

Staphylococcus aureus Blood Stream Infection (Bacteraemia) Surveillance

All Wales Data per 100 000 Bed Days

Commentary

Data from the *Staphylococcus aureus* blood stream infection (bacteraemia) surveillance has now been collected and analysed for the time period from 01.04.01 to 31.12.05. During this time the All Wales rate for *Staph. aureus* bacteraemia has remained fairly constant, moving up and down around an average rate of 27 cases per 100,000 bed days, with a range of 24 – 30 cases per 100,000 bed days.

These data have historically been presented per 1000 bed days, but have been presented per 100,000 bed days since the introduction of the top ten bacteraemia surveillance scheme in April 2006, so that the two schemes are compatible. The *Staph. aureus* bacteraemia data from England is presented per 10,000 bed days, so if you wish to compare these Welsh data with the English data please DIVIDE the Welsh figures by 10.

Since the 14th quarter of data (July 2004 – September 2004), these data have been analysed using Statistical Process Control Charts (SPC). These charts allow us to distinguish between natural variation that occurs as numbers of cases vary by chance (rates fall between set limits on the chart), and a situation where something unusual is occurring (rates fall outside the limits set on the chart). These charts are most useful for individual Trusts as they can investigate any unusual trends or incidences at the local level in their own hospitals. At a National level a major problem or improvement in several Trusts would be required to record unusual events on the national SPC chart. No such problem or improvement has been identified during the surveillance period and all changes in rates can be attributed to chance.

Staph. aureus (MSSA) bacteraemia rates for All Wales have also remained steady, moving up and down around a mean of 16 cases per 100,000 bed days, with a range of 13 – 20 cases per 100,000 bed days.

Staph. aureus (MRSA) bacteraemia rates for All Wales show a natural variation around a mean of 11 cases per 100,000 bed days, with a range of 9 – 13 cases per 100,000 bed days. Although there is a suggestion of a declining rate over the last year and a half the decline is not significantly different from the average rate and could be explained by chance alone.

Currently the MRSA rate for Wales as a whole remains below that for England. In general, rates of MRSA have stabilised or decreased in most Trusts in Wales over the years the surveillance of *Staph. aureus* blood stream infections (bacteraemia) has been conducted.

The percentage of *Staph. aureus* bacteraemia that are MRSA varies considerably between Trusts in Wales, but the overall figure for Wales is 38% for the surveillance period 1.01.05 – 31.12.05. The figures for England are comparable for this same time period.

Across Europe data is available from the European Antimicrobial Resistance Surveillance Scheme (EARSS), which reports on the proportion of invasive isolates of *Staphylococcus aureus* that are MRSA. The lowest rates are seen in Northern Europe in the Scandinavian

countries, Spain and France report figures of between 20 and 30% MRSA, other Mediterranean countries report similar rates to the UK & Ireland of 30 – 40% and Romania reported that 73% of its *Staph. aureus* were MRSA (EARSS report 2004).

Rates of *Staphylococcus aureus* Blood Stream Infections per 100 000 bed days

For the *Staphylococcus aureus* blood stream infection (bacteraemia) surveillance scheme, rates produced for reports have historically used 1000 bed days as the standard comparison denominator. However, the Top Ten Blood Stream Infection (bacteraemia) surveillance uses 100 000 bed days as the standard comparison denominator. To allow comparisons between the two schemes, the *Staph. aureus* data published for each Trust has been recalculated to be per 100 000 bed days. However to allow comparison with the English scheme, which is presented per 10,000 bed days please divide the Welsh figures by 10.

All Wales Annual Data: 01/01/05 – 31/12/05

	Blood Culture Sets Taken (BCS)	Positive Blood Cultures (PBS)*	Total <i>S.aureus</i>	MRSA	Bed days	% of BCS that are MRSA	% of PBS that are MRSA	% of <i>S.aureus</i> that are MRSA	BCS / 100 000 bed days	PBS/ 100 000 bed days	Total <i>S.aureus</i> /100 000 bed days	MRSA/ 100 000 bed days
Total	88121	12609	991	384	3882754	0.44	3.05	38.75	2270	325	26	10
Mean	7343.42	1050.75	82.58	32.00	323563	0.44	3.09	38.30	2526	356	28	11
Median	6133.50	852.00	64.50	27.50	265275	0.39	2.77	38.05	2307	358	23	9
Min	1074	122	14	5	19965	0.24	1.52	26.32	1585	248	17	5
Max	19843	2745	221	90	722076	0.92	5.74	56.94	5380	611	75	35

