

Submitted by delphine.descamps on Thu, 10/05/2017 - 17:01



Hospital-Wide Healthcare-associated Bloodstream Infections

Surveillance results: 2016-2017

From April 1st, 2016, to March 31st, 2017, 89 healthcare facilities took part in the hospital-wide surveillance of bloodstream infections (BSIs), for a combined total of 4,830,348 patient days (Table 1). Participating facilities reported 3,167 BSIs in 2,982 patients. The total incidence rate was 5.43 cases per 10,000 patient days. The incidence rate in 2016-2017 is stable compared with the average rate for 2012-2016. Two non-teaching facilities joined the program in 2016-2017. Data were extracted on May 5th, 2017.

Table 1 - Participation of Healthcare Facilities in the Hospital-Wide Surveillance of BSIs, Québec, 2012-2013 to 2016-2017

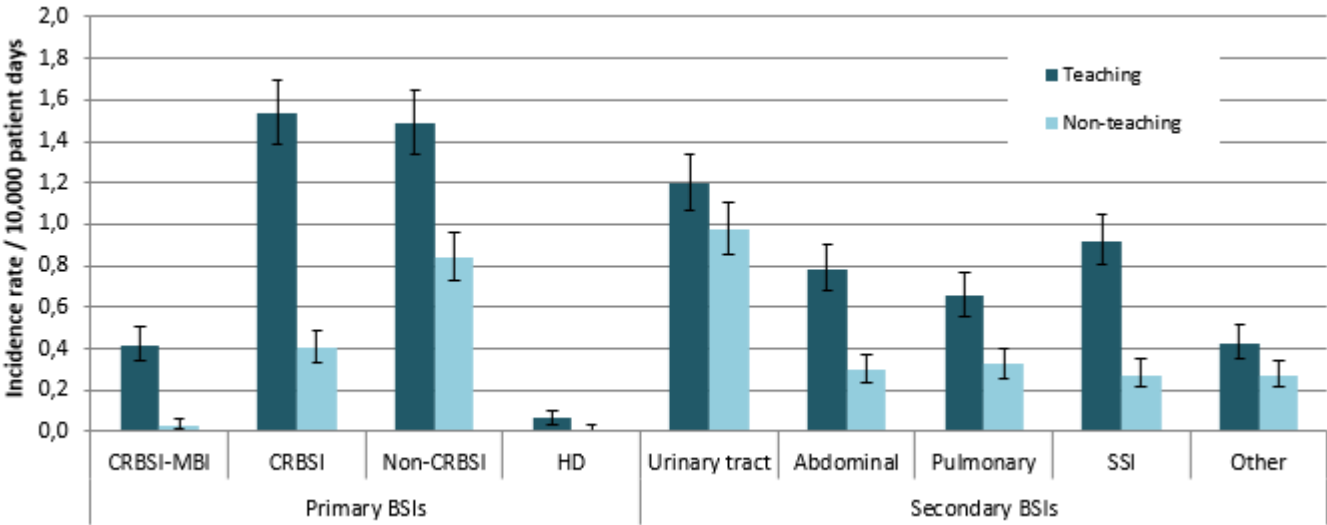
	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Participating facilities (N)	64	73	89	87	89
Admissions (N)	482,354	520,772	633,252	649,458	677,083
Patient days (N)	3,791,482	3,998,173	4,740,371	4,771,179	4,830,348
BSIs (cat. 1a, 1b and 1c, N)	2,537	2,457	3,008	3,126	3,167
Infected patients (N)	2,428	2,295	2,806	2,899	2,982

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Incidence rates

In 2016-2017, the total incidence rate is 5.43 BSIs per 10,000 patient days. The incidence rates remain much higher in intensive care units (ICUs) than in other units (Table 2). They are also higher in teaching facilities than in non-teaching facilities (Figure 1 and Table 2). Catheter-related bloodstream infections (CRBSIs) are the most common BSIs in teaching ICUs; in non-teaching ICUs, it is rather non-catheter-related primary bloodstream infection (non-CRBSI) (Figure 2). In other units, the incidence rates also vary depending on the type of healthcare facility: non-CRBSI are the most common BSIs in teaching facilities, while BSIs secondary to urinary tract infections are the most common in non-teaching facilities (Figure 3). In teaching facilities, in non-intensive care units, the CRBSI incidence rate (1.11 case / 10,000 patient days) increases to 1.54 case / 10,000 patient days when CRBSI associated with a mucosal barrier injury (MBI) are also considered (Figure 3 and Table 2).

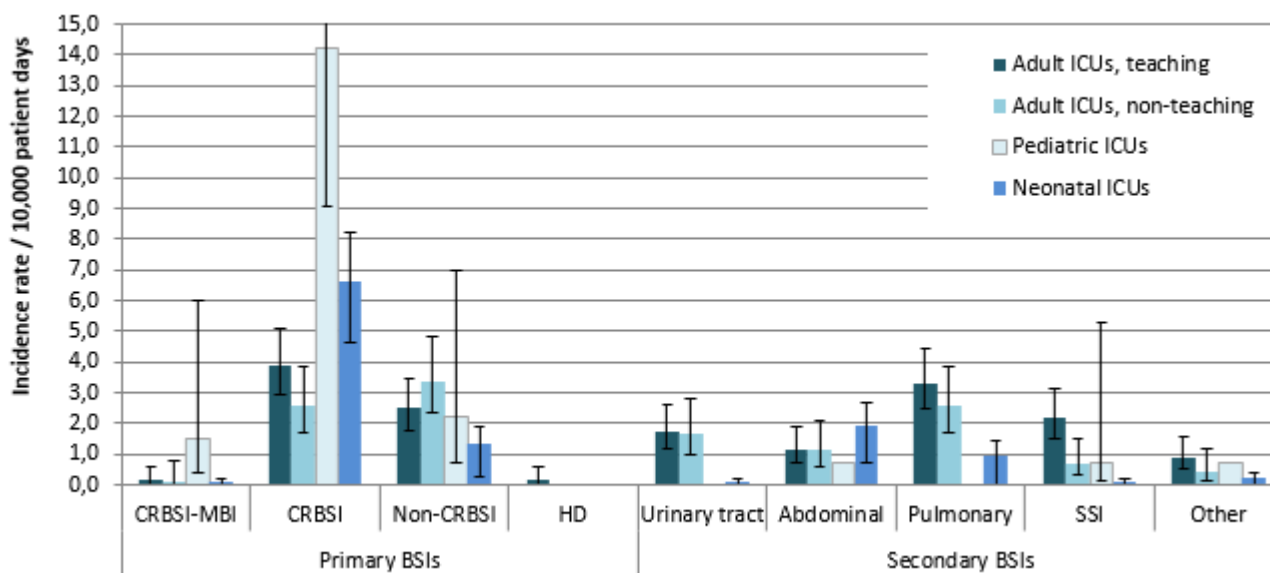
Figure 1 - BSI Incidence Rate for Each Type of Infection, by Type of Healthcare Facility, Québec, 2016-2017 (Incidence Rate per 10,000 Patient Days [95% CI])



[2]

