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Surveillance: *Clostridium difficile* (*C. difficile*) and *Staphylococcus aureus* (MRSA and MSSA bacteraemia)

Report: Financial year report

Time period: 1st April 2013 to 31st March 2014

Health Board: Iechyd UYG

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1. *Clostridium difficile* (*C. difficile*)

C. difficile surveillance notes for interpretation

- This report presents data on numbers of *C. difficile* in Wales in the 2013/14 financial year (FY), with trend data from 2010/11.
- Data is mainly collected via Datastore, a data warehouse system used by all microbiology laboratories in Wales. This data is supplemented manually with *C. difficile* specimens from patients in Powys Teaching Health Board where the laboratory used for processing the specimen is in England.
- Data is extracted for the surveillance scheme using the following criteria:
 - The patient is at least 2 years old
 - The sample was not taken from a patient in a private hospital, a privately run dialysis unit or post-mortem
 - The sample had a positive *C. difficile* toxin test, if a single test (either a toxin A and B enzyme immunoassay or a neutralised cell toxicity assay) protocol was in use in the laboratory at the time the investigation was carried out, or a positive glutamate dehydrogenase (GDH) assay combined with a positive *C. difficile* toxin enzyme immunoassay, if a two-stage testing protocol was in use in the laboratory at the time the investigation was carried out.
 - Multiple positive samples from the same patient within a 28 day period are excluded as duplicates
- Hospital admission data has been supplied by NHS Wales Informatics Service (NWIS) from the Patient Episode Database for Wales (PEDW).
- Population data has been extracted from <https://statswales.wales.gov.uk/Catalogue/Population-and-Migration/Population/Estimates>.
- All ages are included in the hospital admission and population numbers used to calculate rates.
- Mid 2012 population estimates have been used to calculate the 2013/14 population rates. These rates will be updated when the mid 2013 population estimates become available.

Wales

Wales *C. difficile*, 2013/14 FY

Target: Inpatients aged 66 and over

- The Welsh Government target for *C. difficile* for 2013/14 was for inpatients aged 66 and over. 884 cases of *C. difficile* in this demographic group have been reported for Wales for the 2013/14 FY. This is a 19% decrease in numbers compared to the previous FY.
- Compared to the previous FY, 6 of the 8 health boards/trust in Wales have achieved a reduction in numbers of *C. difficile* in inpatients aged 66 and over. Aneurin Bevan University Health Board had a small increase of 0.5% and Velindre NHS Trust increased from 2 cases in the 2012/13 FY to 7 cases. (Table 1.1.)
- Compared to Jul 08 – Jun 09, the original baseline period for the Welsh Government *C. difficile* target, there has been a 68% decrease in the number of *C. difficile* in Wales. (Table 1.1.)
- All health boards/Trust in Wales have achieved at least a 50% reduction in numbers of *C. difficile* in inpatients aged 66 and over, compared to the original baseline period. (Table 1.1.)

Table 1.1. Wales number of *C. difficile* in inpatients aged 66 and over, annual target summary, 2013/14 FY

Health board /Trust	Number of <i>C. difficile</i> baseline year Jul 08– Jun 09	Number of <i>C. difficile</i> 2012/13 FY	Number of <i>C. difficile</i> 2013/14 FY	% change in number of <i>C. difficile</i> from baseline year Jul 08– Jun 09	% change in number of <i>C. difficile</i> from 2012/13 FY
ABM	344	161	145	-58%	-10%
Aneurin Bevan	537	215	216	-60%	+0.5%
Betsi Cadwaladr	805	391	245	-70%	-37%
Cardiff and Vale	585	166	135	-77%	-19%
Cwm Taf	161	51	50	-69%	-2%
Hywel Dda	272	88	76	-72%	-14%
Powys	20	20	10	-50%	-50%
Velindre	19	2	7	-63%	+250%
Wales	2743	1094	884	-68%	-19%
Wales average	343	137	111	-65%	+15%
Wales median	308	125	106	-66%	-12%

