



# Vascular Access-Related Bloodstream Infections in Hemodialysis Patients

## Surveillance results: 2016-2017

From April 1<sup>st</sup>, 2016, to March 31<sup>st</sup>, 2017, 48 hemodialysis units took part in the surveillance of vascular access-related bloodstream infections (VARBSIs) in hemodialysis (HD) patients, for a combined total of 57,570 patient-periods (Table 1). Participating units reported 127 VARBSIs in 120 patients. Patient-periods involving a fistula account for 40.7% of patient-periods. The VARBSI incidence rate is 0.06 cases per 100 patient-periods for patients with an arteriovenous (AV) fistula, 0.10 for patients with a synthetic fistula (graft), 0.32 for patients with a tunneled catheter and 1.24 for patients with a non-tunneled catheter. In 2016-2017, incidence rates for tunneled and non-tunneled catheters have significantly decreased compared to rates for 2012-2016 ( $p < 0.05$ ) while rates for AV fistulas and grafts have remained stable. Since 2015-2016, three HD units joined the surveillance. Data were extracted on May 5<sup>th</sup>, 2017.

**Table 1 - Participation of Hemodialysis Units in the Surveillance of VARBSIs in Hemodialysis Patients, Québec, 2012-2013 to 2016-2017**

	<b>2012-2013</b>	<b>2013-2014</b>	<b>2014-2015</b>	<b>2015-2016</b>	<b>2016-2017</b>
Units (N)	42	42	45	45	48
Patients monitored (average number per period)	3,977	3,984	4,303	4,217	4,428
Patient-periods (N)	51,697	51,791	55,939	54,818	57,570
Patient-months (N)	48,340	48,469	52,316	51,457	53,876
Dialysis sessions (N)	621,516	623,172	672,639	661,588	692,697
Catheter-days (N)	798,816	824,834	891,802	910,884	958,343
VARBSIs (cat. 1a, 1b and 1c, N)	206	150	154	132	127
VARBSIs with AV fistulas or grafts (N)	44	25	23	17	14
VARBSIs with tunneled or non-tunneled catheters (N)	162	125	131	115	113
Infected patients (N)	199	142	142	125	120

Open all

## Incidence rates

The 2016-2017 VARBSI incidence rate was 0.22 cases per 100 patient-periods. The incidence rate was 0.06 for patients with an AV fistula, 0.10 for patients with a graft, 0.32 for patients with a tunneled catheter and 1.24 for patients with a non-tunneled catheter (Figure 1). In patients with AV fistulas, the VARBSI incidence rate was higher when the buttonhole technique was used (0.17 per 100 patient-periods versus 0.04,  $p < 0.05$ ); the incidence rate for patients with tunneled catheters is higher than for patients with an AV fistula without buttonhole ( $p < 0.05$ ); the incidence rate for patients with non-tunneled catheters is statistically higher than the rate for patients with a permanent catheter ( $p < 0.05$ ).

Therefore, compared to AV fistulas without buttonhole, the incidence rate with a non-tunneled catheter is

32.7 [11.0 ; 97.0] times greater ( $p < 0.05$ ), with a tunneled catheter, 8.3 [4.1 ; 19.5] times greater ( $p < 0.05$ ), with a graft 2.6 [0.4 ; 11.6] times greater ( $p > 0.05$ ) and with an AV fistula with a buttonhole, the incidence rate is 4.5 [1.3 ; 14.7] times greater ( $p < 0.05$ ). The incidence rate with a non-tunneled catheter is 3.9 [1.7 ; 8.0] times higher than with a tunneled catheter ( $p < 0.05$ ), this rate itself 5.2 [3.1 ; 9.6] higher than the rate for patients with an AV fistula or a graft ( $p < 0.05$ ).

