



Vascular Access–Related Bloodstream Infections in Hemodialysis Patients, Québec, Surveillance Results 2012–2013

Healthcare-Associated Infections Provincial Surveillance Program

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From April 1, 2012, to March 31, 2013, 42 hemodialysis units took part in the surveillance of vascular access–related bloodstream infections (VARBSIs) in hemodialysis (HD) patients, for a combined total of 51,697 patient periods (Table 1). The participating units reported 218 VARBSIs in 209 patients. Patient periods involving a fistula accounted for 44.9% of cases. The VARBSI incidence rate was 0.19 cases per 100 patient periods for patients with an arteriovenous (AV) fistula, 0.26 for patients with a synthetic fistula (graft), 0.55 for patients with a permanent catheter and 5.06 for patients with a temporary catheter. Incidence rates in 2012–2013 by type of vascular access were stable compared to 2008–2012 despite an increasing proportion of catheter use. The incidence rates for patients with a catheter of either type decreased significantly. The program has been compulsory since 2011–2012, which means the number of participating units has remained unchanged since then.

TABLE 1 Participation of Hemodialysis Units in the Surveillance of VARBSIs in Hemodialysis Patients, Québec, 2008–2009 to 2012–2013

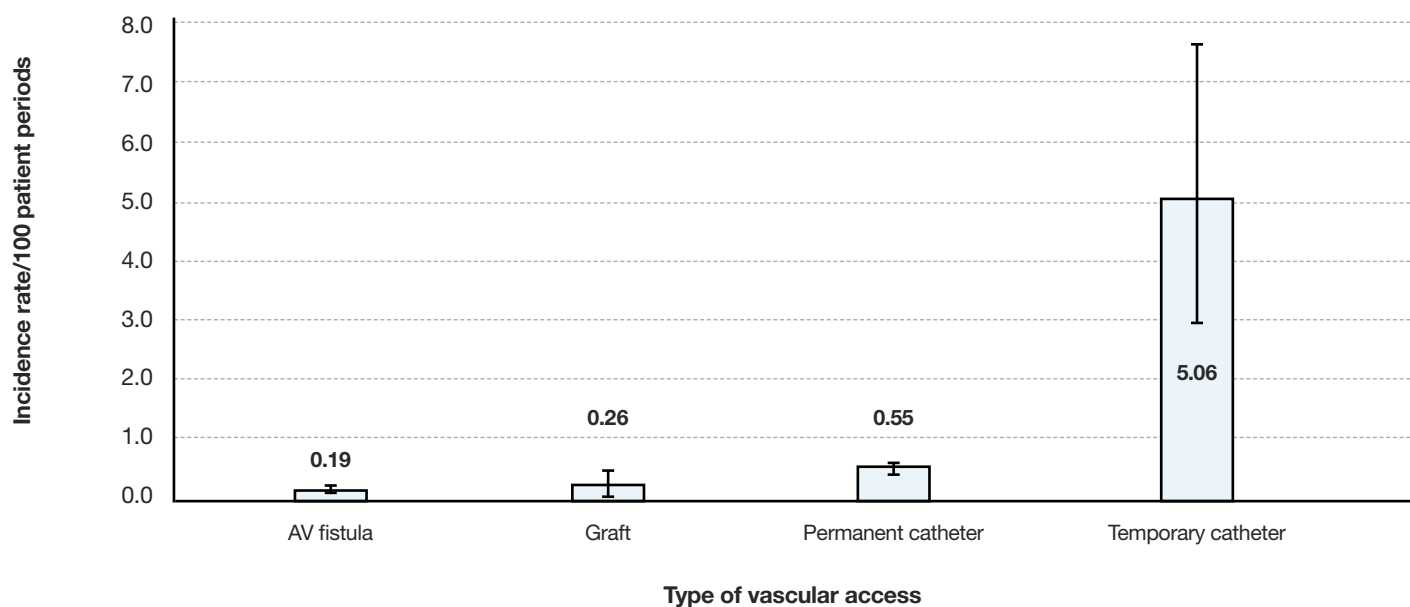
	2008–2009	2009–2010	2010–2011	2011–2012	2012–2013
Units (N)	24	26	30	42	42
Patients monitored (average number per period)	2,936	3,035	3,337	3,871	3,977
Patient periods* (N)	38,172	39,458	43,387	50,327	51,697
Patient months (N)	35,729	36,947	40,607	47,245	48,340
Dialysis sessions (N)	459,375	475,033	522,087	607,436	621,516
Vascular-access days (N)	553,662	592,317	659,463	753,432	798,816
VARBSIs (cat. 1 and 2b, N)	179	199	191	216	218
VARBSIs with AV fistulas or grafts (N)	22	35	30	38	46
VARBSIs with permanent or temporary catheters (N)	157	164	161	178	172
Infected patients (N)	170	186	182	208	209

*One period corresponds to 28 days for a total of 13 periods per year.

Incidence Rates

In 2012–2013, the VARBSI incidence rate was 0.19 cases per 100 patient periods for patients with an AV fistula, 0.26 for patients with a graft, 0.55 for patients with a permanent catheter and 5.06 for patients with a temporary catheter. Therefore, compared with an AV fistula, the relative risk of contracting a VARBSI was 26.6 times greater with a temporary catheter, 2.9 times greater with a permanent catheter and 1.4 times greater with a graft. The risk associated with a temporary catheter was 9.2 times higher than with a permanent catheter ($p < 0.05$), which itself was 2.1 times greater than with a graft ($p < 0.05$). The incidence rate for patients with a graft was not significantly different from those with an AV fistula.

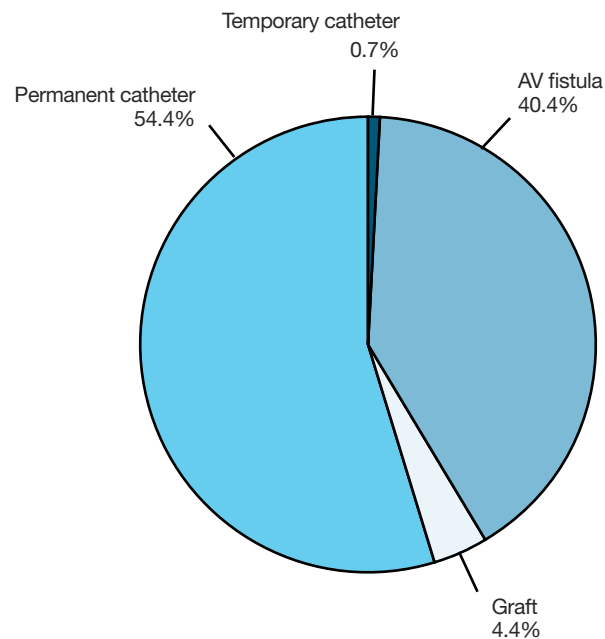
FIGURE 1 VARBSI Incidence Rate by Type of Vascular Access, Québec, 2012–2013 (Incidence Rate per 100 Patient Periods [95% CI])



95% CI: 95% confidence interval

Permanent catheters are the most commonly used type of vascular access, followed by AV fistulas (Figure 2).

