## **Supplementary data**

Table S1. CDI and MRSA HAI definition used by clinical coding team and IPC team in Ontario, Canada

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|  |  | Definitions |
| CDI | Clinical coding team - Positive chart | A04.7 type-2**Exclusion:**1. Abstracts with age on admission less than 1 year 2. Abstracts with a length of stay less than 3 days  |
| Clinical coding team - Negative chart | A04.7 type-1 |
| IPC team - HAI | (1) Diarrhea\* with laboratory confirmation of a positive toxin assay (A/B) for *C. difficile*; **OR** (2) Visualization of pseudomembranes on sigmoidoscopy or colonoscopy; **OR** (3) Histological/pathological diagnosis of pseudomembranous colitis. \*Diarrhea is defined as: loose/watery bowel movements (conform to the shape of the container) AND the bowel movements are unusual or different for the patient, AND there is no other recognized etiology for the diarrhea (for example, laxative use)**HAI –** if the case meets the case definition for CDI; AND CDI was not present on admission (i.e., onset of symptoms >72 hours after admission); OR the infection was present at time of admission, but patient was admitted to the same facility within the last 4 weeks, AND the case has not had CDI in the past 8 weeks. |
| MRSA | Clinical coding team - Positive chart | A41.0 type-2 or type-3 AND U82.1, A49.0 type-2 AND U82.1, J15.2 type-2 AND U82.1, G00.3 type-2 AND U82.1, L00 type-2 AND U82.1, M00.0– type-2 AND U82.1, B95.6 type-3 AND U82.1**Exclusion:** Abstracts with a length of stay less than 3 days  |
| Clinical coding team - Negative chart | A41.0 type-2 or type-3 AND U82.1, A49.0 type-2 AND U82.1, J15.2 type-2 AND U82.1, G00.3 type-2 AND U82.1, L00 type-2 AND U82.1, M00.0– type-2 AND U82.1, B95.6 type-3 AND U82.1**Exclusion:**All positive charts |
| IPC team - HAI | Laboratory isolation of MRSA culture (blood culture or other body site if infection was present and being treated). **HAI**- MRSA case identified on a clinical specimen or screening specimen taken more than 72 hours after admission. |

Legend. CDI, *Clostridioides difficile;* HAI, Healthcare-associated infection; IPC, Infection, prevention and control; MRSA, Methicillin-resistant *Staphylococcus aureus*

Note. Atype-1 diagnosis represent pre-admit comorbidity; type-2, post-admit comorbidity; type-3, secondary diagnosis

Table S2. CDI and MRSA HAI definition used by clinical coding team and IPC team in Quebec, Canada

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|  | Definitions |
| CDI | Clinical coding team - Positive chart | A04.7 AND Y95, A04.7 + V **Exclusion:**1. Abstracts with age on admission less than 1 year 2. Abstracts with a length of stay less than 3 days  |
| Clinical coding team - Negative chart | A04.7**Exclusion:**Positive chart |
| IPC team - HAI | CDI infection is defined as (1) diarrhea (≥3 unformed or liquid stools in <24 hours) lasting at least 24 hours without any other known etiology, combined with a positive assay for toxigenic *C. difficile*; **OR** (2) visualization of pseudomembranes by colonoscopy; or a histopathologic diagnosis; **OR** (3) patient is diagnosed with toxic megacolon, combined with a positive assay for toxigenic *C. difficile*. **HAI -** if symptoms appeared at least 72 hours after admission and up to 4 weeks after discharge. |
| MRSA | Clinical coding team - Positive chart | A41.0 AND U82.1, A49.0 AND U82.1, J15.2 AND U82.1, G00.3 type-2 AND U82.1, L00 type-2 AND U82.1, M00.0– AND U82.1, B95.6 AND U82.1**AND**Y95 OR V**Exclusion:** Abstracts with a length of stay less than 3 days  |
| Clinical coding team - Negative chart | A41.0 AND U82.1, A49.0 AND U82.1, J15.2 AND U82.1, G00.3 type-2 AND U82.1, L00 type-2 AND U82.1, M00.0– AND U82.1, B95.6 AND U82.1**Exclusion:**All positive charts |
| IPC team - HAI | 1 or more signs/symptoms: Fever (>38°C, rectal), hypotension, hypothermia, apnea or bradycardia **AND** one positive MRSA blood culture and signs, symptoms, and laboratory results not related to an infection at another site **OR** one positive MRSA blood culture and associated with an infection with the same organism at another site in the body (secondary bacteremia)**HAI –** Bacteremia identified more than 72 hours after admission. |

Legend. CDI, *Clostridioides difficile;* HAI, Healthcare-associated infection; IPC, Infection, prevention and control; MRSA, Methicillin-resistant *Staphylococcus aureus*;

Note. In Quebec, the V characteristic associated to a code means “during hospitalization”