	53 956	24.1	9	56 656	15.9
Grampian	27	138 065	19.6	27	137 470	19.6
Greater Glasgow & Clyde	122	429 556	28.4	120	447 006	26.8
Highland	25	67 929	36.8	24	63 074	38.1
Lanarkshire	44	128 230	34.3	47	131 389	35.8
Lothian	125	224 377	55.7	131	223 406	58.6
National Waiting Times Centre	1	20 736	4.8	1	21 340	4.7
Orkney	1	1 882	53.1	3	2 319	129.4
Shetland	1	3 529	28.3	1	3 416	29.3
Tayside	48	109 960	43.7	32	110 063	29.1
Western Isles	8	4 687	170.7	3	5 208	57.6
Scotland	485	1 384 047	35.0	475	1 405 832	33.8

Note: Any use of the term increase or decrease in the context of this report denotes a statistically significant change.

Figure 1: Funnel plot of CDI incidence rates (per 100 000 TOBDs) in patients aged 65 years and above for all NHS boards in Scotland in Q4 2014. NHS Shetland and NHS NWTC overlap.

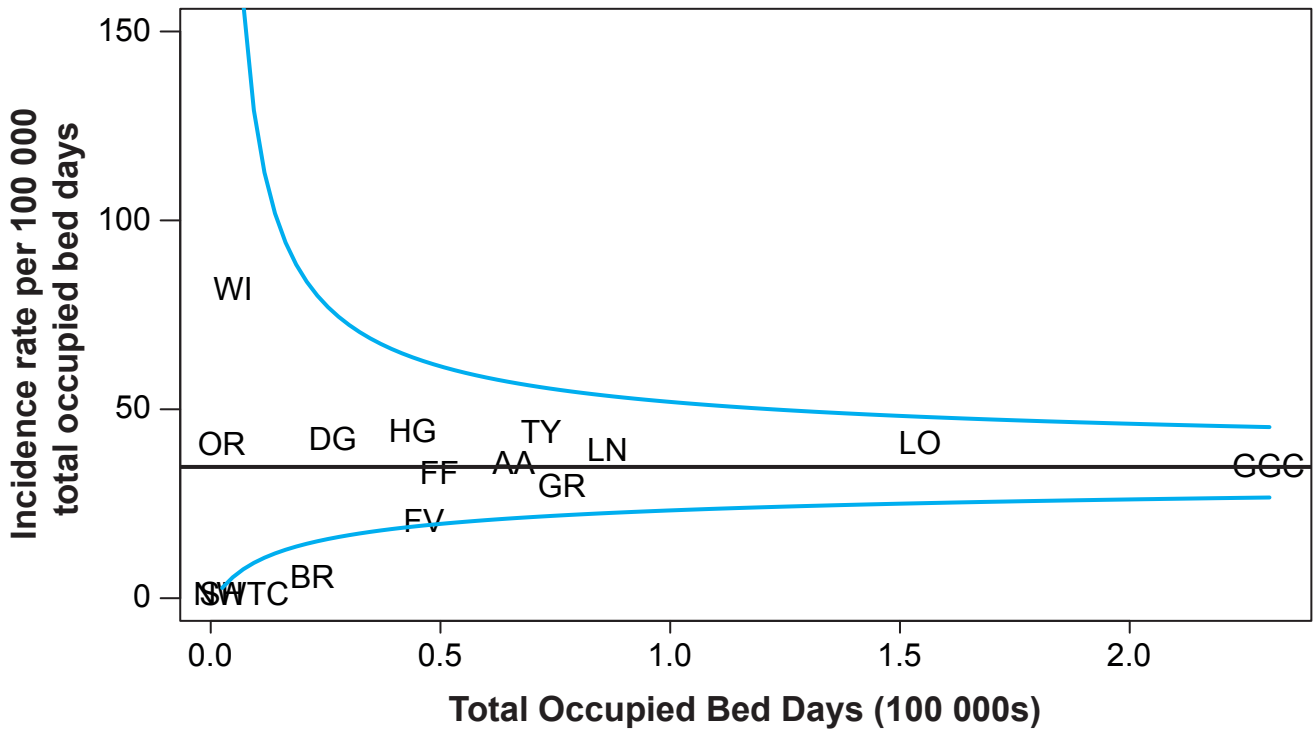
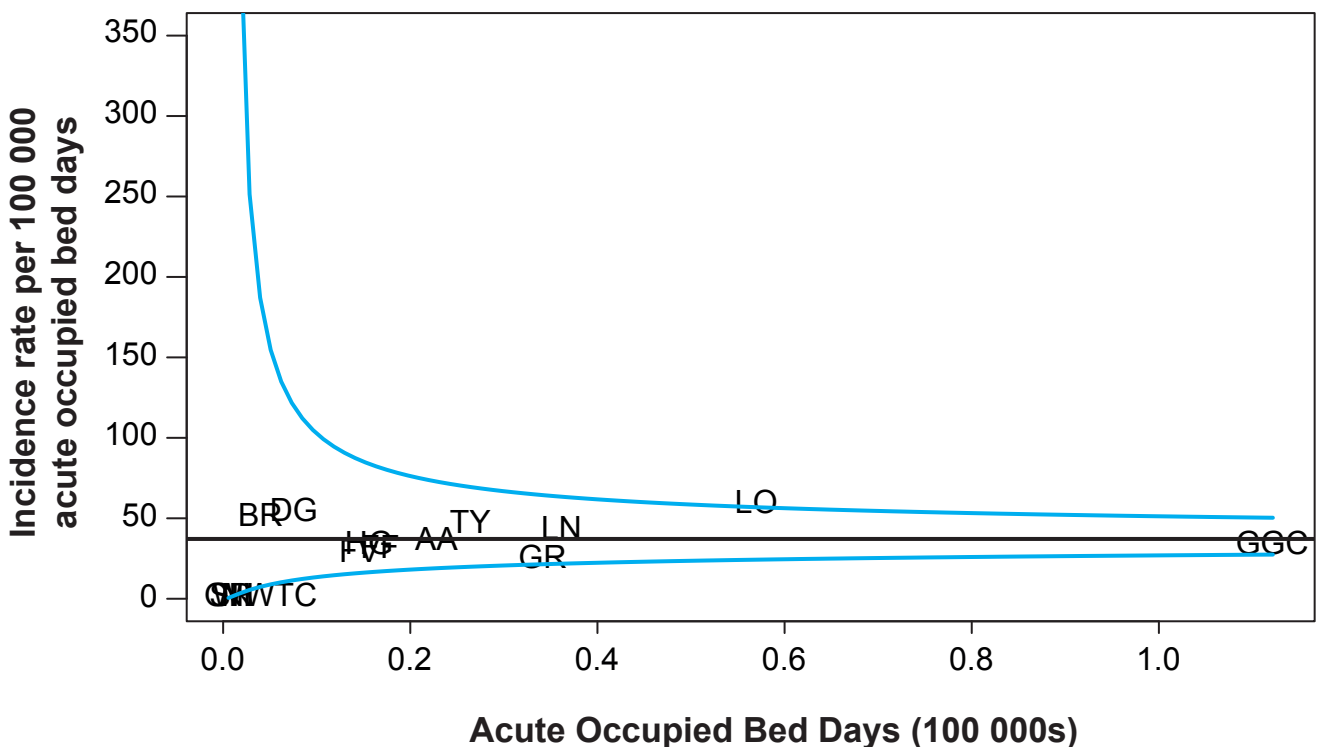