FIGURE 2 Breakdown of Patient Periods by Type of Vascular Access, Québec, 2012–2013 (%)



Incidence Rate Trends

In 2012–2013, the incidence rates by type of vascular access were comparable to 2008–2012 rates (Table 2 and Figures 3 and 4). However, the incidence rates per 100 patient periods and per 1,000 vascular-access days for patients with either type of catheter decreased significantly ($p = 0.03$ in both cases). This decrease may be attributable to a slight, non-significant drop in the rates for both types of catheters, combined with a slight drop in the proportion of patients with a temporary catheter, for whom the rates are significantly higher (Tables 2 and 3).

FIGURE 3 VARBSI Incidence Rates by Type of Vascular Access, Québec, 2008–2012 and 2012–2013 (Incidence Rate per 100 Patient Periods [95% CI])

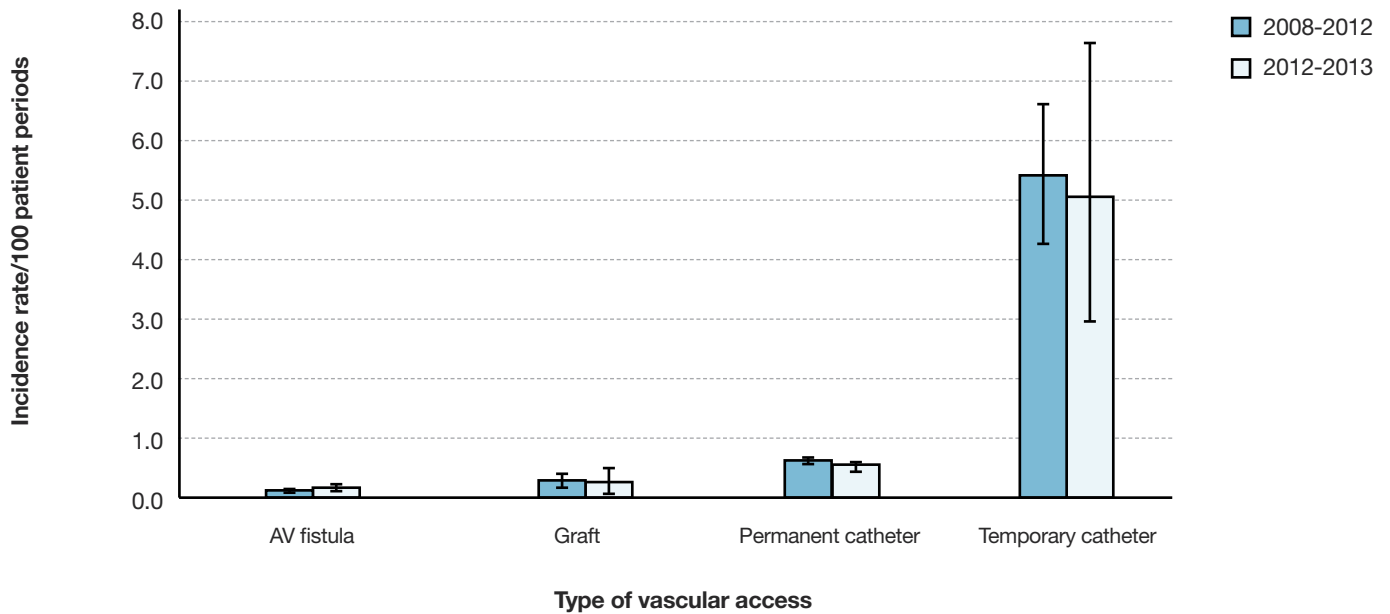
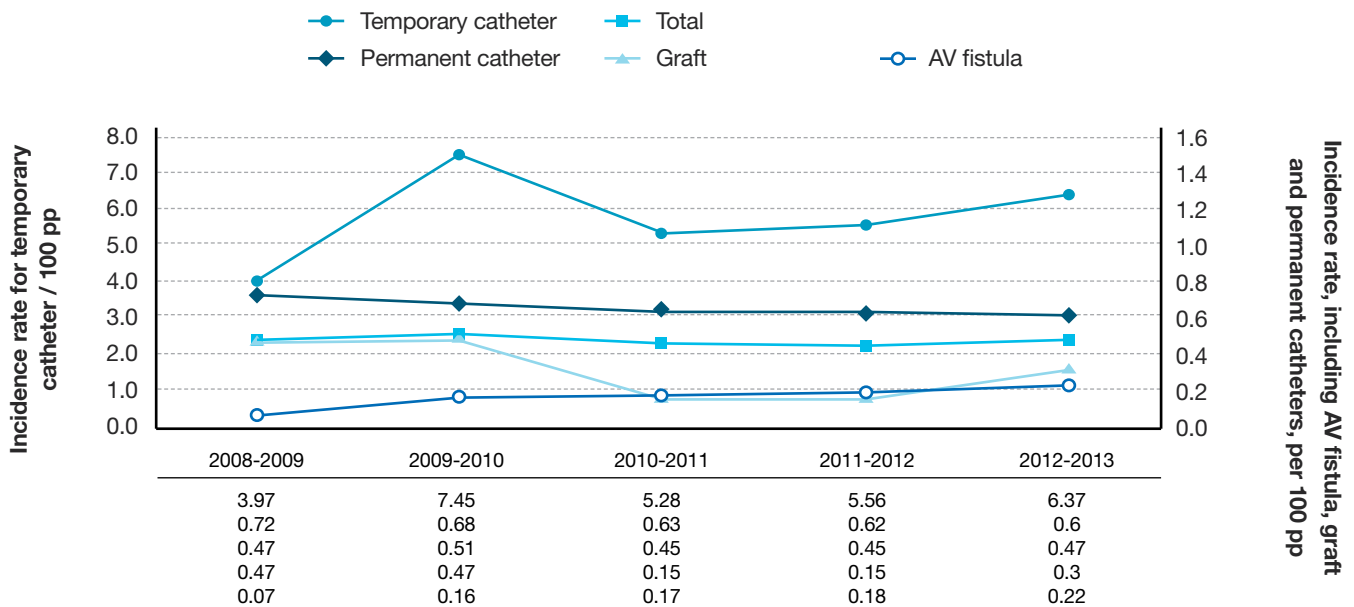