**Figure 1 - VARBSI Incidence Rate by Type of Vascular Access, Québec, 2016-2017 (Incidence Rate per 100 Patient-periods [95% CI])**

 [2]

Tunneled catheters are the most commonly used type of vascular access (58%), followed by AV fistulas without the use of the buttonhole technique (32%, Figure 2). The proportion of patients with a fistula or a graft is 41%.

**Figure 2 - Breakdown of Patient-Periods by Type of Vascular Access, Québec, 2016-2017 (%)**

 [3]

## Incidence rates time trends

In 2016-2017, incidence rates for tunneled and non-tunneled catheters have significantly decreased compared to rates for 2012-2016 ( $p < 0.05$ , Table 2 and Figure 3) while rates for AV fistulas and grafts have remained stable. A general decreasing trend can be observed in units participating since 2012-2013 (Figure 4).

**Figure 3 - Evolution of VARBSI Incidence Rates by Type of Vascular Access in Units That Have Previously Participated (N=45), Québec, 2012-2016 and 2016-2017 (Incidence Rate per 100 Patient-Periods [95% CI])**

 [4]

NB: Incidence rates for AV fistulas, with or without buttonhole, are rates for 2013-2016 and 2016-2017, as information on the use of the buttonhole technique was not collected before 2013-2014.

**Table 2 - Evolution of VARBSI Incidence Rates by Type of Vascular Access in Units That Have Previously Participated (N=45), Québec, 2012-2016 and 2016-2017 (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]	
	2012-2016	2016-2017	2012-2016	2016-2017
AV fistula or graft	0.12 [0.10 ; 0.14]	0.06 [0.04 ; 0.11]	---	---
AV fistula	0.11 [0.09 ; 0.13]	0.06 [0.03 ; 0.10]	---	---
With buttonhole*	0.40 [0.31 ; 0.52]	0.18 [0.08 ; 0.44]	---	---
Without buttonhole*	0.04 [0.03 ; 0.06]	0.04 [0.02 ; 0.08]	---	---
Graft	0.23 [0.15 ; 0.35]	0.10 [0.03 ; 0.41]	---	---
Tunneled or non-tunneled catheter	0.44 [0.40 ; 0.48]	0.33 [0.27 ; 0.40]	0.16 [0.14 ; 0.17]	0.12 [0.10 ; 0.14]
Tunneled catheter	0.40 [0.36 ; 0.43]	0.31 [0.25 ; 0.38]	0.14 [0.13 ; 0.15]	0.11 [0.09 ; 0.13]

Non-tunneled catheter	4.85 [3.72 ; 6.31]	1.52 [0.72 ; 3.19]	1.72 [1.32 ; 2.25]	0.55 [0.26 ; 1.15]
<b>Total</b>	<b>0.30 [0.28 ; 0.32]</b>	<b>0.22 [0.18 ; 0.26]</b>	<b>0.16 [0.14 ; 0.17]</b>	<b>0.12 [0.10 ; 0.14]</b>

\* Incidence rates for AV fistulas, with or without buttonhole, are rates for 2013-2016 and 2016-2017, as information on the use of the buttonhole technique was not collected before 2013-2014.

#### Figure 4 - Evolution of VARBSI Incidence Rates by Type of Vascular Access, for Units Participating Since 2012-2013 (N = 40), Québec, 2012-2013 to 2016-2017 (Incidence Rate per 100 Patient-periods)

 [5]

Despite recommendations, the proportion of patients receiving hemodialysis through a catheter, either non-tunneled or tunneled, increased in 2016-2017 compared with 2012-2016 ( $p < 0.05$ , Table 3 and Figure 5). In addition, the proportion of patients with a non-tunneled catheter, which is the form of vascular access most likely to lead to a VARBSI, increased significantly ( $p < 0.05$ ).