Figure 2: Funnel plot of CDI incidence rates (per 100 000 AOBBDs) in patients aged 15-64 years for all NHS boards in Scotland in Q4 2014. NHS Fife, NHS Forth Valley and NHS Highland overlap as do NHS NWTC, NHS Shetland, NHS Orkney and NHS Western Isles.



Note: Any use of the term increase or decrease in the context of this report denotes a statistically significant change.

Figure 3: Overall quarterly CDI incidence rates for Scotland in patients aged 65 years and above (per 100 000 TOBDs) and 15-64 years (per 100 000 AOBs) for the period January 2010 to December 2014.

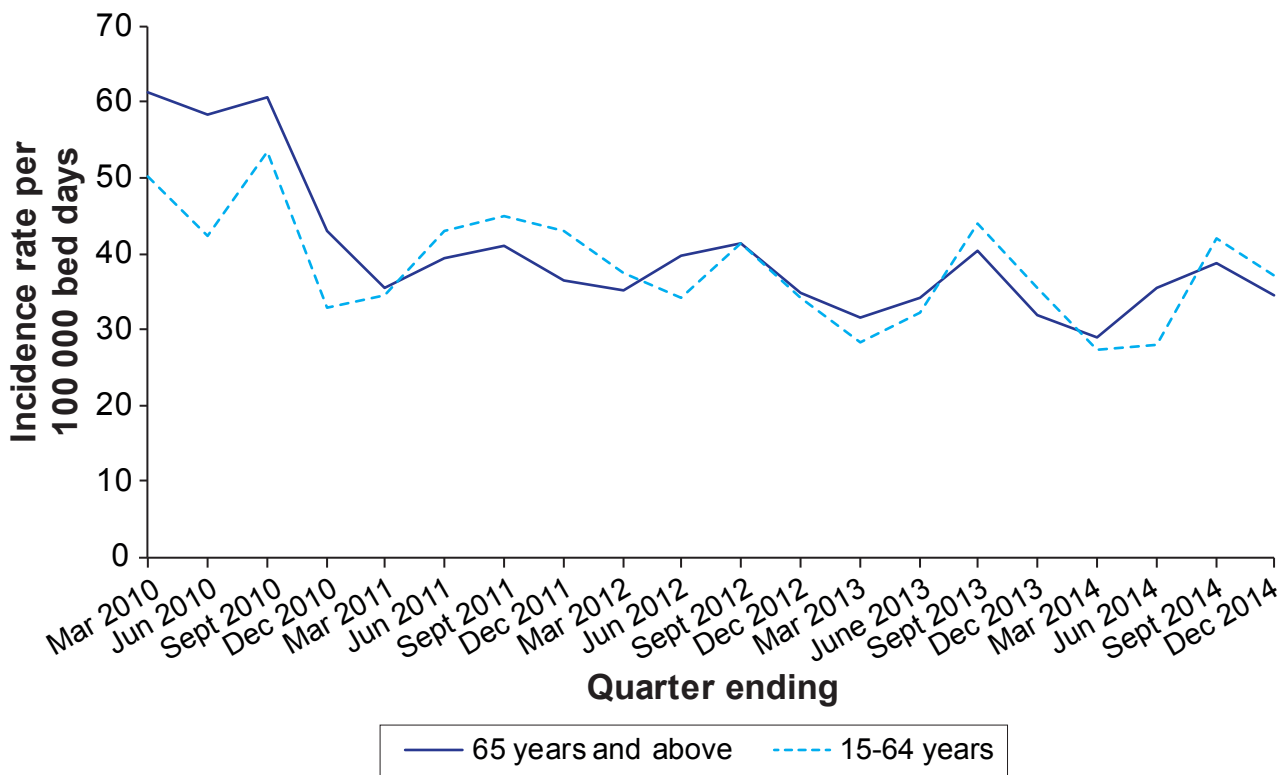
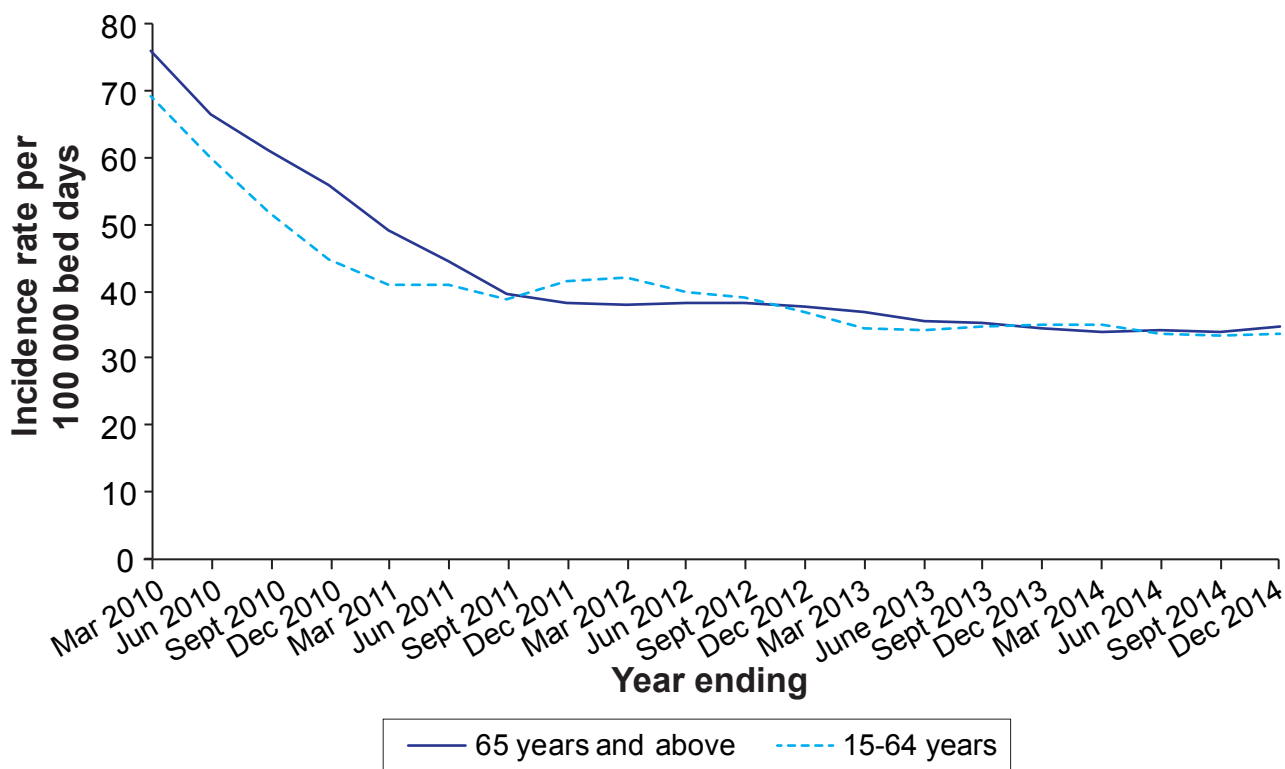


Figure 4: Year-ending CDI incidence rates for Scotland (per 100 000 bed days) in patients aged 65 years and above (per 100 000 TOBDs), and 15-64 years (per 100 000 AOBs) for the period year-ending March 2010 to year-ending December 2014.



