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

Report: Financial year (FY) report

Time period: 1st April 2014 to 31st March 2015

Health Board: Wales

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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 2014/15 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

- 1318 cases of *C. difficile* have been reported for the 2014/15 FY. This is a 16% decrease in numbers compared to the previous FY. The rate of *C. difficile* per 1,000 hospital admissions has decreased by 18%, from 3.61 to 2.95. (Table 1.1.)
- Compared to the previous FY, 6 of the 8 health boards/trust in Wales have achieved a reduction in numbers of *C. difficile*. (Table 1.1.)
- Compared to the 2010/11 FY, there has been a 53% decrease in the number of *C. difficile* and a 53% decrease in the rate of *C. difficile* per 1,000 hospital admissions in Wales. (Table 1.2.)
- 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 1.2.) Powys Teaching Health Board had some changes in data collection methods over this time period.
- 69% (910) of cases were diagnosed in the 18 acute hospitals, 8% (106) diagnosed in non-acute hospitals and 23% (302) in non-hospital locations.
- 64% (847) of cases were diagnosed in hospital inpatient locations. The inpatient rate for Wales is 1.90 per 1,000 hospital admissions for this period.
- 58% (768) of *C. difficile* were in female patients and 81% (1072) were in patients aged 66+ for the 12 month period.
- The rate of *C. difficile* per 100,000 population has decreased by 16% compared to the previous FY, from 51.16 to 42.76. (Table 1.2.)
- Compared to 2010/11 FY, the rate of *C. difficile* per 100,000 population has decreased by 53%. (Table 1.2.)

Table 1.1. Wales numbers of *C. difficile*, percentage change in numbers (from 2013/14 and 2010/11 FYs) and rates per 1,000 hospital admissions and 100,000 population by health board, 2014/15 FY

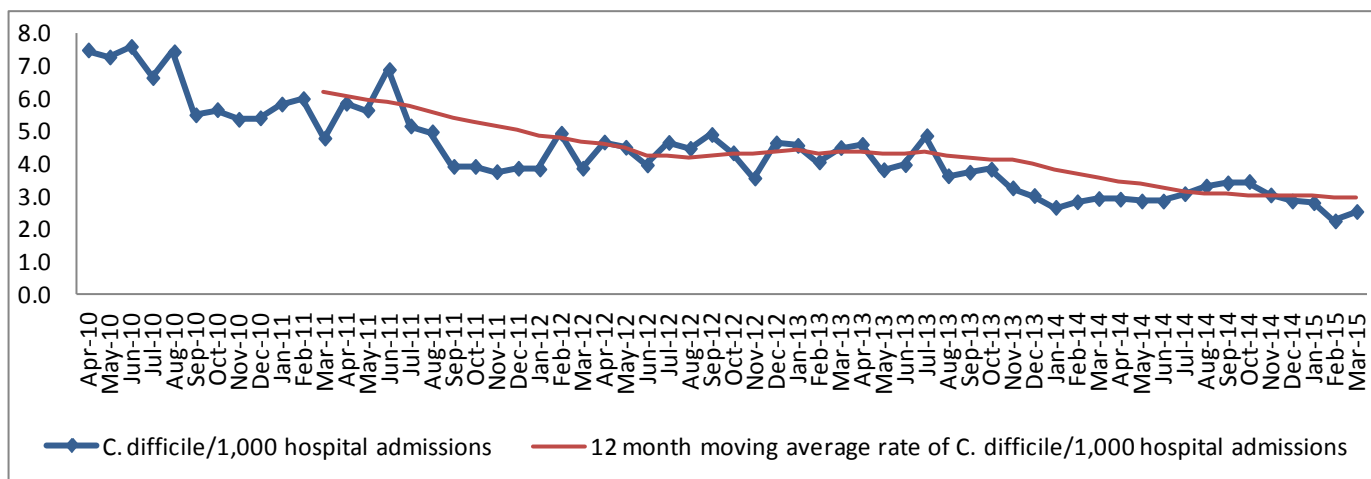
Health board /Trust	Number of <i>C. difficile</i>	% change in number of <i>C. difficile</i> from 2013/14 FY	% change in number of <i>C. difficile</i> from 2010/11 FY	<i>C. difficile</i> /1,000 hospital admissions	<i>C. difficile</i> /100,000 population
ABM	261	+19% (219)	-36% (411)	3.01	50.12
Aneurin Bevan	222	-42% (383)	-67% (679)	2.49	38.34
Betsi Cadwaladr	395	-12% (447)	-51% (805)	4.12	57.08
Cardiff and Vale	171	-34% (260)	-68% (527)	2.62	35.71
Cwm Taf	101	+23% (82)	-32% (148)	1.91	34.22
Hywel Dda	139	-6% (148)	-26% (188)	2.61	36.21
Powys Teaching	21	-13% (24)	+91% (11)	12.61	15.82
Velindre	8	-43% (14)	-69% (26)	4.84	N/A
Wales	1318	-16% (1577)	-53% (2795)	2.95	42.76
Wales average	165			4.28	38.21
Wales median	155			2.82	36.21

