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Vancomycin-Resistant Enterococci (VRE) Infections

Surveillance Results: 2013-2014

From April 1, 2013, to March 31, 2014, 89 healthcare facilities took part in the surveillance of healthcare-associated vancomycin-resistant enterococci (VRE) infections, for a combined total of 4,948,058 patient days (Table 1). In total, 92 VRE infections were reported among patients who contracted strain during a current or previous hospital stay in the reporting facility (categories 1a + 1b). The incidence rate of healthcare-associated VRE infections (cat. 1a + 1b) was 0.19 / 10,000 patient days. This incidence rate was two times higher than 2012-2013. The acquisition rate of healthcare-associated VRE colonization (cat. 1a + 1b) was 9.77 / 10,000 patient days. Data was extracted on May 15th, 2014.

Table 1 - Participation of Healthcare Facilities in the Surveillance of VRE Infections, Québec, 2011-2012 to 2013-2014

	2011-2012*	2012-2013	2013-2014
Participating facilities (N)	89	89	89
Admissions (N)	357,497	644,343	649,297
Inpatient days (N)	2,807,628	5,017,791	4,948,058
Cases of healthcare-associated VRE infection (cat. 1a + 1b) (N)	30	41**	92 [‡]
Cases of healthcare-associated VRE colonization (cat. 1a + 1b) (N)	1,958	4,145	4,834

* The data for 2011-2012 are incomplete, as surveillance was initiated on September 11, 2011. Categories 1a and 1b refer to acquisition of the strain and not to acquisition of the infection.

** The source of acquisition of the strain is unknown in 66 cases involving patients already colonized with VRE since presumed source of infection acquisition is not asked.

[‡] In 2013-2014, the 92 VRE infections included known VRE carriers that developed infection.

Open all

Incidence rate

In 2013-2014, the incidence rate of healthcare-associated VRE infection (cat. 1a + 1b) was 0.19/10,000 patient days (Table 2).

The incidence rate of healthcare-associated VRE infection in teaching healthcare facilities was significantly (eight times) higher than that in non-teaching facilities (Table 2).

Table 2 - Incidence Rate and Percentile Distribution of Healthcare-Associated VRE Infection (Cat. 1a + 1b) by Type of Healthcare Facility, Québec, 2013-2014 (Incidence Rate per 10,000 Patient Days [95% CI])

Type of Facility	Min.	25%	50%	75%	90%	Max.	Incidence Rate
Non-teaching (N = 63)	0.09	0.09	0.32	0.41	0.45	0.45	0.04 [0.02-0.07]
Teaching (N = 26)	0.08	0.25	0.37	1.17	1.52	1.54	0.33 [0.26-0.41] [‡]
Total (N = 89)	0.08	0.18	0.34	0.62	1.50	1.54	0.19 [0.15-0.23]

[I.C. 95%] : 95% confidence interval.

[‡] Significant statistical difference ($p < 0.05$) between non-teaching and teaching healthcare facilities.

Incidence rate trend

The incidence rate of healthcare-associated VRE infections in 2013-2014 was significantly 2.8 times

higher in teaching facilities in 2012-2013 as well as the one at provincial level that was 2.4 times higher in 2013-2014 than in 2012-2013 (Table 3). The incidence rate of healthcare-associated VRE infections in non-teaching facilities was stable.

Table 3 - Change in Incidence Rate of Healthcare-Associated VRE Infection (Cat. 1a + 1b) by Type of Healthcare Facility, Québec, 2011-2012 to 2013-2014 (Incidence Rate per 10,000 Patient Days [95% CI])

Type of Facility	Incidence Rate		
	2011-2012	2012-2013	2013-2014
Non-teaching (N = 63)	0.07 [0.03-0.12]	0.04 [0.02-0.07]	0.04 [0.02-0.07]
Teaching (N = 26)	0.14 [0.09-0.21]	0.12 [0.08-0.17]	0.33 [0.26-0.41]*
Total (N = 89)	0.11 [0.07-0.15]	0.08 [0.06-0.11]	0.19 [0.15-0.23]*

* Significant statistical difference ($p < 0.05$) between healthcare-associated incidence rate in 2012-2013 and 2013-2014.

