Appendix 5 and 5a ICU CLABSI Medical Record Abstraction Tool and Tennessee Checklists for Validation

ICU CLABSI Medical Record Abstraction Tool

A paper-based medical record abstraction tool for 2012 is attached.

In addition, an electronic version using Epi-Info 7 is under development.

Use of this tool will

- Establish a common format database for validation work
- Assure standardized documentation of data used for decision making
- Allow for aggregation, if indicated
- Provide portability with a small thumbprint for onsite use
- Allow for customization by state health departments that wish to add variables

Tennessee Checklists for Validation

Tennessee has developed versioned checklists for NHSN Validation that assure adherence to NHSN Case-Definitions. These are particularly useful to determine whether a potential CLABSI may actually be a secondary bloodstream infection caused by an alternative primary infection site. The Tennessee checklists are updated to new versions as NHSN case-definitions change. These checklists are part of the ICU CLABSI Medical Records Abstraction Tool 2012, and used for distinguishing CLABSI events and alternative primary infections with secondary BSI. When validating 2012 data, be sure to use the correct version of any given checklist. A "how to use the checklists" document and master list of dated versions are available with folders of current and past versions in a downloadable zip file at: http://health.state.tn.us/ceds/hai/index.htm

2012 CLABSI Medical Record Abstraction Tool, V(4) 11/16/12

Chart ID/ MRN _____

Note: This tool follows 2012 definitions and methods; do not use for other time periods.

IDENTIFIERS				
State/Fac ID:		Date of Audit:	Reviewer Initials:	
Patient DOB	Hospital Admission D/T	NICU chart? ❑ Yes ❑ No	If Yes, enter birth weight (grams)	

1. (Table 1) positive blood cultures for this candidate CLABSI event					
*Document **SELECTED*** blood culture in first row (leave remaining lines blank until step 3) and proceed to step 2.*					
S* (selected), I* (index), P* (pathogen) C* (commensal) MC* (matched commensal), QMC*, qualifying matched commensal			Specimen Collection Date/ Time**	Specimen Number	Organisms (up to 3 for each blood culture)
S					

*SELECTED blood culture **(S)** is the (one) positive ICU blood culture chosen from the line list that led to this medical record review. Every blood culture should be classified as either: (1) PATHOGEN blood culture **(P)**, (as many as indicated) = culture that includes a known pathogen. (2) COMMENSAL blood cultures **(C)**, (as many as indicated) = culture growing common commensal(s) ONLY (see #5) and no known pathogens. (3) MATCHED COMMENSALS **(MC)** = at least 2 **C** collected within two days of each other and growing matching organisms. (4) QUALIFYING MATCHED COMMENSALS **(QMC)** = Any **MC** where qualifying symptoms (see #5) occur within 2 days before or after any matching **MC** culture. Only **P** and **QMC** cultures are potential CLABSIs. **INDEX** blood culture **(I)** is the (one) first **P** or **QMC** blood culture from a candidate CLABSI event that may include several positive cultures, and helps to identify infection onset.

**Time of specimen collection required only for Index blood culture

2. Rapid screening questions

a. Was the selected blood culture collected before / during the admission process* to hospital, in the context of no recent hospital discharge*?

- ❑ Yes If **Yes**, STOP; outcome "a", NOT a candidate ICU CLABSI; Infection present on admission (POA).
- ❑ No or don't know; continue to 2b.

*Note: Patients recently discharged (within 48 hours before admission) may have HAI attributable to recent hospitalization. Also, ER/OR exception: If patient developed infection after CL was placed/accessed in ER/OR during direct admission to ICU, the ICU becomes the location of attribution because ER and OR are non-bedded hospital locations.

b. Was there only one positive blood culture, and the isolated organism was a common commensal* only?

- ❑ Yes If **Yes**, STOP; outcome "a", NOT a candidate ICU CLABSI; Single common commensal only.
- ❑ No If **No**, continue to 2c

*Common commensals: diphtheroids [*Corynebacterium spp.* not *C. diphtheriae*], *Bacillus spp.* [not *B. anthracis*], *Propionibacterium spp.*, coagulase-negative staphylococci [including *S. epidermidis*], viridans group streptococci, *Aerococcus spp.*, and *Micrococcus spp.*

(See end for expanded list of commensal genus and species).

c. Was the patient in an ICU before the **SELECTED** blood culture was drawn?

