

**Quarterly epidemiological
data on *Clostridioides difficile*
infection, *Escherichia coli*
bacteraemia, *Staphylococcus
aureus* bacteraemia and
Surgical Site Infection in
Scotland**

October to December 2019



07 April 2020

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Contents

Introduction	3
Main Points	4
Results and Commentary	6
<i>Clostridioides difficile</i> Infection (CDI)	6
<i>Escherichia coli</i> bacteraemia (ECB)	13
<i>Staphylococcus aureus</i> bacteraemia (SAB)	20
Surgical Site Infection (SSI)	27
List of Tables	34
Contact	35
Further Information	35
Rate this publication	35
Appendices	36
Appendix 1 – Background information	36
Appendix 2 – Publication Metadata	40
Appendix 3 – Early access details	47
Appendix 4 – HPS and Official Statistics	48

Introduction

Health Protection Scotland (HPS) provides a commentary on quarterly epidemiological data in Scotland for October to December (Q4) 2019 on the following:

- *Clostridioides difficile* infection
- *Escherichia coli* bacteraemia
- *Staphylococcus aureus* bacteraemia
- Surgical Site Infection

Data are provided for the 14 NHS boards and one NHS Special Health Board.

Main Points

***Clostridioides difficile* infection (CDI) during October to December 2019**

- The total number of CDI cases in patients reported to HPS was 294.
- 229 CDI cases were reported to HPS as healthcare associated. This corresponds to an incidence rate of 14.9 cases per 100,000 total occupied bed days (TOBDs).
- 65 CDI cases were reported as community associated. This corresponds to an incidence rate of 4.7 cases per 100,000 population.
- No NHS boards were above the 95% confidence interval upper limit for healthcare associated CDI in the funnel plot analysis.
- No NHS boards were above the 95% confidence interval upper limit for community associated CDI in the funnel plot analysis.
- No NHS boards were above normal variation for healthcare or community associated CDI when analysing trends over the past three years.

***Escherichia coli* bacteraemia (ECB) during October to December 2019**

- The total number of ECB cases in patients reported to HPS was 1,194.
- 626 ECB cases were reported to HPS as healthcare associated. This corresponds to an incidence rate of 40.8 cases per 100,000 TOBDs.
- 568 ECB cases were reported as community associated. This corresponds to an incidence rate of 41.4 cases per 100,000 population.
- NHS Fife was above the 95% confidence interval upper limit for healthcare associated ECB in the funnel plot analysis.
- NHS Forth Valley was above the 95% confidence interval upper limit for community associated ECB in the funnel plot analysis.
- NHS Fife were above normal variation for healthcare associated ECB when analysing trends over the past three years (see [supplementary data](#)).

***Staphylococcus aureus* bacteraemia (SAB) during October to December 2019**

- The total number of SAB cases in patients reported to HPS was 365.
- 233 SAB cases were reported to HPS as healthcare associated. This corresponds to an incidence rate of 15.2 cases per 100,000 TOBDs.
- 132 SAB cases were reported as community associated. This corresponds to an incidence rate of 9.6 cases per 100,000 population.
- NHS Tayside were above the 95% confidence interval upper limit in the funnel plot analyses for healthcare associated SAB.
- No NHS boards were above normal variation for healthcare or community associated SAB when analysing trends over the past three years.

Surgical Site Infection (SSI) October to December 2019

- 35 SSIs following 4,112 caesarean section procedures were reported to HPS, detected either during inpatient stay or by post discharge surveillance (PDS) to day 10. This corresponds to an incidence of 0.9%.
- 17 SSIs following 2,145 hip arthroplasty procedures were reported to HPS, detected either during inpatient stay or on readmission to day 30. This corresponds to an incidence of 0.8%.
- No NHS boards were above the 95% confidence interval upper limit in the funnel plot analyses for caesarean section procedures.
- No NHS boards were above the 95% confidence interval upper limit in the funnel plot analyses for hip arthroplasty procedures.
- No NHS boards were above normal variation for caesarean section or hip arthroplasty procedures when analysing trends over the past three years.

Results and Commentary

Clostridioides difficile Infection (CDI)

Total Cases for Quarter

- During Q4 2019, 294 *Clostridioides difficile* infection (CDI) cases in patients were reported to HPS. In the previous quarter there were 279 cases.
- In the clinical surveillance typing scheme (covering severe cases and/or outbreaks) ribotypes 002, 015 and 078 (all 10.4%) were the most common ribotypes isolated, followed by 050 (9.0%), 001 and 023 (both 7.5%), and ribotype 106 (4.5%), out of a total of 67 isolates. The remaining ribotypes comprise a mixture each with a prevalence of less than 3%.
- In the snapshot surveillance (which reflects the general distribution of ribotypes among all CDI cases), ribotypes 002, 015, 020 and 078 (all 9.1%) were the most common ribotypes isolated, followed by 005 (7.6%), 014 and 023 (both 4.5%), and ribotypes 011, 018, 026, 043, 050 and 081 (all 3.0%) out of a total of 66 isolates. All isolates tested (snapshot and clinical) were susceptible to metronidazole and vancomycin.

Healthcare associated infection cases by health board of laboratory

- During Q4 2019, 229 CDI cases were reported to HPS as healthcare associated. This corresponds to an incidence rate of 14.9 cases per 100,000 total occupied bed days (TOBDs) ([Table 1](#)).
- Yearly trends (comparing year-ending December 2018 with year-ending December 2019) show that there was a decrease in NHS Dumfries and Galloway, NHS Grampian, NHS Greater Glasgow and Clyde, NHS Highland, and NHSScotland overall ([Table 2](#)).
- No NHS boards were above the 95% confidence interval upper limit in the funnel plot analysis ([Figure 1](#)).
- No NHS boards were above normal variation when analysing trends over the past three years (see [supplementary data](#)).

Community associated infection cases by health board of residence

- During Q4 2019, 65 CDI cases were reported as community associated. This corresponds to an incidence rate 4.7 cases per 100,000 population ([Table 3](#)).
- Yearly trends (comparing year-ending December 2018 with year-ending December 2019) show that there was a decrease in NHS Grampian, NHS Highland and NHSScotland overall. ([Table 4](#)).
- No NHS boards were above the 95% confidence interval upper limit in the funnel plot analysis ([Figure 2](#)).
- No NHS boards were above normal variation when analysing trends over the past three years. (see [supplementary data](#)).

Table 1: CDI cases and incidence rates (per 100,000 TOBDs) for healthcare associated infection cases: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).^{1,2}

NHS Board	Q3 Cases	Q3 Bed Days	Q3 Rate	Q4 Cases	Q4 Bed Days	Q4 Rate
AA	21	110,670	19.0	21	111,501	18.8
BR	4	28,962	13.8	3	29,415	10.2
DG	7	46,074	15.2	6	46,458	12.9
FF	8	90,276	8.9	12	91,708	13.1
FV	14	77,669	18.0	13	79,712	16.3
GR	11	131,950	8.3	17	133,259	12.8
GGC	62	416,741	14.9	69	429,650	16.1
HG	15	75,715	19.8	8	73,909	10.8
LN	24	146,465	16.4	25	147,326	17.0
LO	25	245,501	10.2	42	249,135	16.9
NWTC	1	12,067	8.3	1	11,659	8.6
OR	1	2,983	33.5	0	2,915	0.0
SH	2	2,694	74.2	2	2,673	74.8
TY	10	115,796	8.6	8	117,973	6.8
WI	2	6,702	29.8	2	6,884	29.1
Scotland	207	1,510,265	13.7	229	1,534,177	14.9

1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: Information Services Division ISD(S)1.
2. Figures include any updates received following the last publication (see Appendix 2).

Table 2: CDI cases and incidence rates (per 100,000 TOBDs) for healthcare associated infection cases: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).^{1,2,3}

NHS Board	YE Q4 18 Cases	YE Q4 18 Bed Days	YE Q4 18 Rate	YE Q4 19 Cases	YE Q4 19 Bed Days	YE Q4 19 Rate
AA	66	458,921	14.4	74	443,611	16.7
BR	11	128,353	8.6	17	117,513	14.5
DG	46	173,884	26.5	22	184,346	11.9 ↓
FF	28	360,129	7.8	32	361,726	8.8
FV	35	335,077	10.4	43	311,943	13.8
GR	112	544,288	20.6	57	528,836	10.8 ↓
GGC	317	1,682,549	18.8	264	1,693,580	15.6 ↓
HG	56	294,248	19.0	37	299,785	12.3 ↓
LN	94	562,175	16.7	86	584,854	14.7
LO	141	1,021,033	13.8	131	990,795	13.2
NWTC	3	48,375	6.2	2	47,277	4.2
OR	4	14,769	27.1	1	13,206	7.6
SH	1	9,774	10.2	5	10,420	48.0
TY	32	472,602	6.8	30	466,514	6.4
WI	1	29,593	3.4	5	27,470	18.2
Scotland	947	6,135,770	15.4	806	6,081,876	13.3 ↓

1. An arrow denotes statistically significant change.
2. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: Information Services Division ISD(S)1.
3. Figures include any updates received following the last publication (see Appendix 2).

Table 3: CDI cases and incidence rates (per 100,000 population) for community associated infection cases: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).^{1,2,3, 4}

NHS Board	Q3 Cases	Q3 Population	Q3 Rate	Q4 Cases	Q4 Population	Q4 Rate
AA	7	369,670	7.5	6	369,670	6.4
BR	0	115,270	0.0	2	115,270	6.9
DG	5	148,790	13.3	2	148,790	5.3
FF	3	371,910	3.2	4	371,910	4.3
FV	2	306,070	2.6	0	306,070	0.0
GR	5	584,550	3.4	8	584,550	5.4
GGC	15	1,174,980	5.1	11	1,174,980	3.7
HG	5	321,800	6.2	3	321,800	3.7
LN	8	659,200	4.8	12	659,200	7.2
LO	18	897,770	8.0	11	897,770	4.9
OR	0	22,190	0.0	0	22,190	0.0
SH	0	22,990	0.0	0	22,990	0.0
TY	4	416,080	3.8	4	416,080	3.8
WI	0	26,830	0.0	2	26,830	29.6
Scotland	72	5,438,100	5.3	65	5,438,100	4.7