Note: Any use of the term increase or decrease in the context of this report denotes a statistically significant change.

Staphylococcus aureus bacteraemia (SAB) data and commentary

- During Q4 2014, 394 new *S. aureus* bacteraemia (SAB) cases (including meticillin resistant *S. aureus* (MRSA) and meticillin sensitive *S. aureus* (MSSA)) were reported to Health Protection Scotland (HPS). In the previous quarter there were 410 SAB cases. This corresponds to an overall incidence rate of 30.5 SAB cases per 100 000 acute occupied bed days (AOBDs) compared to 32.3 per 100 000 AOBDs in the previous quarter ([Table 5](#) and [Table 6](#)).
- The proportion of SAB which were MRSA during the quarter Q4 was 12.9% with 51 MRSA cases identified in Scotland. The incidence rate of MRSA increased by 61.5% when compared to the previous quarter from 2.4 to 3.9 per 100 000 AOBDs ([Table 5](#) and [Table 6](#)). However due to small numbers the change in incidence rate should be treated with caution. There was no quarterly increase or decrease in the MSSA or overall SAB rate.
- There were no annual increase or decrease (comparing the year-ending December 2013 with the year-ending December 2014) in MRSA, MSSA or SAB overall Scottish rates.
- Yearly trends (comparing the year-ending December 2013 with the year-ending December 2014) of MRSA increased in NHS Lanarkshire ([Table 7](#) and [Table 8](#)). Yearly trends in SAB increased in NHS Ayrshire and Arran and MSSA and SAB trends increased in NHS Forth Valley. While yearly trends in MSSA and SAB decreased in NHS Fife and NHS Greater Glasgow and Clyde.
- No NHS boards were outliers (SAB, MRSA or MSSA) this quarter as no incidence rates were above the upper 95% confidence limits of the funnel plots during this quarter ([Figure 5](#), [Figure 6](#) and [Figure 7](#)).
- No NHS boards were above normal variation this quarter (SAB, MRSA or MSSA) when analysing long-term trends over the past three years (see [Appendix](#)).
- While the incidence rate for MRSA increased this quarter there was not an increase in the annual trend and the incidence rates for MRSA, MSSA and SAB for Scotland continue to plateau ([Figure 8](#)).
- The national surveillance programme reports on SABs arising three months or longer before publication of this report. It remains essential therefore that it is complemented by more contemporaneous local monitoring of SABs by NHS boards.

Note: Any use of the term increase or decrease in the context of this report denotes a statistically significant change.

Staphylococcus aureus bacteraemia (SAB) tables and figures

Table 5: SAB cases and incidence rates (per 100 000 AOBDS): Q3 2014 (July to September 2014).

NHS board	MRSA cases	MSSA cases	SAB cases	Bed days	MRSA rate	MSSA rate	SAB rate
AA	5	27	32	88 291	5.7	30.6	36.2
BR	2	12	14	20 296	9.9	59.1	69.0
DG	0	8	8	34 841	0.0	23.0	23.0
FF	2	20	22	70 945	2.8	28.2	31.0
FV	1	26	27	49 334	2.0	52.7	54.7
GR	5	42	47	125 280	4.0	33.5	37.5
GGC	4	83	87	360 642	1.1	23.0	24.1
HG	1	15	16	64 671	1.5	23.2	24.7
LN	5	37	42	121 524	4.1	30.4	34.6
LO	6	67	73	205 673	2.9	32.6	35.5
NWTC	0	1	1	12 802	0.0	7.8	7.8
OR	0	1	1	4 235	0.0	23.6	23.6
SH	0	2	2	3 779	0.0	52.9	52.9
TY	0	37	37	100 790	0.0	36.7	36.7
WI	0	1	1	6 528	0.0	15.3	15.3
Scotland	31	379	410	1 269 631	2.4	29.9	32.3

Table 6: SAB cases and incidence rates (per 100 000 AOBDS): Q4 2014 (October to December 2014). Bold outline denotes statistically significant change from the previous year ([Table 5](#)).