Table 1.2. Wales numbers and rates of *C. difficile* per 1,000 hospital admissions and 100,000 population, Apr 10 – Mar 15

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
2014/15 FY	1318	4446171	2.95	3082412	42.76
Mar 15	98	38626	2.54	253349	38.68
Feb 15	75	33346	2.25	261794	28.65
Jan 15	102	36340	2.81	253349	40.26
Dec 14	110	38491	2.86	261794	42.02
Nov 14	113	37127	3.04	261794	43.16
Oct 14	134	38790	3.45	253349	52.89
Sep 14	126	36917	3.41	253349	49.73
Aug 14	116	34986	3.32	261794	44.31
Jul 14	121	39252	3.08	253349	47.76
Jun 14	107	37459	2.86	261794	40.87
May 14	108	37782	2.86	261794	41.25
Apr 14	108	37055	2.91	253349	42.63
2013/14 FY	1577	437247	3.61	3074067	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 15*



*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 2014/15 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, 2014/15 FY

- 166 cases of MRSA bacteraemia have been reported for the 2014/15 FY. This is 1% increase in numbers compared to the previous FY. The rate of MRSA *bacteraemia* per 1,000 hospital admissions has decreased by 1%, from 0.38 to 0.37. (Table 2.1.)
- Compared to the previous FY, 4 of the 8 health boards/NHS 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 23% 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/NHS trust in Wales have achieved a reduction in numbers of MRSA bacteraemia. (Table 2.2.)
- 96% (159) of cases were diagnosed in the 18 acute hospitals. (Table 2.2.)
- 69% (115) of cases were diagnosed in hospital inpatient locations. The inpatient rate is 0.26 per 1,000 hospital admissions for this period.
- 35% (58) of MRSA bacteraemia were in female patients and 71% (118) were in patients aged 66+ for the 12 month period.
- The rate of MRSA bacteraemia per 100,000 population has increased by 1% compared to the previous FY, from 5.35 to 5.39. (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 2013/14 and 2010/11 FYs) and rates per 1,000 hospital admissions and 100,000 population by health board, 2014/15 FY

