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

Report: Bi-annual Report

Time period: 1st April to 30th September 2014

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 from April to September 2014, with trend data from April 2010.
- **Data for April to September 2014 is provisional.**
- 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 2013 population estimates have been used to calculate the 2014/15 population rates. These rates will be updated when the mid 2013 population estimates become available.

Wales

Wales *C. difficile*, Apr – Sep 14

- 686 cases of *C. difficile* have been reported for the 6 month period. This is a 24% decrease in numbers compared to the equivalent period last year. The rate of *C. difficile* per 1,000 hospital admissions has decreased by 25%, from 4.11 to 3.08. (Table 1.1.)
- Compared to the equivalent period last year, 6 of the 8 health boards/trust in Wales have achieved a reduction in numbers of *C. difficile*. (Table 1.1.)
- Compared to Apr – Sep 10, there has been a 56% decrease in the number of *C. difficile* and a 56% decrease in the rate of *C. difficile* per 1,000 hospital admissions in Wales. (Table 1.2.)
- Compared to the Apr – Sep 10, all 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.
- 69% (471) of cases were diagnosed in the 18 acute hospitals, 8% (52) diagnosed in non-acute hospitals and 23% (161) in non-hospital locations. 2 locations were not specified.
- 65% (446) of cases were diagnosed in hospital inpatient locations. The inpatient rate for Wales is 2.00 per 1,000 hospital admissions for this period.
- 59% (403) of *C. difficile* were in female patients and 80% (547) were in patients aged 66+ for the 6 month period.
- The rate of *C. difficile* per 100,000 population has decreased by 24% compared to the equivalent period last year, from 58.30 to 44.39. (Table 1.2.)
- Compared to Apr – Sep 10, the rate of *C. difficile* per 100,000 population has decreased by 57%. (Table 1.2.)

Table 1.1. Wales numbers of *C. difficile*, percentage change in numbers (from Apr – Sep 13) and rates per 1,000 hospital admissions and 100,000 population by health board, Apr – Sep 14

	Number of <i>C. difficile</i>	% change in number of <i>C. difficile</i> from Apr – Sep 13	% change in number of <i>C. difficile</i> from Apr – Sep 10	<i>C. difficile</i>/ 1,000 hospital admissions	<i>C. difficile</i> /100,000 population
ABM	147	+15% (128)	-34% (224)	3.35	56.31
Aneurin Bevan	114	-51% (232)	-69% (370)	2.61	39.26
Betsi Cadwaladr	179	-29% (252)	-55% (401)	3.71	51.59
Cardiff and Vale	103	-26% (140)	-71% (352)	3.18	42.90
Cwm Taf	60	+36% (44)	-38% (96)	2.28	40.55
Hywel Dda	74	-11% (83)	-28% (103)	2.78	38.45
Powys Teaching	4	-71% (14)	-43% (7)	5.01	6.01
Velindre	5	-38% (8)	-50% (10)	5.95	N/A
Wales	685	-24% (901)	-56% (1563)	3.08	44.39
Wales average	86	-22% (113)	-49% (195)	3.61	39.20
Wales median	89	-28% (106)	-46% (164)	3.27	40.55