Wales

All patients aged 2 and over

- 1577 cases of *C. difficile* have been reported for the 2013/14 FY. This is a 18% decrease in numbers compared to the previous FY. The rate of *C. difficile* per 1,000 hospital admissions has decreased by 18%, from 4.40 to 3.61. (Table 1.2.)
- Compared to the previous FY, 6 of the 8 health boards/trust in Wales have achieved a reduction in numbers of *C. difficile*. (Table 1.2.)
- Compared to the 2010/11 FY, there has been a 44% decrease in the number of *C. difficile* and a 42% decrease in the rate of *C. difficile* per 1,000 hospital admissions in Wales. (Table 1.3.)
- Compared to the 2010/11 FY, 7 of the 8 health boards/trust in Wales have achieved a reduction in numbers of *C. difficile*. (Table 1.3.) Powys Teaching Health Board had some changes in data collection methods over this time period.
- 67% (1054) of cases were diagnosed in the 18 acute hospitals, 14% (213) diagnosed in non-acute hospitals and 20% (310) in non-hospital locations.
- 69% (1089) of cases were diagnosed in hospital inpatient locations. The inpatient rate for Wales is 2.49 per 1,000 hospital admissions for this period.
- 59% (927) of *C. difficile* were in female patients and 81% (1272) were in patients aged 66+ for the 12 month period.
- The rate of *C. difficile* per 100,000 population has decreased by 18% compared to the previous FY, from 62.91 to 51.30. (Table 1.3.)
- Compared to 2010/11 FY, the rate of *C. difficile* per 100,000 population has decreased by 44%. (Table 1.3.)

Table 1.2. Wales numbers of *C. difficile*, percentage change in numbers (from 2012/13 and 2010/11 FYs) and rates per 1,000 hospital admissions and 100,000 population by health board, 2013/14 FY

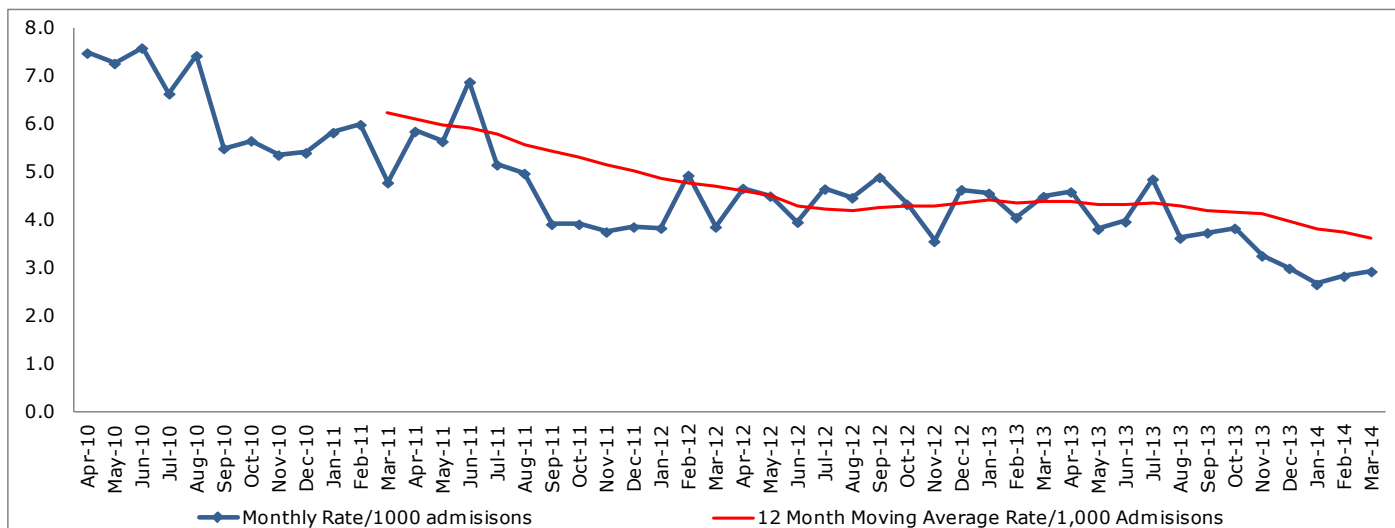
Health board /Trust	Number of <i>C. difficile</i>	% change in number of <i>C. difficile</i> from 2012/13 FY	% change in number of <i>C. difficile</i> from 2010/11 FY	<i>C. difficile</i> /1,000 hospital admissions	<i>C. difficile</i> /100,000 population
ABM	219	-17% (263)	-47% (411)	2.60	42.16
Aneurin Bevan	383	-5% (405)	-44% (679)	4.52	66.27
Betsi Cadwaladr	447	-30% (637)	-44% (805)	4.82	64.74
Cardiff and Vale	260	-23% (336)	-51% (527)	3.80	54.70
Cwm Taf	82	-16% (98)	-45% (148)	1.58	27.84
Hywel Dda	148	-9% (163)	-21% (188)	2.87	38.60
Powys Teaching	24	+20% (20)	+118% (11)	12.92	18.05
Velindre	14	+17% (12)	-46% (26)	7.08	N/A
Wales	1577	-18% (1934)	-44% (2795)	3.61	51.30
Wales average	197	-8% (242)	-23% (349)	5.02	44.62
Wales median	184	-13% (213)	-44% (300)	4.16	42.16