TABLE 2 VARBSI Incidence Rates by Type of Vascular Access, Québec, 2008–2012 and 2012–2013 (Incidence Rate per 100 Patient Periods and per 1,000 Vascular-Access Days [95% CI])

Type of Vascular Access	Incidence Rate/100 Patient Periods [95% CI]		Incidence Rate/1,000 Vascular-Access Days [95% CI]	
	2008-2012	2012-2013	2008-2012	2012-2013
AV fistula or graft	0.16 [0.13; 0.18]	0.20 [0.15; 0.26]	---	---
AV fistula	0.14 [0.11; 0.17]	0.19 [0.14; 0.26]	---	---
Graft	0.30 [0.20; 0.43]	0.26 [0.09; 0.51]	---	---
Permanent or temporary catheter	0.73 [0.67; 0.78]	0.60 [0.52; 0.70]	0.26 [0.24; 0.28]	0.22 [0.18; 0.25]
Permanent catheter	0.65 [0.60; 0.70]	0.55 [0.46; 0.64]	0.23 [0.21; 0.25]	0.20 [0.17; 0.23]
Temporary catheter	5.40 [4.29; 6.64]	5.06 [2.99; 7.66]	1.92 [1.53; 2.37]	1.80 [1.07; 2.73]
Total	0.46 [0.43; 0.49]	0.42 [0.37; 0.48]	0.26 [0.24; 0.28]	0.22 [0.18; 0.25]

FIGURE 4 VARBSI Incidence Rates by Type of Vascular Access, for Units Participating Since 2008–2009 (N = 24), Québec, 2008–2009 to 2012–2013 (Incidence Rate per 100 Patient Periods)



Despite recommendations to increase the use of fistula the proportion of patients who receive hemodialysis through a catheter, increased in 2012–2013 compared with 2008–2012. Despite this increase, the proportion of patients with a temporary catheter, which is the form of vascular access most likely to lead to a VARBSI, decreased significantly ($p < 0.001$).

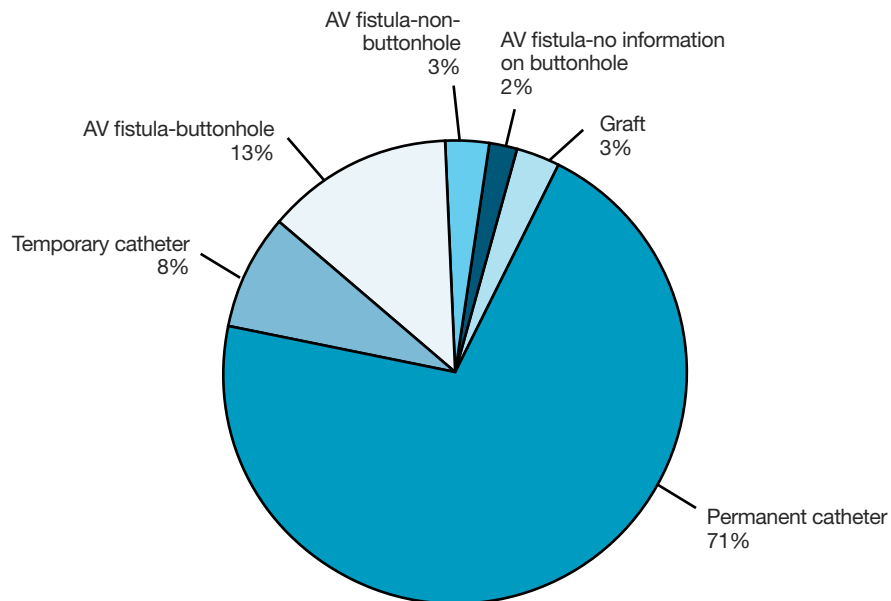
TABLE 3 Breakdown of Patient Periods by Type of Vascular Access, 2008–2012 and 2012–2013 (%)

Type of Vascular Access	Québec (%)	
	2008-2012	2012-2013
AV fistula	41.7	40.4
Graft	5.2	4.4
Permanent catheter	52.3	54.4
Temporary catheter	0.9	0.7
AV fistula or graft	46.9	44.9
Permanent or temporary catheter	53.1	55.1
Catheterized for < 90 days	–	–
Catheterized for ≥ 90 days	–	–
Total (N)	171,344	51,697

Description of Cases

Patients who developed a VARBSI were aged between 23 and 88 years, with a median age of 67 years. The vast majority (79%, or 172 cases) of VARBSIs occurred in patients who received their hemodialysis treatment via catheter, even though they represented only 55% of the patient periods monitored (Figure 5). For most of the cases that arose in patients receiving their hemodialysis through an AV fistula, the buttonhole technique was used (80%). However, the percentage of non-VARBSI patients who receive their hemodialysis using this technique is not known at this time.

FIGURE 5 Breakdown of VARBSIs by Type of Vascular Access, Québec, 2012–2013 (N = 218)