#### Figure 5 - Time Trends in Patient-Periods by Type of Vascular Access, for Units Participating Since 2012-2013 (N = 40), Québec, 2012-2013 to 2016-2017

 [6]

**Table 3 - Breakdown of Patient-Periods by Type of Vascular Access, 2012-2016 and 2016-2017 (%)**

Type of vascular access	2012-2016		2016-2017	
	N	%	N	(%)
AV fistula	82,773	38.7	20,310	37.1
With buttonhole*	-	-	2,758	5
Without buttonhole*	-	-	17,552	32.1
Graft	9,269	4.3	1,966	3.6
Tunneled catheter	120,836	56.5	31,982	58.4
Non-tunneled catheter	1,135	0.5	461	0.8
AV fistula or graft	92,042	43	22,276	40.7
Tunneled or non-tunneled catheter	121,971	57	32,443	59.3
<b>Total (N)</b>	<b>214,013</b>	<b>100</b>	<b>54,719</b>	<b>100</b>

## Description of cases

Patients who developed a VARBSI are aged between 0 and 99 years, with a median age of 68 years. The vast majority (89%, or 113 cases) of VARBSIs occurred in patients who receive their hemodialysis treatment via catheter, even though they represent only 59% of the patient-periods monitored (Figures 2 and 6). For 42% of the cases that arose in patients receiving their hemodialysis through an AV fistula, the buttonhole technique is used even though this technique is used among only 14% of patients with AV fistula.

**Figure 6 - Breakdown of VARBSIs by Type of Vascular Access, Québec, 2016-2017 (N = 127)**

 [7]

Overall, 13% of VARBSI cases resulted in death within 30 days following the onset of bacteremia. Death occurred in 40% of cases of VARBSI among hospitalized patients (Table 4 and Figure 7), compared with 10% of cases among patients receiving ambulatory care ( $p < 0.05$ ). A total of 64% of ambulatory patients who developed a VARBSI required hospitalization.

**Table 4 - 10-Day and 30-Day Case Fatality, Transfers to ICU and Hospitalizations and Rehospitalizations During a VARBSI Episode, by Origin of Acquisition, Québec, 2016-2017 (N, %)**

Origin of acquisition	Complication	Number of VARBSI cases monitored	Presence of complication	
			N	%
During hospitalization	Death within 10 days	15	3	20
	Death within 30 days	15	6	40
	Transfer to ICU	15	1	7
	Rehospitalization	15	1	7
During ambulatory care	Death within 10 days	112	5	4
	Death within 30 days	112	11	10
	Transfer to ICU	112	14	13
	Hospitalization	112	72	64

**Figure 7 - 10-Day and 30-Day Case Fatality, Percentage of Transfers to ICU and Percentage of Hospitalizations and Rehospitalizations During a VARBSI Episode, by Origin of Acquisition, Québec, 2016-2017 (%)**

 [8]

## Microbiology

Figure 8 shows that *Staphylococcus aureus* is the most frequently isolated microorganism in all VARBSI cases (65%). It is followed by coagulase-negative *Staphylococcus* (CoNS, 12%) and enterobacteria (*Escherichia coli*, *Klebsiella* sp. and other enterobacteria, 12%). *S. aureus* is the most frequently isolated microorganism in cases resulting in death (44%).

**Figure 8 - Categories of Isolated Microorganisms in All Reported Cases (N = 129) and Cases Resulting in Death Within 30 Days (N = 18), Québec, 2016-2017 (%)**

 [9]

In 2016–2017, 11% of *S. aureus* strains are oxacillin-resistant, which is not significantly different compared with the 2012–2016 percentage (Table 5 and Figure 9). Please note that results presented in the second graph of Figure 9 exclude *Pseudomonas* sp.