Table 1.3. Wales numbers and rates of *C. difficile* per 1,000 hospital admissions and 100,000 population, Apr 10 – Mar 14

Mth/Yr	Number of <i>C. difficile</i>	Number of hospital admissions	<i>C. difficile</i> / 1,000 hospital admissions	Population*	<i>C. difficile</i> / 100,000 population
2013/14 FY	1577	437247	3.61	3074067	51.30
Mar 14	100	34090	2.93	261085	38.30
Feb 14	95	33516	2.83	235819	40.29
Jan 14	100	37538	2.66	261085	38.30
Dec 13	112	37018	3.03	261085	42.90
Nov 13	121	37116	3.26	252663	47.89
Oct 13	148	38616	3.83	261085	56.69
Sep 13	135	36109	3.74	252663	53.43
Aug 13	129	35537	3.63	261085	49.41
Jul 13	186	38306	4.86	261085	71.24
Jun 13	143	36018	3.97	252663	56.60
May 13	142	37220	3.82	261085	54.39
Apr 13	166	36163	4.59	252663	65.70
2012/13 FY	1934	439792	4.40	3074067	62.91
2011/12 FY	2142	455772	4.70	3063758	69.91
2010/11 FY	2795	448561	6.23	3049971	91.64

*Monthly population = (Total population/Number of days in year) x Number of days in month

Figure 1.1. Wales monthly and 12 month moving average rates of *C. difficile* per 1,000 hospital admissions, Apr 10 – Mar 14*



*12 month moving average rates are shown from Mar 11 as this is when the first full FY of data is complete

2. MRSA (meticillin-resistant *Staphylococcus aureus*) bacteraemia

MRSA bacteraemia surveillance notes for interpretation

- This report presents data on numbers of MRSA from blood cultures (bacteraemia) in Wales in the 2013/14 financial year, with trend data from 2010/11 (other than for Powys Health Board where data collection started in Apr 2011).
- Data is mainly collected via Datastore, a data warehouse system used by all microbiology laboratories in Wales. This data is supplemented manually with MRSA bacteraemia specimens from patients in Powys Health Board where the laboratory used for processing the specimen is in England.
- Data is extracted for the surveillance scheme using the following criteria:
 - *Staphylococcus aureus* (*S. aureus*) was identified from a blood culture sample
 - The sample was not taken from a patient in a private hospital, a privately run dialysis unit or post-mortem
 - Multiple positive samples from the same patient within a 14 day period are excluded as duplicates
- *S. aureus* positive blood cultures are assigned as MRSA (meticillin-resistant *S. aureus*) or MSSA (meticillin-sensitive *S. aureus*) on the basis of sensitivity to the antibiotic flucloxacillin
- Hospital admission data has been supplied by NHS Wales Informatics Service (NWIS) from the Patient Episode Database for Wales (PEDW).
- Population data has been extracted from <https://statswales.wales.gov.uk/Catalogue/Population-and-Migration/Population/Estimates>
- Mid 2012 population estimates have been used to calculate the 2013/14 population rates. These rates will be updated when the mid 2013 population estimates become available.