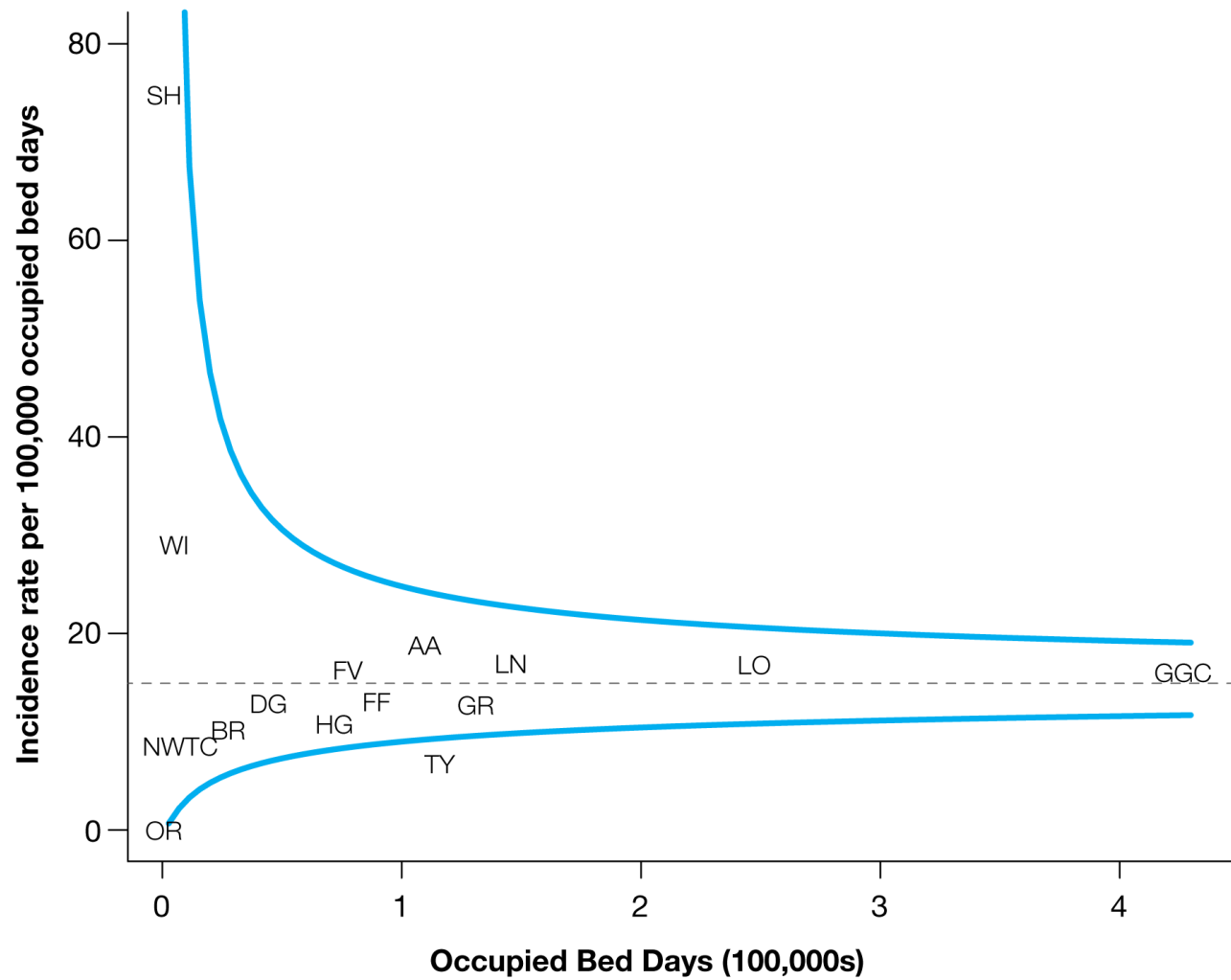
1. Quarterly population rates are based on an annualised population.
2. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & NRS mid-year population estimates.
3. Figures include any updates received following the last publication (see Appendix 2).

Table 4: CDI cases and incidence rates (per 100,000 population) for community associated infection cases: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).^{1,2,3}

NHS Board	YE Q4 18 Cases	YE Q4 18 Population	YE Q4 18 Rate	YE Q4 19 Cases	YE Q4 19 Population	YE Q4 19 Rate
AA	32	369,670	8.7	22	369,670	6.0
BR	4	115,270	3.5	3	115,270	2.6
DG	12	148,790	8.1	12	148,790	8.1
FF	22	371,910	5.9	15	371,910	4.0
FV	9	306,070	2.9	5	306,070	1.6
GR	76	584,550	13.0	25	584,550	4.3↓
GGC	64	1,174,980	5.4	53	1,174,980	4.5
HG	35	321,800	10.9	17	321,800	5.3↓
LN	35	659,200	5.3	37	659,200	5.6
LO	55	897,770	6.1	48	897,770	5.3
OR	4	22,190	18.0	0	22,190	0.0
SH	2	22,990	8.7	0	22,990	0.0
TY	14	416,080	3.4	13	416,080	3.1
WI	2	26,830	7.5	3	26,830	11.2
Scotland	366	5,438,100	6.7	253	5,438,100	4.7↓

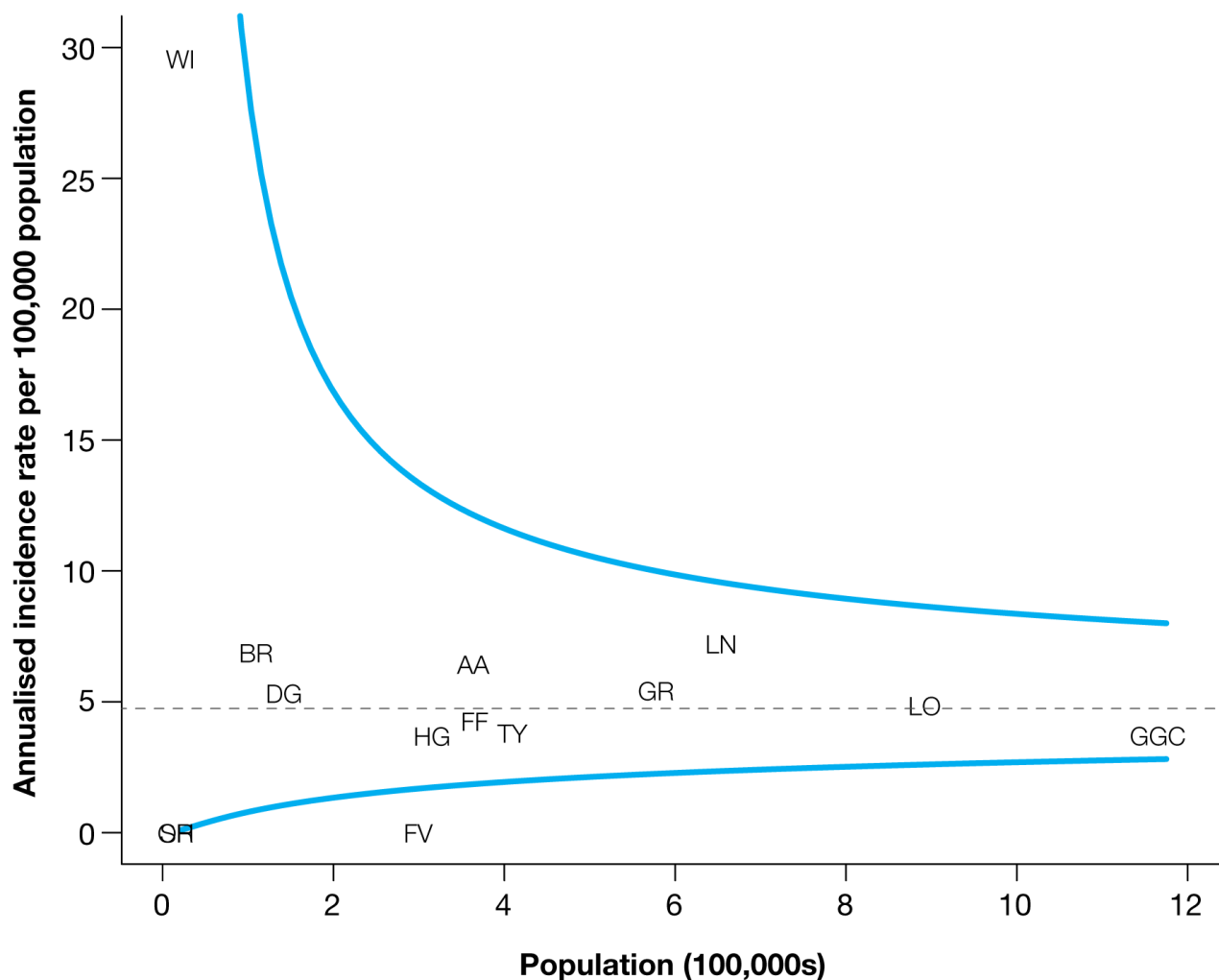
1. An arrow denotes statistically significant change.
2. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & NRS mid-year population estimates.
3. Figures include any updates received following the last publication (see Appendix 2).

Figure 1: Funnel plot of CDI incidence rates (per 100,000 TOBD) in healthcare associated infection cases for all NHS boards in Scotland in Q4 2019.¹



1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: Information Services Division ISD(S)1.

Figure 2: Funnel plot of CDI incidence rates (per 100,000 population) in community associated infection cases for all NHS boards in Scotland in Q4 2019.^{1,2}



1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & NRS mid-year population estimates.
2. NHS Orkney and NHS Shetland overlap.

***Escherichia coli* bacteraemia (ECB)**

Total Cases for Quarter

- During Q4 2019, 1,194 *Escherichia coli* bacteraemia (ECB) cases in patients were reported to HPS. In the previous quarter there were 1,214 cases.

Healthcare associated infection cases by health board of laboratory

- During Q4 2019, 626 ECB cases were reported to HPS as healthcare associated. This corresponds to an incidence rate of 40.8 cases per 100,000 TOBDs ([Table 5](#)).
- Yearly trends (comparing year-ending December 2018 with year-ending December 2019) show that there was an increase in NHS Grampian ([Table 6](#)).
- NHS Fife was above the 95% confidence interval upper limit in the funnel plot analysis ([Figure 3](#)).
- NHS Fife were above normal variation when analysing trends over the past three years (see [supplementary data](#)).

Community associated infection cases by health board of residence

- During Q4 2019, 568 ECB cases were reported as community associated. This corresponds to an incidence rate of 41.4 cases per 100,000 population ([Table 7](#)).
- Yearly trends (comparing year-ending December 2018 with year-ending December 2019) show that there was no increase or decrease in NHS boards or Scotland overall ([Table 8](#)).
- NHS Forth Valley above the 95% confidence interval upper limit in the funnel plot analysis ([Figure 4](#)).
- No NHS boards were above normal variation when analysing trends over the past three years (see [supplementary data](#)).

Table 5: ECB cases and incidence rates (per 100,000 TOBD) for healthcare associated infection cases: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).^{1,2,3}

NHS Board	Q3 Cases	Q3 Bed Days	Q3 Rate	Q4 Cases	Q4 Bed Days	Q4 Rate
AA	50	110,670	45.2	46	111,501	41.3
BR	8	28,962	27.6	14	29,415	47.6
DG	12	46,074	26.0	18	46,458	38.7
FF	28	90,276	31.0	55	91,708	60.0
FV	38	77,669	48.9	38	79,712	47.7
GR	74	131,950	56.1	53	133,259	39.8
GGC	172	416,741	41.3	151	429,650	35.1
HG	17	75,715	22.5	18	73,909	24.4
LN	65	146,465	44.4	77	147,326	52.3
LO	85	245,501	34.6	95	249,135	38.1
NWTC	3	12,067	24.9	1	11,659	8.6
OR	4	2,983	134.1	1	2,915	34.3
SH	2	2,694	74.2	3	2,673	112.2
TY	47	115,796	40.6	54	117,973	45.8
WI	3	6,702	44.8	2	6,884	29.1
Scotland	608	1,510,265	40.3	626	1,534,177	40.8

1. An arrow denotes statistically significant change.
2. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: Information Services Division ISD(S)1.
3. Figures include any updates received following the last publication (see Appendix 2).