*Including duplicates and contaminants

All Wales Quarterly Trend Data: 01/04/01 – 31/12/05

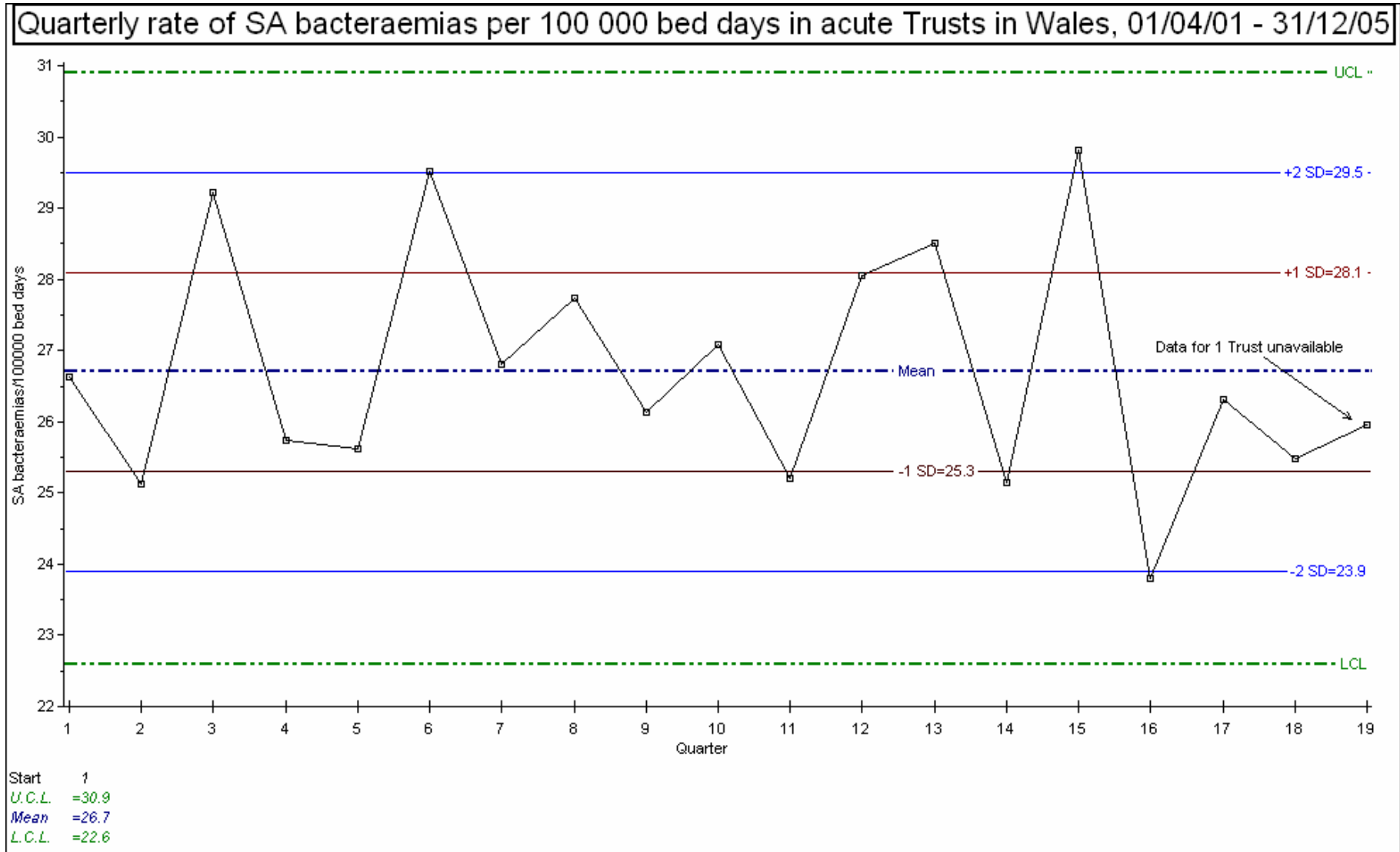
Quarter	Quarter no	MRSA	MSSA	Total <i>S. aureus</i>	Bed days	MRSA/100 000 bed days	MSSA/100 000 bed days	SA/100 000 bed days
Apr 01 - Jun 01	1	110	164	274	1029087	11	16	27
Jul 01 - Sep 01	2	97	159	256	1018970	10	16	25
Oct 01 - Dec 01	3	136	168	304	1040908	13	16	29
Jan 02 - Mar 02	4	123	153	276	1072739	11	14	26
Apr 02 - Jun 02	5	115	153	268	1045924	11	15	26
Jul 02 - Sep 02	6	127	178	305	1033039	12	17	30
Oct 02 - Dec 02	7	121	155	276	1029996	12	15	27
Jan 03 - Mar 03	8	123	175	298	1074792	11	16	28
Apr 03 - Jun 03	9	119	156	275	1052235	11	15	26
Jul 03 - Sep 03	10	115	164	279	1029986	11	16	27
Oct 03 - Dec 03	11	120	142	262	1039490	12	14	25
Jan 04 - Mar 04	12	135	165	300	1069041	13	15	28
Apr 04-Jun 04	13	122	174	296	1038283	12	17	29
Jul 04 - Sep 04	14	100	156	256	1018268	10	15	25
Oct 04 - Dec 04	15	105	198	303	1014098	10	20	30
Jan 05 - Mar 05	16	112	142	254	1074780	10	13	24
Apr 05 - Jun 05	17	108	164	272	1082014	10	15	25
Jul 05 - Sep 05	18	95	159	254	1020796	9	16	25
Oct 05 - Dec 05	19	92	155	247	951882	10	16	26

NB One Trust was unable to provide data for the Oct-Dec 05 quarter, so have not been included in the report.