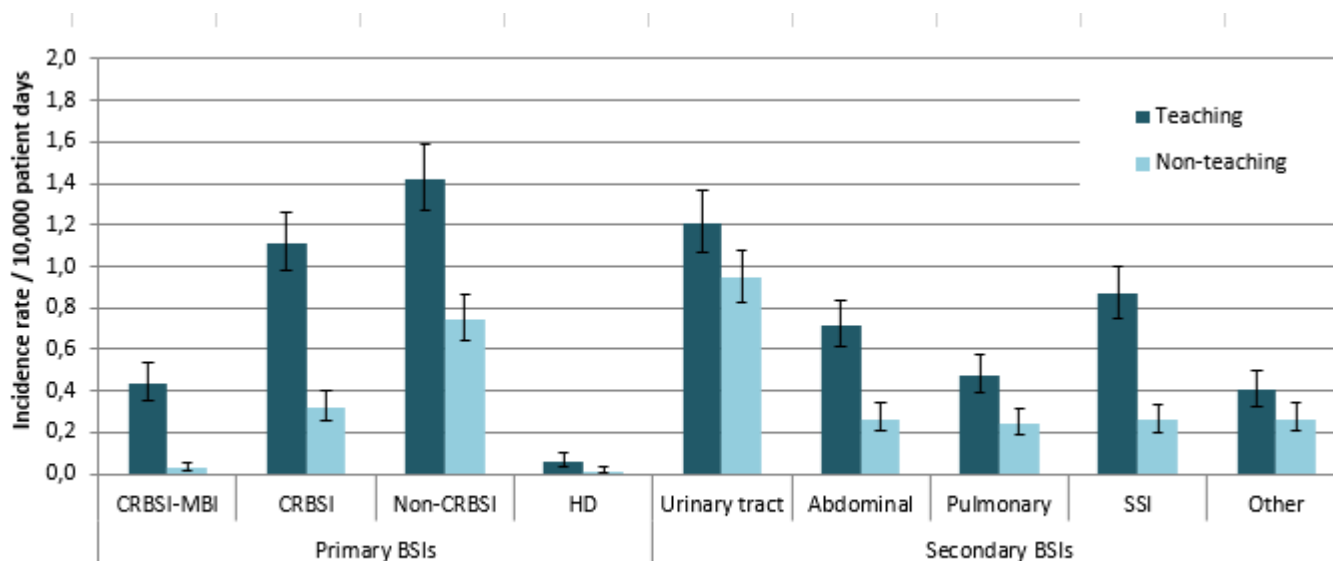
Figure 2 - BSI Incidence Rate in ICUs, For Each Type of Infection, by Type of Healthcare

Facility and Type of ICU, Québec, 2016-2017 (Incidence Rate per 10,000 Patient Days [95% CI])



[3]

Figure 3 - BSI Incidence Rate in Non-ICU Units, for Each Type of Infection, by Type of Healthcare Facility, Québec, 2016-2017 (Incidence Rate per 10,000 Patient Days [95% CI])



[4]

Table 2 - BSI Incidence Rate for Each Type of Infection, by Type of Healthcare Facility, Type of Unit and Type of ICU, Québec, 2016-2017 (Incidence Rate per 10,000 Patient Days [95% CI])

	Primary BSIs				Secondary BSIs					Total
	CRBSI-MBI	CRBSI	Non-CRBSI	HD	Urinary tract	Abdominal	Pulmonary	SSI	Other**	
Total hospitalized	0.22 [0.18 - 0.27]	0.96 [0.88 - 1.05]	1.16 [1.07 - 1.26]	0.04 [0.02 - 0.06]	1.08 [0.99 - 1.18]	0.54 [0.48 - 0.61]	0.49 [0.43 - 0.55]	0.59 [0.53 - 0.66]	0.35 [0.30 - 0.40]	5.43 [5.22 - 5.64]
Teaching	0.41 [0.34 - 0.50]	1.53 [1.38 - 1.70]	1.49 [1.34 - 1.65]	0.06 [0.04 - 0.10]	1.20 [1.06 - 1.34]	0.79 [0.68 - 0.91]	0.65 [0.56 - 0.76]	0.92 [0.80 - 1.05]	0.43 [0.35 - 0.52]	7.47 [7.14 - 7.83]

Non-teaching	0.03 [0.01 - 0.06]	0.40 [0.33 - 0.49]	0.84 [0.73 - 0.96]	0.01 [0.00 - 0.03]	0.97 [0.86 - 1.10]	0.30 [0.23 - 0.37]	0.32 [0.26 - 0.40]	0.27 [0.22 - 0.35]	0.27 [0.21 - 0.34]	3.42 [3.19 - 3.66]
ICUs	0.19 [0.08 - 0.42]	4.66 [3.97 - 5.47]	2.43 [1.94 - 3.03]	0.06 [0.02 - 0.25]	1.24 [0.91 - 1.70]	1.34 [0.99 - 1.80]	2.36 [1.89 - 2.96]	1.18 [0.86 - 1.62]	0.59 [0.38 - 0.93]	14.05 [12.82 - 15.41]
Adult teaching	0.15 [0.04 - 0.59]	3.88 [2.97 - 5.08]	2.49 [1.78 - 3.49]	0.15 [0.04 - 0.59]	1.76 [1.18 - 2.62]	1.17 [0.72 - 1.91]	3.30 [2.46 - 4.42]	2.20 [1.54 - 3.14]	0.88 [0.50 - 1.55]	15.97 [13.99 - 18.24]
Adult non-teaching	0.11 [0.02 - 0.80]	2.58 [1.71 - 3.88]	3.37 [2.35 - 4.81]	-	1.68 [1.01 - 2.79]	1.12 [0.60 - 2.09]	2.58 [1.71 - 3.88]	0.67 [0.30 - 1.50]	0.45 [0.17 - 1.20]	12.56 [10.44 - 15.12]
Pediatric	1.50 [0.37 - 5.98]	14.21 [9.07 - 22.28]	2.24 [0.72 - 6.96]	-	-	0.75 [0.11 - 5.31]	-	0.75 [0.11 - 5.31]	0.75 [0.11 - 5.31]	20.20 [13.85 - 29.45]
Neonatal	0.12 [0.02 - 0.86]	6.65 [5.11 - 8.67]	1.33 [0.74 - 2.4]	-	0.12 [0.02 - 0.86]	1.94 [1.19 - 3.16]	0.97 [0.48 - 1.94]	0.12 [0.02 - 0.86]	0.24 [0.06 - 0.97]	11.49 [9.40 - 14.06]
Non ICU units	0.22 [0.18 - 0.27]	0.70 [0.63 - 0.78]	1.07 [0.98 - 1.17]	0.03 [0.02 - 0.06]	1.07 [0.98 - 1.17]	0.48 [0.42 - 0.55]	0.35 [0.30 - 0.41]	0.55 [0.49 - 0.62]	0.33 [0.28 - 0.39]	4.81 [4.61 - 5.02]
Teaching	0.43 [0.36 - 0.53]	1.11 [0.98 - 1.26]	1.43 [1.27 - 1.59]	0.06 [0.03 - 0.10]	1.21 [1.07 - 1.36]	0.72 [0.61 - 0.84]	0.48 [0.39 - 0.58]	0.87 [0.75 - 1.00]	0.40 [0.33 - 0.50]	6.70 [6.36 - 7.05]
Non-teaching	0.03 [0.01 - 0.06]	0.32 [0.25 - 0.40]	0.75 [0.64 - 0.86]	0.01 [0.00 - 0.03]	0.95 [0.83 - 1.08]	0.26 [0.21 - 0.34]	0.24 [0.18 - 0.31]	0.26 [0.20 - 0.33]	0.26 [0.21 - 0.34]	3.07 [2.86 - 3.30]