Description of cases

In total, 107 cases of VRE infection were reported: 92 (86.0%) were identified in patients who acquired VRE infection during a current hospital stay (89 patients), a previous hospital stay (3 patients) or in ambulatory care of the reporting facility (5 patients) (cat. 1a, 1b and 1c.). A total of 10 cases were associated to another facility, community or unknown (cat. 2, 3 and 4) (table 4). Among the 107 VRE infections, 25 infections were from known colonized cases. A total of 19 cases were of category 1a, 1 case of category 1b, 4 cases of category 3 and 1 case of category 4.

Table 4 - Cases of VRE Infection by Presumed Source of Acquisition, Québec, 2013-2014 (N, %)

Category	Source of Acquisition	Infection
1a	Healthcare-associated with a current hospital stay in the reporting facility	89 (83.2%)
1b	Healthcare-associated with a previous hospital stay in the reporting facility	3 (2.8%)
1c	Healthcare-associated with ambulatory care in the reporting facility	5 (4.7%)
1d	Healthcare-associated with long term unit in the reporting facility	0 (0%)
2	Healthcare-associated with another facility	1 (0.9%)
3	Community	8 (7.5%)
4	Unknown	1 (0.9%)
	Total	107

In 2013-2014, among 107 infections, 20 primary bloodstream infections (BSI) have been reported (Table 5).

Table 5 - Number of Cases of VRE Infection from All Sources by Type of Infection and Number

of Complications (Secondary BSIs), Québec, 2013-2014 (N = 107)

Type of Infection	N
Primary BSI	10
Primary BSI related to catheter use	9
Primary BSI related to hemodialysis venous access	1
Symptomatic urinary infection	22
Intra-abdominal infection	19
Skin infection	11
Surgical organ/space site infection	9
Primary deep incisional infection	6
Soft tissue infection	4
Gastro-intestinal tractus infection	4
Pneumoniae	3
Lower respiratory tract infection other than pneumoniae	2
Primary superficial incisional infection	2
Osteomyelitis	2
Arthritis and bursitis	1
Secondary deep incisional infection	1
Decubitus ulcer infection	1
Total	107

A total of 23 deaths were observed, yielding a 30-days case fatality of 21.5% (Table 6).

Table 6 - Number of Deaths and 30-days case fatality Related to VRE Infection, Québec, 2011-2012 à 2013-2014

	2011-2012	2012-2013	2013-2014
VRE infections (all sources)	63	112	107
Number of deaths	12	21	23
Case fatality	19,0%	18,8%	21,5%

Colonization Screening Protocol

In 2013-2014, the acquisition rate of healthcare-associated VRE colonization (cat. 1a + 1b) was 9.77 / 10,000 patient days. This incidence rate in teaching facilities was almost 1.44 times higher than in non-teaching facilities (Table 7).

Table 7 - Change in the Number of Cases and Acquisition rate of Healthcare-associated VRE

**colonization (Cat. 1a + 1b) by type of Healthcare facility, Québec, 2011-2012 à 2013-2014
(Acquisition rate of Healthcare-Associated VRE colonization per 10,000 patient days)**

Type of Facility	2011-2012		2012-2013		2013-2014	
	Number of Cases of Colonization	Acquisition Rate of HA-VRE Colonization	Number of Cases of Colonization	Acquisition Rate of HA-VRE Colonization	Number of Cases of Colonization	Acquisition Rate of HA-VRE Colonization
Non-teaching (N = 63)	790	5.75	1.395	5.63	1.961	7.98
Teaching (N = 26)	1,168	8.15	2.750	10.82	2.873	11.53
Total (N = 89)	1,958	6.97	4.145	8.26	4.834	9.77

Table 8 shows the number of teaching facilities that identified the type of screening used at admission (25 out of 26) and during hospitalization (24 out of 26). Almost all teaching facilities (25 at admission and 24 during hospitalization out of 26) identified their screening procedure, while almost 9% of non-teaching facilities didn't do so (59 at admission and 56 during hospitalization out of 63).