Table 6: ECB cases and incidence rates (per 100,000 TOBDs) for healthcare associated infection cases: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).^{1,2,3}

NHS Board	YE Q4 18 Cases	YE Q4 18 Bed days	YE Q4 18 Rate	YE Q4 19 Cases	YE Q4 19 Bed days	YE Q4 19 Rate
AA	209	458,921	45.5	194	443,611	43.7
BR	43	128,353	33.5	46	117,513	39.1
DG	68	173,884	39.1	56	184,346	30.4
FF	159	360,129	44.2	156	361,726	43.1
FV	136	335,077	40.6	143	311,943	45.8
GR	174	544,288	32.0	235	528,836	44.4 ↑
GGC	629	1,682,549	37.4	643	1,693,580	38.0
HG	64	294,248	21.8	72	299,785	24.0
LN	232	562,175	41.3	265	584,854	45.3
LO	345	1,021,033	33.8	348	990,795	35.1
NWTC	7	48,375	14.5	10	47,277	21.2
OR	5	14,769	33.9	8	13,206	60.6
SH	10	9,774	102.3	9	10,420	86.4
TY	195	472,602	41.3	198	466,514	42.4
WI	16	29,593	54.1	8	27,470	29.1
Scotland	2,292	6,135,770	37.4	2,391	6,081,876	39.3

1. An arrow denotes statistically significant change.
2. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: Information Services Division ISD(S)1.
3. Figures include any updates received following the last publication (see Appendix 2).

Table 7: ECB cases and incidence rates (per 100,000 population) for community associated infection cases: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).^{1,2,3,4}

NHS Board	Q3 Cases	Q3 Population	Q3 Rate	Q4 Cases	Q4 Population	Q4 Rate
AA	55	369,670	59.0	41	369,670	44.0
BR	24	115,270	82.6	12	115,270	41.3
DG	29	148,790	77.3	21	148,790	56.0
FF	40	371,910	42.7	34	371,910	36.3
FV	40	306,070	51.8	53	306,070	68.7
GR	50	584,550	33.9	38	584,550	25.8
GGC	132	1,174,980	44.6	125	1,174,980	42.2
HG	26	321,800	32.1	43	321,800	53.0
LN	88	659,200	53.0	73	659,200	43.9
LO	62	897,770	27.4	63	897,770	27.8
OR	2	22,190	35.8	2	22,190	35.8
SH	2	22,990	34.5	4	22,990	69.0
TY	51	416,080	48.6	54	416,080	51.5
WI	5	26,830	73.9	5	26,830	73.9
Scotland	606	5,438,100	44.2	568	5,438,100	41.4

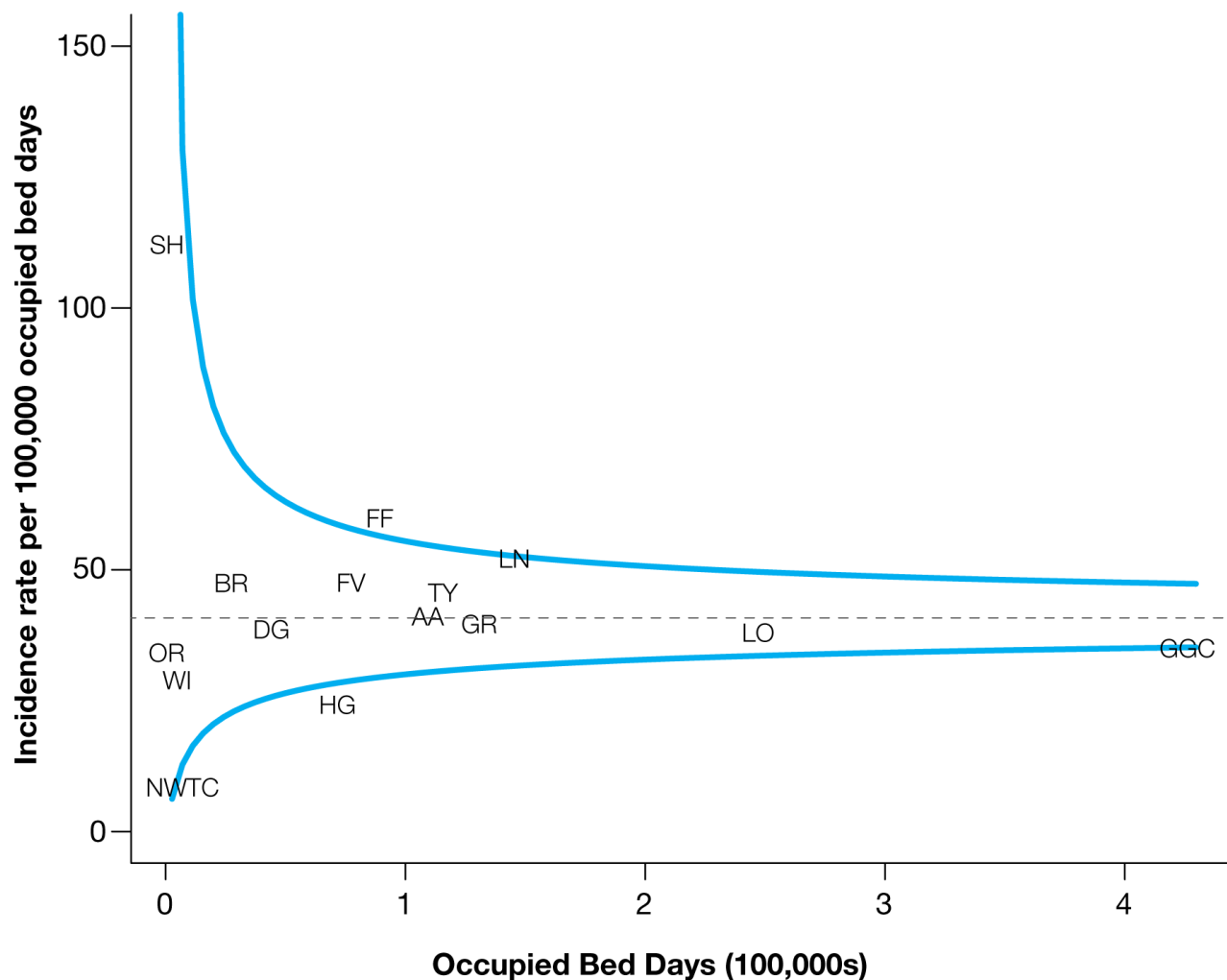
1. Quarterly population rates are based on an annualised population.
2. An arrow denotes statistically significant change.
3. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & NRS mid-year population estimates.
4. Figures include any updates received following the last publication (see Appendix 2).

Table 8: ECB cases and incidence rates (per 100,000 population) for community associated infection cases: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).^{1,2,3}

NHS Board	YE Q4 18 Cases	YE Q4 18 Population	YE Q4 18 Rate	YE Q4 19 Cases	YE Q4 19 Population	YE Q4 19 Rate
AA	217	369,670	58.7	196	369,670	53.0
BR	67	115,270	58.1	71	115,270	61.6
DG	79	148,790	53.1	88	148,790	59.1
FF	145	371,910	39.0	132	371,910	35.5
FV	160	306,070	52.3	172	306,070	56.2
GR	211	584,550	36.1	193	584,550	33.0
GGC	568	1,174,980	48.3	542	1,174,980	46.1
HG	146	321,800	45.4	153	321,800	47.5
LN	368	659,200	55.8	321	659,200	48.7
LO	286	897,770	31.9	272	897,770	30.3
OR	7	22,190	31.5	15	22,190	67.6
SH	4	22,990	17.4	10	22,990	43.5
TY	168	416,080	40.4	190	416,080	45.7
WI	20	26,830	74.5	21	26,830	78.3
Scotland	2,446	5,438,100	45.0	2,376	5,438,100	43.7

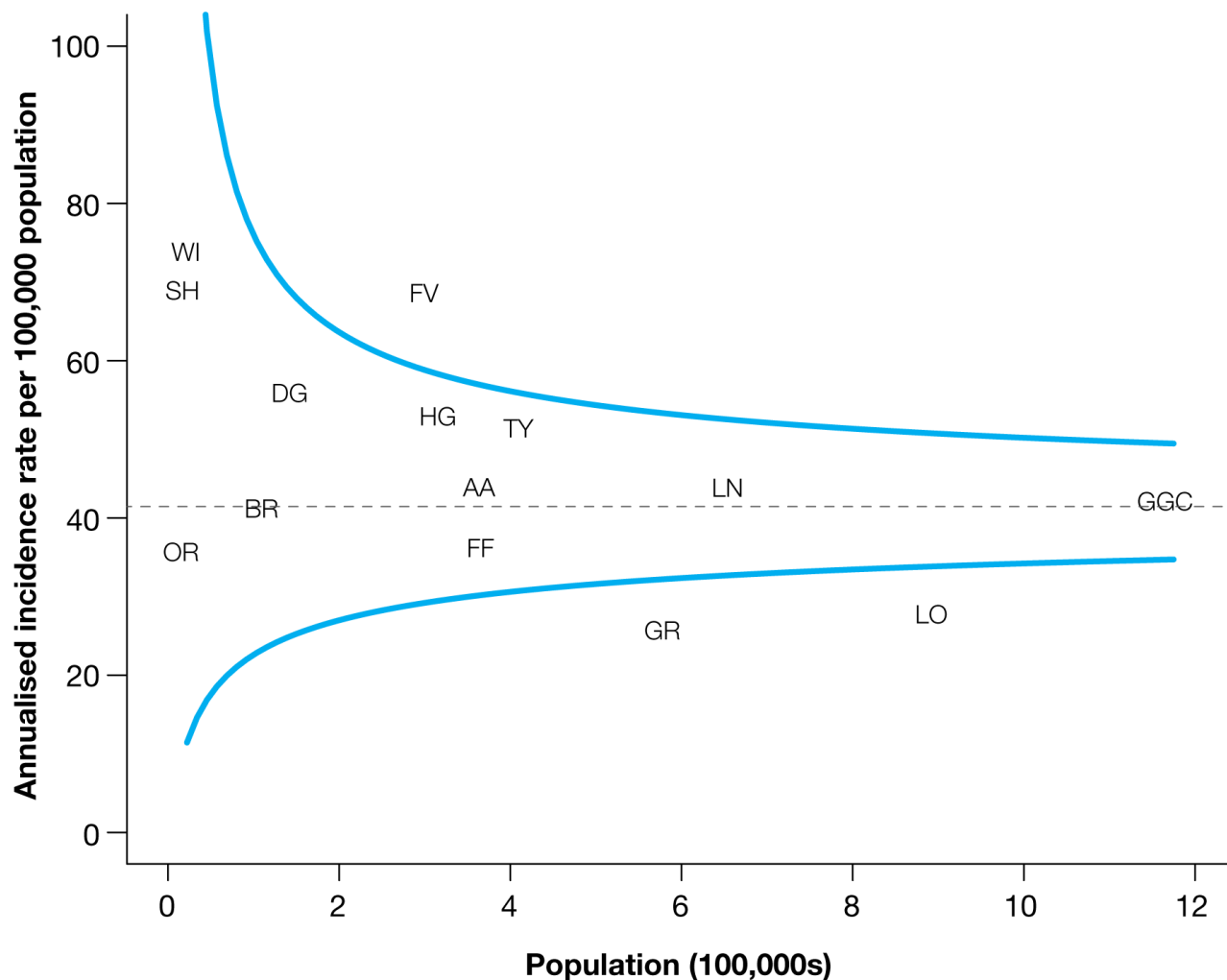
1. An arrow denotes statistically significant change.
2. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & NRS mid-year population estimates.
3. Figures include any updates received following the last publication (see Appendix 2).

Figure 3: Funnel plot of ECB incidence rates (per 100,000 TOBD) in healthcare associated infection cases for all NHS boards in Scotland in Q4 2019.¹



1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: Information Services Division ISD(S)1.