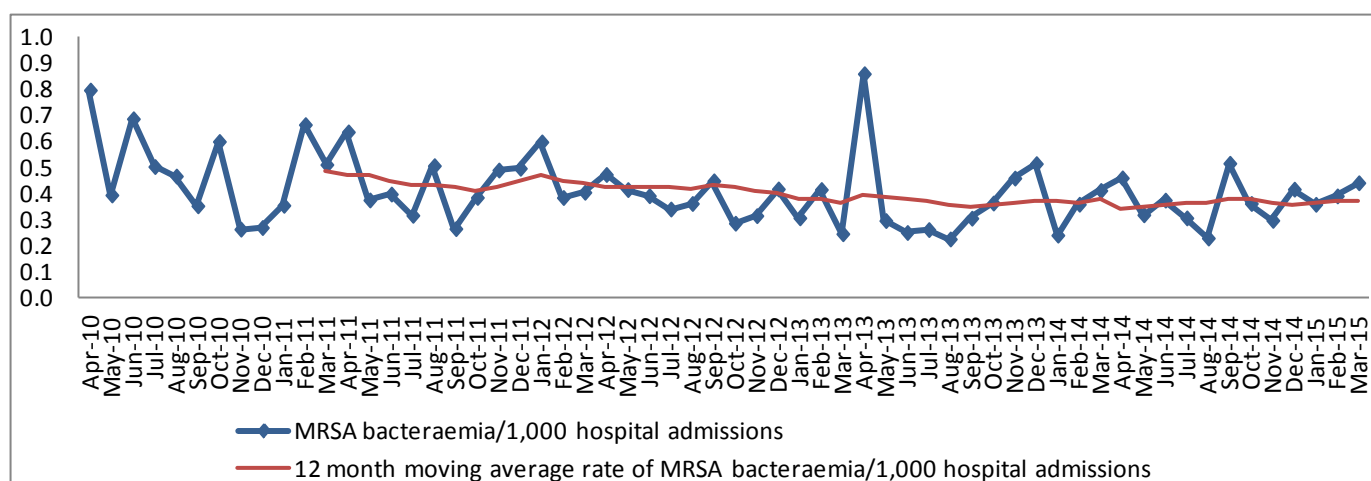
Health board	Number of MRSA bacteraemia	% change in number of MRSA bacteraemia from 2013/14 FY	% change in number of MRSA bacteraemia from 2010/11 FY	MRSA bacteraemia /1,000 hospital admissions	MRSA bacteraemia /100,000 population
ABM	22	-24% (29)	-53% (47)	0.25	4.23
Aneurin Bevan	24	+9% (22)	+9% (22)	0.27	4.14
Betsi Cadwaladr	38	-19% (47)	-31% (55)	0.40	5.49
Cardiff and Vale	44	+42% (31)	-12% (50)	0.67	9.19
Cwm Taf	15	+15% (13)	-25% (20)	0.28	5.08
Hywel Dda	23	+15% (20)	+15% (20)	0.43	5.99
Powys	0	-N/A (1)	N/A	0.00	0.00
Velindre	0	-N/A (2)	-N/A% (4)	0.00	N/A
Wales	166	+1% (165)	-24% (218)	0.37	5.39
Wales average	21			0.29	4.87
Wales median	23			0.28	5.08

Table 2.2. Wales numbers and rates of MRSA bacteraemia per 1,000 hospital admissions and 100,000 population, Apr 10 – Mar 15

Mth/Yr	Number of MRSA bacteraemia	Number of hospital admissions	MRSA bacteraemia/ 1,000 hospital admissions	Population*	MRSA bacteraemia/ 100,000 population
2014/15 FY	166	446171	0.37	3082412	5.39
Mar 15	17	38626	0.44	261794	6.49
Feb 15	13	33346	0.39	236459	5.50
Jan 15	13	36340	0.36	261794	4.97
Dec 14	16	38491	0.42	261794	6.11
Nov 14	11	37127	0.30	253349	4.34
Oct 14	14	38790	0.36	261794	5.35
Sep 14	19	36917	0.51	253349	7.50
Aug 14	8	34986	0.23	261794	3.06
Jul 14	12	39252	0.31	261794	4.58
Jun 14	14	37459	0.37	253349	5.53
May 14	12	37782	0.32	261794	4.58
Apr 14	17	37055	0.46	253349	6.71
2013/14 FY	165	437247	0.38	3082412	5.35
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 15*



*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 2014/15 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

Wales MSSA bacteraemia, 2014/15 FY

- 759 cases of MSSA bacteraemia have been reported for the 2014/15 FY. This is 1% increase in numbers compared to the previous FY. The rate of MSSA *bacteraemia* per 1,000 hospital admissions has decreased by 1%, from 1.72 to 1.70. (Table 3.1.)
- Compared to the previous FY, 4 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 15% increase in the number of MSSA bacteraemia and a 16% increase in the rate of MSSA bacteraemia per 1,000 hospital admissions. (Table 3.2.)
- Compared to the 2010/11 FY, 3 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.)
- 97% (738) of cases were diagnosed in the 18 acute hospitals.
- 57% (431) of cases were diagnosed in hospital inpatient locations. The inpatient rate is 0.97 per 1,000 hospital admissions for this period.
- 38% (291) of MSSA bacteraemia were in female patients and 50% (379) were in patients aged 66+ for the 12 month period.
- The rate of MSSA bacteraemia per 100,000 population has increased by 1% compared to the previous FY, from 24.36 to 24.62. (Table 3.1.)
- Compared to 2010/11 FY, the rate of MSSA bacteraemia per 100,000 population has increased by 14%. (Table 3.2.)