Table 8 - Number of Healthcare Facilities that Identified the type of Screening Procedure Used at Admission and During Hospitalization by Type of Facility, Québec, 2013-2014

Type of Facility	Number of Facilities That Identified the Type of Screening Procedure Used*		
	At admission	During Hospitalization	Total
Non-teaching	59	56	63
Teaching	25	24	26
Total	84	80	89

* The number of facilities that reported the type of screening procedures used at admission and during hospitalization is not additive.

Tables 9 and 10 feature the total number of screening tests performed at admission and during hospitalization, as well as the mean number of VRE screening tests.

Table 9 - Total Number of Screening Tests Performed at Admission and During Hospitalization by Type of Healthcare Facility, Québec, 2013-2014

Type of Facility	Total Number of Screening Tests			Total
	At admission	During Hospitalization	Unspecified	
Non-teaching	133,442	118,819	110,918	363,179
Teaching	129,404	253,525	26,907	409,836
Total	262,846	372,344	137,825	773,015

Table 10 - Mean Number of VRE Screening Score by Type of Healthcare Facility, Québec, 2013-2014 (Mean VRE Screening Tests per Admission)

Type of Facility	Mean Number of VRE Screening Score*		
	At admission	During Hospitalization	Total

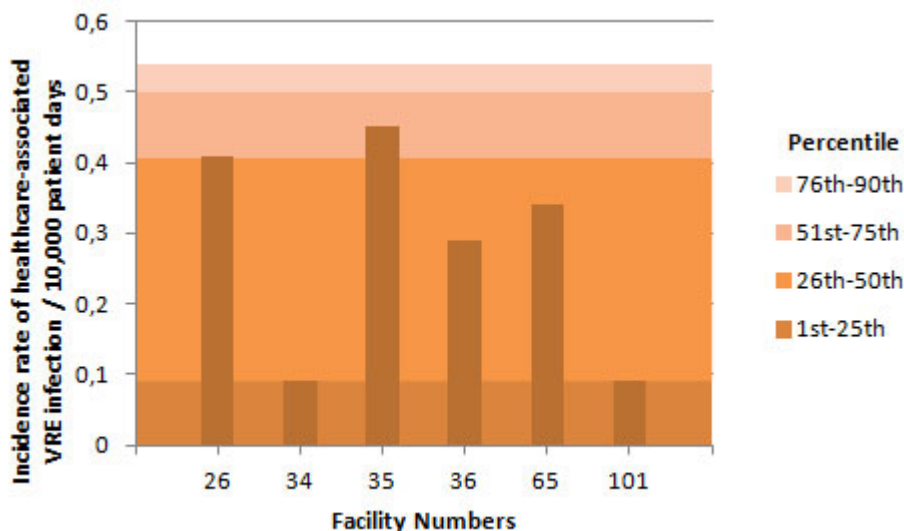
Non-teaching	0.40	0.36	1.09
Teaching	0.41	0.80	1.29
Total	0.40	0.57	1.19

* The mean numbers of VRE screening score at admission and during hospitalization are not additive.