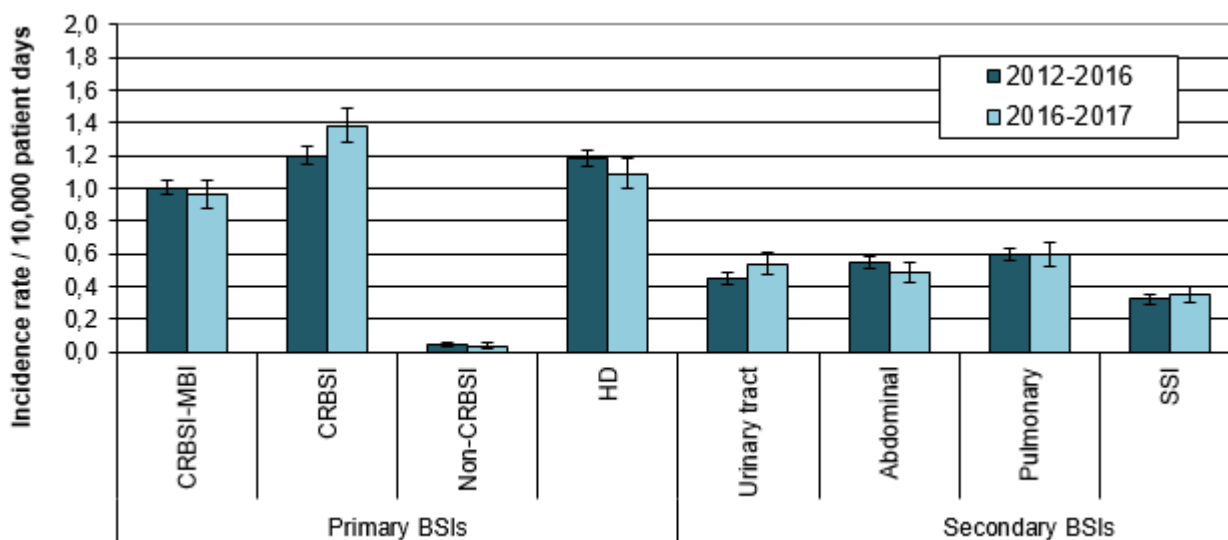
* When the incidence rate is 0, the confidence interval [CI] is not calculated.

** The "Other" column also includes HD-related BSIs and secondary BSIs arising from a skin, soft tissue, bone or joint infection.

Incidence rate time trends

The BSI incidence rate in 2016–2017 remains stable compared with the 2012–2016 pooled rate ($p > 0.05$, Table 3). This is observed in both teaching and non-teaching facilities. This stability is also observed for every BSI type except for non-CRBSIs and BSIs secondary to an abdominal infection ($p < 0.05$, Figure 4). The apparent variation in rates of BSIs secondary to a urinary infection is not statistically significant.

Figure 4 - Evolution of BSI Incidence Rates, by Type of Infection, in Facilities that Previously participated in Surveillance (N = 89), Québec, 2012-2016 and 2016-2017 (Incidence Rate per 10,000 Patient Days [95% CI])



[5]

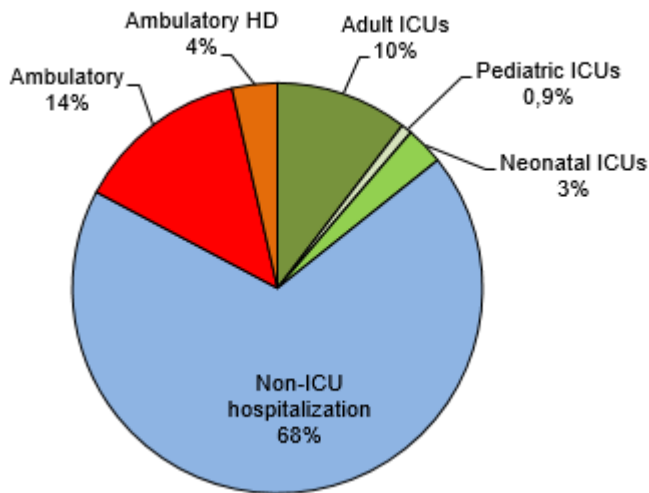
Table 3 - Evolution of BSI Incidence Rates, by Type of Healthcare Facility, in Facilities that Previously participated in Surveillance (N = 89), Québec, 2012-2016 and 2016-2017 (Incidence Rate per 10,000 Patient Days [95% CI])

Facility	Number of facilities	Incidence rate	
		2012-2013	2016-2017
Teaching	26	7.20 [7.02 ; 7.38]	7.47 [7.14 ; 7.83]
Non-teaching	63	3.49 [3.36 ; 3.61]	3.43 [3.20 ; 3.67]
Total	89	5.35 [5.24 ; 5.46]	5.43 [5.23 ; 5.64]

Description of cases

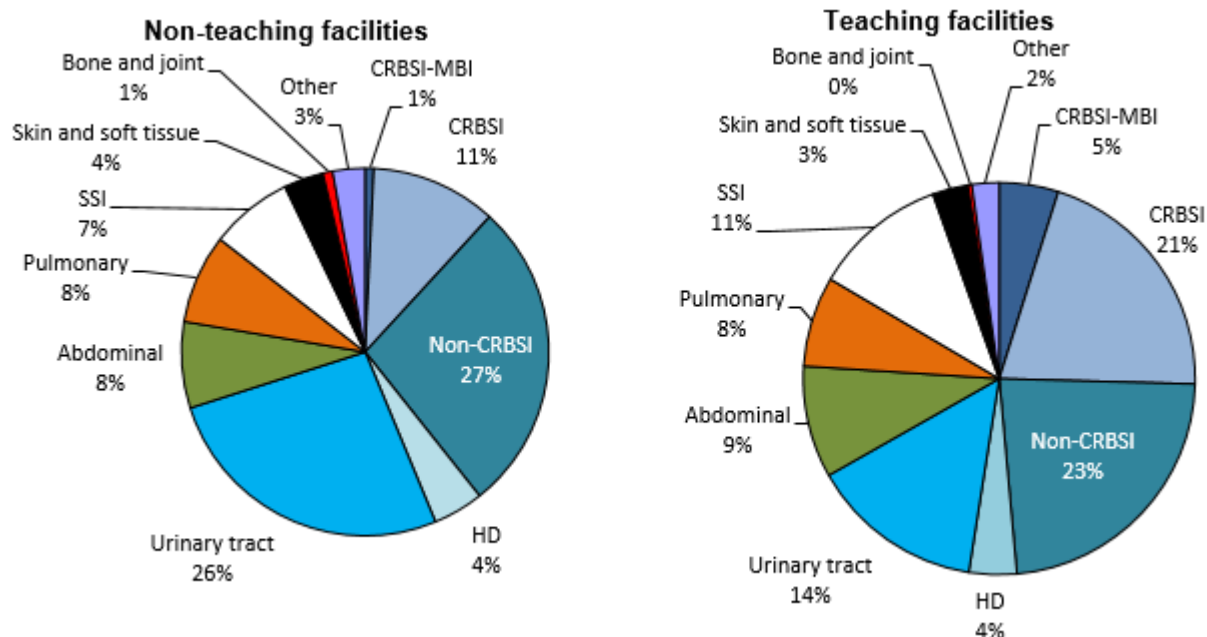
Patients who developed a BSI are aged between 0 and 101 years, with a median age of 69 years. Forty-one percent of BSIs (41%) occurred in women. Although the incidence rates are higher in ICUs, most BSIs occurred in non-ICU units (68%, Table 4 and Figure 5). Non-CRBSIs are the most commonly encountered BSIs in both teaching and non-teaching facilities (Table 4 and Figure 6).

Figure 5 - Breakdown of Cases Based on Type of Unit and Type of ICU, Québec, 2016-2017 (%)



[6]

Figure 6 - Breakdown of Cases Based on Type of BSI, for Teaching and Non-Teaching Healthcare Facilities, Québec, 2016-2017 (%)



[7]

Table 4 - Number of Cases for Each Type of BSI, by Type of Healthcare Facility, Type of Unit and Type of ICU, Québec, 2016-2017 (N)

	Primary BSIs				Secondary BSIs					Total
	CRBSI-MBI	CRBSI	Non-CRBSI	HD	Urinary tract	Abdominal	Pulmonary	SSI	Other*	
Total	111	551	778	130	580	275	240	310	192	3,167
Teaching	103	434	488	83	302	195	157	233	116	2,111
Non-teaching	8	117	290	47	278	80	83	77	76	1,056
Total hospitalized	106	465	561	17	523	260	235	286	168	2,621
Teaching	99	367	356	15	286	188	156	219	102	1,788
Non-teaching	7	98	205	2	237	72	79	67	66	833
ICU	6	150	78	2	40	42	78	38	19	452
Teaching	2	53	34	2	24	16	45	30	12	218
Non-teaching	1	23	30	0	15	10	23	6	4	112
pédiatriques	2	19	3	0	0	1	0	1	1	27
néonatales	1	55	11	0	1	16	8	1	2	95
Non-ICU hospitalization	100	315	483	15	483	217	159	248	149	2,169
Teaching	94	240	308	13	261	155	103	187	87	1,448
Non-teaching	6	75	175	2	222	62	56	61	62	721
Ambulatory	5	86	217	113	57	15	5	24	24	546
Teaching	4	67	132	68	16	7	1	14	14	323
Non-teaching	1	19	85	45	41	8	4	10	10	223

* The "Other" column also includes BSIs secondary to skin, soft tissue, bone or joint infection.