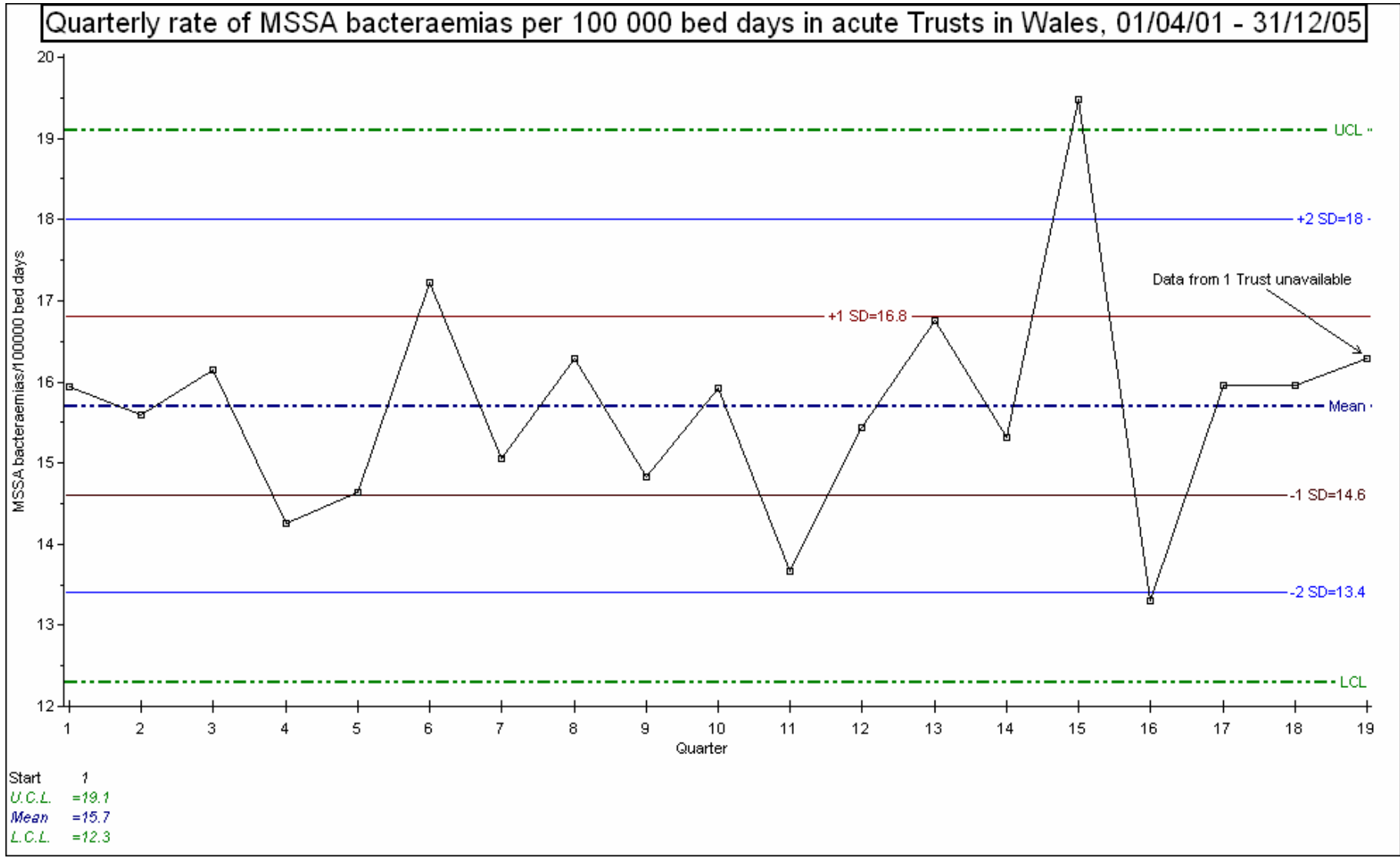
All Wales Statistical Process Control Charts for Rates of *S. aureus* Blood Stream Infections per 100 000 Bed Days

Data from the *Staphylococcus aureus* blood stream infection (bacteraemia) surveillance are used to produce statistical process control (SPC) charts. These compare a Trust's rate of infection with calculated upper and lower control limits, which allow natural variation in rates to be distinguished from situations where something unusual is occurring. SPC charts are used to compare rates within a Trust over time and between equivalent Trusts at a given point in time. Trusts are asked to investigate if their rates fall outside the control limits of the SPC charts. More information about the statistical analyses performed on the *S. aureus* data and what the results mean is provided in the section on the *S. aureus* Blood Stream Infections surveillance scheme.

SPC Chart for Quarterly *S. aureus* Blood Stream (Bacteraemia) Rates: 01/04/01 – 31/12/05



SPC Chart for Quarterly MSSA Blood Stream (Bacteraemia) Rates: 01/04/01 – 31/12/05



SPC Chart for Quarterly MRSA Blood Stream (Bacteraemia) Rates: 01/04/01 – 31/12/05