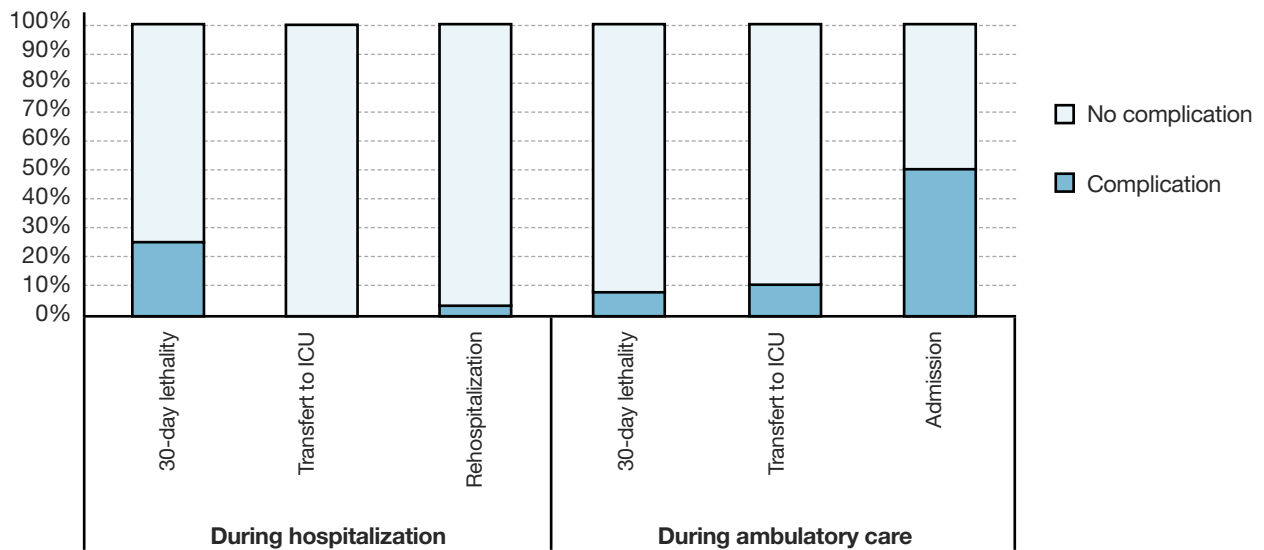


Overall, 11% of VARBSI cases resulted in death within 30 days following the onset of bacteremia. Death occurred in 28% of cases of VARBSI among hospitalized patients (Table 4 and Figure 6), compared with 8% of cases among patients receiving ambulatory care ($p = 0.003$). A total of 51% of ambulatory patients who developed a VARBSI required hospitalization.

TABLE 4 30-Day Case Fatality, Percentage of Transfers to ICU and Percentage of Hospitalizations and Rehospitalizations During a VARBSI Episode, by Origin of Acquisition, Québec, 2012–2013 (N, %)

Origin of Acquisition	Complication	Number of VARBSI Cases Monitored	Presence of Complication	
			N	%
During hospitalization	Death within 10 days	25	6	24
	Death within 30 days	25	7	28
	Transfer to ICU	22	0	0
	Rehospitalization	25	1	4
During ambulatory care	Death within 10 days	193	11	6
	Death within 30 days	193	16	8
	Transfer to ICU	174	18	10
	Hospitalization	193	98	51

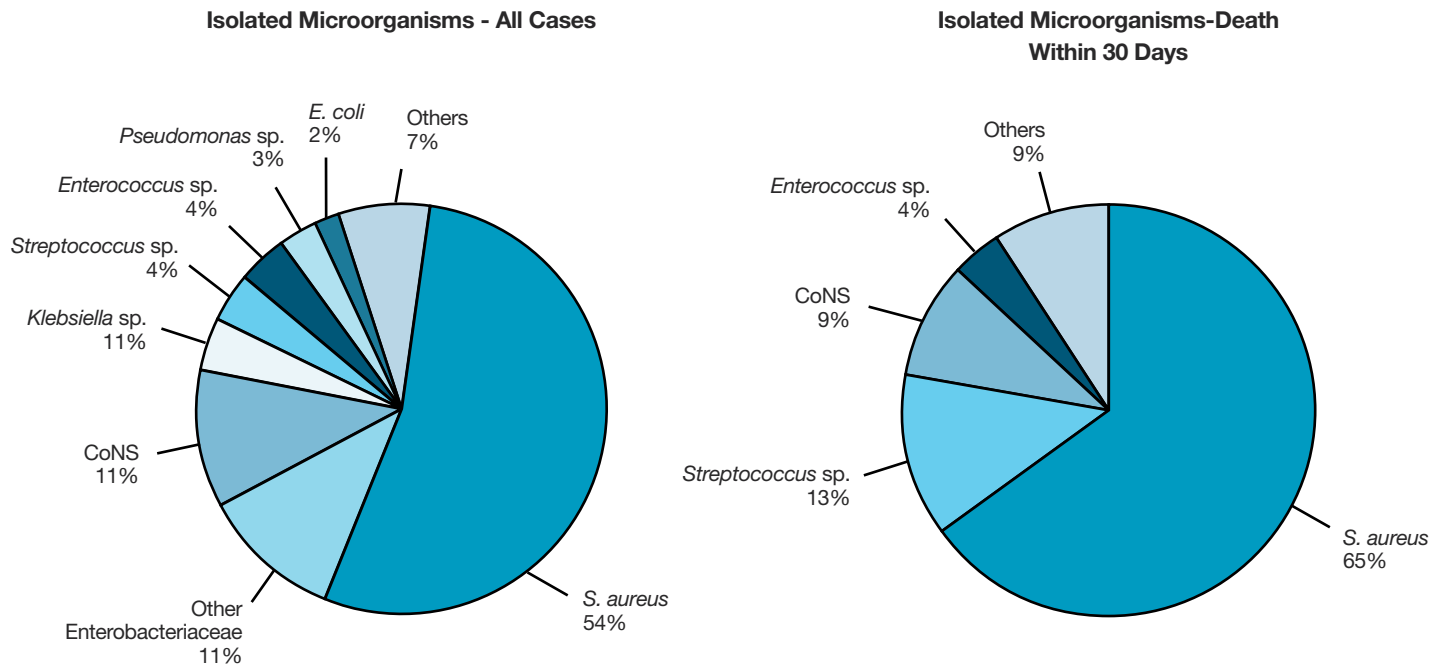
FIGURE 6 30-Day Case Fatality, Percentage of Transfers to ICU and Percentage of Hospitalizations and Rehospitalizations During a VARBSI Episode, by Origin of Acquisition, Québec, 2012–2013 (%)



Microbiology

Figure 7 shows that *Staphylococcus aureus* was the most frequently isolated microorganism in all VARBSI cases as well as cases resulting in death (54% and 65% respectively). This was followed by enterobacteriaceae (other than *Escherichia coli* and *Klebsiella* sp.) and coagulase-negative *Staphylococcus* (CoNS) for all VARBSIs (11% each). Five of the CoNS cases (n = 19) involved *S. lugdunensis*.

FIGURE 7 Categories of Isolated Microorganisms in All Reported Cases (N = 226) and Cases Resulting in Death Within 30 Days (N = 23), Québec, 2012–2013 (%)



In 2012–2013, 7% of the *S. aureus* strains were oxacillin-resistant, which represents a significant decline compared with 2011–2012 ($p = 0.002$; Table 5 and Figure 8).