Figure 4: Funnel plot of ECB incidence rates (per 100,000 population) in community associated infection cases for all NHS boards in Scotland in Q4 2019.¹



1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & NRS mid-year population estimates.

***Staphylococcus aureus* bacteraemia (SAB)**

Total cases for quarter

- During Q4 2019, 365 *Staphylococcus aureus* bacteraemia (SAB) cases were reported to HPS. In the previous quarter there were 366 SAB cases.

Healthcare associated infection cases by health board of laboratory

- During Q4 2019, 233 SAB cases were reported to HPS as healthcare associated. This corresponds to an incidence rate of 15.2 cases per 100,000 TOBDs ([Table 9](#)).
- Yearly trends (comparing year-ending December 2018 with year-ending December 2019) show that there was an increase in NHS Tayside and decreases in NHS Borders and NHS Fife ([Table 10](#)).
- NHS Tayside were above the 95% confidence interval upper limit in the funnel plot analysis ([Figure 5](#)).
- No NHS boards were above normal variation when analysing trends over the past three years (see [supplementary data](#)).

Community associated infection cases by health board of residence

- During Q4 2019, 132 SAB cases were reported as community associated. This corresponds to an incidence rate of 9.6 cases per 100,000 population ([Table 11](#)).
- Yearly trends (comparing year-ending December 2018 with year-ending December 2019) show that there was no increase or decrease in NHS boards or Scotland overall ([Table 12](#)).
- No NHS boards were above the 95% confidence interval upper limit in the funnel plot analysis ([Figure 6](#)).
- No NHS boards were above normal variation when analysing trends over the past three years (see [supplementary data](#)).

Table 9: SAB cases and incidence rates (per 100,000 TOBDs) for healthcare associated infection cases: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).^{1,2,3}

NHS Board	Q3 Cases	Q3 Bed Days	Q3 Rate	Q4 Cases	Q4 Bed Days	Q4 Rate
AA	22	110,670	19.9	16	111,501	14.3
BR	0	28,962	0.0	2	29,415	6.8
DG	4	46,074	8.7	2	46,458	4.3
FF	14	90,276	15.5	10	91,708	10.9
FV	15	77,669	19.3	8	79,712	10.0
GR	21	131,950	15.9	20	133,259	15.0
GGC	93	416,741	22.3	69	429,650	16.1
HG	10	75,715	13.2	10	73,909	13.5
LN	31	146,465	21.2	30	147,326	20.4
LO	25	245,501	10.2	32	249,135	12.8
NWTC	1	12,067	8.3	1	11,659	8.6
OR	1	2,983	33.5	1	2,915	34.3
SH	0	2,694	0.0	1	2,673	37.4
TY	22	115,796	19.0	30	117,973	25.4
WI	5	6,702	74.6	1	6,884	14.5
Scotland	264	1,510,265	17.5	233	1,534,177	15.2

1. An arrow denotes statistically significant change.
2. Note: Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: Information Services Division ISD(S)1.
3. Figures include any updates received following the last publication (see Appendix 2).

Table 10: SAB cases and incidence rates (per 100,000 TOBDs) for healthcare associated infection cases: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).^{1,2,3}

NHS Board	YE Q4 18 Cases	YE Q4 18 Bed days	YE Q4 18 Rate	YE Q4 19 Cases	YE Q4 19 Bed days	YE Q4 19 Rate
AA	74	458,921	16.1	67	443,611	15.1
BR	31	128,353	24.2	7	117,513	6.0 ↓
DG	14	173,884	8.1	13	184,346	7.1
FF	79	360,129	21.9	49	361,726	13.5 ↓
FV	64	335,077	19.1	47	311,943	15.1
GR	106	544,288	19.5	86	528,836	16.3
GGC	340	1,682,549	20.2	326	1,693,580	19.2
HG	43	294,248	14.6	42	299,785	14.0
LN	100	562,175	17.8	119	584,854	20.3
LO	145	1,021,033	14.2	115	990,795	11.6
NWTC	10	48,375	20.7	8	47,277	16.9
OR	2	14,769	13.5	4	13,206	30.3
SH	6	9,774	61.4	3	10,420	28.8
TY	65	472,602	13.8	94	466,514	20.1 ↑
WI	3	29,593	10.1	8	27,470	29.1
Scotland	1,082	6,135,770	17.6	988	6,081,876	16.2

1. An arrow denotes statistically significant change.
2. Note: Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: Information Services Division ISD(S)1.
3. Figures include any updates received following the last publication (see Appendix 2).

Table 11: SAB cases and incidence rates (per 100,000 population) for community associated infection cases: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).^{1,2,3,4}

NHS Board	Q3 Cases	Q3 Population	Q3 Rate	Q4 Cases	Q3 Population	Q3 Rate
AA	8	369,670	8.6	9	369,670	9.7
BR	2	115,270	6.9	2	115,270	6.9
DG	3	148,790	8.0	2	148,790	5.3
FF	11	371,910	11.7	8	371,910	8.5
FV	10	306,070	13.0	14	306,070	18.1
GR	6	584,550	4.1	13	584,550	8.8
GGC	17	1,174,980	5.7	22	1,174,980	7.4
HG	10	321,800	12.3	10	321,800	12.3
LN	12	659,200	7.2	16	659,200	9.6
LO	15	897,770	6.6	21	897,770	9.3
OR	0	22,190	0.0	0	22,190	0.0
SH	0	22,990	0.0	1	22,990	17.3
TY	8	416,080	7.6	14	416,080	13.3
WI	0	26,830	0.0	0	26,830	0.0
Scotland	102	5,438,100	7.4	132	5,438,100	9.6

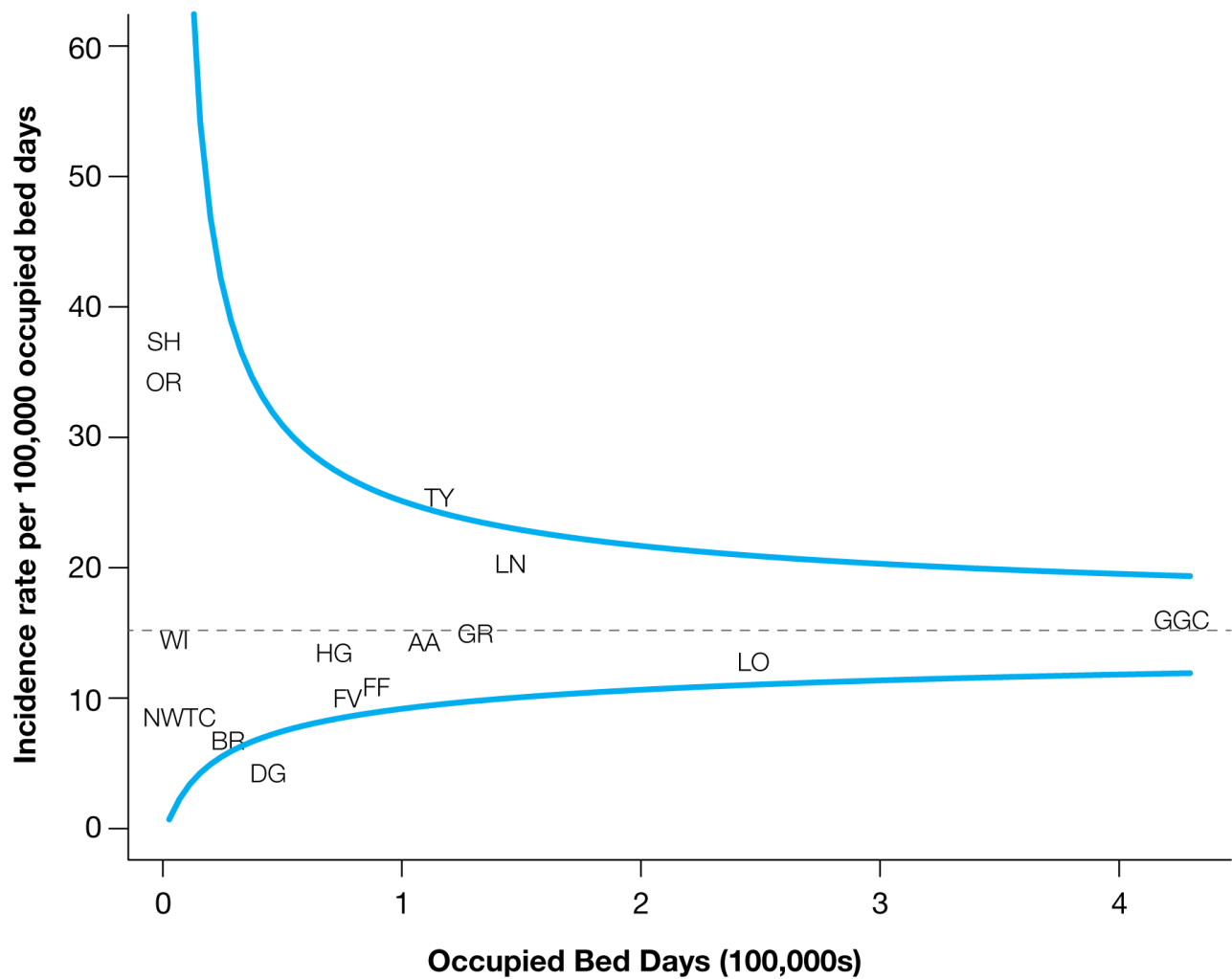
1. Quarterly population rates are based on an annualised population.
2. An arrow denotes statistically significant change.
3. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & NRS mid-year population estimates.
4. Figures include any updates received following the last publication (see Appendix 2).

Table 12: SAB cases and incidence rates (per 100,000 population) for community associated infection cases: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).^{1,2,3}

NHS Board	YE Q4 18 Cases	YE Q4 18 Population	YE Q4 18 Rate	YE Q4 19 Cases	YE Q4 19 Population	YE Q4 19 Rate
AA	42	369,670	11.4	43	369,670	11.6
BR	12	115,270	10.4	10	115,270	8.7
DG	19	148,790	12.8	17	148,790	11.4
FF	39	371,910	10.5	39	371,910	10.5
FV	29	306,070	9.5	39	306,070	12.7
GR	52	584,550	8.9	41	584,550	7.0
GGC	73	1,174,980	6.2	88	1,174,980	7.5
HG	34	321,800	10.6	36	321,800	11.2
LN	53	659,200	8.0	55	659,200	8.3
LO	87	897,770	9.7	90	897,770	10.0
OR	1	22,190	4.5	1	22,190	4.5
SH	1	22,990	4.3	5	22,990	21.7
TY	57	416,080	13.7	45	416,080	10.8
WI	4	26,830	14.9	2	26,830	7.5
Scotland	503	5,438,100	9.2	511	5,438,100	9.4

