APPENDIX A

Central Line-Associated Primary Bloodstream Infection (CLI) Rate

Case Definition[1]:

Note:

1) Include only ICU patients

2) Blood stream infection (BSI) is considered to be associated with a central line if the line was in place during the 48-hour period before the development of the BSI. If the time interval between the onset of infection and device use is greater than 48 hours, there should be compelling evidence that the infection is related to the central line.

Laboratory-Confirmed BSI: Must meet **at least one** of the following criteria:

Criterion 1: Patient has a central line and has a recognized pathogen (eg: staphylococcus aureus; euterococcus, Escherichia coli, klebsielle species, entenbacter spp, pseudoumnas aerugimosa, candida species) cultured from one or more blood cultures, and the pathogen cultured from the blood is not related to an infection or pathology from another site.

Criterion 2: Patient has at least one of the following signs or symptoms: fever

(100.4 [38C]), chills, or hypotension, and signs and symptoms and positive laboratory results are not related to an infection at another site, and at least one of the following:

In association with a central line:

1. A common skin contaminant [e.g., Corynebacterium sp. (formerly diphtheroids), Bacillus sp., Propionibacterium sp., coagulase-negative staphylococci, or micrococci] isolated from two or more blood cultures drawn separately (at least one from a venipuncture).

2. A common skin contaminant [e.g. Corynebacterium sp. (formerly diphtheroids), Bacillus sp., Propionibacterium sp., coagulase-negative staphylococci, or micrococci] is cultured from at least one blood culture from a patient with an intravascular line, and the physician institutes appropriate antimicrobial therapy.

3. Positive antigen test on blood (e.g., H. influenzae, S. pneumoniae, N. meningitidis, or Group B streptococcus).

Note Well: Blood cultures should be drawn if any of the following apply to the patient*:

- Hypothermia or hyperthermia
- Increase or decrease WBC
- Other signs of sepsis including unexplained hypotension

* These apply only if these are unexplained or there is no other source findings.

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Method of calculation[1]:

Number of ICU patients with new central line BSI (CLI) per 1,000 central line days.

Numerator: the total number of laboratory confirmed BSI developing in patients in the ICU after 48 hours of placement of a central line

Denominator: the total number of central line days for patients 18 and older in the ICU with a central line in place

$$\text{CLI infection rate} = \frac{\text{total number of BSI in ICU patients after 48 hours of central line placement in the ICU}}{\text{Total number of central line days for ICU patients 18 years and older}} \times 1{,}000$$

Rationale[1,2,3]:

- 90% of catheter-related bloodstream infections occur with central venous catheters, which are increasingly used in acute care settings.
- CLI prolongs hospitalization.
- There are prevention interventions known to impact infection rates.

Data capture:

Critical Care Information System (CCIS).

Reporting:

Timeframe: Initial April 30 2009 (Period 1) reporting should include cumulative data for the three-month period Jan 01 to Mar 31 2009. Subsequent reporting will be **quarterly** following the time-table below.

Administrative periods for aggregating data are defined as:

Period	Period end date	CCIS Submission to MOH	Public reporting date
1	31-Mar-09	15-Apr-09	30-Apr-09
2	30-Jun-09	15-Jul-09	30-Jul-09
3	30-Sep-09	15-Oct-09	30-Oct-09
4	31-Dec-09	15-Jan-10	29-Jan-10

Public Reporting:

At the end of each Period and as indicated above hospitals will report the previous three month's data on their website **by hospital site** including;

(i) the number of new CLI cases that is zero (0) or totalling five (5) or more associated with that hospital site, or if this is less than 5 cases (i.e. 1 to 4 cases), then hospitals may post text reading "< 5 cases", and

(ii) the CLI rate as calculated above.

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CCIS Reporting:

All critical care units who are currently reporting into the Critical Care Information System (CCIS) will report all cases of Central Line Infections (CLI) according to the *Data Collection Policy Guide (v2.0) for Critical Care Unit Patients & CCRT* posted on the CCIS Document Library.

Information on cases and rates will be available in an on-line report that will include existing cases of CLI upon admission, new cases of CLI diagnosed in the unit, and the incidence rate (see above definition). This on-line report may be used to generate the information required for posting data on the hospital website. In order to comply with the above case definition, ages 18 and older must be selected as a filter. In addition, only the rate and cases diagnosed in the unit are required for public reporting on your website.

To note are the following sections in the Guide:

- Where and how to capture Central Lines and Central Line Infections (CLI) variables
- Information on data entry policies (i.e. 24 hour reporting requirements)

Diagnostic checklists for CLI are also located on the document library. **Please note that physician sign-off is required for final diagnosis and before data entry.**

MOHLTC Reporting:

Hospitals are not required to do any additional reporting directly to the MOHLTC for the CLI patient safety indicator.

The Critical Care Secretariat will forward aggregate data to the Health Data Branch by the 15th of the month (as above) to meet the public reporting timelines.

Reporting eligibility:

All hospitals reporting to the Critical Care Information System (CCIS).

References:

1. O'Grady NP, Alexander M, Dellinger EP, et al. Guidelines for the prevention of intravascular catheter-related infections. Centers for Disease Control and Prevention. *MMWR Recomm Rep.* Aug 9 2002;51(RR-10):1-29. www.cdc.gov/mmwr/PDF/rr/rr5110.pdf

2. Pittet, D., D. Tarara, and R. P. Wenzel. 1994. Nosocomial bloodstream infection in critically ill patient. Excess length stay, extra cost, and attributable mortality. *JAMA.* 1994; (20):271: 1598-1601.

3. Jarvis WR Selected aspects of the socioeconomic impact of nosocomial infections: morbidity, mortality, cost, and prevention. Infect Control Hosp Epidemiol. 1996 (8): 552-7.