Wales

Wales MRSA bacteraemia, 2013/14 FY

- 165 cases of MRSA bacteraemia have been reported for the 2013/14 FY. This is 2% increase in numbers compared to the previous FY. The rate of MRSA bacteraemia per 1,000 hospital admissions has increased by 3%, from 0.37 to 0.38. (Table 2.1.)
- Compared to the previous FY, 3 of the 8 health boards/trust in Wales have achieved a reduction in numbers of MRSA bacteraemia. (Table 2.1.)
- Compared to the 2010/11 FY, there has been a 24% decrease in the number of MRSA bacteraemia and a 22% decrease in the rate of MRSA bacteraemia per 1,000 hospital admissions. (Table 2.2.)
- Compared to the 2010/11 FY, 5 of the 7 (data was not collected from Powys Teaching Health Board for this FY) health boards/trust in Wales have achieved a reduction in numbers of MRSA bacteraemia. (Table 2.2.)
- 95% (157) of cases were diagnosed in the 18 acute hospitals. (Table 2.2.)
- 79% (130) of cases were diagnosed in hospital inpatient locations. The inpatient rate is 0.30 per 1,000 hospital admissions for this period.
- 36% (59) of MRSA bacteraemia were in female patients and 76% (125) were in patients aged 66+ for the 12 month period.
- The rate of MRSA bacteraemia per 100,000 population has increased by 2% compared to the previous FY, from 5.24 to 5.37. (Table 2.1.)
- Compared to 2010/11 FY, the rate of MRSA bacteraemia per 100,000 population has decreased by 25%. (Table 2.2.)

Table 2.1. Wales numbers of MRSA bacteraemia, percentage change in numbers (from 2012/13 and 2010/11 FYs) and rates per 1,000 hospital admissions and 100,000 population by health board, 2013/14 FY