TABLE 5 Percentage of Strains Tested and Percentage of Resistance to Antibiotics for Certain Isolated Microorganisms, Québec, 2012–2013 (N, %)

Microorganism	Antibiotic	Isolated N	Tested		Resistant	
			N	%	N	%
<i>Staphylococcus aureus</i>	Oxacillin	123	123	100.0	9	7.3
<i>Enterococcus faecium</i>	Vancomycin	0	–	–	–	–
<i>Enterococcus faecalis</i>	Vancomycin	7	7	100.0	0	0.0
<i>Klebsiella</i> (<i>pneumoniae/oxytoca</i>)	CSE 4	9	9	100.0	0	0.0
	Imipenem or meropenem	9	0	0.0	–	–
	Multiresistant 1	9	9	0.0	0	0.0
<i>Escherichia coli</i>	CSE 4	5	5	100.0	1	20.0
	Fluoroquinolones 3	5	4	80.0	1	25.0
	Imipenem or meropenem	5	–	–	–	–
	Multiresistant 1	5	5	100.0	0	0.0
<i>Enterobacter</i> sp.	CSE 4	10	10	100.0	1	10.0
	Imipenem or meropenem	10	9	90.0	0	0.0
	Multiresistant 1	10	10	100.0	0	0.0
<i>Pseudomonas</i> sp.	Amikacin, gentamicin or tobramycin	7	7	100.0	0	0.0
	CSE 2	7	7	100.0	1	14.3
	Fluoroquinolones 2	7	7	100.0	0	0.0
	Imipenem or meropenem	7	6	85.7	0	0.0
	Piperacillin/tazobactam	7	6	85.7	0	0.0
	Multiresistant 2	7	7	100.0	0	0.0
<i>Acinetobacter</i> sp.	Imipenem or meropenem	0	–	–	–	–
	Multiresistant 3	0	–	–	–	–

CSE 2: cefepime or ceftazidime;

CSE 4: cefepime, cefotaxime, ceftazidime or ceftriaxone;

Fluoroquinolones 2: ciprofloxacin or levofloxacin;

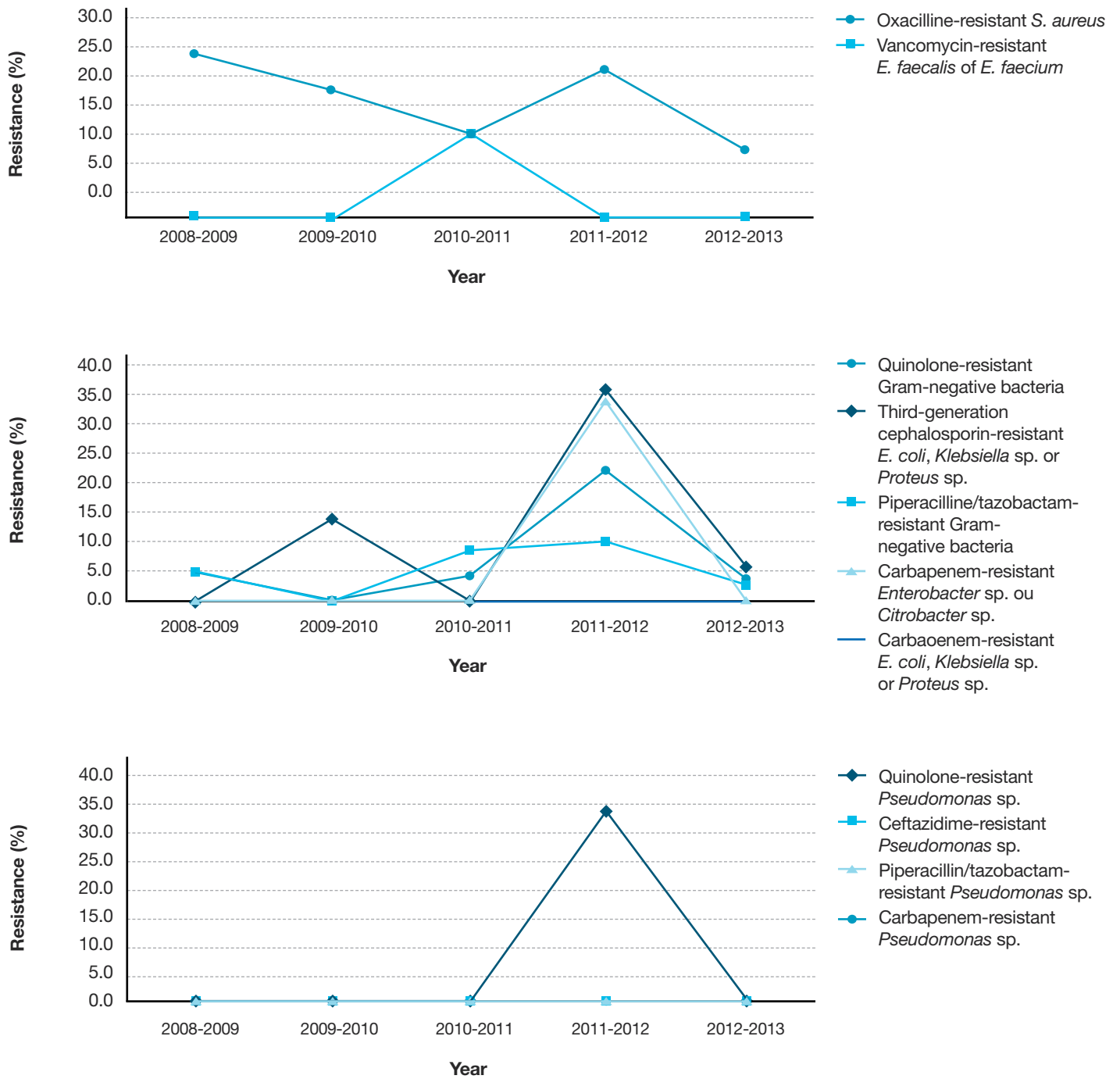
Fluoroquinolones 3: ciprofloxacin, levofloxacin or moxifloxacin;

Multiresistant 1: intermediate or resistant to an agent in three of the following five categories: cephalosporins 4, fluoroquinolones 3, aminoglycosides, carbapenems, piperacillin or piperacillin/tazobactam.

Multiresistant 2: intermediate or resistant to an agent in three of the following five categories: cephalosporins 2, fluoroquinolones 2, aminoglycosides, carbapenems, piperacillin or piperacillin/tazobactam.

Multiresistant 3: intermediate or resistant to an agent in three of the following six categories: cephalosporins 2, fluoroquinolones 2, aminoglycosides, carbapenems, piperacillin or piperacillin/tazobactam, ampicillin/sulbactam.

FIGURE 8 Percentage of Antibiotic Resistance in Certain Gram-Positive Bacteria, Certain Gram-Negative Bacteria and *Pseudomonas* sp., Québec, 2008–2009 to 2012–2013 (%)



Results per Healthcare Facility

Figures 9 and 10 show the breakdown of patient periods monitored in 2012–2013, by type of vascular access and by healthcare facility. In 2012–2013, the percentage of fistulas decreased in 15 healthcare facilities and increased in 6 (Table 6). Nine facilities reported a rate of 0 VARBSI per 100 patient periods, and only 3 reported a rate higher than the 90th-percentile mark for 2008–2012 (Figure 11 and Table 7). The facilities with an incidence rate of 0 had small dialysis units of 4 to 11 chairs.