Data per Facility

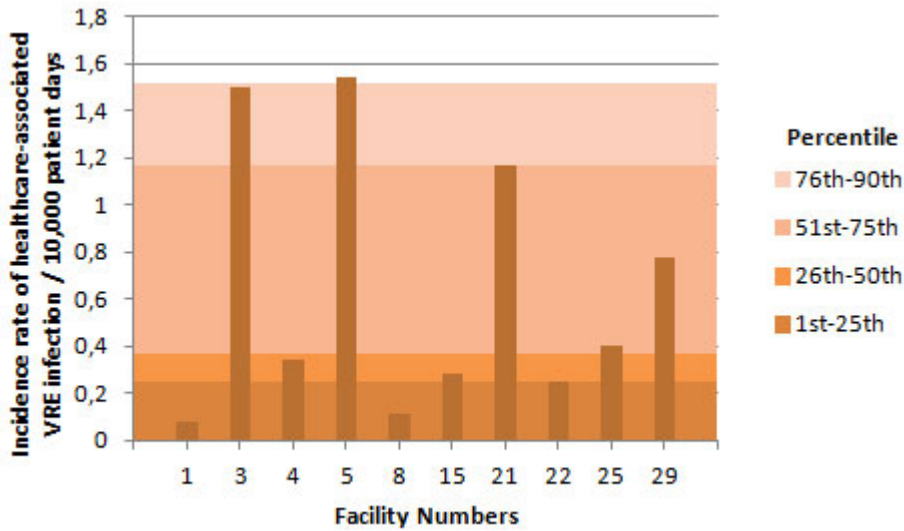
The incidence rate of HA-VRE infection and the percentile rankings by type of facility are shown in figure 1 and 2. Figures 3 and 4 feature the rate of acquisition and percentile ranking of HA-VRE colonization by type of facility.

Figure 1 - Incidence Rate and Percentile Ranking of Healthcare-Associated VRE infection (Cat. 1a + 1b) for Non-Teaching Healthcare Facilities, Québec, 2013-2014 (Incidence Rate per 10,000 Patient Days)



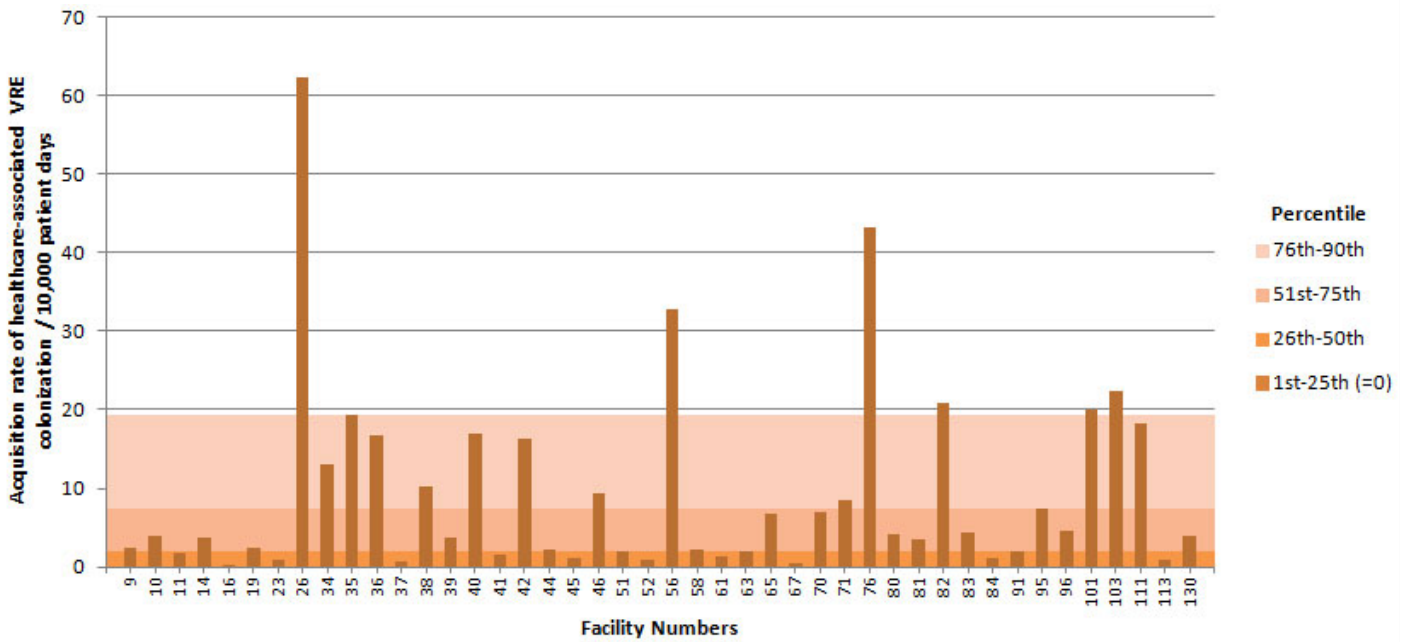
NB: Facilities 9, 10, 11, 14, 16, 19, 23, 32, 37, 38, 39, 40, 41, 42, 44, 45, 46, 47, 49, 51, 52, 53, 56, 58, 59, 61, 63, 64, 67, 70, 71, 72, 74, 75, 76, 77, 80, 81, 82, 83, 84, 85, 86, 88, 89, 91, 95, 96, 97, 99, 103, 107, 109, 111, 112, 113 and 130 did not report any cases of infection in 2013-2014.