**Table 5 - Percentage of Strains Tested and Percentage of Resistance to Antibiotics for Certain Isolated Microorganisms, Québec, 2016–2017 (N, %)**

Microorganism	Antibiotic	Isolated	Tested		Resistant	
		N	N	%	N	%
<i>Staphylococcus aureus</i>	Oxacillin	84	84	100	9	10.7
<i>Enterococcus faecium</i>	Vancomycin	0	0	-	-	-
<i>Enterococcus faecalis</i>	Vancomycin	5	5	100	0	0
	CSE 4	2	2	100	0	0
<i>Klebsiella</i> sp.	Imipenem ou meropenem	2	1	50	0	0
	Multiresistant 1	2	2	100	0	0
	CSE 4	3	3	100	0	0
<i>Escherichia coli</i>	Fluoroquinolones 3	3	3	100	0	0
	Imipenem ou meropenem	3	2	66.7	0	0
	Multiresistant 1	3	3	100	0	0
	CSE 4	5	5	100	2	40
<i>Enterobacter</i> sp.	Imipenem ou meropenem	5	4	80	0	0
	Multiresistant 1	5	4	80	0	0
	Amikacin, gentamicin or tobramycin	3	3	100	0	0
	CSE 2	3	3	100	1	33.3
<i>Pseudomonas</i> sp.	Fluoroquinolones 2	3	3	100	0	0
	Imipenem ou meropenem	3	2	66.7	1	50
	Piperacillin/tazobactam	3	3	100	0	0
	Multiresistant 2	3	3	100	0	0
<i>Acinetobacter</i> sp.	Imipenem ou meropenem	0	0	-	-	-
	Multiresistant 3	0	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 9 - Evolution of Percentage of Antibiotic Resistance in Certain Gram-Positive Bacteria, Certain Gram-Negative Bacteria and *Pseudomonas* sp., Québec, 2012-2016 to 2016-2017 (%)**

 [10]

## Results per Healthcare Facility

Figures 10 and 11 show the breakdown of patient-periods monitored in 2016-2017, by type of vascular access and by healthcare facility. In 2016-2017, the percentage of fistulas decreased in 15 healthcare facilities and increased in 8 (Table 6). Twenty-one facilities report a rate of 0 VARBSI per 100 patient-periods, and 1 facility (2% of facilities) reports a rate higher than the 90th-percentile mark for 2012-2016 (Figure 12 and Table 7). Facilities with an incidence rate of 0 have small dialysis units of 4 to 12 chairs, except for three larger units.

**Figure 10 - Patient-periods Followed, by Healthcare Facility, Québec, 2016-2017 (%)**

 [11]

**Figure 11 - Breakdown of Patient-periods Monitored by Type of Vascular Access and by Healthcare Facility, Québec, 2016-2017 (N)**

 [12]

**Figure 12 - VARBSI Incidence Rate per Healthcare Facility (2016-2017) and Incidence Rate Percentile (2012-2013 to 2015-2016), Québec, 2016-2017 (Incidence Rate per 100 Patient-periods)**

 [13]

**Table 6 - Evolution of the Number of Patient-Periods Monitored and Percentage of Fistulas, by Healthcare Facility, Québec, 2012-2016 and 2016-2017 (N, % [95% CI])**

Facility	2012-2016		2016-2017		Variation (p<0.05)
	Patient-periods (N)	% with fistula	Patient-periods (N)	% with fistula	
1 HÔPITAL CHARLES LEMOYNE	1,6571	37 [37 ; 38]	4,454	38 [37 ; 40]	
3 GLEN - ROYAL VICTORIA	6,367	42 [41 ; 43]	316	16 [12 ; 21]	decrease
4 HÔPITAL NOTRE-DAME DU CHUM	9,202	63 [62 ; 64]	661	33 [29 ; 36]	decrease
5 HÔPITAL GÉNÉRAL JUIF	10,680	21 [20 ; 22]	2,829	19 [18 ; 21]	decrease
6 GLEN - ENFANTS	169	27 [21 ; 34]	17	0	decrease
7 PAVILLON L'HÔTEL-DIEU DE QUÉBEC	15,144	54 [54 ; 55]	3,811	49 [47 ; 50]	decrease