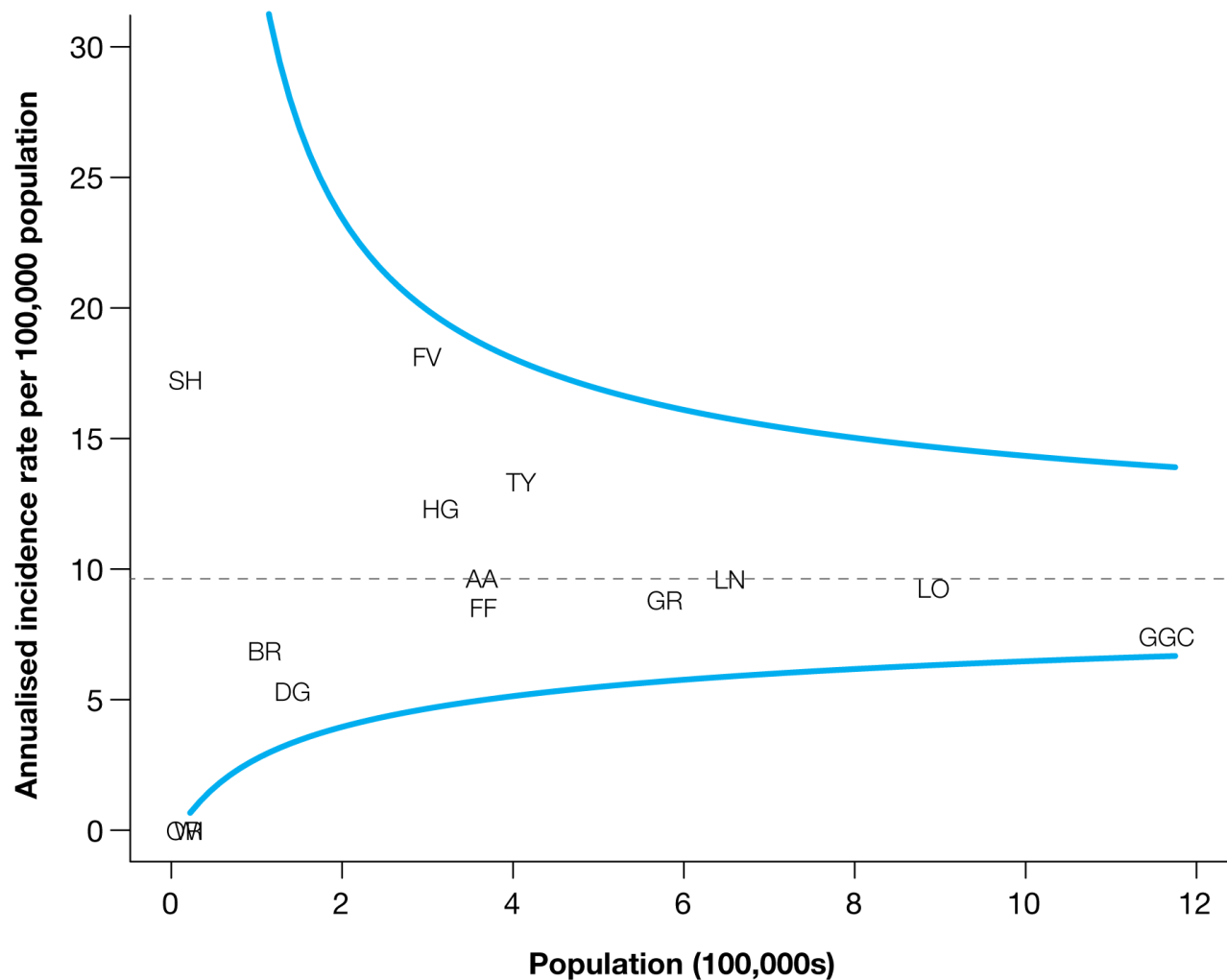
1. An arrow denotes statistically significant change.
2. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & NRS mid-year population estimates.
3. Figures include any updates received following the last publication (see Appendix 2).

Figure 5: Funnel plot of SAB incidence rates (per 100,000 TOBD) in healthcare associated infection cases for all NHS boards in Scotland in Q3 2019.¹



1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & Total occupied bed days: Information Services Division ISD(S)1.

Figure 6: Funnel plot of SAB incidence rates (per 100,000 population) in community associated infection cases for all NHS boards in Scotland in Q4 2019.^{1,2}



1. Source of data is Electronic Communication of Surveillance in Scotland (ECOSS) & NRS mid-year population estimates.
2. NHS Orkney and NHS Western Isles overlap.

Surgical Site Infection (SSI)

Caesarean section

- During Q4 2019, 4,112 caesarean section procedures were carried out in NHSScotland and 35 SSIs were reported to HPS, detected either during inpatient stay or by PDS to day 10, this corresponds to an incidence of 0.9%. In the previous quarter the SSI incidence was 1.2% ([Table 13](#)).
- Yearly trends (comparing year-ending December 2018 with year-ending December 2019) show that there was a decrease in NHS Greater Glasgow and Clyde, NHS Tayside and NHSScotland overall ([Table 14](#)).
- No NHS boards were above the 95% confidence interval upper limit in the funnel plot analysis ([Figure 7](#)).
- No NHS boards were above normal variation when analysing trends over the past three years (see [supplementary data](#)).

Hip arthroplasty

- During Q4 2019, 2,145 hip arthroplasty procedures were carried out in NHSScotland and 17 SSIs were reported to HPS, detected either during inpatient stay or on readmission to day 30, this corresponds to an incidence of 0.8%. In the previous quarter the SSI incidence was 0.8% ([Table 15](#)).
- Yearly trends (comparing year-ending December 2018 with year-ending December 2019) show that there was no increase or decrease in NHS boards or Scotland overall ([Table 16](#)).
- No NHS boards were above the 95% confidence interval upper limit in the funnel plot analysis ([Figure 8](#)).
- No NHS boards were above normal variation when analysing trends over the past three years (see [supplementary data](#)).

Table 13: Caesarean section procedures and SSI incidence (per 100 procedures) for inpatients and PDS to day 10: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).^{1,2,3}

NHS Board	Q3 SSI	Q3 Procedures	Q3 Incidence	Q4 SSI	Q4 Procedures	Q4 Incidence
AA	5	303	1.7	2	251	0.8
BR	1	57	1.8	0	63	0.0
DG	1	86	1.2	0	72	0.0
FF	6	236	2.5	5	216	2.3
FV	2	219	0.9	2	205	1.0
GR	10	463	2.2	6	469	1.3
GGC	3	1,367	0.2	4	1,306	0.3
HG	4	216	1.9	3	178	1.7
LN	4	398	1.0	5	349	1.4
LO	12	718	1.7	6	685	0.9
OR	0	8	0.0	0	8	0.0
SH	0	10	0.0	0	9	0.0
TY	3	311	1.0	2	290	0.7
WI	0	16	0.0	0	11	0.0
Scotland	51	4,408	1.2	35	4,112	0.9

1. An arrow denotes statistically significant change.
2. Source of data is Surgical Site Infection Reporting System (SSIRS).
3. Figures include any updates received following the last publication (see Appendix 2).

Table 14: Caesarean section procedures and SSI incidence (per 100 procedures) for inpatients and PDS to day 10: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).^{1,2,3}

NHS Board	YE Q4 18 SSI	YE Q4 18 Procedures	YE Q4 18 Incidence	YE Q4 19 SSI	YE Q4 19 Procedures	YE Q4 19 Incidence
AA	9	1,209	0.7	12	1,088	1.1
BR	0	255	0.0	1	262	0.4
DG	5	297	1.7	1	311	0.3
FF	23	890	2.6	27	841	3.2
FV	24	967	2.5	13	849	1.5
GR	19	1,845	1.0	33	1,860	1.8
GGC	59	5,273	1.1	20	5,198	0.4↓
HG	16	690	2.3	13	735	1.8
LN	25	1,384	1.8	22	1,490	1.5
LO	43	2,752	1.6	41	2,782	1.5
OR	1	28	3.6	1	28	3.6
SH	0	30	0.0	0	33	0.0
TY	26	1,125	2.3	9	1,154	0.8↓
WI	0	60	0.0	0	58	0.0
Scotland	250	16,805	1.5	193	16,689	1.2↓

1. An arrow denotes statistically significant change.
2. Source of data is Surgical Site Infection Reporting System (SSIRS).
3. Figures include any updates received following the last publication (see Appendix 2).

Table 15: Hip arthroplasty procedures and SSI incidence (per 100 procedures) for inpatients and on readmission to day 30: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).^{1,2,3}

NHS Board	Q3 SSI	Q3 Procedures	Q3 Incidence	Q4 SSI	Q4 Procedures	Q4 Incidence
AA	0	129	0.0	0	150	0.0
BR	1	74	1.4	2	90	2.2
DG	0	49	0.0	0	46	0.0
FF	2	142	1.4	1	127	0.8
FV	0	67	0.0	0	55	0.0
GR	2	268	0.7	1	275	0.4
GGC	4	348	1.1	4	319	1.3
HG	2	105	1.9	2	101	2.0
LN	1	93	1.1	1	125	0.8
LO	1	241	0.4	1	236	0.4
NWTC	3	439	0.7	1	434	0.2
TY	1	145	0.7	3	170	1.8
WI	0	21	0.0	1	17	5.9
Scotland	17	2,121	0.8	17	2,145	0.8

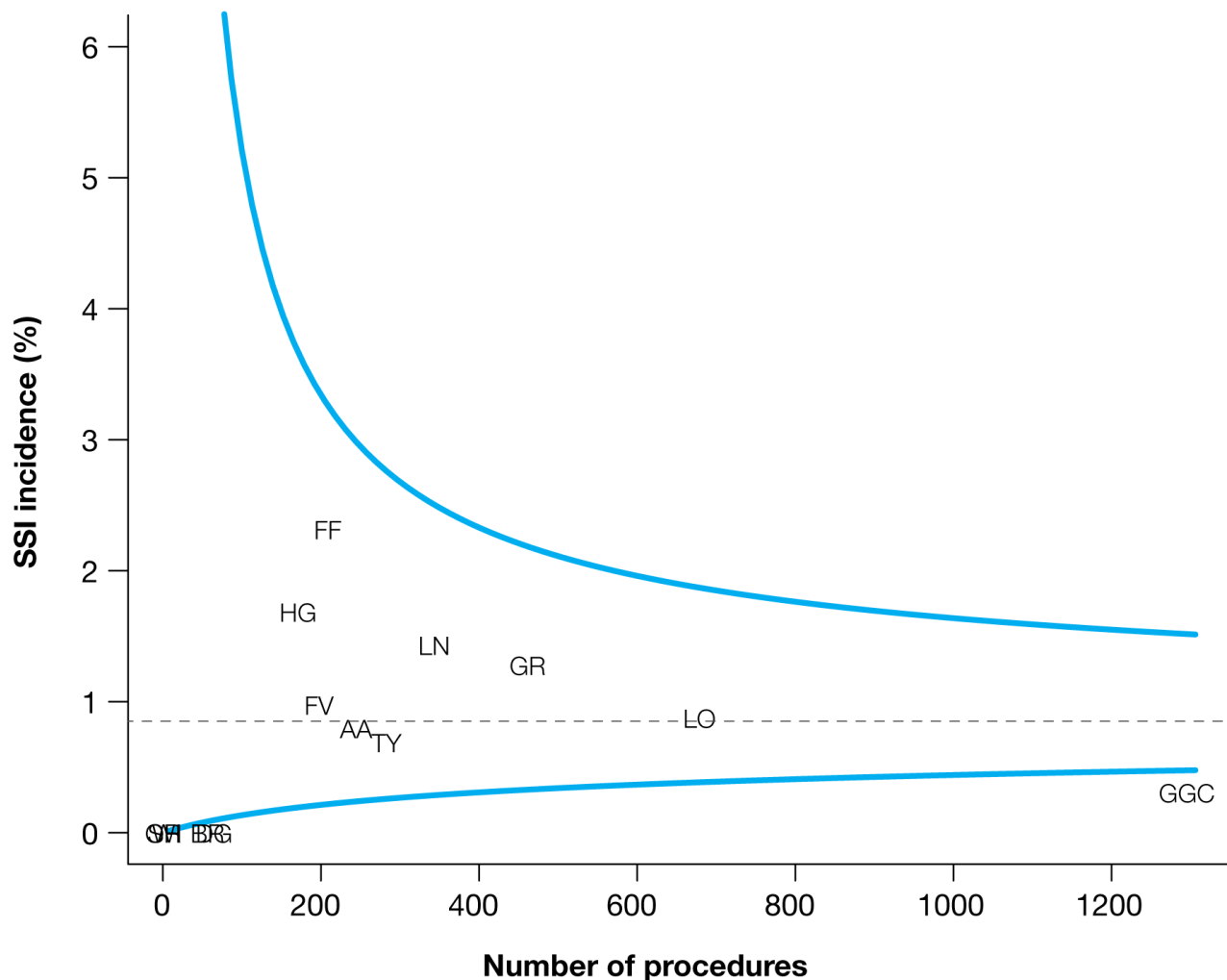
1. An arrow denotes statistically significant change.
2. Source of data is Surgical Site Infection Reporting System (SSIRS).
3. Figures include any updates received following the last publication (see Appendix 2).