Table 3.1. Wales numbers of MSSA bacteraemia, percentage change in numbers (from 2013/14 and 2010/11 FYs) and rates per 1,000 hospital admissions and 100,000 population by health board, 2014/15 FY

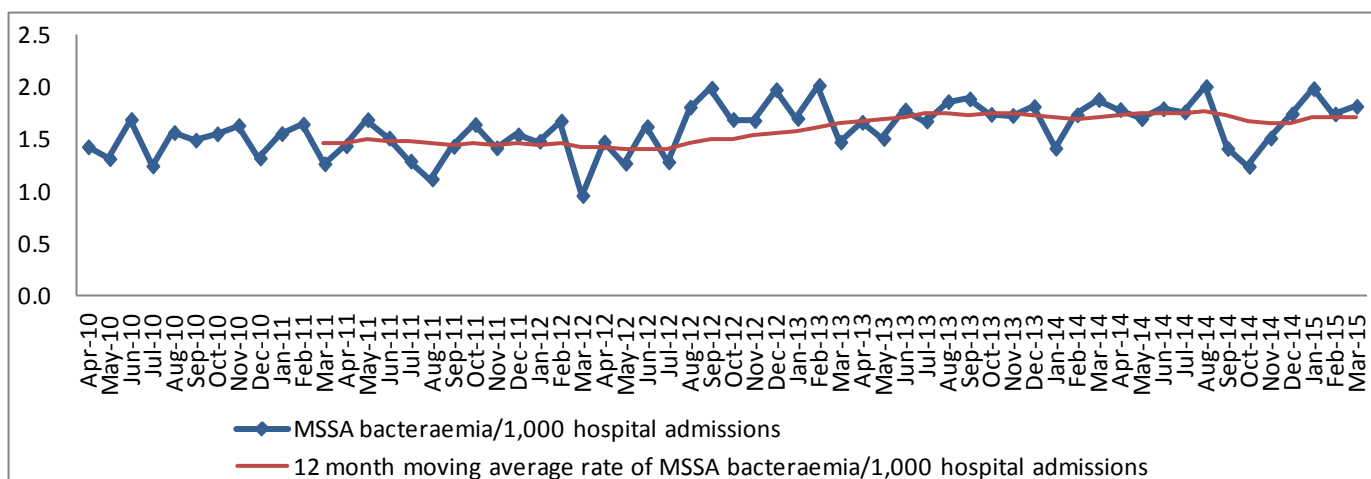
Health board	Number of MSSA bacteraemia	% change in number of MSSA bacteraemia from 2013/14 FY	% change in number of MSSA bacteraemia from 2010/11 FY	MSSA bacteraemia /1,000 hospital admissions	MSSA bacteraemia /100,000 population
ABM	147	-5% (155)	+21% (121)	1.70	28.23
Aneurin Bevan	110	-1% (111)	-4% (114)	1.23	18.99
Betsi Cadwaladr	141	+32% (107)	+9% (129)	1.47	20.38
Cardiff and Vale	140	-20% (176)	-10% (155)	2.15	29.24
Cwm Taf	98	+9% (90)	+100% (49)	1.86	33.21
Hywel Dda	121	+15% (105)	+42% (85)	2.27	31.52
Powys	0	=0% (0)	N/A	0.00	0.00
Velindre	2	-71% (7)	-67% (6)	1.21	N/A
Wales	759	+1% (751)	+15% (659)	1.70	24.62
Wales average	95			1.49	23.08
Wales median	116			1.58	28.23

Table 3.2. Wales numbers and rates of MSSA bacteraemia per 1,000 hospital admissions and 100,000 population, Apr 10 – Mar 15

Mth/Yr	Number of MSSA bacteraemia	Number of hospital admissions	MSSA bacteraemia/ 1,000 hospital admissions	Population*	MSSA bacteraemia/ 100,000 population
2014/15 FY	759	446171	1.70	3082412	24.62
Mar 15	70	38626	1.81	261794	26.74
Feb 15	58	33346	1.74	236459	24.53
Jan 15	72	36340	1.98	261794	27.50
Dec 14	67	38491	1.74	261794	25.59
Nov 14	56	37127	1.51	253349	22.10
Oct 14	48	38790	1.24	261794	18.34
Sep 14	52	36917	1.41	253349	20.53
Aug 14	70	34986	2.00	261794	26.74
Jul 14	69	39252	1.76	261794	26.36
Jun 14	67	37459	1.79	253349	26.45
May 14	64	37782	1.69	261794	24.45
Apr 14	66	37055	1.78	253349	26.05
2013/14 FY	751	437247	1.72	3082412	24.36
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 15*



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