



GIG
CYMRU
NHS
WALES

Iechyd Cyhoeddus
Cymru
Public Health
Wales

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

Report: Financial Year (FY) Report

Time period: 2016/17 FY

Health Board: Wales

Content: Pg 2 – *C. difficile*
Pg 5 – MRSA bacteraemia
Pg 9 – MSSA bacteraemia

Issued by: Welsh Healthcare Associated Infection Programme (WHAIP)

Issue date: 19th May 2017

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

C. difficile surveillance notes for interpretation

- This report presents data on numbers of *C. difficile* in Wales from April 2016 to March 2017, with trend data from April 2010.
- 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 2015 population estimates have been used to calculate the 2016/17 FY population rates. These rates will be updated when the mid 2016 population estimates become available.

Wales *C. difficile*, 2016/17 FY

- 1047 cases of *C. difficile* have been reported for 2016/17. This is a 16% decrease in numbers compared to 2015/16. The rate of *C. difficile* per 1,000 hospital admissions has decreased by 17% from 2.77 to 2.29. (Table 1.1.)
- Compared to 2015/16, 5 of the 8 health boards/trust in Wales have achieved a reduction in numbers of *C. difficile*. (Table 1.1.)
- Compared to 2010/11, there has been a 63% decrease in the number and rate of *C. difficile* per 1,000 hospital admissions in Wales. (Table 1.2.)
- Compared to 2010/11, 7 of the 8 health boards/trust in Wales have achieved a reduction in numbers of *C. difficile*. (Table 1.1.) Powys Teaching Health Board had some changes in data collection methods over this time period.
- 68% (716) of cases were diagnosed in the 18 acute hospitals, 8% (82) in non-acute hospitals and 23% (242) in non-hospital locations. 7 locations were not specified.
- 62% (648) of cases were diagnosed in hospital inpatient locations. The inpatient rate for Wales is 1.42 per 1,000 hospital admissions for this period.
- 57% (598) of *C. difficile* were in female patients and 79% (824) were in patients aged 66+ for this 12 month period.
- The rate of *C. difficile* per 100,000 population has decreased by 16% compared to 2015/16, from 40.11 to 33.78. (Table 1.2.)
- Compared to 2010/11, the rate of *C. difficile* per 100,000 population has decreased by 63%. (Table 1.2.)

Table 1.1. Wales numbers of *C. difficile*, percentage change in numbers (from 2015/16 and 2010/11 FYs) and rates per 1,000 hospital admissions and 100,000 population by health board, 2016/17 FY

	Number of <i>C. difficile</i>	% change in number of <i>C. difficile</i> from 2015/16 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	229	-16% (274)	-44% (411)	2.60	43.58
Aneurin Bevan	161	-21% (204)	-76% (679)	1.69	27.67
Betsi Cadwaladr	268	-25% (355)	-67% (805)	2.84	38.59
Cardiff and Vale	161	+7% (150)	-69% (527)	2.44	33.21
Cwm Taf	50	-39% (82)	-66% (148)	0.91	16.85
Hywel Dda	144	-5% (151)	-23% (188)	2.62	37.58
Powys Teaching	29	+32% (22)	+164% (11)	19.37	21.86
Velindre	5	=0% (5)	-81% (26)	2.51	N/A
Wales	1047	-16% (1243)	-63% (2795)	2.29	33.78
Wales average	131			4.37	31.34
Wales median	153			2.56	33.21

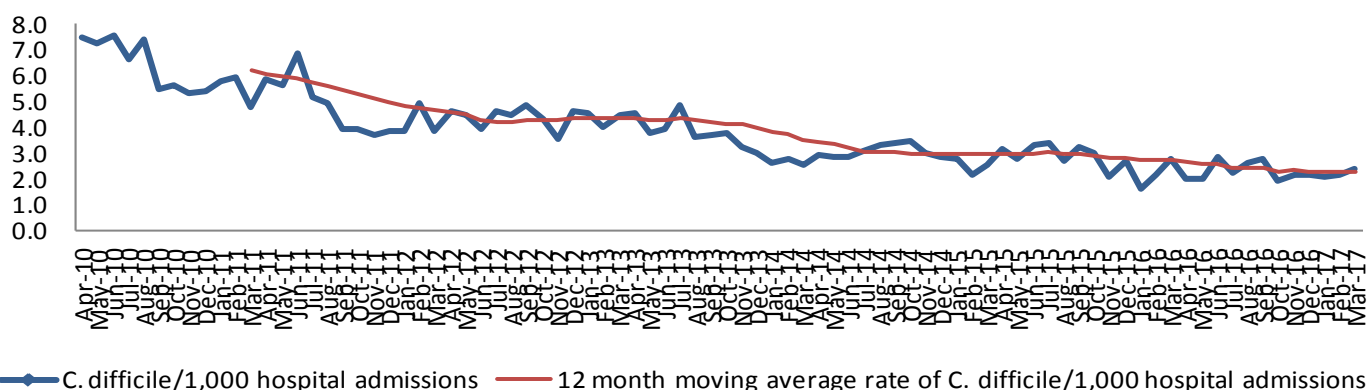
Wales

Table 1.2. Wales numbers and rates of *C. difficile* per 1,000 hospital admissions and 100,000 population, Apr 10 – Mar 17