Table 16: Hip arthroplasty procedures and SSI incidence (per 100 procedures) for inpatients and on readmission to day 30: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).^{1,2,3}

NHS Board	YE Q4 18 SSI	YE Q4 18 Procedures	YE Q4 18 Incidence	YE Q4 19 SSI	YE Q4 19 Procedures	YE Q4 19 Incidence
AA	2	504	0.4	0	584	0.0
BR	2	279	0.7	6	322	1.9
DG	2	171	1.2	1	168	0.6
FF	3	535	0.6	4	550	0.7
FV	0	218	0.0	0	258	0.0
GR	9	1,160	0.8	4	1,150	0.3
GGC	20	1,443	1.4	10	1,455	0.7
HG	1	364	0.3	4	395	1.0
LN	3	440	0.7	3	434	0.7
LO	10	1,030	1.0	4	949	0.4
NWTC	3	1,889	0.2	8	1,692	0.5
TY	9	622	1.4	7	650	1.1
WI	0	54	0.0	1	62	1.6
Scotland	64	8,709	0.7	52	8,669	0.6

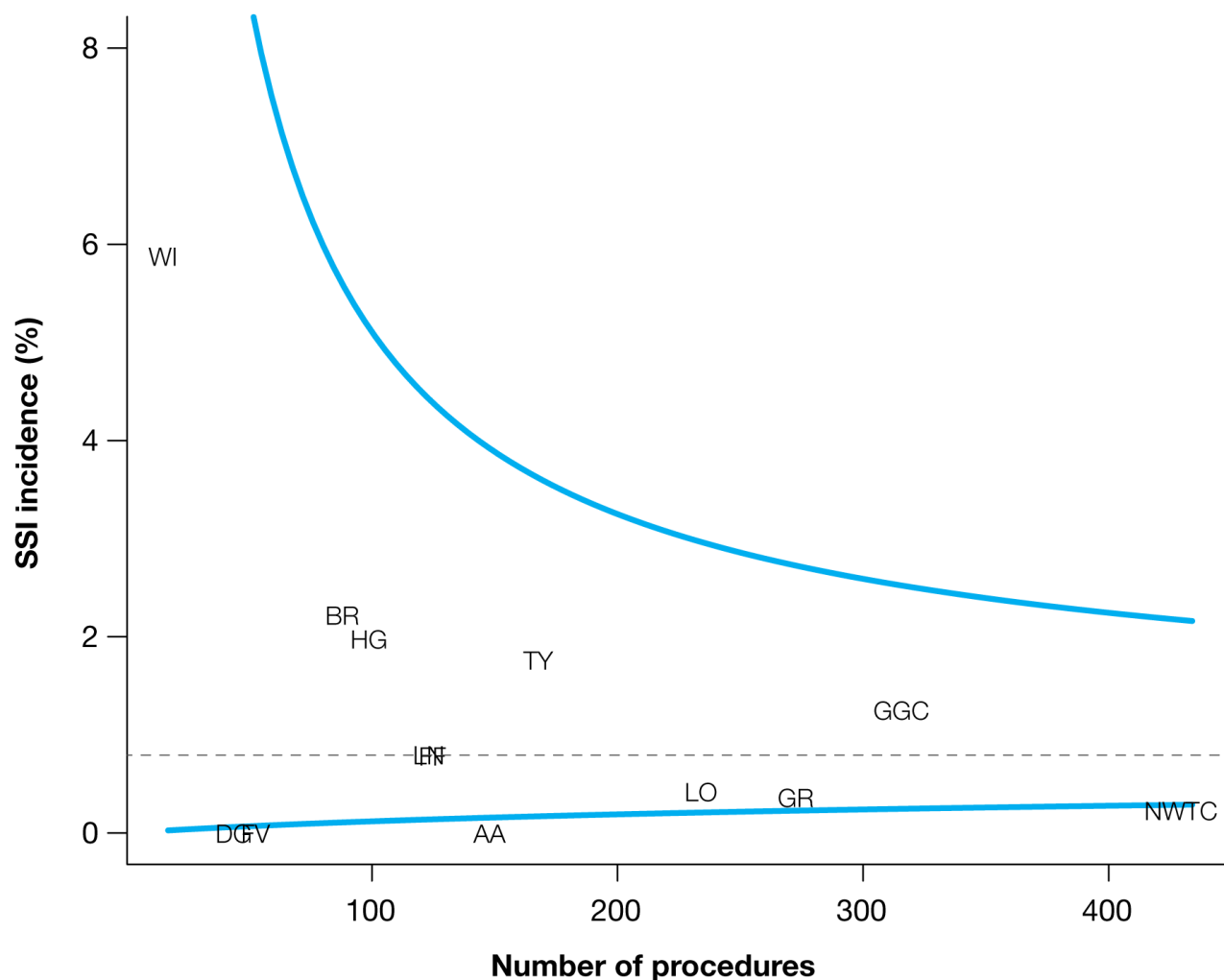
1. An arrow denotes statistically significant change.
2. Source of data is Surgical Site Infection Reporting System (SSIRS).
3. Figures include any updates received following the last publication (see Appendix 2).

Figure 7: Funnel plot of caesarean section SSI incidence (per 100 procedures) in inpatients and PDS to day 10 for all NHS boards in Scotland in Q4 2019.^{1,2}



1. Source of data is Surgical Site Infection Reporting System (SSIRS).
2. NHS Orkney, NHS Shetland and NHS Western Isles, and NHS Borders and NHS Dumfries & Galloway overlap.

Figure 8: Funnel plot of hip arthroplasty SSI incidence (per 100 procedures) in inpatients and on readmission to day 30 for all NHS boards in Scotland in Q4 2019.^{1,2}



1. Source of data is Surgical Site Infection Reporting System (SSIRS).
2. NHS Fife and NHS Lanarkshire, and NHS Dumfries & Galloway and NHS Forth Valley overlap.

List of Tables

File name	File and size
<u>Table 1: CDI cases and incidence rates (per 100,000 TOBDs) for healthcare associated infection cases: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 2: CDI cases and incidence rates (per 100,000 TOBDs) for healthcare associated infection cases: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 3: CDI cases and incidence rates (per 100,000 population) for community associated infection cases: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 4: CDI cases and incidence rates (per 100,000 population) for community associated infection cases: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 5: ECB cases and incidence rates (per 100,000 TOBD) for healthcare associated infection cases: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 6: ECB cases and incidence rates (per 100,000 TOBDs) for healthcare associated infection cases: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 7: ECB cases and incidence rates (per 100,000 population) for community associated infection cases: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 8: ECB cases and incidence rates (per 100,000 population) for community associated infection cases: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 9: SAB cases and incidence rates (per 100,000 TOBDs) for healthcare associated infection cases: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 10: SAB cases and incidence rates (per 100,000 TOBDs) for healthcare associated infection cases: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 11: SAB cases and incidence rates (per 100,000 population) for community associated infection cases: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 12: SAB cases and incidence rates (per 100,000 population) for community associated infection cases: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 13: Caesarean section procedures and SSI incidence (per 100 procedures) for inpatients and PDS to day 10: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 14: Caesarean section procedures and SSI incidence (per 100 procedures) for inpatients and PDS to day 10: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 15: Hip arthroplasty procedures and SSI incidence (per 100 procedures) for inpatients and on readmission to day 30: Q3 2019 (July to September 2019) compared to Q4 2019 (October to December 2019).</u>	<u>supplementary data</u> (415 Kb)
<u>Table 16: Hip arthroplasty procedures and SSI incidence (per 100 procedures) for inpatients and on readmission to day 30: year-ending December 2018 (YE Q4 18) compared to year-ending December 2019 (YE Q4 19).</u>	<u>supplementary data</u> (415 Kb)

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Further Information

Further Information can be found on the [HPS website](#).

For more information on types of infections included in this report, please see the [CDI](#), [ECB](#), [SAB](#) and [SSI](#) pages.

The next release of this publication will be July 2020.

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Appendices

Appendix 1 – Background information

Revisions to the surveillance

Description of Revision	First report revision applied	Report section(s) revision applies to	Rational for revision
Name change for <i>Clostridium difficile</i> to <i>Clostridioides difficile</i> .	October 2018	CDI	A novel genus <i>Clostridioides</i> has been proposed for <i>Clostridium difficile</i> which will now be known as <i>Clostridioides difficile</i>. There are no implications with regards the natural history of infection, infection prevention and control, or clinical treatment. https://www.sciencedirect.com/science/article/pii/S1075996416300762?via%3Dihub
Addition of healthcare/community case assignment	October 2017	CDI/SAB	An increasing awareness of those infections occurring in community settings has warranted measurement of incidence rates by healthcare setting (healthcare settings

			vs. community settings) to enable interventions to be targeted to the relevant settings.
Use of standardised denominator data for CDI/ECB/SAB	October 2017	CDI/SAB	The 'total occupied bed days' data will be extracted from the ISD(S)1 data collection which contains aggregated information on acute and non-acute bed days including geriatric medicine and long-term stays in real-time. The standardisation of denominator data across the three surveillance programmes could result in slightly less accurate denominators due to inclusion of persons in the denominator who are at slightly less risk of infection. However, in surveillance programmes developed for the purpose of preventing infection and driving quality improvement in care, consistency of the

			denominators over time tend to be more important than getting a very precise estimate of the population at risk, as the primary aim is to reduce infection to a lower incidence relative to what it was at the initial time of benchmarking.
Reporting of CDI cases aged 15 years and above only	October 2017	CDI	Current Scottish Government Local Delivery Plan Standards are based on the incidence rate in cases aged 15 years and above, therefore the report has been aligned to reflect this. HPS will continue to monitor CDI incidence rates in the separate age groups (15-64 years and 65 years and above) internally.
Reporting of total SAB cases only (i.e. Removal of MRSA sub-analysis)	October 2017	SAB	MRSA numbers are becoming too small to carry out statistical analysis. HPS will continue to monitor internally.
Addition of year end trends to ECB	October 2018	ECB	This analysis (already included for other reported

			organisms) is now possible for ECB due the amount of data that has now been collected.
Change in production of Quarterly SPC Charts	April 2020	All sections	Updated method used for calculating exceptions within the SPC charts. The mean, Trigger/warning lines (+2 standard deviations) and upper control limits (+3 standard deviations) presented, are now calculated using the 12 quarters prior to the most recent quarter, as to compare the new rate against an existing baseline.