Facility	2012-2016		2016-2017		Variation (p<0.05)
	Patient-periods (N)	% with fistula	Patient-periods (N)	% with fistula	
8 PAVILLON MAISONNEUVE/PAVILLON MARCEL-LAMOUREUX	19,732	44 [43 ; 45]	5,054	44 [42 ; 45]	
9 HÔPITAL DU HAUT-RICHELIEU	6,145	43 [42 ; 44]	1,543	45 [42 ; 47]	
11 HÔPITAL PIERRE-LE GARDEUR	4,499	40 [38 ; 41]	1,378	33 [31 ; 36]	decrease
12 CENTRE HOSPITALIER UNIVERSITAIRE SAINTE-JUSTINE	246	26 [21 ; 31]	34	44 [27 ; 61]	increase
14 CENTRE HOSPITALIER RÉGIONAL DE LANAUDIÈRE	4,984	25 [23 ; 26]	1,423	23 [21 ; 25]	
15 HÔPITAL FLEURIMONT	4,713	32 [31 ; 33]	1,008	38 [35 ; 41]	increase
16 HÔPITAL RÉGIONAL DE RIMOUSKI	2,798	58 [56 ; 60]	723	62 [58 ; 66]	increase
18 HÔTEL-DIEU DE LÉVIS	4,314	46 [45 ; 48]	989	49 [46 ; 52]	
19 HÔPITAL CITÉ DE LA SANTÉ	12,058	64 [64 ; 65]	3,074	58 [56 ; 59]	decrease
20 HÔPITAL DE CHICOUTIMI	3,948	51 [49 ; 52]	776	38 [35 ; 41]	decrease
21 HÔPITAL SAINT-LUC DU CHUM	5,396	59 [58 ; 60]	3,359	58 [56 ; 59]	
23 HÔTEL-DIEU D'ARTHABASKA	1,140	29 [27 ; 32]	365	24 [19 ; 28]	decrease
25 HÔPITAL DU SACRÉ-COEUR DE MONTRÉAL	9,837	32 [31 ; 33]	2,639	37 [35 ; 39]	increase
26 HÔPITAL DE VERDUN	6,700	42 [41 ; 43]	1,610	39 [37 ; 41]	decrease
29 HÔPITAL GÉNÉRAL DE MONTRÉAL	5,786	33 [32 ; 34]	1,667	33 [31 ; 35]	
31 PAVILLON SAINTE-MARIE	8,353	28 [27 ; 29]	2,320	24 [23 ; 26]	decrease
35 HÔPITAL HONORÉ-MERCIER	4,700	53 [51 ; 54]	1,580	48 [46 ; 51]	decrease
36 HÔPITAL GÉNÉRAL DU LAKESHORE	5,846	34 [33 ; 35]	1,708	35 [33 ; 37]	
37 HÔTEL-DIEU DE SOREL	2,650	57 [55 ; 59]	705	57 [54 ; 61]	
40 HÔPITAL DE HULL	8,824	29 [28 ; 30]	2,021	26 [24 ; 28]	decrease
42 CENTRE HOSPITALIER ANNA-LABERGE	-	-	724	38 [34 ; 42]	
44 HÔPITAL SAINTE-CROIX	1,986	39 [37 ; 41]	517	34 [30 ; 38]	decrease
45 HÔPITAL DE SAINT-EUSTACHE	-	-	1,118	47 [44 ; 50]	
46 HÔPITAL DE GRANBY	2,690	51 [49 ; 53]	858	50 [47 ; 53]	
47 HÔPITAL DE ROUYN-NORANDA	611	74 [71 ; 78]	181	67 [61 ; 74]	
48 CENTRE HOSPITALIER DE ST. MARY	4,575	43 [41 ; 44]	1,270	40 [37 ; 43]	