NHS board	MRSA cases	MSSA cases	SAB cases	Bed days	MRSA rate	MSSA rate	SAB rate
AA	6	23	29	91 004	6.6	25.3	31.9
BR	2	7	9	19 919	10.0	35.1	45.2
DG	0	7	7	37 273	0.0	18.8	18.8
FF	3	14	17	72 027	4.2	19.4	23.6
FV	3	20	23	49 581	6.1	40.3	46.4
GR	3	36	39	128 360	2.3	28.0	30.4
GGC	9	84	93	370 540	2.4	22.7	25.1
HG	2	13	15	64 708	3.1	20.1	23.2
LN	11	35	46	119 479	9.2	29.3	38.5
LO	9	67	76	209 007	4.3	32.1	36.4
NWTC	0	0	0	12 314	0.0	0.0	0.0
OR	0	0	0	4 331	0.0	0.0	0.0
SH	0	1	1	3 359	0.0	29.8	29.8
TY	2	35	37	104 441	1.9	33.5	35.4
WI	1	1	2	6 713	14.9	14.9	29.8
Scotland	51	343	394	1 293 056	3.9	26.5	30.5

Note: Any use of the term increase or decrease in the context of this report denotes a statistically significant change.

Table 7: SAB cases and incidence rates (per 100 000 AOBs): year-ending December 2013.

NHS board	MRSA cases	MSSA cases	SAB cases	Bed days	MRSA rate	MSSA rate	SAB rate
AA	8	80	88	349 503	2.3	22.9	25.2
BR	3	32	35	77 198	3.9	41.5	45.3
DG	7	32	39	143 758	4.9	22.3	27.1
FF	13	113	126	272 253	4.8	41.5	46.3
FV	7	63	70	214 888	3.3	29.3	32.6
GR	8	135	143	527 158	1.5	25.6	27.1
GGC	41	422	463	1 452 465	2.8	29.1	31.9
HG	6	58	64	254 048	2.4	22.8	25.2
LN	13	137	150	478 583	2.7	28.6	31.3
LO	33	216	249	806 395	4.1	26.8	30.9
NWTC	0	8	8	49 155	0.0	16.3	16.3
OR	1	2	3	15 788	6.3	12.7	19.0
SH	0	3	3	14 968	0.0	20.0	20.0
TY	14	126	140	413 095	3.4	30.5	33.9
WI	0	3	3	25 052	0.0	12.0	12.0
Scotland	154	1 430	1 584	5 094 307	3.0	28.1	31.1

Table 8: SAB cases and incidence rates (per 100 000 AOBs): year-ending December 2014. Bold outline denotes statistically significant change from the previous year ([Table 7](#)).

NHS board	MRSA cases	MSSA cases	SAB cases	Bed days	MRSA rate	MSSA rate	SAB rate
AA	17	103	120	357 658	4.8	28.8	33.6
BR	5	33	38	81 974	6.1	40.3	46.4
DG	0	45	45	144 097	0.0	31.2	31.2
FF	7	76	83	282 410	2.5	26.9	29.4
FV	8	88	96	203 353	3.9	43.3	47.2
GR	12	143	155	515 052	2.3	27.8	30.1
GGC	31	353	384	1 468 991	2.1	24.0	26.1
HG	6	53	59	259 034	2.3	20.5	22.8
LN	26	149	175	486 688	5.3	30.6	36.0
LO	21	238	259	829 847	2.5	28.7	31.2
NWTC	0	5	5	49 719	0.0	10.1	10.1
OR	0	1	1	16 820	0.0	5.9	5.9
SH	0	7	7	15 075	0.0	46.4	46.4
TY	7	129	136	409 037	1.7	31.5	33.2
WI	1	3	4	27 717	3.6	10.8	14.4
Scotland	141	1 426	1 567	5 147 472	2.7	27.7	30.4

Note: Any use of the term increase or decrease in the context of this report denotes a statistically significant change.

Figure 5: Funnel plot of SAB rates (per 100 000 AOBs) for all NHS boards in Scotland in Q4 2014. NHS National Waiting Times Centre and NHS Orkney overlap as do NHS Fife/NHS Highland and NHS Shetland/NHS Western Isles.