	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
2016/17	1047	456856	2.29	3099086	33.78
Mar 17	91	37220	2.44	263210	34.57
Feb 17	75	35046	2.14	237738	31.55
Jan 17	80	38620	2.07	263210	30.39
Dec 16	84	38964	2.16	263210	31.91
Nov 16	87	39998	2.18	254719	34.16
Oct 16	76	39527	1.92	263210	28.87
Sep 16	107	38212	2.80	254719	42.01
Aug 16	100	37382	2.68	263210	37.99
Jul 16	86	38361	2.24	263210	32.67
Jun 16	110	38570	2.85	254719	43.18
May 16	78	38557	2.02	263210	29.63
Apr 16	73	36399	2.01	254719	28.66
2015/16 FY	1243	449440	2.77	3099086	40.11
2014/15 FY	1318	446699	2.95	3092036	42.63
2013/14 FY	1577	442821	3.56	3082412	51.16
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 17*



*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 from April 2016 to March 2017, with trend data from April 2010 (other than for Powys Health Board where data collection started in April 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 2015 population estimates have been used to calculate the 2016/17 FY population rates. These rates will be updated when the mid 2016 population estimates become available.

Wales MRSA bacteraemia, 2016/17 FY

- 113 cases of MRSA bacteraemia have been reported for 2016/17. This is a 12% increase in numbers compared to 2015/16. The rate of MRSA bacteraemia per 1,000 hospital admissions has increased by 10% from 0.22 to 0.25. (Table 2.1.)
- Compared to 2015/16, 3 of the 8 health boards/trust in Wales have achieved a reduction in numbers of MRSA bacteraemia. (Table 2.1.)
- Compared to 2010/11, there has been a 48% decrease in the number MRSA bacteraemia and 49% decrease rate of MRSA bacteraemia per 1,000 hospital admissions in Wales. (Table 2.2.)
- Compared to 2010/11, 7 of the 8 health boards/trust in Wales have achieved a reduction in numbers of MRSA bacteraemia. (Table 2.1.) Powys Teaching Health Board had some changes in data collection methods over this time period.
- 87% (98) of cases were diagnosed in the 18 acute hospitals, 4% (5) in non-acute hospitals and 9% (10) in non-hospital locations.
- 56% (63) of cases were diagnosed in hospital inpatient locations. The inpatient rate for Wales is 0.14 per 1,000 hospital admissions for this period.
- 36% (41) of MRSA bacteraemia were in female patients and 73% (82) were in patients aged 66+ for this 12 month period.
- The rate of MRSA bacteraemia per 100,000 population has increased by 12% compared to 2015/16, from 3.26 to 3.65. (Table 2.2.)
- Compared to 2010/11, the rate of MRSA bacteraemia per 100,000 population has decreased by 49%. (Table 2.2.)

Table 2.1. Wales numbers of MRSA bacteraemia, percentage change in numbers (from 2015/16 and 2010/11 FYs) and rates per 1,000 hospital admissions and 100,000 population by health board, 2016/17 FY

	Number of MRSA bacteraemia	% change in number of MRSA bacteraemia from 2015/16 FY	% change in number of MRSA bacteraemia from 2010/11 FY	MRSA bacteraemia /1,000 hospital admissions	MRSA bacteraemia /100,000 population
ABM	20	+43% (14)	-57% (47)	0.23	3.81
Aneurin Bevan	11	-45% (20)	-50% (22)	0.12	1.89
Betsi Cadwaladr	31	-9% (34)	-44% (55)	0.33	4.46
Cardiff and Vale	17	+31% (13)	-66% (50)	0.26	3.51
Cwm Taf	6	-14% (7)	-70% (20)	0.11	2.03
Hywel Dda	15	+15% (13)	-25% (20)	0.27	3.91
Powys Teaching	13	N/A	N/A	8.68	9.80
Velindre	0	=0% (0)	-100% (4)	0.00	N/A
Wales	113	+12% (101)	-48% (218)	0.25	3.65
Wales average	14			1.25	4.20
Wales median	14			0.24	3.81