FIGURE 9 Breakdown of Patient Periods Monitored by Type of Vascular Access and by Healthcare Facility, Québec, 2012–2013 (N)

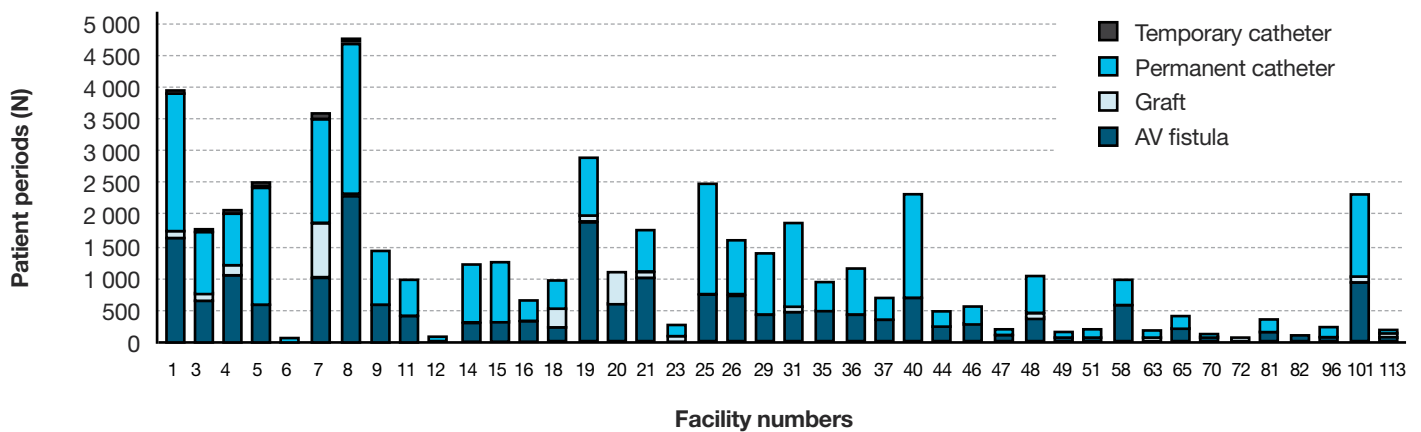


FIGURE 10 Percentage of Patient Periods Involving a Fistula, by Healthcare Facility, Québec, 2012–2013 (%)

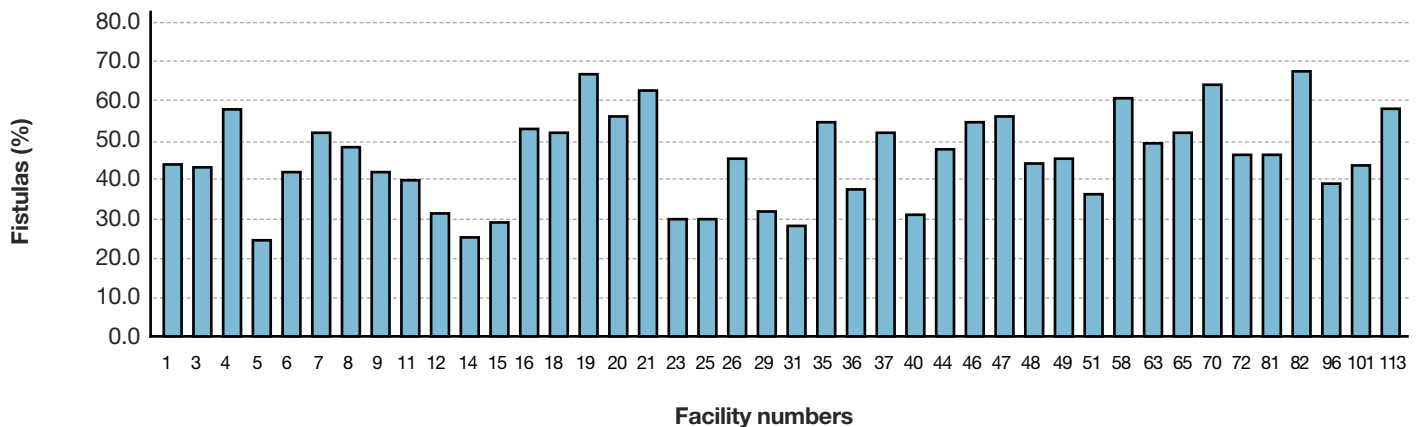


FIGURE 11 VARBSI Incidence Rate per Healthcare Facility (2012–2013) and Incidence Rate Percentile (2008–2009 to 2011–2012), Québec, 2012–2013 (Incidence Rate per 100 Patient Periods)

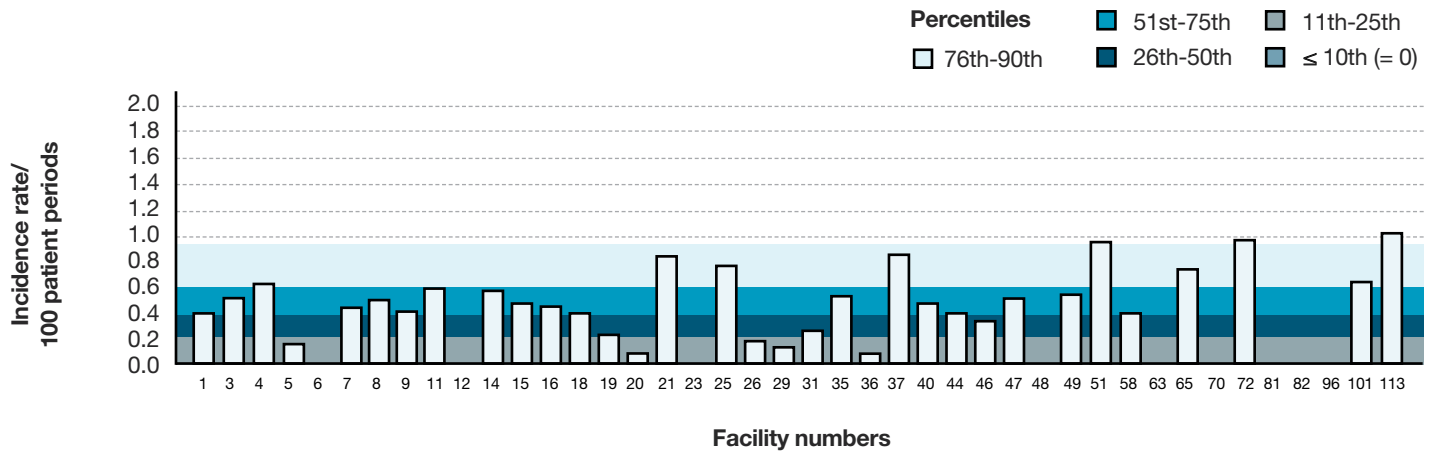


TABLE 6 Number of Patient Periods Monitored and Percentage of Fistulas, by Healthcare Facility, Québec, 2008–2012 and 2012–2013 (N, % [95% CI])