- Report methods and caveats

Full details of the report methods and caveats can be found here –

<https://www.hps.scot.nhs.uk/data/healthcare-associated-infection-quarterly-epidemiological-commentary/>

- UK comparisons

Improved collaboration with the other UK nations has made comparisons and standardisation across the UK a high priority for all four nations' governments/health departments. The changes introduced in the Scottish HAI surveillance, described here facilitate benchmarking of the Scottish data against those of the rest of the UK.

Appendix 2 – Publication Metadata

Metadata Indicator	Description
Publication title	Commentary on quarterly epidemiological data on <i>Clostridioides difficile</i> infection, <i>Escherichia coli</i> bacteraemia, <i>Staphylococcus aureus</i> bacteraemia and Surgical Site Infection in Scotland
Description	This release provides information on <i>Clostridioides difficile</i> infection, <i>Escherichia coli</i> bacteraemia, <i>Staphylococcus aureus</i> bacteraemia and Surgical Site Infection in Scotland for the period October to December 2019.
Theme	Infections in Scotland
Topic	<i>Clostridioides difficile</i> infection, <i>Escherichia coli</i> bacteraemia, <i>Staphylococcus aureus</i> bacteraemia and Surgical Site Infection
Format	Excel workbooks
Data source(s)	<i>Clostridioides difficile</i> infection: Case data source: Electronic Communication of Surveillance in Scotland (ECOSS) Data linkage source: General / Acute Inpatient and Day Case Scottish Morbidity Records (SMR01) Healthcare associated denominator: Total occupied bed days: Information Services Division ISD(S)1 Community associated denominator: National Records of Scotland (NRS) mid-year population estimates <i>Escherichia coli</i> bacteraemia: Case data source: Electronic Communication of Surveillance in Scotland (ECOSS) Enhanced Surveillance Web Tool Healthcare associated denominator: Total occupied bed days: Information Services Division ISD(S)1 Community associated denominator: NRS mid-year population estimates <i>Staphylococcus aureus</i> bacteraemia: Case data source: Electronic Communication of Surveillance in Scotland (ECOSS) Enhanced Surveillance Web Tool Healthcare associated denominator: Total occupied bed days: Information Services Division ISD(S)1 Community associated denominator: NRS mid-year population estimates Surgical Site Infection: Case data source: Surgical Site Infection Reporting System (SSIRS) Number of procedures denominator: SSIRS

Date that data are acquired	The date the data were extracted for analysis. <i>Clostridioides difficile</i> : 22/01/2020 <i>Escherichia coli</i> Bacteraemia: 02/03/2020 <i>Staphylococcus aureus</i> Bacteraemia: 27/02/2020 Surgical Site Infection: 24/02/2020																																																																									
Release date	7 April 2020																																																																									
Frequency	Quarterly																																																																									
Timeframe of data and timeliness	The latest iteration of data is 31 December 2019, therefore three months in arrears																																																																									
Continuity of data	Quarterly as at March, June, September, December																																																																									
Revisions statement	These data are not subject to planned major revisions. However, HPS aims to continually improve the interpretation of the data and therefore analysis methods are regularly reviewed and may be updated in the future.																																																																									
Revisions relevant to this publication	Updates to previously published figures Total Occupied Bed Days (TOBDs) Amendments to total occupied bed days dataset provided by Information Services Division (ISD) have been included in historic dataset for analysis and reporting. Updated figures are available to view in the most recent supplementary data. <table><tr><th>Quarter</th><th>NHS Board</th><th>Previous TOBDs</th><th>Updated TOBDs</th></tr><tr><td>2019 Q2</td><td>OR</td><td>3445</td><td>3479</td></tr><tr><td>2019 Q3</td><td>OR</td><td>2854</td><td>2983</td></tr></table> <i>Clostridioides difficile</i> Infection (CDI) Data linkage between CDI surveillance data and the Scottish Morbidity Records (SMR01) is used to identify community and healthcare associated CDI cases. Delays in SMR01 data availability at the time of report production means that some cases may be reassigned as either healthcare associated or community associated CDI at a later date (see Methods and Caveats). The following updates have been made to the CDI case numbers as a result of more SMR01 hospital discharge records being made available for linkage since the last publication: Updates to healthcare and community associated CDI data: <table><tr><th>NHS Board</th><th>Quarter</th><th>Previous Healthcare associated CDI cases</th><th>Updated Healthcare associated CDI cases</th><th>Previous Community associated CDI cases</th><th>Updated Community associated CDI cases</th><th>Reason</th></tr><tr><td>GGC</td><td>2015 Q2</td><td>92</td><td>91</td><td>12</td><td>13</td><td>1 case reassigned as community</td></tr><tr><td>GGC</td><td>2016 Q2</td><td>70</td><td>71</td><td>16</td><td>15</td><td>1 case reassigned as healthcare</td></tr><tr><td>GR</td><td>2018 Q4</td><td>10</td><td>11</td><td>13</td><td>12</td><td>1 case reassigned as healthcare</td></tr><tr><td>FF</td><td>2019 Q1</td><td>5</td><td>6</td><td>6</td><td>5</td><td>1 case reassigned as healthcare</td></tr><tr><td>GGC</td><td>2019 Q3</td><td>59</td><td>62</td><td>18</td><td>15</td><td>1 case reassigned as healthcare</td></tr><tr><td>FF</td><td>2019 Q3</td><td>9</td><td>8</td><td>3</td><td>3</td><td>Reporting error</td></tr><tr><td>FV</td><td>2019 Q3</td><td>13</td><td>14</td><td>2</td><td>2</td><td>Reporting error</td></tr></table>						Quarter	NHS Board	Previous TOBDs	Updated TOBDs	2019 Q2	OR	3445	3479	2019 Q3	OR	2854	2983	NHS Board	Quarter	Previous Healthcare associated CDI cases	Updated Healthcare associated CDI cases	Previous Community associated CDI cases	Updated Community associated CDI cases	Reason	GGC	2015 Q2	92	91	12	13	1 case reassigned as community	GGC	2016 Q2	70	71	16	15	1 case reassigned as healthcare	GR	2018 Q4	10	11	13	12	1 case reassigned as healthcare	FF	2019 Q1	5	6	6	5	1 case reassigned as healthcare	GGC	2019 Q3	59	62	18	15	1 case reassigned as healthcare	FF	2019 Q3	9	8	3	3	Reporting error	FV	2019 Q3	13	14	2	2	Reporting error
Quarter	NHS Board	Previous TOBDs	Updated TOBDs																																																																							
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GR	2018 Q4	10	11	13	12	1 case reassigned as healthcare																																																																				
FF	2019 Q1	5	6	6	5	1 case reassigned as healthcare																																																																				
GGC	2019 Q3	59	62	18	15	1 case reassigned as healthcare																																																																				
FF	2019 Q3	9	8	3	3	Reporting error																																																																				
FV	2019 Q3	13	14	2	2	Reporting error																																																																				

	*When a case is reassigned from community associated to healthcare associated infection, the NHS Board reported will change from NHS Board of residence to NHS Board of laboratory. **SMR01 records for 2019 Q4 were below the required level of completeness at time of data linkage. Amendments have been manually applied following validation with the NHS boards. Surgical Site Infection (SSI) Retrospective SSI form additions and amendments submitted to HPS after the reporting deadline have been updated in the historic dataset for analysis and reporting. These updates from NHS boards will also affect the overall NHSScotland SSI incidence (%) and yearly trends. Updated figures are available to view in the most recent supplementary data. Caesarean section data update: <table><tr><th>NHS Board</th><th>Quarter</th><th>Previous SSIs</th><th>Updated SSIs</th><th>Previous Procedures</th><th>Updated Procedures</th><th>Reason</th></tr><tr><td>FV</td><td>2019 Q3</td><td>0</td><td>2</td><td>219</td><td>219</td><td>SSI amended by NHS Board following data review.</td></tr></table> Hip arthroplasty data update: <table><tr><th>NHS Board</th><th>Quarter</th><th>Previous SSIs</th><th>Updated SSIs</th><th>Previous Procedures</th><th>Updated Procedures</th><th>Reason</th></tr><tr><td>LO</td><td>2017 Q2</td><td>2</td><td>4</td><td>247</td><td>247</td><td>SSI amended by NHS Board following data review.</td></tr></table>	NHS Board	Quarter	Previous SSIs	Updated SSIs	Previous Procedures	Updated Procedures	Reason	FV	2019 Q3	0	2	219	219	SSI amended by NHS Board following data review.	NHS Board	Quarter	Previous SSIs	Updated SSIs	Previous Procedures	Updated Procedures	Reason	LO	2017 Q2	2	4	247	247	SSI amended by NHS Board following data review.
NHS Board	Quarter	Previous SSIs	Updated SSIs	Previous Procedures	Updated Procedures	Reason																							
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LO	2017 Q2	2	4	247	247	SSI amended by NHS Board following data review.																							
Concepts and definitions	<i>Clostridioides difficile</i> Infection (CDI) <i>Clostridioides difficile</i> infection (CDI) is the most common cause of intestinal infections (and diarrhoea) associated with antimicrobial therapy. Clinical disease comprises a range of toxin mediated symptoms from mild diarrhoea, which can resolve without treatment, to severe cases such as pseudomembranous colitis (PMC), toxic megacolon and peritonitis that can lead to death. For mild disease, diarrhoea is usually the only symptom. Other clinical features consistent with more severe forms of CDI include fever, leukocytosis, pseudomembranous colitis and ileus. Symptoms of CDI, and associated immune reactions in children differ from those in adults, but the pathology is not well described. Routine testing in children aged less than 3 years old is not recommended. Approximately 3% of healthy adults and 20% of hospital patients carry <i>C. difficile</i> in their gut. The elderly living in care homes or staying in long-term care facilities are more likely to carry <i>C. difficile</i> than other adults. In studies from the US, 20% of care home residents and 50% of patients in long-term care facilities, respectively, were colonised with <i>C. difficile</i>. The Scottish CDI guidance ‘Guidance on Prevention and Control of CDI in Healthcare Settings in Scotland’ and <i>C. difficile</i> testing protocol ‘protocol for diagnosis of CDI’ are key documents for the control and reduction of CDI in Scotland. There remains scope for a reduction of incidence rates through continued local monitoring, appropriate prescribing, and compliance with infection prevention and control measures. <i>Escherichia coli</i> Bacteraemia (ECB)																												