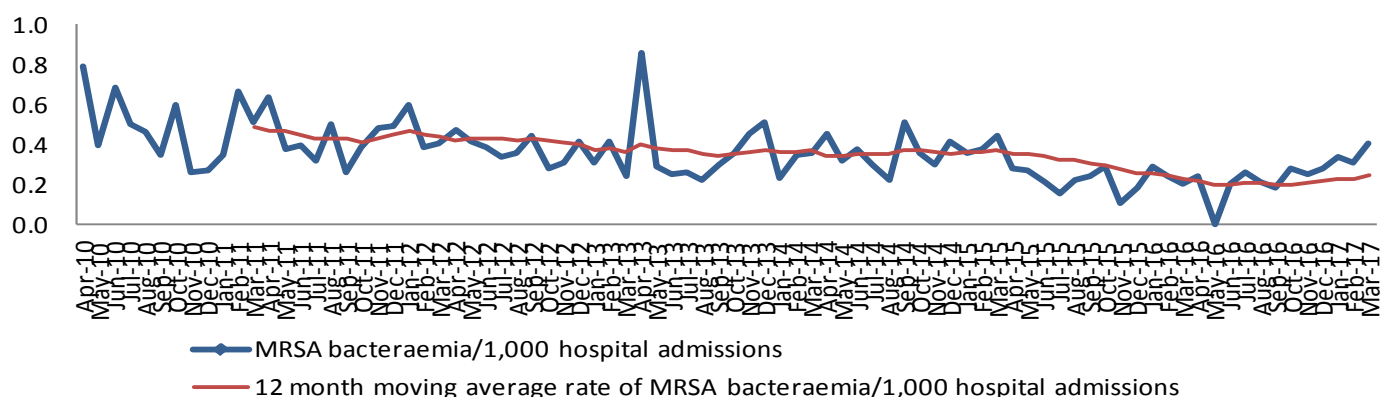
Wales

Table 2.2. Wales numbers and rates of MRSA bacteraemia per 1,000 hospital admissions and 100,000 population, Apr 10 – Mar 17

	Number of MRSA bacteraemia	Number of hospital admissions	MRSA bacteraemia/ 1,000 hospital admissions	Population*	MRSA bacteraemia/ 100,000 population
2016/17	113	456856	0.25	3099086	3.65
Mar 17	15	37220	0.40	263210	5.70
Feb 17	11	35046	0.31	237738	4.63
Jan 17	13	38620	0.34	263210	4.94
Dec 16	11	38964	0.28	263210	4.18
Nov 16	10	39998	0.25	254719	3.93
Oct 16	11	39527	0.28	263210	4.18
Sep 16	7	38212	0.18	254719	2.75
Aug 16	8	37382	0.21	263210	3.04
Jul 16	10	38361	0.26	263210	3.80
Jun 16	8	38570	0.21	254719	3.14
May 16	0	38557	0.00	263210	0.00
Apr 16	9	36399	0.25	254719	3.53
2015/16	101	449440	0.22	3099086	3.26
2014/15	166	446699	0.37	3092036	5.37
2013/14	165	442821	0.37	3082412	5.35
2012/13	161	439792	0.37	3074067	5.24
2011/12	199	455772	0.44	3063758	6.50
2010/11	218	448561	0.49	3049971	7.15

*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 MRSA bacteraemia per 1,000 hospital admissions, Apr 10 – Mar 17*



*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 from April 2016 to March 2017, with trend data from April 2010 (other than for Powys Health Board where data collection started in April 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 2015 population estimates have been used to calculate the 2016/17 FY population rates. These rates will be updated when the mid 2016 population estimates become available.

Wales MSSA bacteraemia, 2016/17 FY

- 744 cases of MSSA bacteraemia have been reported for 2016/17. This is a 3% decrease in numbers compared to 2015/16. The rate of MSSA bacteraemia per 1,000 hospital admissions has decreased by 4% from 1.70 to 1.63. (Table 3.1.)
- Compared to 2015/16, 4 of the 8 health boards/trust in Wales have achieved a reduction in numbers of MSSA bacteraemia. (Table 3.1.)
- Compared to 2010/11, there has been a 13% increase in the number of MSSA bacteraemia and an 11% increase in the rate of MSSA bacteraemia per 1,000 hospital admissions in Wales. (Table 3.2.)
- Compared to 2010/11, 2 of the 8 health boards/trust in Wales have achieved a reduction in numbers of MSSA bacteraemia. (Table 3.1.) Powys Teaching Health Board had some changes in data collection methods over this time period.
- 98% (728) of cases were diagnosed in the 18 acute hospitals, 2% (12) in non-acute hospitals and 1 in non-hospital locations. 3 locations were not specified.
- 47% (352) of cases were diagnosed in hospital inpatient locations. The inpatient rate for Wales is 0.77 per 1,000 hospital admissions for this period.
- 36% (269) of MSSA bacteraemia were in female patients and 54% (400) were in patients aged 66+ for this 12 month period.
- The rate of MSSA bacteraemia per 100,000 population has decreased by 3% compared to 2015/16, from 24.68 to 24.01. (Table 3.2.)
- Compared to 2010/11, the rate of MSSA bacteraemia per 100,000 population has increased by 11%. (Table 3.2.)