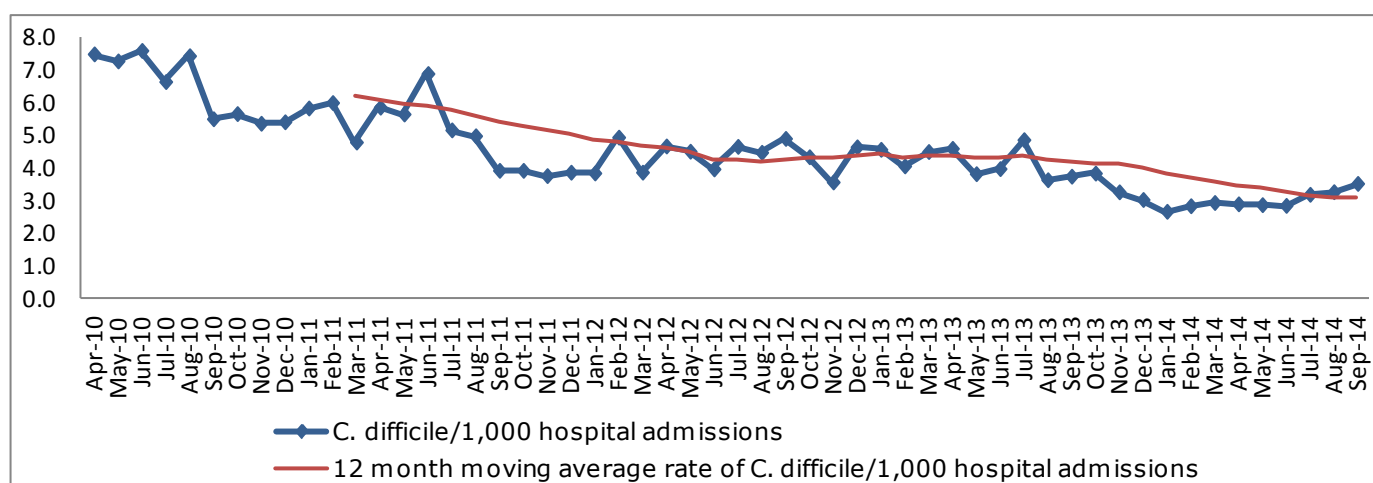
Wales

Table 1.2. Wales numbers and rates of *C. difficile* per 1,000 hospital admissions and 100,000 population, Apr 10 – Sep 14

	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
Apr – Sep 14	686	222610	3.08	1545428	44.39
Sep 14	127	36423	3.49	253349	50.13
Aug 14	116	34805	3.33	261794	44.31
Jul 14	123	39180	3.14	261794	46.98
Jun 14	105	37406	2.81	253349	41.44
May 14	108	37757	2.86	261794	41.25
Apr 14	107	37039	2.89	253349	42.23
2013/14 FY	1577	437247	3.61	3082412	51.16
Apr – Sep 13	901	219353	4.11	1545428	58.30
2012/13 FY	1934	439792	4.40	3074067	62.91
Apr – Sep 12	998	220574	4.52	1541245	64.75
2011/12 FY	2142	455772	4.70	3063758	69.91
Apr – Sep 11	1214	224821	5.40	1536076	79.03
Apr – Dec 10	2795	448561	6.23	3049971	91.64
Apr – Sep 10	1563	223855	6.98	1529164	102.21

*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 – Sep 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 from April to September 2014, with trend data from April 2010 (other than for Powys Health Board where data collection started in Apr 2011).
- **Data for April to September 2014 is provisional.**
- 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 2013 population estimates have been used to calculate the 2014/15 population rates. These rates will be updated when the mid 2013 population estimates become available.

Wales

Wales MRSA bacteraemia, Apr – Sep 14

- 82 cases of MRSA bacteraemia have been reported for the 6 month period. This is a 3% increase in numbers compared to the equivalent period last year. The rate of MRSA bacteraemia per 1,000 hospital admissions has increased by 1%, from 0.36 to 0.37. (Table 2.1.)
- Compared to the equivalent period last year, 4 of the 8 health boards/trust in Wales have achieved a reduction in numbers of MRSA bacteraemia. One health board had the same number of MRSA bacteraemia for both time periods. (Table 2.1.)
- Compared to Apr – Sep 10, there has been a 31% decrease in the number of MRSA bacteraemia and a 31% decrease in the rate of MRSA bacteraemia per 1,000 hospital admissions in Wales. (Table 2.2.)
- Compared to the Apr – Sep 10, 5 of the 8 health boards/trust in Wales have achieved a reduction in numbers of MRSA bacteraemia. One health board had the same number of MRSA bacteraemia for both time periods. (Table 2.3.) Powys Teaching Health Board had some changes in data collection methods over this time period.
- 94% (77) of cases were diagnosed in the 18 acute hospitals, 4% (3) diagnosed in non-acute hospitals and 0% in non-hospital locations. 2 locations were not specified.
- 67% (55) of cases were diagnosed in hospital inpatient locations. The inpatient rate for Wales is 0.25 per 1,000 hospital admissions for this period.
- 35% (29) of MRSA bacteraemia were in female patients and 72% (59) were in patients aged 66+ for the 6 month period.
- The rate of MRSA bacteraemia per 100,000 population has increased by 3% compared to the equivalent period last year, from 5.18 to 5.31. (Table 2.2.)
- Compared to Apr – Sep 10, the rate of MRSA bacteraemia per 100,000 population has decreased by 32%. (Table 2.2.)