Three hundred and thirty four (334) procedures that occurred in the seven days preceding the BSI are reported for the 778 non-CRBSIs (Table 5). Urologic procedures are the most frequently reported procedures, representing 42% of all reported procedures.

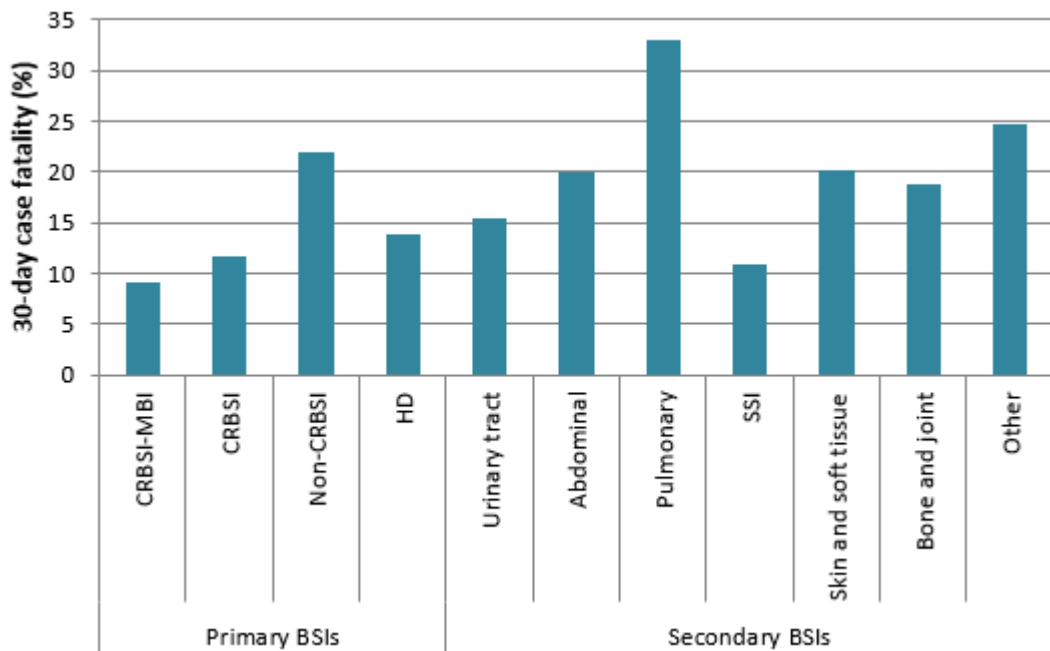
Table 5 - Distribution of Invasive Procedures Reported for Non-CRBSIs, by Type, Québec,

2016-2017 (N, %)

Type of invasive procedure	Procedures	
	N	%
Urologic	141	42.2
Prostate biopsy	47	14.1
Ureteral double J stent placement	47	14.1
Cystoscopy / retrograde ureteroscopy	32	9.6
Percutaneous nephrostomy	15	4.5
Abdominal	39	11.7
Colonoscopy	10	3
Upper gastrointestinal endoscopy	8	2.4
Paracentesis - Ascitic tap	10	3
Other abdominal	11	3.3
Cardiovascular	16	4.8
Angiography with / without angioplasty or stent	9	2.7
Other cardiovascular	7	2.1
Hepatobiliary	62	18.6
ERCP with / without biliary stent	59	17.7
Other hepatobiliary	3	0.9
Musculoskeletal	0	0
Arthrocentesis (joint tap)	0	0
Cutaneous	0	0
Gynecological	0	0
Neurologic	0	0
Respiratory	9	2.7
Other	67	20.1
Total	334	100

Overall, 18% of BSI cases resulted in death within 30 days of bacteremia onset (Table 6). Case fatality is highest in patients with a BSI secondary to a pulmonary infection (Table 6 and Figure 7).

Figure 7 - 30-Day Case Fatality for Each Type of Infection, Québec, 2016-2017 (%)



[8]

Table 6 - 10-Day and 30-Day Case Fatality for Each Type of Infection, 2016-2017 (N, %)

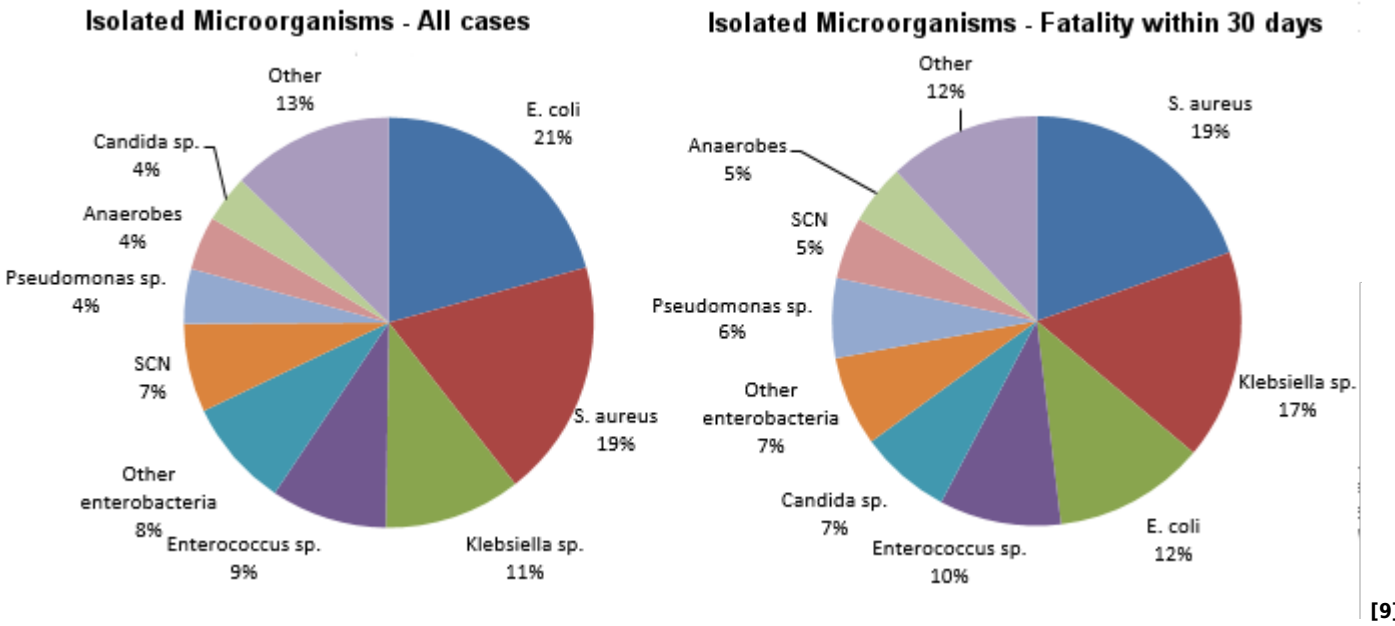
	BSIS (n)	10-day case fatality		30-day case fatality	
		n	%	n	%
Primary BSIs					
CRBSI-MBI	111	6	5	10	9
CRBSI	551	32	6	64	12
Non-CRBSI	778	127	16	171	22
HD	130	9	7	18	14
Secondary BSIs					
Urinary tract	580	48	8	89	15
Abdominal	275	38	14	55	20
Pulmonary	240	61	25	79	33
SSI	310	17	5	34	11
Skin and soft tissue	99	12	12	20	20
Bone and joint	16	1	6	3	19
Other	77	8	10	19	25
Total	3,167	359	11	562	18

Microbiology

The three most frequently isolated microorganisms in reported cases and in cases resulting in death within 30 days are *Escherichia coli*, *Staphylococcus aureus* and *Klebsiella* sp. (Figure 8 and Table 7).