Figure 2 - Incidence Rate and Percentile Ranking of Healthcare-Associated VRE infection (Cat. 1a + 1b) for Teaching Healthcare Facilities, Québec, 2013-2014 (Incidence Rate per 10,000 Patient Days)



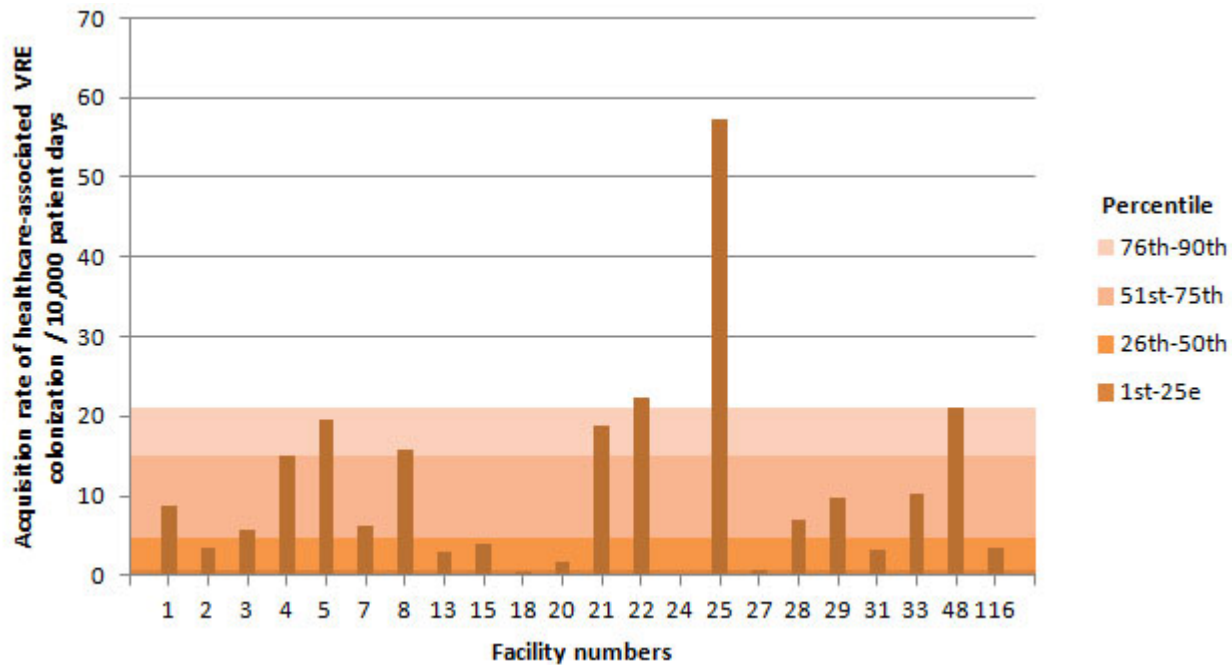
NB: Facilities 2, 6, 7, 12, 13, 18, 20, 24, 27, 28, 30, 31, 33, 48, 116 and 118 did not report any cases of infection in 2013-2014.