Table 2.1. Wales numbers of MRSA bacteraemia, percentage change in numbers (from Apr – Sep 13) and rates per 1,000 hospital admissions and 100,000 population by health board, Apr – Sep 14

	Number of MRSA bacteraemia	% change in number of MRSA bacteraemia from Apr – Sep 13	% change in number of MRSA bacteraemia from Apr – Sep 10	MRSA bacteraemia /1,000 hospital admissions	MRSA bacteraemia /100,000 population
ABM	13	+8% (12)	-55% (29)	0.30	4.98
Aneurin Bevan	10	-17% (12)	-9% (11)	0.23	3.44
Betsi Cadwaladr	18	-25% (24)	-36% (28)	0.37	5.19
Cardiff and Vale	21	+75% (12)	-5% (22)	0.65	8.75
Cwm Taf	6	+100% (3)	-45% (11)	0.23	4.05
Hywel Dda	14	-7% (15)	-13% (16)	0.53	7.27
Powys Teaching	0	-100% (1)	N/A	0.00	0.00
Velindre	0	-100% (1)	-100% (2)	0.00	N/A
Wales	82	+3% (80)	-31% (119)	0.37	5.31
Wales average	10	-8% (10)	-37% (17)	0.29	4.81
Wales median	12	-12% (12)	-36% (16)	0.26	4.98

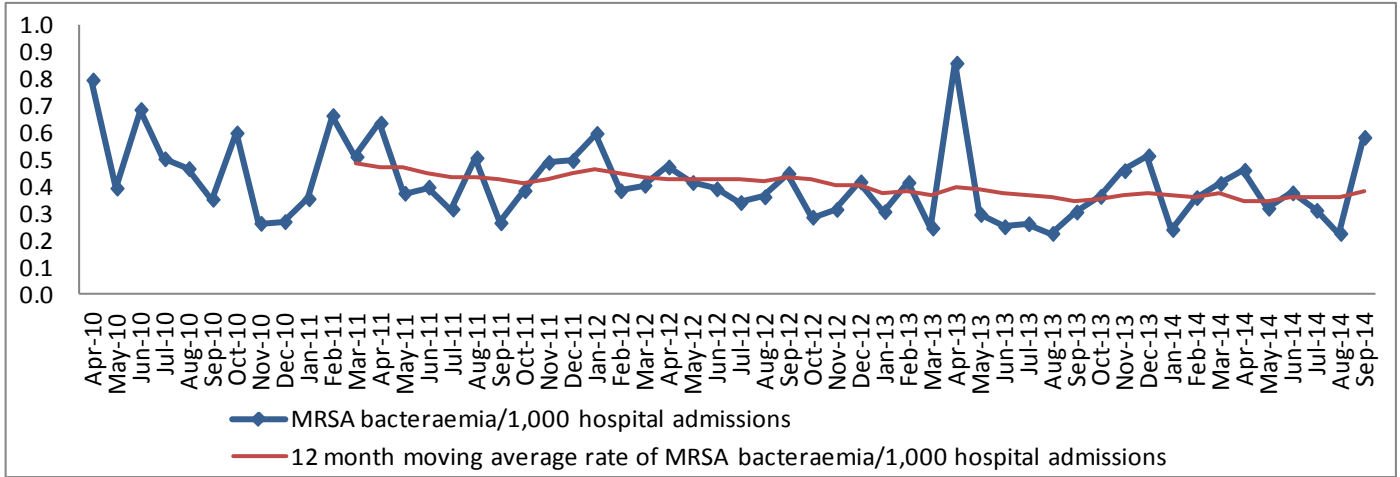
Table 2.2. Wales numbers and rates of MRSA bacteraemia per 1,000 hospital admissions and 100,000 population, Apr 10 – Sep 14