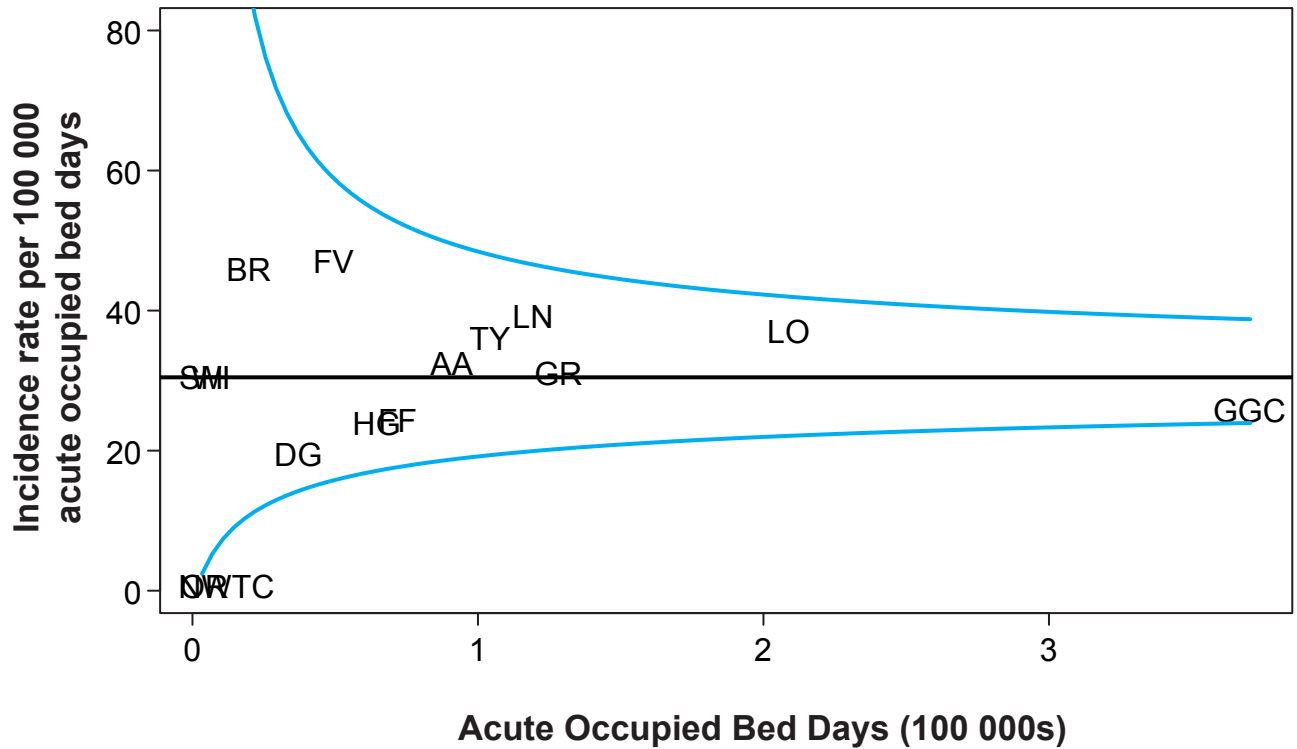
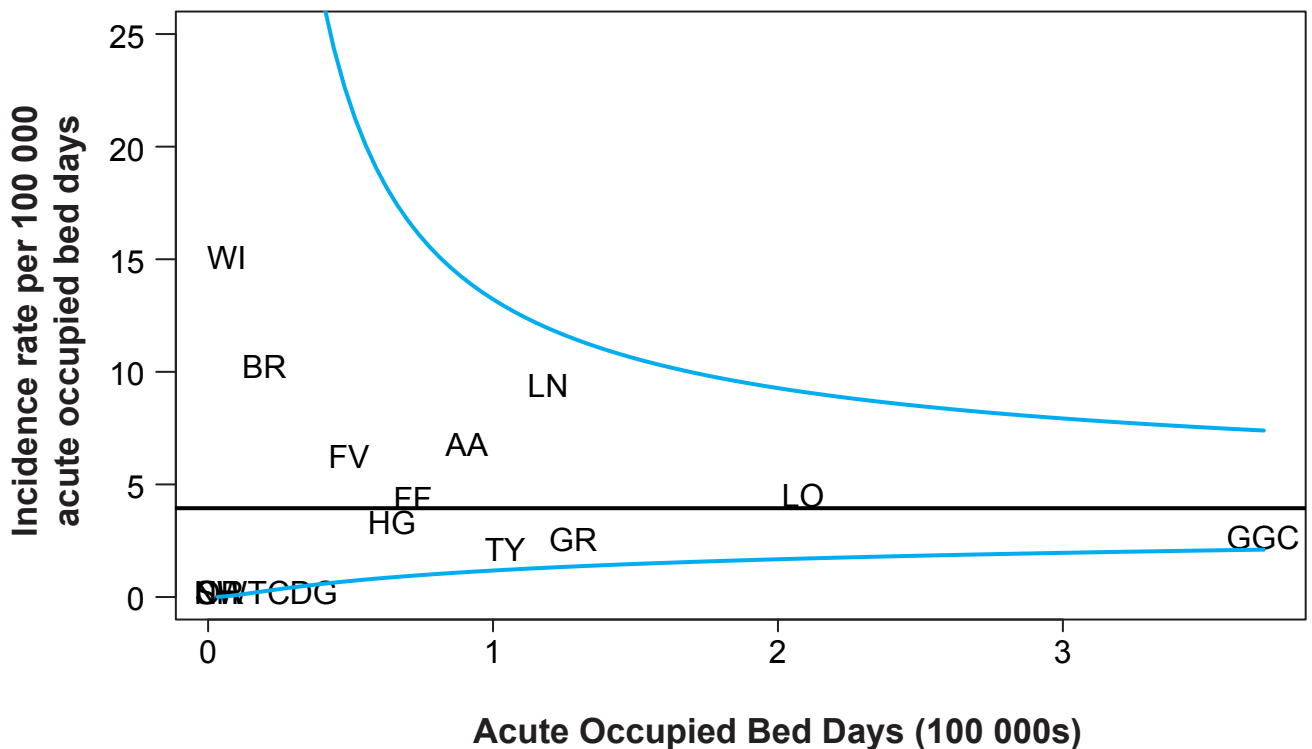