Figure 3 - Acquisition Rate of Healthcare-Associated VRE Colonization (Cat.1a + 1b) in Non-Teaching Healthcare Facilities, Québec, 2013-2014 (Acquisition Rate of Healthcare-Associated VRE colonization per 10,000 patient days)



NB: Facilities 32, 47, 49, 53, 59, 64, 72, 74, 75, 77, 85, 86, 88, 89, 97, 99, 107, 109 and 112 did not report any cases of infection in 2013-2014.

Figure 4 - Acquisition Rate of Healthcare-Associated VRE Colonization (Cat.1a + 1b) in Teaching Healthcare Facilities, Québec, 2013-2014 (Acquisition Rate of Healthcare-Associated VRE colonization per 10,000 patient days)



NB: Facilities 6, 12, 30 and 118 did not report any cases of infection in 2013-2014.

At the local level, in 2013-2014, the incidence rate of HA-VRE infection ranged from 0 to 1.54 * 10,000 patient days, whereas the acquisition rate of HA-VRE colonization ranged from 0 to 62.32 / 10,000 patient days. A total of 23 facilities (25.8%) did not report any HA-VRE infection or colonization in 2013-2014. A detailed summary of the surveillance data for HA-VRE infection by healthcare facility can be found in Table 11.

Table 11 - Incidence Rate of Healthcare-Associated VRE Infection (cat. 1a + 1b), Acquisition Rate of Healthcare-Associated VRE Colonization and Mean VRE Screening Tests by Admission and by Facility, Québec, 2013-2014 (Incidence Rate per 10,000 patient days [95% CI]; Acquisition Rate of Colonization per 10,000 patient days)

Health Region	Facility		Incidence Rate of HA-VRE Infection (cat. 1a + 1b) [95% CI]	Acquisition Rate of HA-VRE Colonization (cat. 1a + 1b)	Mean VRE Screening Tests per Admission*
	Number	Name			
01	16	HÔPITAL RÉGIONAL DE RIMOUSKI	0	0.19	1.20
	32	CENTRE HOSPITALIER RÉGIONAL DU GRAND-PORTAGE	0	0	0.91
	61	HÔPITAL NOTRE-DAME-DE-FATIMA	0	1.30	0.45
	71	HÔPITAL DE MATANE	0	8.55	1.15
	77	HÔPITAL D'AMQUI	0	0	2.31
	84	HÔPITAL DE NOTRE-DAME-DU-LAC	0	1.19	1.00
		BAS-SAINT-LAURENT	0	1.17	1.15