Facility	2012-2016		2016-2017		Variation (p<0.05)
	Patient-periods (N)	% with fistula	Patient-periods (N)	% with fistula	
49 CSSS DE MEMPHREMAGOG	766	46 [42 ; 49]	200	48 [41 ; 55]	
51 HÔPITAL DE MANIWAKI	873	33 [30 ; 37]	238	28 [22 ; 34]	
53 HÔPITAL DE CHANDLER	236	55 [49 ; 61]	147	68 [60 ; 76]	increase
58 HÔPITAL DU SUROÏT	4,172	51 [49 ; 52]	1,224	33 [31 ; 36]	decrease
63 HÔPITAL DE SAINT-GEORGES	862	54 [51 ; 57]	278	58 [52 ; 64]	
65 HÔPITAL ET CLSC DE VAL-D'OR	1,551	44 [41 ; 46]	348	54 [49 ; 60]	increase
70 CENTRE DE SOINS DE COURTE DURÉE LA SARRE	429	55 [50 ; 60]	143	60 [52 ; 68]	
72 HÔPITAL ET CENTRE D'HÉBERGEMENT DE SEPT-ÎLES	540	63 [59 ; 67]	153	59 [51 ; 67]	
74 HÔPITAL DE DOLBEAU-MISTASSINI	399	37 [32 ; 42]	128	55 [47 ; 64]	increase
76 HÔPITAL DE LACHINE	-	-	1,009	36 [33 ; 39]	
81 HÔPITAL DE MONT-LAURIER	1,701	49 [47 ; 52]	457	46 [41 ; 50]	
89 HÔPITAL DE MONTMAGNY	349	41 [36 ; 46]	199	39 [32 ; 45]	
96 CENTRE DE SANTÉ DE CHIBOUGAMAU	953	32 [29 ; 35]	225	28 [22 ; 34]	
101 HÔPITAL RÉGIONAL DE SAINT-JÉRÔME	9,267	44 [43 ; 45]	1,688	43 [40 ; 45]	
111 HÔPITAL DE PAPINEAU	468	37 [32 ; 41]	223	42 [36 ; 49]	
113 HÔPITAL DE THETFORD MINES	783	59 [56 ; 63]	178	69 [62 ; 76]	increase

**Table 7 - Evolution of the Number of VARBSI Cases and Incidence Rate by Healthcare Facility, Québec, 2012-2016 and 2016-2017 (Incidence Rate per 100 Patient-periods [95% CI])**

Facility	2012-2016*			2016-2017	
	Cases (N)	Cases per year (N)	Rate /100 pp	Cases (N)	Rate /100 pp
1 HÔPITAL CHARLES LEMOYNE	38	9.5	0.23 [0.16 ; 0.31]	9	0.20 [0.09 ; 0.36]
3 GLEN - ROYAL VICTORIA	36	9	0.57 [0.40 ; 0.77]	3	0.95 [0.18 ; 2.33]
4 HÔPITAL NOTRE-DAME DU CHUM	47	11.8	0.51 [0.38 ; 0.67]	4	0.61 [0.16 ; 1.34]
5 HÔPITAL GÉNÉRAL JUIF	16	4	0.15 [0.09 ; 0.23]	3	0.11 [0.02 ; 0.26]