Table 3.1. Wales numbers of MSSA bacteraemia, percentage change in numbers (from 2015/16 and 2010/11 FYs) and rates per 1,000 hospital admissions and 100,000 population by health board, 2016/17 FY

	Number of MSSA bacteraemia	% change in number of MSSA bacteraemia from 2015/16 FY	% change in number of MSSA bacteraemia from 2010/11 FY	MSSA bacteraemia /1,000 hospital admissions	MSSA bacteraemia /100,000 population
ABM	162	-2% (165)	+34% (121)	1.84	30.83
Aneurin Bevan	114	+23% (93)	=0% (114)	1.20	19.59
Betsi Cadwaladr	134	=0% (134)	+4% (129)	1.42	19.30
Cardiff and Vale	129	-8% (140)	-17% (155)	1.95	26.76
Cwm Taf	73	-37% (115)	+49% (49)	1.33	24.60
Hywel Dda	128	+13% (113)	+51% (85)	2.33	33.40
Powys Teaching	1	N/A	N/A	0.67	0.75
Velindre	3	-40% (5)	-50% (6)	1.51	N/A
Wales	744	-3% (765)	+13% (659)	1.63	24.01
Wales average	93			1.53	22.18
Wales median	121			1.46	24.60

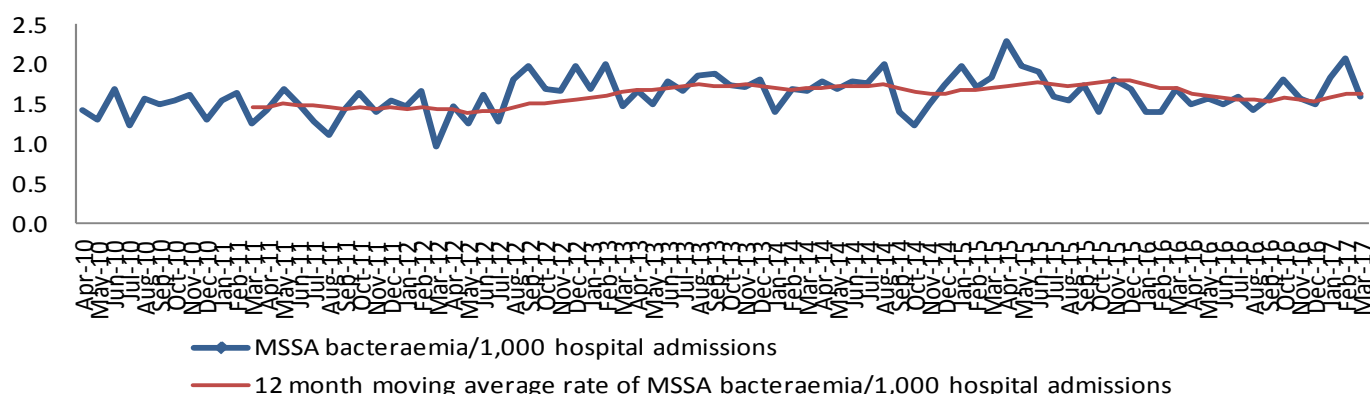
Wales

Table 3.2. Wales numbers and rates of MSSA bacteraemia per 1,000 hospital admissions and 100,000 population, Apr 10 – Mar 17

	Number of MSSA bacteraemia	Number of hospital admissions	MSSA bacteraemia/ 1,000 hospital admissions	Population*	MSSA bacteraemia/ 100,000 population
2016/17	744	456856	1.63	3099086	24.01
Mar 17	59	37220	1.59	263210	22.42
Feb 17	73	35046	2.08	237738	30.71
Jan 17	71	38620	1.84	263210	26.97
Dec 16	58	38964	1.49	263210	22.04
Nov 16	63	39998	1.58	254719	24.73
Oct 16	72	39527	1.82	263210	27.35
Sep 16	60	38212	1.57	254719	23.56
Aug 16	53	37382	1.42	263210	20.14
Jul 16	61	38361	1.59	263210	23.18
Jun 16	58	38570	1.50	254719	22.77
May 16	61	38557	1.58	263210	23.18
Apr 16	55	36399	1.51	254719	21.59
2015/16	765	449440	1.70	3099086	24.68
2014/15	759	446699	1.70	3092036	24.55
2013/14	751	442821	1.70	3082412	24.36
2012/13	728	439792	1.66	3074067	23.68
2011/12	651	455772	1.43	3063758	21.25
2010/11	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 17*



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