Facility	2008-2012		2012-2013		Variations (p < 0,05)
	Patient periods (N)	% with fistula	Patient periods (N)	% with fistula	
1 HÔPITAL CHARLES-LEMOYNE	14,767	57 [56; 58]	3 949	44 [43; 46]	reduction
3 HÔPITAL ROYAL VICTORIA	7,828	42 [41; 43]	1 757	43 [41; 46]	
4 HÔPITAL NOTRE-DAME DU CHUM	8,660	65 [64; 66]	2 067	59 [57; 61]	reduction
5 HÔPITAL GÉNÉRAL JUIF	2,312	31 [29; 33]	2 496	25 [23; 26]	reduction
6 HÔPITAL DE MONTRÉAL POUR ENFANTS	199	16 [11; 21]	31	42 [25; 59]	increase
7 PAVILLON L'HÔTEL-DIEU DE QUÉBEC	13,958	51 [51; 52]	3 605	52 [50; 53]	
8 PAV. MAISONNEUVE / PAV. MARCEL-LAMOUREUX	18,797	51 [50; 52]	4 778	48 [47; 50]	reduction
9 HÔPITAL DU HAUT-RICHELIEU	4,666	46 [44; 47]	1 459	42 [40; 45]	reduction
11 HÔPITAL PIERRE-LE GARDEUR	4,121	45 [44; 47]	1 009	41 [38; 44]	reduction
12 CENTRE HOSPITALIER UNIVERSITAIRE SAINTE-JUSTINE	119	22 [14; 29]	41	32 [17; 46]	
14 CENTRE HOSPITALIER RÉGIONAL DE LANAUDIÈRE	4,504	30 [28; 31]	1 226	25 [23; 28]	reduction
15 HÔPITAL FLEURIMONT	6,648	35 [34; 36]	1 253	30 [27; 32]	reduction
16 HÔPITAL RÉGIONAL DE RIMOUSKI	1,319	62 [59; 64]	666	53 [49; 57]	reduction
18 HÔTEL-DIEU DE LÉVIS	3,549	47 [45; 49]	993	52 [49; 55]	increase
19 HÔPITAL CITÉ DE LA SANTÉ	2,733	70 [68; 71]	2 914	67 [65; 69]	reduction
20 HÔPITAL DE CHICOUTIMI	3,879	68 [66; 69]	1 094	56 [53; 59]	reduction

Facility	2008-2012		2012-2013		Variations (p < 0,05)	
	Patient periods (N)	% with fistula	Patient periods (N)	% with fistula		
21	HÔPITAL SAINT-LUC DU CHUM	7,404	61 [60; 63]	1 780	63 [60; 65]	
23	HÔTEL-DIEU D'ARTHABASKA	1,665	40 [38; 42]	275	30 [24; 35]	reduction
25	HÔPITAL DU SACRÉ-CŒUR DE MONTRÉAL	6,506	25 [24; 26]	2 489	30 [29; 32]	increase
26	HÔPITAL DE VERDUN	6,233	54 [52; 55]	1 620	45 [43; 48]	reduction
29	HÔPITAL GÉNÉRAL DE MONTRÉAL	6,997	26 [25; 27]	1 407	32 [29; 34]	increase
31	PAVILLON SAINT-JOSEPH	8,653	30 [29; 31]	1 870	29 [27; 31]	
35	HÔPITAL HONORÉ-MERCIER	947	51 [48; 54]	942	55 [51; 58]	
36	HÔPITAL GÉNÉRAL DU LAKESHORE	2,158	41 [39; 43]	1 156	38 [35; 41]	
37	HÔTEL-DIEU DE SOREL	2,417	50 [48; 52]	704	52 [49; 56]	
40	HÔPITAL DE HULL	9,324	33 [32; 34]	2 333	31 [29; 33]	
44	HÔPITAL SAINTE-CROIX	2,026	38 [36; 41]	504	48 [44; 53]	increase
46	HÔPITAL DE GRANBY	895	64 [61; 67]	582	55 [51; 59]	reduction
47	HÔPITAL DE ROUYN-NORANDA	881	63 [59; 66]	194	56 [49; 63]	
48	CENTRE HOSPITALIER DE ST. MARY	1,920	44 [41; 46]	1 053	44 [41; 47]	
49	CSSS MEMPHRÉMAGOG	190	51 [43; 58]	184	46 [38; 53]	
51	HÔPITAL DE MANIWAKI	183	42 [34; 49]	211	36 [30; 43]	
58	HÔPITAL DU SUROÏT	3,933	58 [57; 60]	999	61 [58; 64]	
63	HÔPITAL DE SAINT-GEORGES	81	59 [49; 70]	164	49 [42; 57]	
65	HÔPITAL ET CLSC DE VAL-D'OR	400	56 [51; 61]	410	52 [47; 57]	
70	CENTRE DE SOINS DE COURTE DURÉE LA SARRE	126	70 [62; 78]	114	64 [55; 73]	
72	HÔPITAL ET CENTRE D'HÉBERGEMENT DE SEPT-ÎLES	35	51 [35; 68]	103	47 [37; 56]	
81	HÔPITAL DE MONT-LAURIER	1,082	48 [45; 51]	366	46 [41; 52]	
82	PAVILLON SAINTE-FAMILLE	104	50 [40; 60]	130	68 [60; 76]	increase
96	CENTRE DE SANTÉ DE CHIBOUGAMAU	249	40 [34; 46]	241	39 [33; 46]	
101	HÔPITAL RÉGIONAL DE SAINT-JÉRÔME	8,745	47 [46; 48]	2 330	44 [42; 46]	reduction
113	HÔPITAL DE THETFORD MINES	131	59 [50; 67]	198	58 [51; 65]	

TABLE 7 Number of VARBSI Cases and Incidence Rate by Healthcare Facility, and Percentile Ranking, Québec, 2008–2012 and 2012–2013 (Incidence Rate per 100 Patient Periods [95% CI])