Figure 6: Funnel plot of MRSA bacteraemia rates (per 100 000 AOBs) for all NHS boards in Scotland in Q4 2014. NHS Dumfries and Galloway, NHS National Waiting Times Centre, NHS Orkney and NHS Shetland overlap.



Note: Any use of the term increase or decrease in the context of this report denotes a statistically significant change.

Figure 7: Funnel plot of MSSA bacteraemia rates (per 100 000 AOBs) for all NHS boards in Scotland in Q4 2014. NHS National Waiting Times Centre and NHS Orkney overlap as do NHS Fife/NHS Highland and NHS Lanarkshire/NHS Grampian.

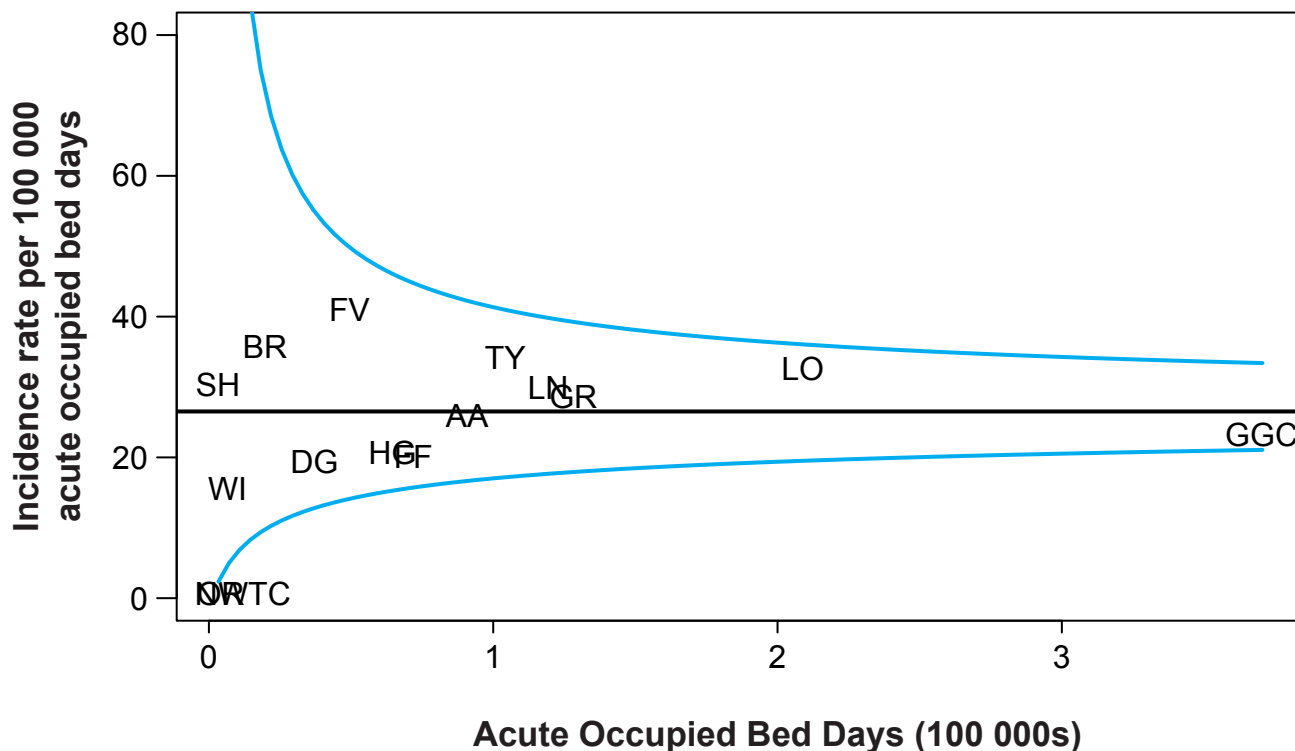
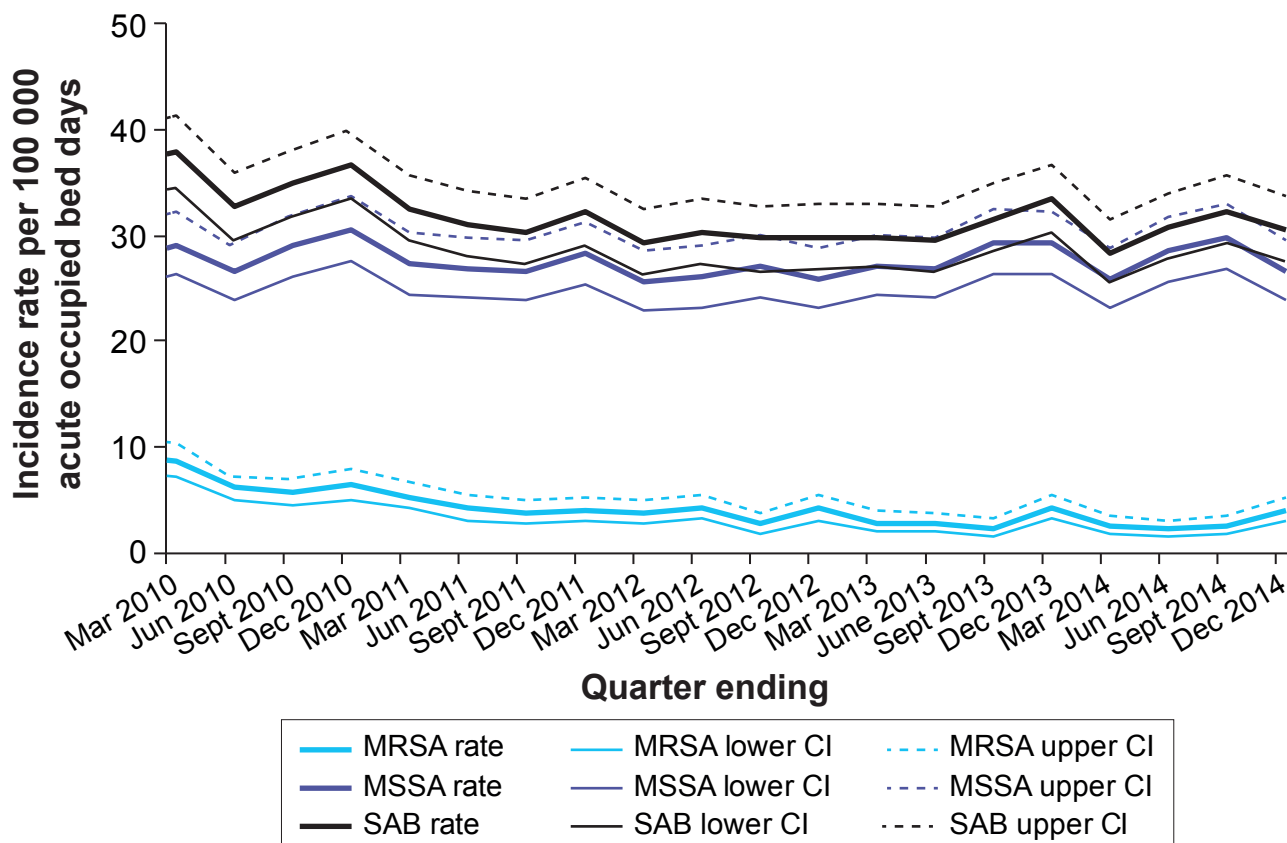


Figure 8: Overall quarterly SAB, MRSA and MSSA bacteraemia incidence rates for Scotland (per 100 000 AOBs) for the period January 2010 to December 2014.



Note: Any use of the term increase or decrease in the context of this report denotes a statistically significant change.

NHS board abbreviations

AA	Ayrshire & Arran	LN	Lanarkshire
BR	Borders	LO	Lothian
DG	Dumfries & Galloway	NWTC	National Waiting Times Centre
FF	Fife	OR	Orkney
FV	Forth Valley	SH	Shetland
GR	Grampian	TY	Tayside
GGC	Greater Glasgow & Clyde	WI	Western Isles
HG	Highland		

Data appendices, methods and notes

The HPS website contains information on data sources (including denominators, calculation of rates and statistical analyses), the definitions used to generate this report, and all previous published data.

Individual rates and denominator data for each NHS board and overall for Scotland are available from: <http://www.hps.scot.nhs.uk/haic/sshaip/quarterlyepidemiologicalcommentaries.aspx>.

Please send comments by email to: NSS.HPSHAIC@nhs.net

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