	Number of MRSA bacteraemia	Number of hospital admissions	MRSA bacteraemia/ 1,000 hospital admissions	Population*	MRSA bacteraemia/ 100,000 population
Apr – Sep 14	82	222610	0.37	1545428	5.31
Sep 14	19	36423	0.52	253349	7.50
Aug 14	8	34805	0.23	261794	3.06
Jul 14	12	39180	0.31	261794	4.58
Jun 14	14	37406	0.37	253349	5.53
May 14	12	37757	0.32	261794	4.58
Apr 14	17	37039	0.46	253349	6.71
2013/14 FY	165	437247	0.38	3082412	5.35
Apr – Sep 13	80	219353	0.36	1545428	5.18
2012/13 FY	161	439792	0.37	3074067	5.24
Apr – Sep 12	89	220574	0.40	1541245	5.77
2011/12 FY	199	455772	0.44	3063758	6.50
Apr – Sep 11	93	224821	0.41	1536076	6.05
Apr – Dec 10	218	448561	0.49	3049971	7.15
Apr – Sep 10	119	223855	0.53	1529164	7.78

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

Wales

Figure 2.1. Wales monthly and 12 month moving average rates of MRSA bacteraemia per 1,000 hospital admissions, Apr 10 – Sep 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 from April to September 2014, with trend data from April 2010 (other than for Powys Health Board where data collection started in Apr 2011).
- **Data for April to September 2014 is provisional.**
- 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 2013 population estimates have been used to calculate the 2014/15 population rates. These rates will be updated when the mid 2013 population estimates become available.

Wales

Wales MSSA bacteraemia, Apr – Sep 14

- 389 cases of MSSA bacteraemia have been reported for the 6 month period. This is a 3% increase in numbers compared to the equivalent period last year. The rate of MSSA bacteraemia per 1,000 hospital admissions has increased by 1%, from 1.72 to 1.75. (Table 3.1.)
- Compared to the equivalent period last year, 2 of the 8 health boards/trust in Wales have achieved a reduction in numbers of MSSA bacteraemia. (Table 3.1.)
- Compared to Apr – Sep 10, there has been a 20% increase in the number of MSSA bacteraemia and a 20% increase in the rate of MSSA bacteraemia per 1,000 hospital admissions in Wales. (Table 3.2.)
- Compared to the Apr – Sep 10, 2 of the 8 health boards/trust in Wales have achieved a reduction in numbers of MSSA bacteraemia. (Table 3.3.) Powys Teaching Health Board had some changes in data collection methods over this time period.
- 96% (375) of cases were diagnosed in the 18 acute hospitals, 2% (7) diagnosed in non-acute hospitals and 1% (2) in non-hospital locations. 5 locations were not specified.
- 61% (238) of cases were diagnosed in hospital inpatient locations. The inpatient rate for Wales is 1.07 per 1,000 hospital admissions for this period.
- 40% (155) of MSSA bacteraemia were in female patients and 47% (183) were in patients aged 66+ for the 6 month period.
- The rate of MSSA bacteraemia per 100,000 population has increased by 3% compared to the equivalent period last year, from 24.46 to 25.17. (Table 3.2.)
- Compared to Apr – Sep 10, the rate of MSSA bacteraemia per 100,000 population has increased by 18%. (Table 3.2.)

Table 3.1. Wales numbers of MSSA bacteraemia, percentage change in numbers (from Apr – Sep 13) and rates per 1,000 hospital admissions and 100,000 population by health board, Apr – Sep 14