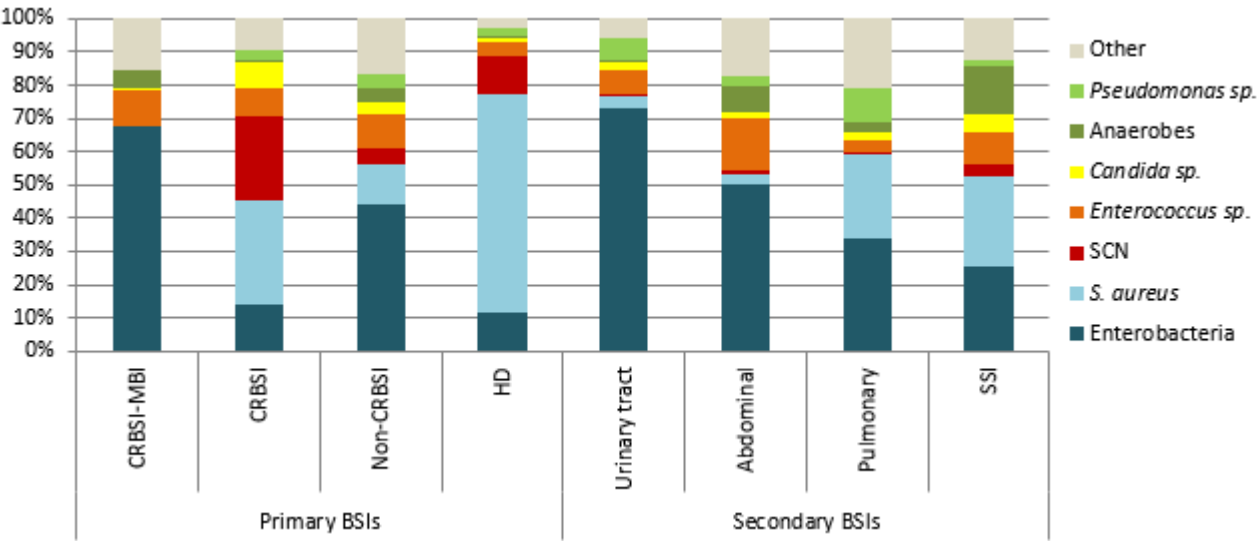
Staphylococcus aureus is the most frequently isolated microorganisms in patients with CRBSIs, hemodialysis-related BSIs and in BSIs secondary to a pulmonary infection or a SSI (Figure 9 and Table 7). In patients with a non-CRBSI, CRBSI-MBI or a BSI secondary to a urinary tract or abdominal infection, *Escherichia coli* is the most common microorganism. A polymicrobial infection occurred in 11% of cases; this proportion reaches 21% in BSIs secondary to an abdominal infection and 14% in BSIs secondary to a SSI.

Figure 8 - Breakdown of Categories of Isolated Microorganisms in All Cases (N = 3,579) and Cases of Fatality Within 30 Days (N = 635), Québec, 2016-2017 (%)



[9]

Figure 9 - Breakdown of Categories of Isolated Microorganisms, for Each Type of BSI, Québec, 2016-2017 (%)



[10]

Table 7 - Breakdown of Microorganisms associated with BSIs, for each Type of BSI, for all BSIs and for those associated with a Fatality Within 30 Days, Québec, 2016-2017 (N, %)

Microorganism	Primary BSIs			Secondary BSIs					Overall*	30-day case fatality	
	CRBSI-MBI	CRBSI	Non-CRBSI	HD	Urinary tract	Abdominal	Pulmonary	SSI		n	%
Enterobacteria	82	86	395	15	458	176	88	92	1431	226	15.8
<i>E. coli</i>	44	19	205	3	282	88	26	55	739	76	10.3
<i>Klebsiella sp.</i>	24	36	115	2	97	50	34	21	387	105	27.1
Other enterobacteria	14	31	75	10	79	38	28	16	305	45	14.8
<i>S. aureus</i>	0	195	111	87	23	10	66	98	672	124	18.5
CNS	0	158	41	15	5	5	1	13	250	31	12.4
<i>Enterococcus sp.</i>	13	55	95	6	45	55	10	35	328	61	18.6
<i>Candida sp.</i>	1	48	31	1	16	6	7	19	133	47	35.3
Anaerobic	6	2	35	1	2	28	7	52	152	30	19.7
<i>Pseudomonas sp.</i>	0	22	42	3	42	9	26	7	155	40	25.8
Other	19	57	148	4	37	61	55	44	458	76	16.6
Total	121	623	898	132	628	350	260	360	3579	635	17.7

* This column includes the sum of the other columns as well as secondary BSIs arising from a skin, soft tissue, bone or joint infection, or another source.

Methicillin-resistant *S. aureus* (MRSA) account for 12% (80 / 671) of *S. aureus* BSIs in all geographic areas (Table 8 and Figure 10); this represents a significant decrease compared to the 2012-2016 proportion (16%, $p < 0.05$). BSIs associated with carbapenem-resistant enterobacteriaceae continue to be relatively rare in Québec (13 / 997 or 1% of tested strains) and the apparent increase in resistance in 2015-2016 and 2016-2017 is not statistically significant. Please note that results presented in the second graph of Figure 10 exclude *Pseudomonas sp.*

Table 8 - Proportion of Strains Tested and Proportion of Resistance to Antibiotics for Selected Isolated Microorganisms, Québec, 2016-2017 (N, %)

Microorganism	Antibiotic	Isolated	Tested		Resistant	
		N	N	%	N	%
<i>Staphylococcus aureus</i>	Oxacillin	672	671	99.9	80	11.9
<i>Enterococcus faecium</i>	Vancomycin	109	108	99.1	11	10.2
<i>Enterococcus faecalis</i>	Vancomycin	180	180	100	1	0.6
	CSE 4	387	294	76	22	7.5
<i>Klebsiella sp.</i>	Imipenem ou meropenem	387	257	66.4	3	1.2
	Multiresistant 1	387	327	84.5	5	1.5
	CSE 4	739	590	79.8	67	11.4
<i>Escherichia coli</i>	Fluoroquinolones 3	739	669	90.5	188	28.1
	Imipenem ou meropenem	739	520	70.4	2	0.4
	Multiresistant 1	739	657	88.9	26	4

	CSE 4	122	93	76.2	26	28
<i>Enterobacter</i> sp.	Imipenem ou meropenem	122	97	79.5	2	2.1
	Multiresistant 1	122	93	76.2	3	3.2
	Amikacin, gentamicin or tobramycin	155	125	80.6	4	3.2
	CSE 2	155	144	92.9	8	5.6
<i>Pseudomonas</i> sp.	Fluoroquinolones 2	155	145	93.5	11	7.6
	Imipenem ou meropenem	155	134	86.5	15	11.2
	Piperacillin/tazobactam	155	128	82.6	4	3.1
	Multiresistant 2	155	146	94.2	9	6.2
<i>Acinetobacter</i> sp.	Imipenem ou meropenem	14	12	85.7	1	8.3
	Multiresistant 3	14	6	42.9	0	0

CSE 2: cefepime or ceftazidime;

CSE 4: cefepime, cefotaxime, ceftazidime or ceftriaxone;

Fluoroquinolones 2: ciprofloxacin or levofloxacin;