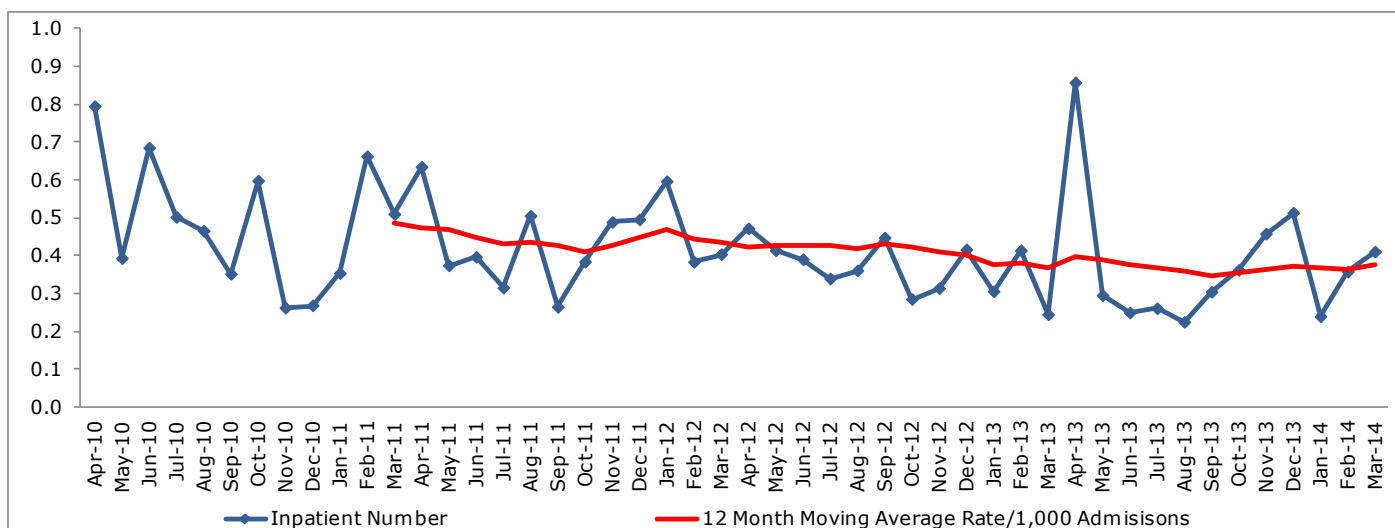
Health board	Number of MRSA bacteraemia	% change in number of MRSA bacteraemia from 2012/13 FY	% change in number of MRSA bacteraemia from 2010/11 FY	MRSA bacteraemia /1,000 hospital admissions	MRSA bacteraemia /100,000 population
ABM	29	+7% (27)	-38% (47)	0.34	5.58
Aneurin Bevan	22	-4% (23)	0% (22)	0.26	3.81
Betsi Cadwaladr	47	-4% (49)	-15% (55)	0.51	6.81
Cardiff and Vale	31	+7% (29)	-38% (50)	0.45	6.52
Cwm Taf	13	-32% (19)	-35% (20)	0.25	4.41
Hywel Dda	20	+43% (14)	0% (20)	0.39	5.22
Powys	1	N/A (0)	N/A (0)	0.54	0.75
Velindre	2	N/A (0)	-50% (4)	1.01	N/A
Wales	165	+2% (161)	-24% (218)	0.38	5.37
Wales average	21	+3% (20)	-25% (31)	0.47	4.73
Wales median	21	+1% (21)	-35% (22)	0.42	5.22

Table 2.2. Wales numbers and rates of MRSA bacteraemia per 1,000 hospital admissions and 100,000 population, Apr 10 – Mar 14

Mth/Yr	Number of MRSA bacteraemia	Number of hospital admissions	MRSA bacteraemia/ 1,000 hospital admissions	Population*	MRSA bacteraemia/ 100,000 population
2013/14 FY	165	437247	0.38	3074067	5.37
Mar 14	14	34090	0.41	261085	5.36
Feb 14	12	33516	0.36	235819	5.09
Jan 14	9	37538	0.24	261085	3.45
Dec 13	19	37018	0.51	261085	7.28
Nov 13	17	37116	0.46	252663	6.73
Oct 13	14	38616	0.36	261085	5.36
Sep 13	11	36109	0.30	252663	4.35
Aug 13	8	35537	0.23	261085	3.06
Jul 13	10	38306	0.26	261085	3.83
Jun 13	9	36018	0.25	252663	3.56
May 13	11	37220	0.30	261085	4.21
Apr 13	31	36163	0.86	252663	12.27
2012/13 FY	161	439792	0.37	3074067	5.24
2011/12 FY	199	455772	0.44	3063758	6.50
2010/11 FY	218	448561	0.49	3049971	7.15

*Monthly population = (Total population/Number of days in year) x Number of days in month

Figure 2.1. Wales monthly and 12 month moving average rates of MRSA bacteraemia per 1,000 hospital admissions, Apr 10 – Mar 14*



*12 month moving average rates are shown from Mar 11 as this is when the first full FY of data is complete

