

SECTION I BACTERAEMIA IN RRT RECIPIENTS: A JOINT REPORT WITH HEALTH PROTECTION SCOTLAND



This section's data are available on-line in Tableau format which enables interaction with the data: <http://www.srr.scot.nhs.uk/publications/Dashboards/Bacteraemia.html>.

Patients treated by renal replacement therapy (RRT) for established renal failure are at high risk of infection with associated increased morbidity and mortality. Infection was the second most frequent cause of death of RRT recipients in 2016.

All bacteraemia in Scotland, that is bacteria being detected within a patient's blood stream by means of a positive blood culture, are reported directly from microbiology laboratories to Health Protection Scotland (HPS) using the Electronic Communication of Surveillance in Scotland (ECOSS) system. Methicillin resistant *Staphylococcus aureus* (MRSA) bacteraemia incidence surveillance has been mandatory in Scotland since 2001 and surveillance was extended in 2006 to include methicillin sensitive *S. aureus* (MSSA). In addition, mandatory *Escherichia coli* bacteraemia surveillance was introduced in Scotland in April 2016. Whilst surveillance of bacteraemia with other organisms is not mandatory, all positive blood cultures are reported to ECOSS enabling these data to be used robustly in epidemiological analyses.

Database linkage was performed between the Scottish Renal Registry including all patients who have received RRT in Scotland and ECOSS bacteraemia data namely *S. aureus*, *Staphylococcus epidermidis*, *Streptococcus* sp., *E. coli*, *Klebsiella* sp. and *Pseudomonas* sp.. These organisms were chosen due to their clinical significance in RRT patients. For the purpose of the analyses, *E. coli*, *Klebsiella* sp. and *Pseudomonas* sp. were grouped as Gram negative organisms. Linkage was performed for the period 01 January 2012 to 31 December 2016. An episode of bacteraemia was defined as a bacteraemia in a patient without a previous episode of bacteraemia with the same organism in the preceding two weeks.

I1 Bacteraemia reported in patients treated by RRT 2012-2016

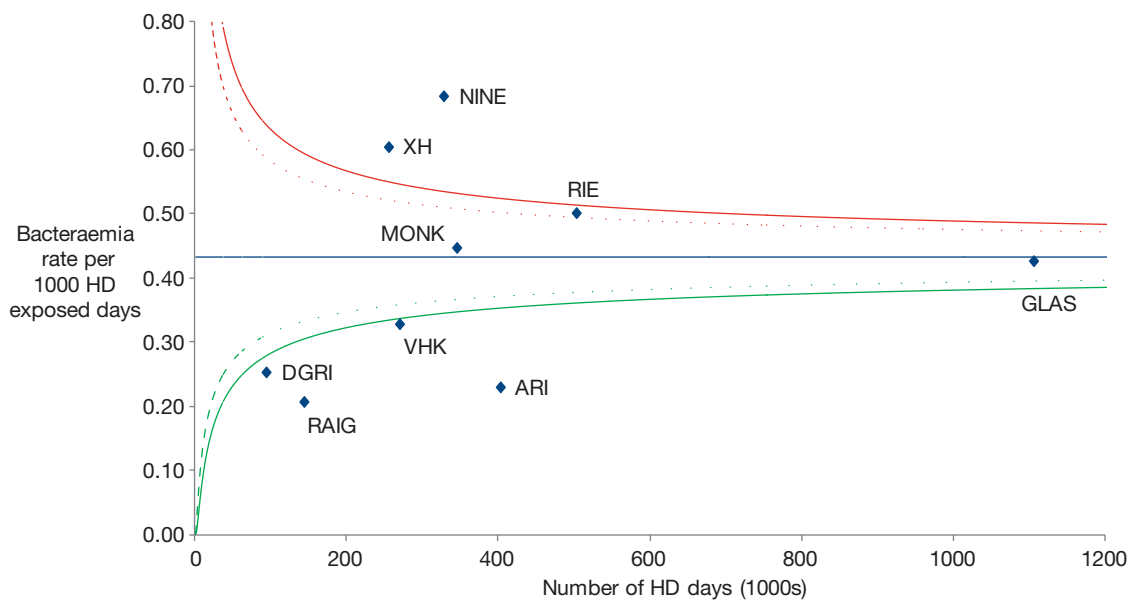
I1.1 Incidence of Bacteraemia in RRT population 2012-2016 by modality of RRT

Organism	HD		PD		Tx		All
	n	%	n	%	n	%	n
Gram negative*	353	50	18	3	329	47	700
<i>Staphylococcus aureus</i>	493	91	12	2	37	7	542
<i>Staphylococcus epidermidis</i>	478	84	17	3	75	13	570
<i>Streptococcus sp.</i>	187	80	8	3	38	16	233
Total	1511	74	55	3	479	23	2045