Facility	2012-2016*			2016-2017	
	Cases (N)	Cases per year (N)	Rate /100 pp	Cases (N)	Rate /100 pp
6 GLEN - ENFANTS	0	0	0.00 [0.57 ; 0.57]	0	0
7 PAVILLON L'HÔTEL-DIEU DE QUÉBEC	46	11.5	0.30 [0.22 ; 0.40]	8	0.21 [0.09 ; 0.38]
8 PAVILLON MAISONNEUVE/PAVILLON MARCEL-LAMOUREUX	63	15.8	0.32 [0.25 ; 0.40]	9	0.18 [0.08 ; 0.31]
9 HÔPITAL DU HAUT-RICHELIEU	16	4	0.26 [0.15 ; 0.40]	5	0.32 [0.10 ; 0.67]
11 HÔPITAL PIERRE-LE GARDEUR	18	4.5	0.40 [0.24 ; 0.61]	3	0.22 [0.04 ; 0.53]
12 CENTRE HOSPITALIER UNIVERSITAIRE SAINTE-JUSTINE	8	2	3.25 [1.39 ; 5.90]	0	0
14 CENTRE HOSPITALIER RÉGIONAL DE LANAUDIÈRE	12	3	0.24 [0.12 ; 0.40]	6	0.42 [0.15 ; 0.83]
15 HÔPITAL FLEURIMONT	22	5.5	0.47 [0.29 ; 0.68]	3	0.30 [0.06 ; 0.73]
16 HÔPITAL RÉGIONAL DE RIMOUSKI	4	1	0.14 [0.04 ; 0.32]	0	0
18 HÔTEL-DIEU DE LÉVIS	4	1	0.09 [0.02 ; 0.21]	3	0.30 [0.06 ; 0.74]
19 HÔPITAL CITÉ DE LA SANTÉ	23	5.8	0.19 [0.12 ; 0.28]	11	0.36 [0.18 ; 0.60]
20 HÔPITAL DE CHICOUTIMI	10	2.5	0.25 [0.12 ; 0.43]	0	0
21 HÔPITAL SAINT-LUC DU CHUM	20	6.7	0.37 [0.23 ; 0.55]	7	0.21 [0.08 ; 0.39]
23 HÔTEL-DIEU D'ARTHABASKA	1	0.3	0.09 [0.00 ; 0.34]	0	0
25 HÔPITAL DU SACRÉ-COEUR DE MONTRÉAL	39	9.8	0.40 [0.28 ; 0.53]	5	0.19 [0.06 ; 0.39]
26 HÔPITAL DE VERDUN	19	4.8	0.28 [0.17 ; 0.43]	5	0.31 [0.10 ; 0.64]
29 HÔPITAL GÉNÉRAL DE MONTRÉAL	21	5.3	0.36 [0.22 ; 0.53]	8	0.48 [0.20 ; 0.87]
31 PAVILLON SAINTE-MARIE	22	5.5	0.26 [0.16 ; 0.38]	9	0.39 [0.18 ; 0.68]
35 HÔPITAL HONORÉ-MERCIER	16	4	0.34 [0.19 ; 0.53]	2	0.13 [0.01 ; 0.36]

Facility	2012-2016*			2016-2017	
	Cases (N)	Cases per year (N)	Rate /100 pp	Cases (N)	Rate /100 pp
36 HÔPITAL GÉNÉRAL DU LAKESHORE	11	2.8	0.19 [0.09 ; 0.32]	1	0.06 [0.00 ; 0.23]
37 HÔTEL-DIEU DE SOREL	15	3.8	0.57 [0.32 ; 0.89]	3	0.43 [0.08 ; 1.04]
40 HÔPITAL DE HULL	28	7	0.32 [0.21 ; 0.45]	3	0.15 [0.03 ; 0.36]
42 CENTRE HOSPITALIER ANNA-LABERGE	-	-	-	0	0
44 HÔPITAL SAINTE-CROIX	6	1.5	0.30 [0.11 ; 0.59]	1	0.19 [0.00 ; 0.76]
45 HÔPITAL DE SAINT-EUSTACHE	-	-	-	2	0.18 [0.02 ; 0.51]
46 HÔPITAL DE GRANBY	6	1.5	0.22 [0.08 ; 0.44]	0	0
47 HÔPITAL DE ROUYN-NORANDA	1	0.3	0.16 [0.00 ; 0.64]	0	0
48 CENTRE HOSPITALIER DE ST. MARY	7	1.8	0.15 [0.06 ; 0.29]	4	0.31 [0.08 ; 0.70]
49 CSSS DE MEMPHREMAGOG	0	0	0	0	0
51 HÔPITAL DE MANIWAKI	0	0	0	0	0
53 HÔPITAL DE CHANDLER	0	0	0	0	0
58 HÔPITAL DU SUROÛT	8	2	0.19 [0.08 ; 0.35]	0	0
63 HÔPITAL DE SAINT-GEORGES	1	0.3	0.12 [0.00 ; 0.45]	0	0
65 HÔPITAL ET CLSC DE VAL-D'OR	8	2	0.52 [0.22 ; 0.94]	0	0
70 CENTRE DE SOINS DE COURTE DURÉE LA SARRE	0	0	0	0	0
72 HÔPITAL ET CENTRE D'HÉBERGEMENT DE SEPT-ÎLES	2	0.5	0.37 [0.03 ; 1.06]	0	0
74 HÔPITAL DE DOLBEAU-MISTASSINI	2	0.7	0.50 [0.05 ; 1.44]	0	0
76 HÔPITAL DE LACHINE	-	-	-	5	0.50 [0.16 ; 1.03]
81 HÔPITAL DE MONT-LAURIER	4	1	0.24 [0.06 ; 0.52]	2	0.44 [0.04 ; 1.25]
89 HÔPITAL DE MONTMAGNY	2	1	0.57 [0.05 ; 1.64]	0	0