Facility	2008-2012*			2012-2013	
	Number of cases	Average number of cases per year	Rate/100 pp	Number of cases	Rate/100 pp
1 HÔPITAL CHARLES-LEMOYNE	40	10.0	0.27 [0.19; 0.36]	12	0.30 [0.16; 0.50]
3 HÔPITAL ROYAL VICTORIA	54	13.5	0.69 [0.52; 0.89]	9	0.51 [0.23; 0.90]
4 HÔPITAL NOTRE-DAME DU CHUM	25	6.3	0.29 [0.19; 0.41]	13	0.63 [0.33; 1.02]
5 HÔPITAL GÉNÉRAL JUIF	8	8.0	0.35 [0.15; 0.63]	4	0.16 [0.04; 0.36]
6 HÔPITAL DE MONTRÉAL POUR ENFANTS	1	0.3	0.50 [0.00; 1.97]	0	0.00
7 PAVILLON L'HÔTEL-DIEU DE QUÉBEC	58	14.5	0.42 [0.32; 0.53]	16	0.44 [0.25; 0.69]
8 PAV. MAISONNEUVE / PAV. MARCEL-LAMOUREUX	81	20.3	0.43 [0.34; 0.53]	24	0.50 [0.32; 0.72]
9 HÔPITAL DU HAUT-RICHELIEU	46	11.5	0.99 [0.72; 1.29]	6	0.41 [0.15; 0.81]
11 HÔPITAL PIERRE-LE GARDEUR	23	5.8	0.56 [0.35; 0.81]	6	0.59 [0.21; 1.17]
12 CENTRE HOSPITALIER UNIVERSITAIRE SAINTE-JUSTINE	5	2.5	4.20 [1.33; 8.69]	0	0.00
14 CENTRE HOSPITALIER RÉGIONAL DE LANAUDIÈRE	25	6.3	0.56 [0.36; 0.79]	7	0.57 [0.23; 1.07]
15 HÔPITAL FLEURIMONT	35	8.8	0.53 [0.37; 0.72]	6	0.48 [0.17; 0.94]
16 HÔPITAL RÉGIONAL DE RIMOUSKI	3	1.0	0.23 [0.04; 0.56]	3	0.45 [0.08; 1.10]
18 HÔTEL-DIEU DE LÉVIS	12	3.0	0.34 [0.17; 0.56]	4	0.40 [0.10; 0.89]
19 HÔPITAL CITÉ DE LA SANTÉ	9	9.0	0.33 [0.15; 0.58]	7	0.24 [0.10; 0.45]
20 HÔPITAL DE CHICOUTIMI	18	4.5	0.46 [0.27; 0.70]	1	0.09 [0.00; 0.36]
21 HÔPITAL SAINT-LUC DU CHUM	37	9.3	0.50 [0.35; 0.67]	15	0.84 [0.47; 1.32]
23 HÔTEL-DIEU D'ARTHABASKA	7	1.8	0.42 [0.17; 0.79]	0	0.00
25 HÔPITAL DU SACRÉ-CŒUR DE MONTRÉAL	30	7.5	0.46 [0.31; 0.64]	19	0.76 [0.46; 1.15]
26 HÔPITAL DE VERDUN	28	7.0	0.45 [0.30; 0.63]	3	0.19 [0.03; 0.45]
29 HÔPITAL GÉNÉRAL DE MONTRÉAL	46	11.5	0.66 [0.48; 0.86]	2	0.14 [0.01; 0.41]
31 PAVILLON SAINT-JOSEPH	28	7.0	0.32 [0.21; 0.45]	5	0.27 [0.08; 0.55]
35 HÔPITAL HONORÉ-MERCIER	5	5.0	0.53 [0.17; 1.09]	5	0.53 [0.17; 1.10]
36 HÔPITAL GÉNÉRAL DU LAKESHORE	5	2.5	0.23 [0.07; 0.48]	1	0.09 [0.00; 0.34]
37 HÔTEL-DIEU DE SOREL	18	4.5	0.74 [0.44; 1.13]	6	0.85 [0.31; 1.67]
40 HÔPITAL DE HULL	50	12.5	0.54 [0.40; 0.70]	11	0.47 [0.23; 0.79]
44 HÔPITAL SAINTE-CROIX	9	2.3	0.44 [0.20; 0.78]	2	0.40 [0.04; 1.14]
46 HÔPITAL DE GRANBY	2	1.0	0.22 [0.02; 0.64]	2	0.34 [0.03; 0.98]
47 HÔPITAL DE ROUYN-NORANDA	6	1.5	0.68 [0.25; 1.34]	1	0.52 [0.00; 2.02]
48 CENTRE HOSPITALIER DE ST. MARY	6	3.0	0.31 [0.11; 0.61]	0	0.00
49 CSSS MEMPHRÉMAGOG	0	0.0	0.00	1	0.54 [0.00; 2.13]
51 HÔPITAL DE MANIWAKI	1	1.0	0.55 [0.00; 2.14]	2	0.95 [0.09; 2.72]
58 HÔPITAL DU SUROÏT	9	2.3	0.23 [0.10; 0.40]	4	0.40 [0.10; 0.89]
63 HÔPITAL DE SAINT-GEORGES	1	1.0	1.23 [0.00; 4.84]	0	0.00
65 HÔPITAL ET CLSC DE VAL-D'OR	1	1.0	0.25 [0.00; 0.98]	3	0.73 [0.14; 1.79]

Facility	2008-2012*			2012-2013	
	Number of cases	Average number of cases per year	Rate/100 pp	Number of cases	Rate/100 pp
70 CENTRE DE SOINS DE COURTE DURÉE LA SARRE	0	0.0	0.00	0	0.00
72 HÔPITAL ET CENTRE D'HÉBERGEMENT DE SEPT-ÎLES	0	0.0	0.00	1	0.97 [0.00; 3.81]
81 HÔPITAL DE MONT-LAURIER	1	0.3	0.09 [0.00; 0.36]	0	0.00
82 PAVILLON SAINTE-FAMILLE	0	0.0	0.00	0	0.00
96 CENTRE DE SANTÉ DE CHIBOUGAMAU	0	0.0	0.00	0	0.00
101 HÔPITAL RÉGIONAL DE SAINT-JÉRÔME	52	13.0	0.59 [0.44; 0.77]	15	0.64 [0.36; 1.01]
113 HÔPITAL DE THETFORD MINES	0	0.0	0.00	2	1.01 [0.10; 2.9]
10th			0.00		0.00
25th			0.23		0.10
50th			0.39		0.41
75th			0.61		0.56
90th			0.93		0.83

* Changes in rates within individual facilities were not subjected to statistical analysis, given the small number of cases involved.



Vascular Access–Related Bloodstream Infections in Hemodialysis Patients, Québec, Surveillance Results 2012–2013

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