* Gram negative organism group comprises *Escherichia coli*, *Klebsiella sp.* and *Pseudomonas sp.*

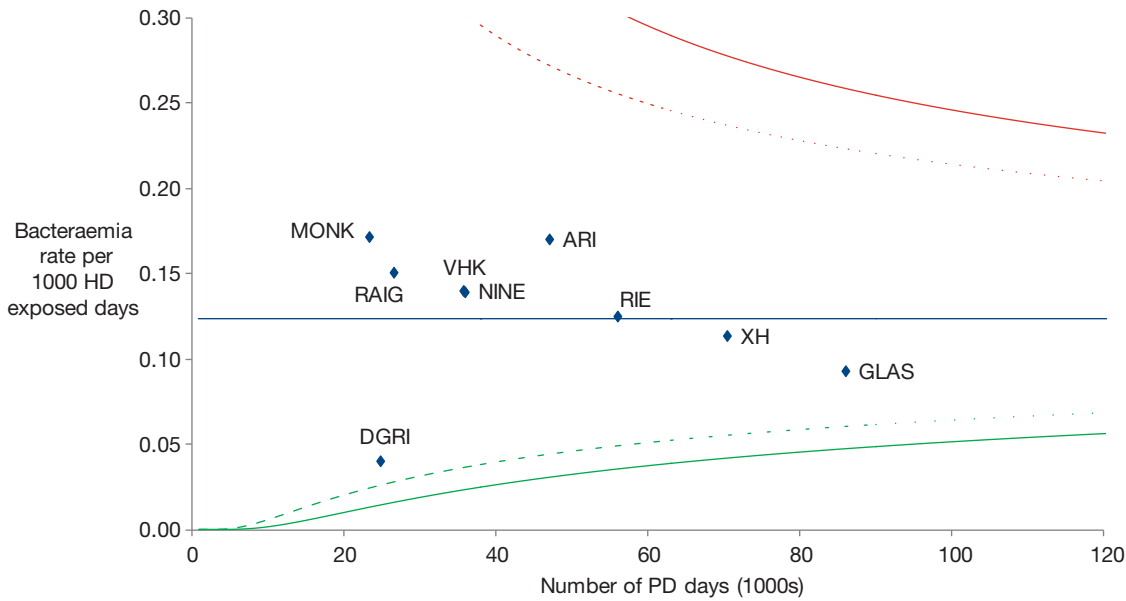
S. epidermidis, a member of the coagulase negative *Staphylococcus* group, are commonly found on the skin and may be identified in blood cultures incidentally due to a breakdown in technique during collection of blood cultures. *S. epidermidis* bacteraemia rates should be interpreted with some caution as clinical investigation, not undertaken whilst using a data linkage approach to measurement of bacteraemia outcome, is required to assess whether the bacteraemia are significant or due to contaminated blood cultures.

I1.2 Haemodialysis patient bacteraemia* rate per 1000 HD treatment days by adult renal unit 2012-2016



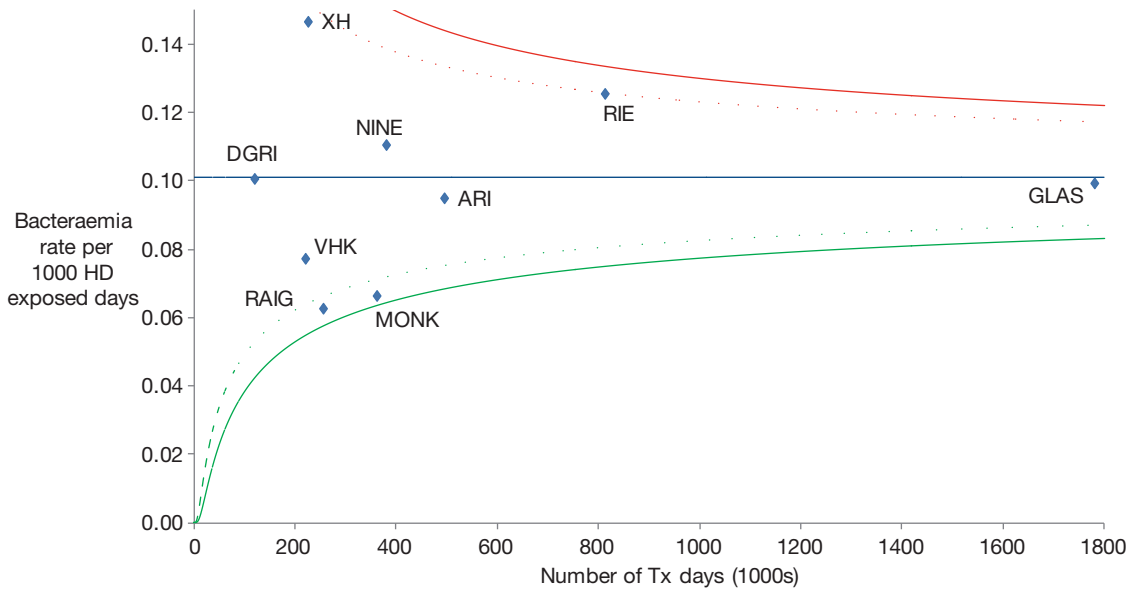
* Includes *S. aureus*, *S. epidermidis*, *Streptococcus sp.* and Gram negative group as previously defined.