	20	HÔPITAL DE CHICOUTIMI	0	1.75	0.70
	67	HÔPITAL ET CENTRE DE RÉADAPTATION DE JONQUIÈRE	0	0.51	0.89
02	74	HÔPITAL DE DOLBEAU-MISTASSINI	0	0	0.78
	88	HÔPITAL, CLSC ET CENTRE D'HÉBERGEMENT DE ROBERVAL	0	0	0.83
	112	HÔPITAL D'ALMA	0	0	0.47
		SAGUENAY-LAC-SAINT-JEAN	0	0.86	0.71
	2	HÔPITAL DE L'ENFANT-JÉSUS	0	3.46	1.43
	7	PAVILLON L'HÔTEL-DIEU DE QUÉBEC	0	6.35	2.58
	24	HÔPITAL DU SAINT-SACREMENT	0	0.18	1.50
	27	PAVILLON CENTRE HOSPITALIER DE L'UNIVERSITÉ LAVAL	0	0.74	1.21
03	28	PAVILLON SAINT-FRANÇOIS D'ASSISE	0	7.06	1.75
	33	INST. UNIV. DE CARDIO. ET DE PNEUMO. DE QUÉBEC	0	10.17	4.73
	59	HÔPITAL DE BAIE-SAINT-PAUL	0	0	1.29
	86	HÔPITAL DE LA MALBAIE	0	0	1.13
		CAPITALE-NATIONALE	0	4.56	2.15
	23	HÔTEL-DIEU D'ARTHABASKA	0	0.95	0.98
	31	PAVILLON SAINT-JOSEPH	0	3.22	1.27
	41	HÔPITAL DU CENTRE-DE-LA-MAURICIE	0	1.44	1.25
04	44	HÔPITAL SAINTE-CROIX	0	2.22	1.11
	85	CSSS DU HAUT-SAINT-AURICE	0	0	0.70
		MAURICIE ET CENTRE-DU-QUÉBEC	0	2.24	1.16
	15	HÔPITAL FLEURIMONT	0.28 [0.05-0.68]	3.88	0.52
	30	HÔTEL-DIEU DE SHERBROOKE	0	0	0.44
05	49	CSSS DE MEMPHRÉMAGOG	0	0	0.89
	75	CSSS DU GRANIT	0	0	0.09
		ESTRIE	0.15 [0.03-0.37]	2.12	0.49

	3	HÔPITAL ROYAL VICTORIA	1.50 [0.87-2.30]	5.84	0.18
	4	HÔPITAL NOTRE-DAME DU CHUM	0.34 [0.09-0.75]	14.98	1.92
	5	HÔPITAL GÉNÉRAL JUIF	1.54 [1.01-2.18]	19.67	0.26
	6	HÔPITAL DE MONTRÉAL POUR ENFANTS	0	0	0.09
	8	PAV. MAISONNEUVE / PAV. MARCEL-LAMOUREUX	0.11 [0.01-0.31]	15.92	1.24
	12	CENTRE HOSPITALIER UNIVERSITAIRE SAINTE-JUSTINE	0	0	0.12
	13	INSTITUT DE CARDIOLOGIE DE MONTRÉAL	0	3.04	1.69
	21	HÔPITAL SAINT-LUC DU CHUM	1.17 [0.60-1.93]	18.76	2.14
	22	HÔTEL-DIEU DU CHUM	0.25 [0.02-0.72]	22.42	3.12
	25	HÔPITAL DU SACRÉ-CŒUR DE MONTRÉAL	0.40 [0.14-0.79]	57.27	2.14
06	26	HÔPITAL DE VERDUN	0.41 [0.08-1.01]	62.32	0.96
	29	HÔPITAL GÉNÉRAL DE MONTRÉAL	0.78 [0.31-1.47]	9.86	0.31
	34	HÔPITAL SANTA CABRINI	0.09 [0-0.36]	13.15	1.77
	36	HÔPITAL GÉNÉRAL DU LAKESHORE	0.29 [0.03-0.84]	16.65	1.35
	38	HÔPITAL JEAN-TALON	0	10.22	1.47
	48	CENTRE HOSPITALIER DE ST. MARY	0	21.06	1.31
	76	HÔPITAL DE LACHINE	0	43.29	4.14
	80	HÔPITAL FLEURY	0	4.13	1.53
	83	HÔPITAL DE LASALLE	0	4.26	0.37
	116	INSTITUT THORACIQUE DE MONTRÉAL	0	3.47	0.40
	118	HÔPITAL NEUROLOGIQUE DE MONTRÉAL	0	0	0.27
		MONTRÉAL	0.49 [0.39-0.60]	19.23	1.17
	39	HÔPITAL DE GATINEAU	0	3.64	0.71
	40	HÔPITAL DE HULL	0	16.93	1.52
07	51	HÔPITAL DE MANIWAKI	0	1.99	1.21
	95	HÔPITAL DU PONTIAC	0	7.43	1.42
	111	HÔPITAL DE PAPINEAU	0	18.18	1.65
		OUTAOUAIS	0	10.19	1.12
	47	HÔPITAL DE ROUYN-NORANDA	0	0	0.04
	52	CENTRE HOSPITALIER HÔTEL-DIEU D'AMOS	0	0.95	0.12
08	65	HÔPITAL ET CLSC DE VAL-D'OR	0.34 [0-1.33]	6.81	0.53
	70	CENTRE DE SOINS DE COURTE DURÉE LA SARRE	0	6.92	0.59
	82	PAVILLON SAINTE-FAMILLE	0	20.84	0.44
		ABITIBI-TÉMISCAMINGUE	0.11 [0-0.43]	4.87	0.29
	64	HÔPITAL LE ROYER	0	0	0.24
09	72	HÔPITAL ET CENTRE D'HÉBERGEMENT DE SEPT-ÎLES	0	0	0.17
		CÔTE-NORD	0	0	0.21
10	96	CENTRE DE SANTÉ DE CHIBOUGAMAU	0	4.66	0.77
		NORD-DU-QUÉBEC	0	4.66	0.77