Facility	2012-2016*			2016-2017	
	Cases (N)	Cases per year (N)	Rate /100 pp	Cases (N)	Rate /100 pp
96 CENTRE DE SANTÉ DE CHIBOUGAMAU	0	0	0	0	0
101 HÔPITAL RÉGIONAL DE SAINT-JÉRÔME	35	8.8	0.38 [0.26 ; 0.51]	3	0.18 [0.03 ; 0.44]
111 HÔPITAL DE PAPINEAU	2	1	0.43 [0.04 ; 1.22]	0	0
113 HÔPITAL DE THETFORD MINES	3	0.8	0.38 [0.07 ; 0.94]	0	0

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

## References

1. Fistula First. *Graphs of Prevalent AV Fistula Use Rates, By Network* [online]. <http://www.fistulafirst.org/AboutFistulaFirst/FisultaFirstCatheterLastFFCLData.aspx> [14] (last consulted: 2013-08-06).
2. Ayzac, L., Machut, A., Russell, I., et al. *Rapport final pour l'année 2011 du réseau de surveillance des infections en hémodialyse - DIALIN*. Cclin Sud-Est and RAISIN [online]. [http://cclin-sudest.chu-lyon.fr/Reseaux/DIALIN/Resultats/rapport\\_annuel\\_2011\\_V2.pdf](http://cclin-sudest.chu-lyon.fr/Reseaux/DIALIN/Resultats/rapport_annuel_2011_V2.pdf) [15] (last consulted: 2013-08-06).
3. Patel, P. R., Yi, S. H., Booth, S., et al. Bloodstream Infection Rates in Outpatient Hemodialysis Facilities Participating in a Collaborative Prevention Effort: A Quality Improvement Report. *American Journal of Kidney Diseases*, Vol. 62, No. 2 (August 2013), p. 322-330.

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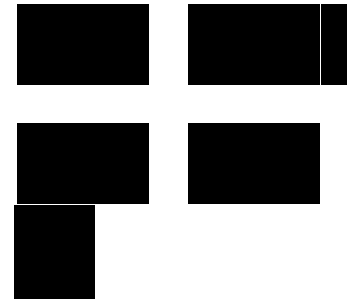
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- [3] <https://www.inspq.qc.ca/sites/default/files/images/maladies-infectieuses/spin/hd/2017/en/figure2.png>
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- [14] <http://www.fistulafirst.org/AboutFistulaFirst/FisultaFirstCatheterLastFFCLData.aspx>
- [15] [http://cclin-sudest.chu-lyon.fr/Reseaux/DIALIN/Resultats/rapport\\_annuel\\_2011\\_V2.pdf](http://cclin-sudest.chu-lyon.fr/Reseaux/DIALIN/Resultats/rapport_annuel_2011_V2.pdf)
- [16] <https://www.inspq.qc.ca/en/file/11057/download?token=kWMtdb7g>