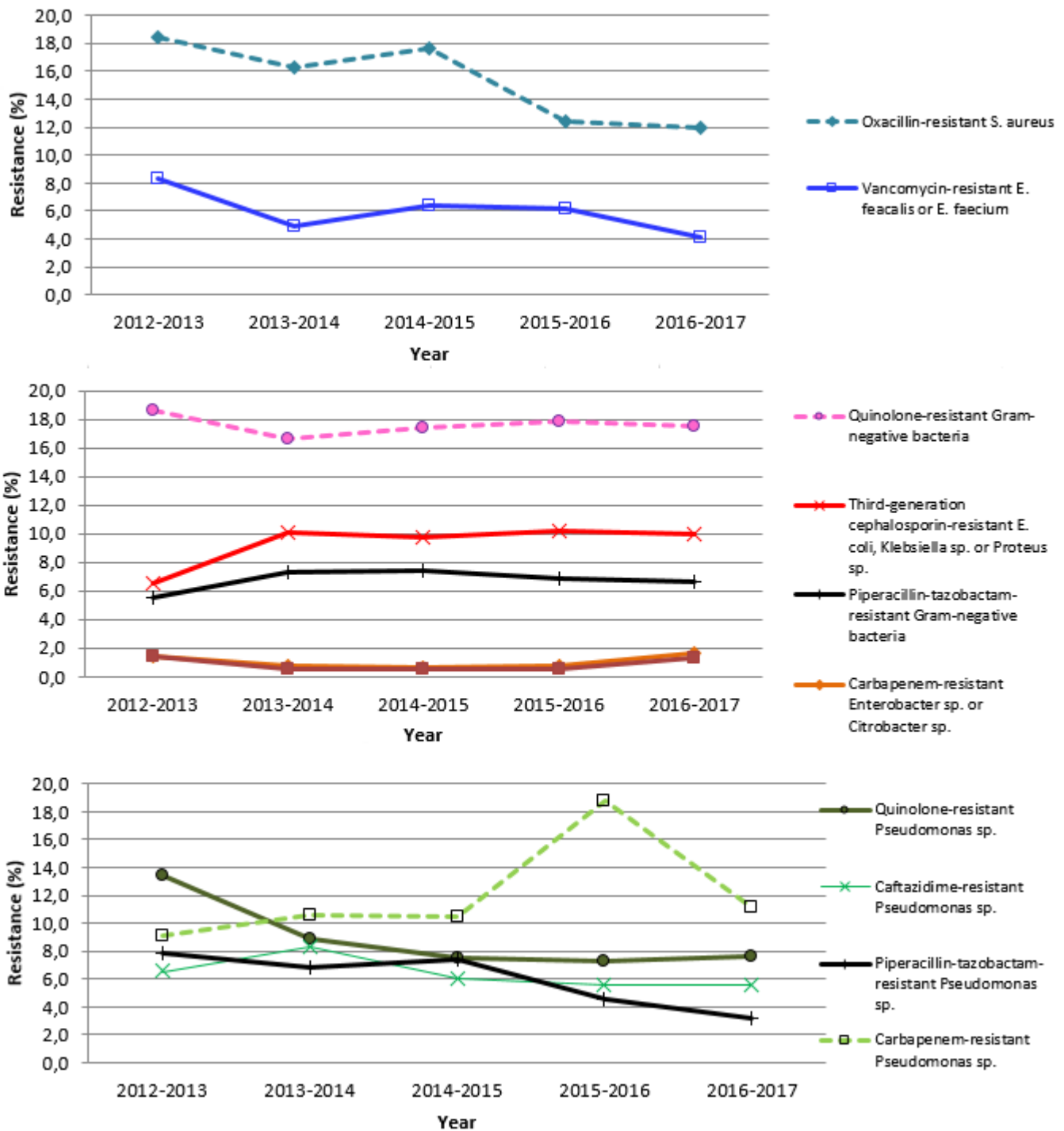
Fluoroquinolones 3: ciprofloxacin, levofloxacin or moxifloxacin;

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 10 - Antibiotic Resistance in Gram-Positive Bacteria, Gram-Negative Bacteria and *Pseudomonas* sp., Québec, 2012-2013 to 2016-2017 (%)



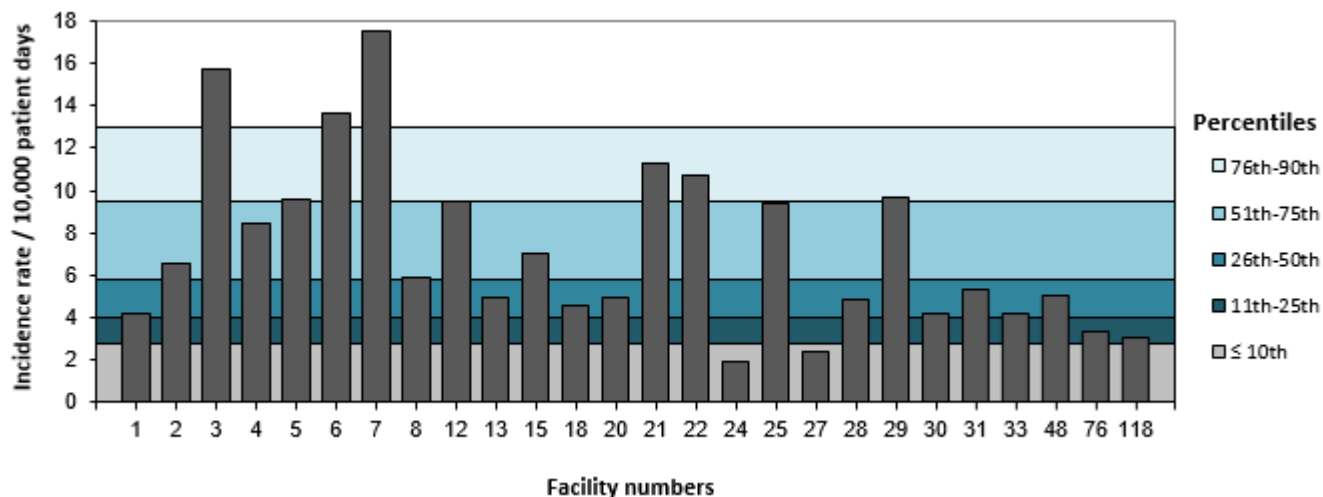
[11]

Results per Healthcare Facility

Three teaching and four non-teaching facilities have an incidence rate above the 90th percentiles of 2012-2016 incidence rates (Figures 11 and 12). Tables 9 and 10 present 2016-2017 rates of CRBSI and of BSIs secondary to urinary tract infections and SSIs, per healthcare facility.

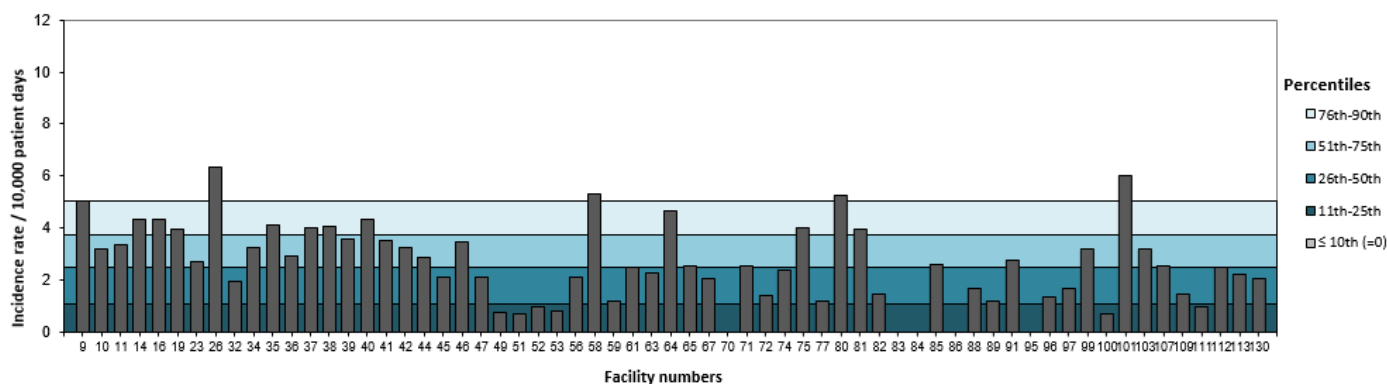
Figure 11 - BSI Incidence Rate per Facility (2016-2017) and Percentile Ranking (2012-2013 to