	53	HÔPITAL DE CHANDLER	0	0	0.68
	91	HÔPITAL HÔTEL-DIEU DE GASPÉ	0	1.93	1.34
11	97	HÔPITAL DE MARIA	0	0	1.31
	107	HÔPITAL DE L'ARCHIPEL	0	0	0.43
	109	HÔPITAL DE SAINTE-ANNE-DES-MONTS	0	0	2.05
		GASPÉSIE-ÎLES-DE-LA-MADELEINE	0	0.35	1.17
	18	HÔTEL-DIEU DE LÉVIS	0	0.39	0.54
	63	HÔPITAL DE SAINT-GEORGES	0	2.01	1.86
12	89	HÔPITAL DE MONTMAGNY	0	0	1.34
	113	HÔPITAL DE THETFORD MINES	0	0.80	0.82
		CHAUDIÈRE-APPALACHES	0	0.81	1.02
13	19	HÔPITAL CITÉ DE LA SANTÉ	0	2.32	0.62
		LAVAL	0	2.32	0.62
	11	HÔPITAL PIERRE-LE GARDEUR	0	1.70	0.89
14	14	CENTRE HOSPITALIER RÉGIONAL DE LANAUDIÈRE	0	3.75	1.56
		LANAUDIÈRE	0	2.63	1.19
	45	HÔPITAL DE SAINT-EUSTACHE	0	1.03	1.14
	56	CSSS D'ARGENTEUIL	0	32.76	2.88
15	81	HÔPITAL DE MONT-LAURIER	0	3.55	1.87
	101	HÔPITAL RÉGIONAL DE SAINT-JÉRÔME	0.09 [0-0.36]	19.96	2.14
	103	HÔPITAL LAURENTIEN	0	22.36	1.26
		LAURENTIDES	0.04 [0-0.16]	13.27	1.68
	1	HÔPITAL CHARLES-LEMOYNE	0.08 [0-0.31]	8.88	1.46
	9	HÔPITAL DU HAUT-RICHELIEU	0	2.41	0.96
	10	HÔPITAL PIERRE-BOUCHER	0	3.86	0.31
	35	HÔPITAL HONORÉ-MERCIER	0.45 [0.09-1.10]	19.39	2.06
	37	HÔTEL-DIEU DE SOREL	0	0.59	1.16
16	42	HÔPITAL ANNA-LABERGE	0	16.32	1.56
	46	HÔPITAL DE GRANBY	0	9.37	0.77
	58	HÔPITAL DU SUROÏT	0	2.20	1.11
	99	HÔPITAL BROME-MISSISQUOI-PERKINS	0	0	0.84
	130	HÔPITAL BARRIE MEMORIAL	0	3.92	2.24
		MONTÉRÉGIE	0.06 [0.02-0.13]	7.42	1.10
		Total	0.19 [0.15-0.23]	9.77	1.19

* Number of screening test divided by number of admissions.

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