11.3 Peritoneal dialysis patient bacteraemia* rate per 1000 PD treatment days by adult renal unit 2012-2016



*Includes *S. aureus*, *S. epidermidis*, *Streptococcus* sp. and Gram negative group as previously defined.

11.4 Transplanted patient bacteraemia* rate per 1000 Tx treatment days by adult renal unit 2012-2016



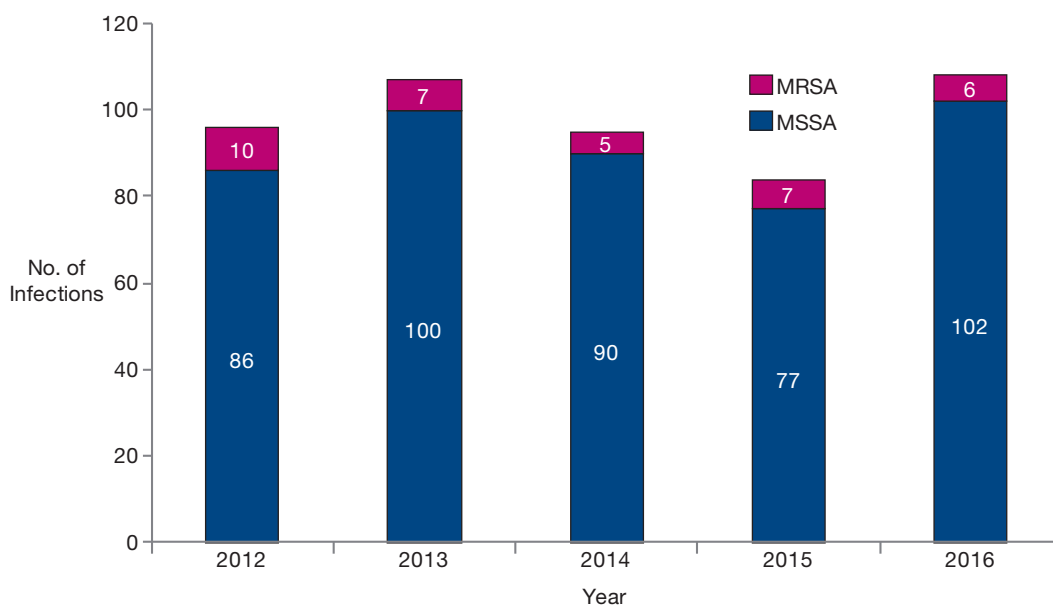
*Includes *S. aureus*, *S. epidermidis*, *Streptococcus* sp. and Gram negative group as previously defined.

Graphs I1.2, I1.3 and I1.4 show the bacteraemia rate occurring in patients treated by each mode of RRT. The number of treatment days for each modality is the total number of days provided at each adult unit for all patients in the time period 2012-2016.

Across Scotland as a whole during 2012-2016 one bacteraemia episode occurred in every 2307 days of delivered haemodialysis; every 8110 days of delivered peritoneal dialysis and 9880 days in patients with a kidney transplant.

I2 Staphylococcus aureus bacteraemia reported in patients treated by RRT 2012-2016

I2.1 Incidence of MRSA and MSSA bacteraemia reported in RRT patients in Scotland 2012-2016



I2.2 Staphylococcus aureus bacteraemia rate for haemodialysis patients by adult renal unit 2012-2016

Unit	Rate per 1000 HD Days 2012-2016	95% CI
ARI	0.08	(0.05, 0.11)
XH	0.17	(0.12, 0.23)
DGRI	0.15	(0.08, 0.25)
GLAS	0.18	(0.16, 0.21)
MONK	0.16	(0.12, 0.21)
NINE	0.15	(0.11, 0.2)
RAIG	0.09	(0.05, 0.15)
RIE	0.09	(0.07, 0.12)
VHK	0.14	(0.1, 0.19)
SCOTLAND	0.14	(0.13, 0.16)

12.3 Staphylococcus aureus bacteraemia (SAB) rate for haemodialysis patients by adult renal unit 2012-2016