- ❑ No If **No**, STOP; outcome "a", NOT a candidate ICU CLABSI; No eligible ICU admission.
- ❑ Yes If **Yes**, continue to 2d

d. Was a central line (CL) in place during the ICU stay, AND before the **SELECTED** blood culture was drawn?

- ❑ No If **No**, STOP; outcome "a", NOT a candidate ICU CLABSI; No eligible ICU central line.
- ❑ Yes If **Yes**, proceed to step 3

3. Characterize blood culture "event"*

*A blood culture "event" is often a single or two sets of blood cultures growing the same organism before treatment begins. In complex cases an event may be defined by repeated isolation of the same organism from blood before and/or during treatment of an infection that is difficult to clear. In rare cases, an event may include changing organisms in the setting of continuous symptoms of infection under therapy; e.g., enteric organisms in blood causing unremitting sepsis on therapy, followed by isolation of yeast. If symptoms of infection improve then relapse, this is not a single event.

Are there additional positive blood cultures that are part of the **selected** blood culture event*? *(choose one)*

- ❑ No If No, proceed to step 4
- ❑ Yes If Yes,
  - Return to Table 1 and document all positive blood cultures that are part of the same blood culture event;
  - Proceed to step 4

4. Index blood culture identification

a. Order the blood cultures in Table 1 by specimen collection date/time and identify the **FIRST** blood culture.

b. Determine whether the **FIRST** blood culture contains a known pathogen **"P"** or common commensal(s)* **"C"** only. Mark specimen 1 as **"P"** or **"C"** in Table 1 as appropriate.

- ❑ If the specimen is a pathogen, it is the **INDEX** blood culture; skip to step 5.
- ❑ If the specimen is a common commensal only, continue to 4c.

*Common commensals: diphtheroids [*Corynebacterium spp.* not *C. diphtheriae*], *Bacillus spp.* [not *B. anthracis*], *Propionibacterium spp.*, coagulase-negative staphylococci [including *S. epidermidis*], viridans group streptococci, *Aerococcus spp.*, and *Micrococcus spp.*

(See end for expanded list of commensal genus and species).

c. Does the NEXT blood culture contain a known pathogen **"P"** or common commensal(s)* **"C"** only? Mark specimen as **"P"** or **"C"** in Table 1, as appropriate.

- ❑ If specimen is a pathogen, it is the **INDEX** blood culture; skip to step 5
- ❑ If the specimen is a common commensal only, proceed to 4d

d. Does a common commensal organism from this specimen match** a common commensal organism from the previous specimen within a two 2 day period?

- ❑ No If No, repeat process beginning at 4c with each subsequent blood culture(s). If all blood cultures have been evaluated, STOP; outcome "b", UNMATCHED COMMON COMMENSAL.
- ❑ Yes If Yes,
  - Mark these cultures as **"MC"** (matched commensals) in Table 1;
  - Proceed to 4e

**If one culture is identified to the genus + species level and the other culture only to the genus level, they are assumed to match. "Diphtheroids" are assumed to be *Corynebacterium spp.*

e. For matched commensal cultures, was at least one qualifying symptom of infection*** present within 2 days before or after either of the matched common commensal cultures?

- ❑ No If No, repeat process beginning at 4c with subsequent blood culture(s) in Table 1. If all blood cultures have been evaluated, STOP; outcome "c", MATCHED COMMON COMMENSALS WITHOUT QUALIFYING SYMPTOMS.
- ❑ Yes If Yes,
  - Mark these cultures as **"QMC"** (qualified matched commensals) in Table 1;
  - Document patient age, qualifying symptoms and date of symptom onset below;
  - The first of these QMC cultures is the **INDEX** blood culture;
  - Proceed to step 5

***Qualifying symptoms of common commensal infection [for patient any age: fever (>38°C), chills, hypotension; for child ≤1 year old: fever (>38°C core), hypothermia (<36°C core), apnea, bradycardia]

Patient age (years):	
Qualifying symptom(s):	
Earliest symptom onset (date and time) within 2 days of either QMC:	

5. Identify infection onset date/time

a. Mark the **INDEX (I)** blood culture in Table 1, and record specimen collection time.

b. Use the type of **INDEX** blood culture* to determine the infection onset date/time, and record infection onset Date/Time below:

Infection onset Date/Time:	

c. Proceed to step 6

*For Index **"P"** (pathogen) cultures, infection onset is blood culture specimen collection date/time.