3. MSSA (meticillin-sensitive *Staphylococcus aureus*) bacteraemia

MSSA bacteraemia surveillance notes for interpretation

- This report presents data on numbers of MSSA from blood cultures (bacteraemia) in Wales in the 2013/14 financial year, with trend data from 2010/11 (other than for Powys Health Board where data collection started in Apr 2011).
- Data is mainly collected via Datastore, a data warehouse system used by all microbiology laboratories in Wales. This data is supplemented manually with MSSA bacteraemia specimens from patients in Powys Health Board where the laboratory used for processing the specimen is in England.
- Data is extracted for the surveillance scheme using the following criteria:
 - *Staphylococcus aureus* (*S. aureus*) was identified from a blood culture sample
 - The sample was not taken from a patient in a private hospital, a privately run dialysis unit or post-mortem
 - Multiple positive samples from the same patient within a 14 day period are excluded as duplicates
- *S. aureus* positive blood cultures are assigned as MRSA (meticillin-resistant *S. aureus*) or MSSA (meticillin-sensitive *S. aureus*) on the basis of sensitivity to the antibiotic flucloxacillin
- Hospital admission data has been supplied by NHS Wales Informatics Service (NWIS) from the Patient Episode Database for Wales (PEDW).
- Population data has been extracted from <https://statswales.wales.gov.uk/Catalogue/Population-and-Migration/Population/Estimates>
- Mid 2012 population estimates have been used to calculate the 2013/14 population rates. These rates will be updated when the mid 2013 population estimates become available.

Wales MSSA bacteraemia, 2013/14 FY

- 751 cases of MSSA bacteraemia have been reported for the 2013/14 FY. This is 3% increase in numbers compared to the previous FY. The rate of MSSA bacteraemia per 1,000 hospital admissions has increased by 4%, from 1.66 to 1.72. (Table 3.1.)
- Compared to the previous FY, 3 of the 8 health boards/trust in Wales have achieved a reduction in numbers of MSSA bacteraemia. (Table 3.1.)
- Compared to the 2010/11 FY, there has been a 14% increase in the number of MSSA bacteraemia and a 17% increase in the rate of MSSA bacteraemia per 1,000 hospital admissions. (Table 3.2.)
- Compared to the 2010/11 FY, 2 of the 7 (data was not collected from Powys Teaching Health Board for this FY) health boards/trust in Wales have achieved a reduction in numbers of MSSA bacteraemia. (Table 3.2.)
- 98% (737) of cases were diagnosed in the 18 acute hospitals.
- 68% (507) of cases were diagnosed in hospital inpatient locations. The inpatient rate is 1.16 per 1,000 hospital admissions for this period.
- 37% (280) of MSSA bacteraemia were in female patients and 51% (386) were in patients aged 66+ for the 12 month period.
- The rate of MSSA bacteraemia per 100,000 population has increased by 3% compared to the previous FY, from 23.68 to 24.43. (Table 3.1.)
- Compared to 2010/11 FY, the rate of MSSA bacteraemia per 100,000 population has increased by 13%. (Table 3.2.)

Table 3.1. Wales numbers of MSSA bacteraemia, percentage change in numbers (from 2012/13 and 2010/11 FYs) and rates per 1,000 hospital admissions and 100,000 population by health board, 2013/14 FY