2015-2016) for Teaching Healthcare Facilities, Québec, 2016-2017



[12]

Figure 12 - BSI Incidence Rate per Facility (2016-2017) and Percentile Ranking (2012-2013 to 2015-2016) for Non-Teaching Healthcare Facilities, Québec, 2016-2017



[13]

Table 9 - Incidence Rates of CRBSI and of BSIs Secondary to Urinary Tract and Pulmonary Infections per Facility and Percentile Ranking, for Teaching Healthcare Facilities, Québec, 2016-2017 (Incidence Rate per 10,000 Patient Days [95% CI])

Facility	CRBSI		Urinary tract		SSI	
	Cases (n)	Incidence rates	Cases (n)	Incidence rates	Cases (n)	Incidence rates
1 HÔPITAL CHARLES LEMOYNE	5	0.39 [0.16 - 0.94]	5	0.39 [0.16 - 0.94]	7	0.55 [0.26 - 1.15]
2 HÔPITAL DE L'ENFANT-JÉSUS	19	1.46 [0.93 - 2.29]	10	0.77 [0.41 - 1.43]	7	0.54 [0.26 - 1.13]
3 GLEN - ROYAL VICTORIA	35	3.24 [2.33 - 4.51]	20	1.85 [1.19 - 2.87]	22	2.04 [1.34 - 3.09]
4 HÔPITAL NOTRE-DAME DU CHUM	23	2.21 [1.47 - 3.32]	14	1.34 [0.80 - 2.27]	11	1.06 [0.58 - 1.91]
5 HÔPITAL GÉNÉRAL JUIF	31	1.84 [1.29 - 2.61]	32	1.9 [1.34 - 2.68]	7	0.42 [0.20 - 0.87]
6 GLEN - ENFANTS	44	10.34 [7.70 - 13.9]	1	0.24 [0.03 - 1.67]	0	0
7 PAVILLON L'HÔTEL-DIEU DE QUÉBEC	14	1.65 [0.98 - 2.79]	29	3.42 [2.38 - 4.93]	22	2.6 [1.71 - 3.94]

Facility	CRBSI		Urinary tract		SSI	
	Cases (n)	Incidence rates	Cases (n)	Incidence rates	Cases (n)	Incidence rates
8 PAVILLON MAISONNEUVE/PAVILLON MARCEL-LAMOUREUX	28	1.5 [1.04 - 2.17]	15	0.8 [0.48 - 1.33]	13	0.7 [0.40 1.20]
12 CENTRE HOSPITALIER UNIVERSITAIRE SAINTE-JUSTINE	45	5.15 [3.84 - 6.90]	3	0.34 [0.11 - 1.06]	2	0.23 [0.06 - 0.91]
13 INSTITUT DE CARDIOLOGIE DE MONTRÉAL	3	0.67 [0.22 - 2.09]	4	0.9 [0.34 - 2.40]	8	1.8 [0.90 3.60]
15 HÔPITAL FLEURIMONT	17	1.61 [1.00 2.59]	8	0.76 [0.38 - 1.51]	7	0.66 [0.32 - 1.39]
18 HÔTEL-DIEU DE LÉVIS	0	0	14	1.82 [1.08 - 3.08]	0	0
20 HÔPITAL DE CHICOUTIMI	2	0.29 [0.07 - 1.16]	8	1.16 [0.58 - 2.31]	5	0.72 [0.30 1.74]
21 HÔPITAL SAINT-LUC DU CHUM	13	1.28 [0.74 - 2.20]	12	1.18 [0.67 - 2.08]	23	2.26 [1.50 3.41]
22 HÔTEL-DIEU DU CHUM	10	1.49 [0.80 2.77]	6	0.89 [0.40 1.99]	19	2.83 [1.81 - 4.44]
24 HÔPITAL DU SAINT-SACREMENT	0	0	5	0.96 [0.40 2.30]	2	0.38 [0.10 1.53]
25 HÔPITAL DU SACRÉ-COEUR DE MONTRÉAL	25	1.71 [1.15 - 2.52]	29	1.98 [1.37 - 2.85]	8	0.55 [0.27 - 1.09]
27 PAVILLON CENTRE HOSPITALIER DE L'UNIVERSITÉ LAVAL	7	0.6 [0.29 - 1.26]	7	0.6 [0.29 - 1.26]	0	0
28 PAVILLON SAINT-FRANCOIS D'ASSISE	5	0.56 [0.23 - 1.35]	12	1.34 [0.76 - 2.37]	5	0.56 [0.23 - 1.35]
29 HÔPITAL GÉNÉRAL DE MONTRÉAL	23	3.22 [2.14 - 4.84]	4	0.56 [0.21 - 1.49]	21	2.94 [1.91 - 4.50]
30 HÔTEL-DIEU DE SHERBROOKE	3	0.44 [0.14 - 1.35]	7	1.02 [0.48 - 2.13]	3	0.44 [0.14 - 1.35]
31 PAVILLON SAINTE-MARIE	9	0.71 [0.37 - 1.37]	14	1.11 [0.66 - 1.87]	8	0.63 [0.32 - 1.26]
33 INSTITUT UNIVERSITAIRE DE CARDIOLOGIE ET DE PNEUMOLOGIE DE QUÉBEC	3	0.3 [0.10 0.93]	6	0.6 [0.27 - 1.34]	18	1.81 [1.14 - 2.87]
48 CENTRE HOSPITALIER DE ST. MARY	3	0.4 [0.13 - 1.23]	16	2.12 [1.30 3.45]	0	0
76 HÔPITAL DE LACHINE	0	0	4	2.24 [0.84 - 5.96]	0	0

Tableau 10 - Incidence Rates of CRBSI and of BSIs Secondary to Urinary Tract and Pulmonary Infections per Facility and Percentile Ranking, for Non-Teaching Healthcare Facilities, Québec, 2016-2017 (Incidence Rate per 10,000 Patient Days [95% CI])

Facility	CRBSI		Urinary tract		SSI	
	Cases (n)	Incidence rates	Cases (n)	Incidence rates	Cases (n)	Incidence rates
9 HÔPITAL DU HAUT-RICHELIEU	5	0.57 [0.24 - 1.38]	11	1.26 [0.70 2.28]	1	0.11 [0.02 - 0.81]
10 HÔPITAL PIERRE-BOUCHER	0	0	15	1.31 [0.79 - 2.17]	2	0.17 [0.04 - 0.70]
11 HÔPITAL PIERRE-LE GARDEUR	3	0.27 [0.09 - 0.82]	13	1.15 [0.67 - 1.98]	2	0.18 [0.04 - 0.71]