	<i>Escherichia coli</i> (<i>E. coli</i>) is a bacterium commonly found in the gut of animals and people where it forms part of the normal gut flora that helps human digestion. Although most types of <i>E. coli</i> live harmlessly in your gut, some types can make you unwell. Some types <i>E. coli</i> can cause urinary tract infections (UTI) and illnesses such as pneumonia. <i>E. coli</i> continues to be the most frequent cause of Gram-negative bacteraemia in Scotland and is a frequent cause of infection worldwide. The number of patients with <i>E. coli</i> bacteraemia (ECB) reported to Health Protection Scotland (HPS) has increased continuously since 2009. New cases of ECB are identified by laboratory testing (via positive blood cultures) and submitted to the national system ECOSS. Only cases of ECB that have been reviewed and confirmed by the NHS boards in the enhanced surveillance system are included in the quarterly commentaries. <i>Staphylococcus aureus</i> Bacteraemia (SAB) <i>Staphylococcus aureus</i> (<i>S. aureus</i>) is a Gram positive bacterium which colonises the nasal cavity of about a quarter of the healthy population. This colonisation is usually harmless. However, infection can occur if <i>S. aureus</i> breaches the body's defence systems and can cause a range of illnesses from minor skin infections to serious systemic infections such as bacteraemia. Some strains of <i>S. aureus</i> produce toxins or show resistance to first line treatments therefore can be more complicated to treat. Scotland has had a mandatory meticillin resistant <i>S. aureus</i> (MRSA) bacteraemia surveillance programme since 2001. The programme was extended to include meticillin sensitive <i>S. aureus</i> (MSSA) bacteraemias in 2006 and in 2014 to include enhanced <i>S. aureus</i> bacteraemia (SAB) surveillance. Full details of the surveillance methods may be found in the protocol. Surgical Site Infection (SSI) A surgical site infection (SSI) is an infection that occurs after surgery in the part of the body where the surgery took place. SSI may be superficial infections involving the skin only, while other SSI is more serious and can involve tissues under the skin, organs, or implanted material. SSI is one of the most common types of healthcare associated infection in Scotland, estimated to account for 16.5% of inpatient healthcare associated infection within NHSScotland, according to Scottish Point Prevalence Survey 2016. Surgical Site Infection Surveillance (SSIS) is mandatory across NHSScotland and all NHS boards participate in SSI surveillance for all inpatient and post discharge surveillance (PDS) for 10 post-operative days for caesarean section procedures and prospective readmission surveillance for hip arthroplasty for 30 post-operative days. Additional new mandatory large bowel and vascular procedures commenced since April 2017. Reporting these procedures will not take place until it is assessed that robust data have been provided by boards. Further information on the methods and caveats for can be found here: http://www.hps.scot.nhs.uk/pubs/detail.aspx?id=3340
Relevance and key uses	<i>Clostridioides difficile</i> Infection (CDI)

of the statistics	Surveillance data is essential for monitoring trends and assisting in outbreak investigations. Certain strains of <i>C. difficile</i> have been associated with more severe disease (e.g. PCR types 027 and 078) and antibiotic resistance has been suggested to be a factor in the emergence and spread of <i>C. difficile</i> epidemic types. In addition, the identification of ribotypes can assist in the investigation of outbreaks. The surveillance data should inform and support NHS boards in implementing antimicrobial prescribing policies, infection control and prevention interventions. <i>Escherichia coli</i> Bacteraemia (ECB) The outputs of the surveillance programme are intended to support the NHS boards in controlling and reducing the burden of ECB. Benchmarking against other NHS boards (and other countries) is an important function of the surveillance. In conjunction with other sources of intelligence (including enhanced surveillance data) the outputs of the quarterly surveillance can also help the NHS boards with planning and targeting activities to reduce risk to patient of becoming infected and improve the care of patients (i.e. strategic planning, targeted intervention, care quality improvement). As urinary tract infections are commonly associated with <i>E. coli</i> bacteraemia cases, we are collaborating with the Scottish Urinary Tract Infection Network (SUTIN). This will promote collaborative working with our partners within Health and Social Care around change ideas which may reduce the risk of <i>E. coli</i> bacteraemia. Work is also being done on improving antimicrobial treatment of people with infections – co-ordinated by the Scottish Antimicrobial Prescribing Group (SAPG) through a network of antimicrobial management teams. <i>Staphylococcus aureus</i> Bacteraemia (SAB) HPS continues to offer support to NHS boards across Scotland to aid their local SAB reduction strategies. A programme of enhanced SAB surveillance commenced in all NHS boards in Scotland on 1 October 2014. This is providing further intelligence to focus future reduction interventions. Surgical Site Infection (SSI) SSIs are estimated to double the length of post-operative stay in hospital and significantly increase the cost of care. The national SSIS programme is intended to enhance the quality of patient care with use of data obtained from surveillance to compare incidence of SSI over time and against a benchmark rate and to use this information locally to review and guide clinical practice. Key to NHS boards AA = Ayrshire & Arran BR = Borders DG = Dumfries & Galloway FV = Forth Valley FF = Fife GR = Grampian GGC = Greater Glasgow & Clyde HG = Highland LN = Lanarkshire
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	LO = Lothian NWTC = National Waiting Times Centre OR = Orkney SH = Shetland TY = Tayside WI = Western Isles
Accuracy	CDI, ECB and SAB data are the product of the Electronic Communication of Surveillance in Scotland (ECOSS). Participating laboratories routinely report all identifications of organisms, infection or microbiological intoxication, unless they are known to be of no clinical or public health importance. The collected data is used for; the identification of single cases of severe disease, outbreaks, and longer term trends in the incidence of laboratory reported infections, enhanced surveillance, health protection, analytical and statistical use. Delays in SMR01 data availability at the time of report production means that some CDI cases may be reassigned at a later date. Therefore, healthcare-associated and community-associated CDI cases in this report are provisional and may change. The enhanced ECB and SAB ECOSS web tool has built-in validation rules that have to be met before the data is submitted. Further checks of the data are made by HPS before the data are analysed. CDI validation of collected data entails sending a list of CDI cases extracted from ECOSS and asking for confirmation that the cases represent true CDI cases, i.e., meet the case definition which is defined in the surveillance protocol sent to all the NHS boards and available on the HPS website. The final list of CDI cases is then agreed before publishing. SSI data comes from the Surgical Site Infection Reporting System (SSIRS). Complying with a national minimum dataset and definitions for Surgical Site Infections, enables the data submitted to Health Protection Scotland to be mapped into the national dataset following a rigorous quality assurance process. SSIRS has built-in validation rules and data cannot be submitted until rules are met. SSIRS primary validation checks for incomplete or ambiguous core data fields, for example, if presentation to the surgery is 'emergency' the OPCS code should correspond. Secondary validation includes data checks that can be accepted without completion and/or values that are outside the stated requirements.
Completeness	ECB/SAB: Surveillance data are collected using an ECOSS Surveillance Web Tool that allows data collectors in NHS boards to validate ECOSS records as well as additional cases that may not be included in the ECOSS system. This therefore means that completeness is near to 100%. Only cases reviewed in the enhanced surveillance are included in the 'analysis' in the commentary publication. CDI: Diagnosis of CDI is confirmed in a patient who is both symptomatic with diarrhoea and whose stool has tested positive using a two-step diagnostic algorithm. Laboratory reports of positive samples are then sent to ECOSS for data extraction. In the community, patients with CDI may have a mild illness that does not require a GP visit, or the symptoms may not be recognised by a GP for a <i>C. difficile</i> test request. In hospitals, the chance of a diarrhoea sample not being tested for <i>C. difficile</i> is much lower, and patients who have ileus (i.e., CDI but with no diarrhoea) might be missed, however as a result of HPS published guidance on managing CDI patients, this is not likely. HPS carries out validation with the NHS boards to check that no CDI cases have been missed from ECOSS each quarter. As with most surveillance programmes, completeness will not be 100% but mandatory surveillance, supported by HPS

	through issued guidance on diagnosis of CDI and validation of cases, ensures this is as near to 100% as practically possible. When categorising by healthcare or community, not all cases may be successfully data linked in any one quarter. Therefore, the sum total of the healthcare and community CDI cases may not equal the total number of CDI cases reported to HPS. SSI: Surveillance coordinators are responsible for completeness and accuracy of data. At hospital level, processes are in place to ensure all patients included in the standard surveillance have had forms completed (e.g. cross checking with admission or theatre list). HPS also compare SSIRS data with data from ISD to make sure all procedures under surveillance have been included; however, this comparison is only done annually.
Comparability	CDI / ECB / SAB: Public Health England report rates per quarter for CDI, ECB and SAB (methods and definitions may differ) – https://www.gov.uk/government/statistics/mrsa-mssa-and-e-coli-bacteraemia-and-c-difficile-infection-quarterly-epidemiological-commentary SSI: SSI rates by health board are not published by the rest of UK. Annual numbers are reported by Public Health England - https://www.gov.uk/government/publications/surgical-site-infections-ssi-surveillance-nhs-hospitals-in-england
Accessibility	It is the policy of HPS to make its web sites and products accessible according to published guidelines .
Coherence and clarity	Tables and charts are accessible via the HPS website at: http://www.hps.scot.nhs.uk/pubs/detail.aspx?id=3631
Value type and unit of measurement	Healthcare associated cases and incidence rates (per 100,000 Total occupied bed days (TOBDs)) for <i>Clostridioides difficile</i> infection, <i>Escherichia coli</i> bacteraemia & <i>Staphylococcus aureus</i> bacteraemia. Community associated cases and incidence rates (per 100,000 population) for <i>Clostridioides difficile</i> infection, <i>Escherichia coli</i> bacteraemia & <i>Staphylococcus aureus</i> bacteraemia. Number of procedures and Surgical Site Infections and incidence per categories (per 100 procedures) for inpatients and post discharge surveillance.
Disclosure	The HPS protocol on Statistical Disclosure Protocol is followed.
Official Statistics designation	Official Statistics
UK Statistics Authority Assessment	Not Assessed
Last published	7 January 2020
Next published	7 July 2020
Date of first publication	7 April 2015 Prior to this <i>Clostridioides difficile</i> infection (first publication - 2 Apr 2008) and <i>Staphylococcus aureus</i> bacteraemia (first publication - 3 Apr 2002) were separate reports.
Help email	mailto:NSS.HPSHAIC@nhs.net
Date form completed	31 March 2020

Appendix 3 – Early access details

Pre-Release Access

Under terms of the "Pre-Release Access to Official Statistics (Scotland) Order 2008", HPS is obliged to publish information on those receiving Pre-Release Access ("Pre-Release Access" refers to statistics in their final form prior to publication). The standard maximum Pre-Release Access is five working days. Shown below are details of those receiving standard Pre-Release Access.

Standard Pre-Release Access:

Scottish Government Health Department

NHS Board Chief Executives

NHS Board Communication leads

Appendix 4 – HPS and Official Statistics

About HPS

HPS is a division of NHS National Services Scotland which works at the very heart of the health service across Scotland, delivering services critical to frontline patient care and supporting the efficient and effective operation of NHSScotland.

HPS was established by the Scottish Government in 2005 to strengthen and coordinate health protection in Scotland. It is organised into three specialist groups with expertise provided by a multi-disciplinary workforce which includes doctors, nurses, scientists and information staff, all of whom are supported by core business and IM&T teams. The specialist groups are:

- Healthcare Associated Infections and Infection Control;
- Blood Borne Viruses and Sexually Transmitted Infections, Immunisation, and Respiratory and Vaccine Preventable Diseases;
- Gastrointestinal and Zoonoses Travel, and Environmental Public Health.

Official Statistics

Our official statistics publications are produced to a high professional standard and comply with the Code of Practice for Statistics. The Code of Practice is produced and monitored by the UK Statistics Authority which is independent of Government. Under the Code of Practice, the format, content and timing of statistics publications are the responsibility of professional staff working within NHS National Services Scotland.

Our statistical publications are currently classified as one of the following:

- National Statistics (i.e. assessed by the UK Statistics Authority as complying with the Code of Practice)
- National Statistics (i.e. legacy, still to be assessed by the UK Statistics Authority)
- Official Statistics (i.e. still to be assessed by the UK Statistics Authority)
- other (not Official Statistics)

Further information on NHS National Services Scotland's statistics, including compliance with the Code of Practice for Statistics, and on the UK Statistics Authority, is available on the [ISD website](#).