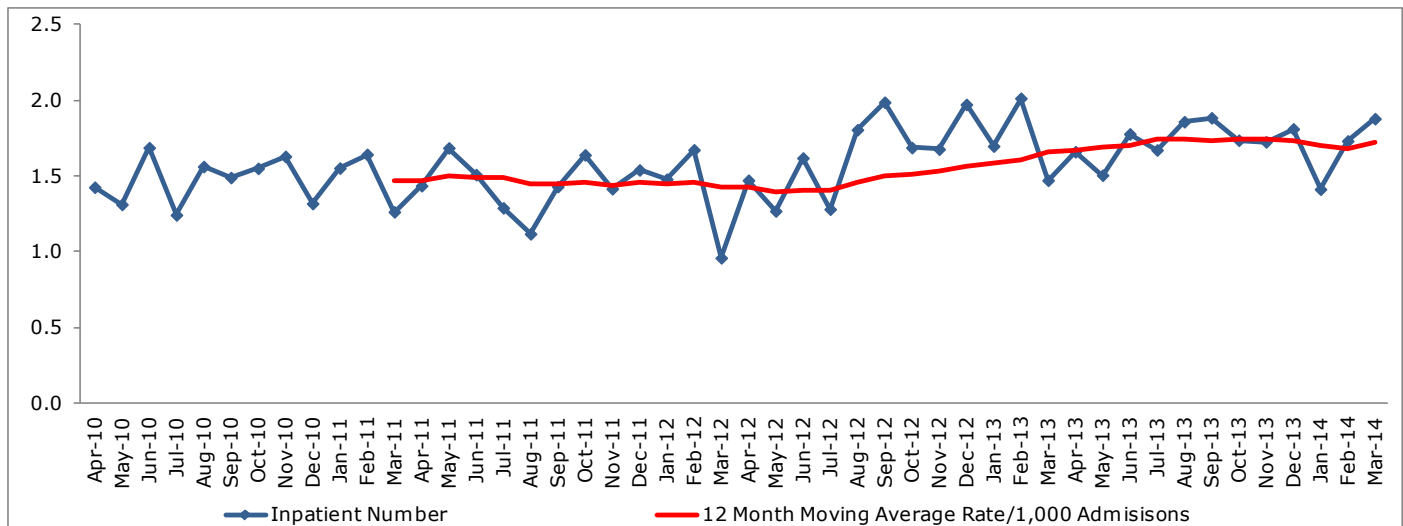
Health board	Number of MSSA bacteraemia	% change in number of MSSA bacteraemia from 2012/13 FY	% change in number of MSSA bacteraemia from 2010/11 FY	MSSA bacteraemia /1,000 hospital admissions	MSSA bacteraemia /100,000 population
ABM	155	-8% (169)	+28% (121)	1.84	29.84
Aneurin Bevan	111	-2% (113)	-3% (114)	1.31	19.20
Betsi Cadwaladr	107	-9% (118)	-17% (129)	1.15	15.50
Cardiff and Vale	176	+13% (156)	+14% (155)	2.57	37.03
Cwm Taf	90	+43% (63)	+84% (49)	1.73	30.56
Hywel Dda	105	+4% (101)	+24% (85)	2.04	27.39
Powys	0	-100% (1)	N/A	0.00	0.00
Velindre	7	=0% (7)	+17% (6)	3.54	N/A
Wales	751	+3% (728)	+14% (659)	1.72	24.43
Wales average	94	-7% (91)	+21% (94)	1.77	22.79
Wales median	106	-1% (107)	+17% (114)	1.79	27.39

Table 3.2. Wales numbers and rates of MSSA bacteraemia per 1,000 hospital admissions and 100,000 population, Apr 10 – Mar 14

Mth/Yr	Number of MSSA bacteraemia	Number of hospital admissions	MSSA bacteraemia/ 1,000 hospital admissions	Population*	MSSA bacteraemia/ 100,000 population
2013/14 FY	751	437247	1.72	3074067	24.43
Mar 14	64	34090	1.88	261085	24.51
Feb 14	58	33516	1.73	235819	24.60
Jan 14	53	37538	1.41	261085	20.30
Dec 13	67	37018	1.81	261085	25.66
Nov 13	64	37116	1.72	252663	25.33
Oct 13	67	38616	1.74	261085	25.66
Sep 13	68	36109	1.88	252663	26.91
Aug 13	66	35537	1.86	261085	25.28
Jul 13	64	38306	1.67	261085	24.51
Jun 13	64	36018	1.78	252663	25.33
May 13	56	37220	1.50	261085	21.45
Apr 13	60	36163	1.66	252663	23.75
2012/13 FY	728	439792	1.66	3074067	23.68
2011/12 FY	651	455772	1.43	3063758	21.25
2010/11 FY	659	448561	1.47	3049971	21.61

*Monthly population = (Total population/Number of days in year) x Number of days in month

Figure 3.1. Wales monthly and 12 month moving average rates of MSSA bacteraemia per 1,000 hospital admissions, Apr 10 – Mar 14*



*12 month moving average rates are shown from Mar 11 as this is when the first full FY of data is complete