	Number of MSSA bacteraemia	% change in number of MSSA bacteraemia from Apr – Sep 13	% change in number of MSSA bacteraemia from Apr – Sep 10	MSSA bacteraemia /1,000 hospital admissions	MSSA bacteraemia /100,000 population
ABM	80	+1% (79)	+43% (56)	1.83	30.64
Aneurin Bevan	60	+2% (59)	-3% (62)	1.37	20.67
Betsi Cadwaladr	72	+24% (58)	+7% (67)	1.49	20.75
Cardiff and Vale	74	-11% (83)	+21% (61)	2.29	30.82
Cwm Taf	48	+7% (45)	+71% (28)	1.83	32.44
Hywel Dda	53	+8% (49)	+10% (48)	1.99	27.54
Powys Teaching	0	0% (0)	N/A	0.00	0.00
Velindre	2	-60% (5)	-33% (3)	2.38	N/A
Wales	389	+3% (378)	+20% (325)	1.75	25.17
Wales average	49	-4% (47)	+17% (46)	1.65	23.27
Wales median	57	+1% (54)	+10% (56)	1.83	27.54

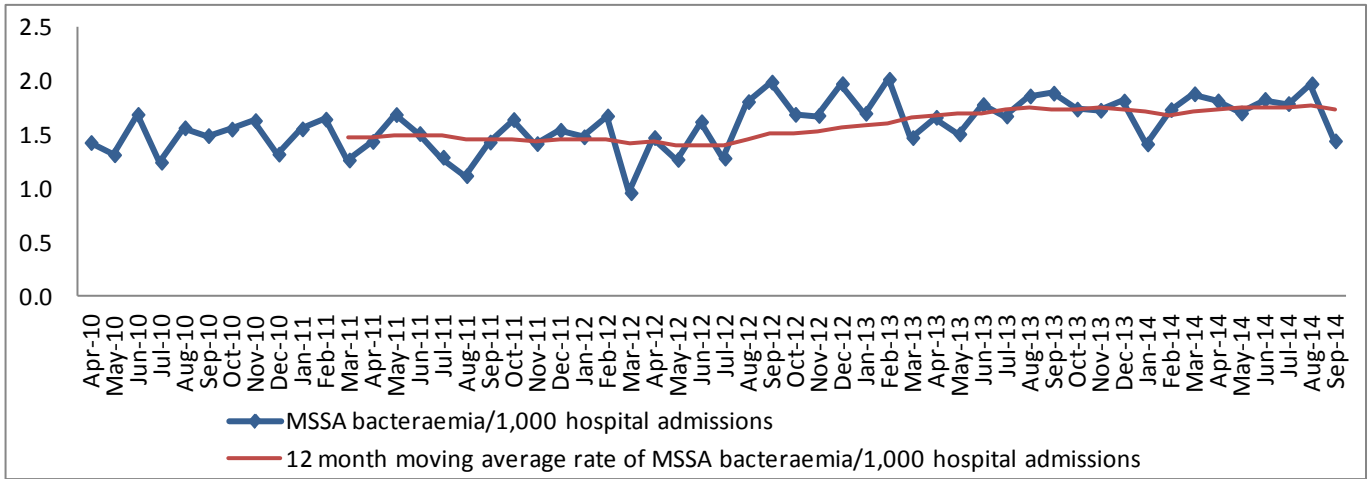
Table 3.2. Wales numbers and rates of MSSA bacteraemia per 1,000 hospital admissions and 100,000 population, Apr 10 – Sep 14

	Number of MSSA bacteraemia	Number of hospital admissions	MSSA bacteraemia/ 1,000 hospital admissions	Population*	MSSA bacteraemia/ 100,000 population
Apr – Sep 14	389	222610	1.75	1545428	25.17
Sep 14	52	36423	1.43	253349	20.53
Aug 14	70	34805	2.01	261794	26.74
Jul 14	70	39180	1.79	261794	26.74
Jun 14	67	37406	1.79	253349	26.45
May 14	64	37757	1.70	261794	24.45
Apr 14	66	37039	1.78	253349	26.05
2013/14 FY	751	437247	1.72	3082412	24.36
Apr – Sep 13	378	219353	1.72	1545428	24.46
2012/13 FY	728	439792	1.66	3074067	23.68
Apr – Sep 12	345	220574	1.56	1541245	22.38
2011/12 FY	651	455772	1.43	3063758	21.25
Apr – Sep 11	317	224821	1.41	1536076	20.64
Apr – Dec 10	659	448561	1.47	3049971	21.61
Apr – Sep 10	325	223855	1.45	1529164	21.25

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

Wales

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



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