Facility	CRBSI		Urinary tract		SSI	
	Cases (n)	Incidence rates	Cases (n)	Incidence rates	Cases (n)	Incidence rates
14 CENTRE HOSPITALIER RÉGIONAL DE LANAUDIÈRE	4	0.39 [0.15 - 1.05]	11	1.08 [0.60 - 1.96]	6	0.59 [0.27 - 1.32]
16 HÔPITAL RÉGIONAL DE RIMOUSKI	1	0.19 [0.03 - 1.33]	6	1.13 [0.51 - 2.51]	0	0
19 HÔPITAL CITÉ DE LA SANTÉ	10	0.58 [0.31 - 1.07]	11	0.63 [0.35 - 1.14]	6	0.35 [0.16 - 0.77]
23 HÔTEL-DIEU D'ARTHABASKA	0	0	2	0.42 [0.10 - 1.66]	3	0.62 [0.20 - 1.93]
26 HÔPITAL DE VERDUN	13	1.58 [0.92 - 2.72]	16	1.94 [1.19 - 3.17]	3	0.36 [0.12 - 1.13]
32 CENTRE HOSPITALIER RÉGIONAL DU GRAND-PORTAGE	1	0.4 [0.06 - 2.80]	0	0	0	0
34 HÔPITAL SANTA CABRINI	2	0.2 [0.05 - 0.78]	14	1.37 [0.81 - 2.32]	3	0.29 [0.09 - 0.91]
35 HÔPITAL HONORÉ-MERCIER	4	0.61 [0.23 - 1.63]	7	1.07 [0.51 - 2.25]	3	0.46 [0.15 - 1.43]
36 HÔPITAL GÉNÉRAL DU LAKESHORE	1	0.13 [0.02 - 0.94]	9	1.2 [0.62 - 2.30]	1	0.13 [0.02 - 0.94]
37 HÔTEL-DIEU DE SOREL	2	0.43 [0.11 - 1.70]	8	1.7 [0.85 - 3.40]	0	0
38 HÔPITAL JEAN-TALON	4	0.82 [0.31 - 2.18]	4	0.82 [0.31 - 2.18]	4	0.82 [0.31 - 2.18]
39 HÔPITAL DE GATINEAU	0	0	10	1.64 [0.88 - 3.05]	0	0
40 HÔPITAL DE HULL	4	0.6 [0.22 - 1.60]	5	0.75 [0.31 - 1.80]	2	0.3 [0.07 - 1.20]
41 HÔPITAL DU CENTRE-DE-LA-MAURICIE	5	1.04 [0.43 - 2.49]	7	1.45 [0.69 - 3.04]	2	0.41 [0.10 - 1.66]
42 CENTRE HOSPITALIER ANNA-LABERGE	1	0.14 [0.02 - 0.96]	9	1.22 [0.63 - 2.34]	2	0.27 [0.07 - 1.08]
44 HÔPITAL SAINTE-CROIX	0	0	7	1.18 [0.56 - 2.48]	3	0.51 [0.16 - 1.57]
45 HÔPITAL DE SAINT-EUSTACHE	9	0.99 [0.52 - 1.91]	3	0.33 [0.11 - 1.03]	3	0.33 [0.11 - 1.03]
46 HÔPITAL DE GRANBY	1	0.22 [0.03 - 1.55]	8	1.74 [0.87 - 3.48]	0	0
47 HÔPITAL DE ROUYN-NORANDA	0	0	2	0.86 [0.21 - 3.42]	1	0.43 [0.06 - 3.04]
49 CSSS DE MEMPHREMAGOG	0	0	0	0	0	0
51 HÔPITAL DE MANIWAKI	0	0	1	0.71 [0.10 - 5.04]	0	0
52 HÔPITAL D'AMOS	0	0	0	0	0	0
53 HÔPITAL DE CHANDLER	0	0	0	0	0	0
56 CENTRE DE SANTÉ ET DE SERVICES SOCIAUX D'ARGENTEUIL	0	0	3	2.11 [0.68 - 6.55]	0	0
58 HÔPITAL DU SUROÏT	1	0.17 [0.02 - 1.18]	11	1.82 [1.01 - 3.29]	1	0.17 [0.02 - 1.18]
59 HÔPITAL DE BAIE-SAINT-PAUL	0	0	0	0	0	0
61 HÔPITAL NOTRE-DAME-DE-FATIMA	0	0	1	1.26 [0.18 - 8.94]	0	0
63 HÔPITAL DE SAINT-GEORGES	0	0	0	0	0	0
64 HÔPITAL LE ROYER	1	0.47 [0.07 - 3.33]	3	1.41 [0.45 - 4.36]	0	0
65 HÔPITAL ET CLSC DE VAL-D'OR	0	0	0	0	0	0

Facility	CRBSI		Urinary tract		SSI	
	Cases (n)	Incidence rates	Cases (n)	Incidence rates	Cases (n)	Incidence rates
67 HÔPITAL ET CENTRE DE RÉADAPTATION DE JONQUIÈRE	0	0	3	0.78 [0.25 - 2.41]	0	0
70 CENTRE DE SOINS DE COURTE DURÉE LA SARRE	0	0	0	0	0	0
71 HÔPITAL DE MATANE	0	0	1	0.85 [0.12 - 6.04]	0	0
72 HÔPITAL ET CENTRE D'HÉBERGEMENT DE SEPT-ÎLES	1	0.48 [0.07 - 3.39]	0	0	0	0
74 HÔPITAL DE DOLBEAU-MISTASSINI	0	0	0	0	0	0
75 CSSS DU GRANIT	0	0	1	1.01 [0.14 - 7.14]	0	0
77 HÔPITAL D'AMQUI	0	0	0	0	0	0
80 HÔPITAL FLEURY	4	1.01 [0.38 - 2.68]	7	1.76 [0.84 - 3.69]	4	1.01 [0.38 - 2.68]
81 HÔPITAL DE MONT-LAURIER	1	0.56 [0.08 - 4.00]	1	0.56 [0.08 - 4.00]	0	0
82 PAVILLON SAINTE-FAMILLE	1	1.5 [0.21 - 10.64]	0	0	0	0
83 HÔPITAL DE LASALLE	0	0	0	0	0	0
84 HÔPITAL DE NOTRE-DAME-DU-LAC	0	0	0	0	0	0
85 CENTRE DE SANTÉ ET DE SERVICES SOCIAUX DU HAUT-SAINT-AURICE	0	0	0	0	1	1.32 [0.19 - 9.34]
86 HÔPITAL DE LA MALBAIE	0	0	0	0	0	0
88 HÔPITAL. CLSC ET CENTRE D'HÉBERGEMENT DE ROBERVAL	0	0	2	0.84 [0.21 - 3.35]	0	0
89 HÔPITAL DE MONTMAGNY	0	0	1	0.59 [0.08 - 4.18]	1	0.59 [0.08 - 4.18]
91 HÔPITAL HÔTEL-DIEU DE GASPÉ	0	0	1	0.92 [0.13 - 6.57]	0	0
95 HÔPITAL DU PONTIAC	0	0	0	0	0	0
96 CENTRE DE SANTÉ DE CHIBOUGAMAU	0	0	0	0	0	0
97 HÔPITAL DE MARIA	0	0	1	0.57 [0.08 - 4.01]	1	0.57 [0.08 - 4.01]
99 HÔPITAL BROME-MISSISQUOI-PERKINS	1	0.4 [0.06 - 2.85]	4	1.61 [0.60 4.28]	0	0
100 HÔPITAL DE LA BAIE	0	0	1	0.72 [0.10 5.09]	0	0
101 HÔPITAL RÉGIONAL DE SAINT-JÉRÔME	14	1.29 [0.77 - 2.19]	8	0.74 [0.37 - 1.48]	11	1.02 [0.56 - 1.84]
103 HÔPITAL LAURENTIEN	2	0.64 [0.16 - 2.56]	3	0.96 [0.31 - 2.97]	0	0
107 HÔPITAL DE L'ARCHIPEL	1	1.28 [0.18 - 9.08]	0	0	1	1.28 [0.18 - 9.08]
109 HÔPITAL DE SAINTE-ANNE-DES-MONTS	0	0	0	0	0	0
111 HÔPITAL DE PAPINEAU	0	0	2	1 [0.25 - 3.98]	0	0
112 HÔPITAL D'ALMA	1	0.31 [0.04 - 2.20]	1	0.31 [0.04 - 2.20]	0	0
113 HÔPITAL DE THETFORD MINES	0	0	3	1.34 [0.43 - 4.16]	0	0
130 HÔPITAL BARRIE MÉMORIAL	0	0	0	0	0	0

Abbreviations

95% CI: 95% confidence interval

BSI: bloodstream infection

CoNS: coagulase-negative

Staphylococcus

CRBSI: catheter-related bloodstream infection

HD: hemodialysis

ICU: intensive care unit

MBI: mucosal barrier injury

Non-CRBSI: non-catheter-related primary bloodstream infection

SSI: surgical site infection

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