*For Index **"QMC"** (qualified matched commensal) cultures, infection onset is earlier of Index **QMC** blood culture specimen collection date/time OR (required) earliest symptom onset date and time (see step 4) for Index **QMC** blood culture.

6. Confirm central line presence at infection onset

a. Was a central line* in place at the time of infection onset or during the prior 48 hours?

- ❑ No If No, STOP; outcome "d", INFECTION NOT ATTRIBUTABLE TO CENTRAL LINE
- ❑ Yes If Yes, affirm central line presence during the 48 hour window by checking a box in **Table 8a** below (ONLY one is necessary), and proceed to step 7

*A central line terminates at or close to heart or in great vessel (aorta, pulmonary artery, superior vena cava, inferior vena cava, brachiocephalic vein, internal jugular vein, subclavian vein, external iliac vein, common iliac vein, femoral vein, or umbilical artery/vein), and is used for infusion, withdrawal of blood, or hemodynamic monitoring. May include introducer or dialysis catheter if placed as above. Does not include ECMO, femoral artery line, or intra-aortic balloon pump.

7. Document location of attribution

a. Was the patient in an ICU* at the time of infection onset or during the prior 48 hours?

- ❑ Yes If Yes, affirm ICU location residence during the 48 hour window by checking a box in **Table 8b** (ONLY one is necessary), and proceed to step 9.
- ❑ No If No, STOP; outcome "e", LOCATION OF ATTRIBUTION (LOA) WAS NOT ICU;
  - DOCUMENT LOA* _____

*Note ER/OR exception: If patient developed infection after CL was placed/accessed in ER/OR during direct admission to ICU, the ICU becomes the LOA because ER and OR are non-bedded hospital locations.

Table 8 (a and b). CL PRESENCE and LOA at INFECTION ONSET

a. (affirm one or more)	*b. (affirm one or more)*
❑ CL in place at infection onset?	❑ ICU residence at infection onset?
❑ CL in place within 48 hours before infection onset?	❑ ICU residence within 48 hours before infection onset?

9. Possible alternative primary site with secondary bloodstream infection

a. Is there documentation indicating possible alternative source of infection?

- ❑ No If No, STOP; outcome "g", ICU CLABSI.
- ❑ Yes If Yes,
  - use TN checklists to determine whether case meets definition for alternative primary infection
  - attach completed checklist to this form

b. Does documentation satisfy TN checklist criteria for an alternative primary infection?

- ❑ No If No, STOP; outcome "g", ICU CLABSI.
- ❑ Yes If Yes, If Yes, STOP; outcome "f", ALTERNATIVE PRIMARY SITE INFECTION WITH SECONDARY BSI.
- ❑ Document Major site _____
- ❑ Document Specific type of infection _____
- ❑ If there is a (non-blood) organism from the Major site that matches the INDEX blood culture, document match in Table 9.
- ❑ If there is no matching (non-blood) culture evidence for Major site, document logical pathogen for Major site from Index blood culture_____

Table 9: Matching Index blood culture and culture of Major Infection Site

	Type of culture	Specimen Collection Date	Unique Specimen Number	Organisms (up to 3 for each culture)
Index blood culture	blood			
Major site				

Outcome of 2012 CLABSI audit (complete this section when review ends):

a. Screened out: NOT a candidate ICU CLABSI

- reason
  - ❑ POA;
  - ❑ single common commensal only;
  - ❑ no eligible ICU admission;
  - ❑ no eligible ICU Central Line

b. Unmatched common commensals

c. Matched common commensals without qualifying symptoms

d. Infection not central line attributable

e. Location of attribution (LOA) was not ICU

- Document LOA: _____

f. Alternative primary infection site with secondary BSI (attach completed TN checklist to this form)

- Major site _____
- Specific type of infection _____
- Either: Matching (non-blood) organism from Major site and INDEX blood culture (name of organism)_____,

OR

- Logical pathogen for Major site from Index blood culture_____

g. ICU CLABSI

Notes/Worksheet:

Helpful dates, if needed:		Comments
Emergency Room Date/Time		
Facility Admission Date/Time		
ICU admission Date/Time		
Line Insertion Date/Time		
Line placement xray Date/Time		
Index blood culture Date/Time		
Infection onset Date/Time		

Expanded list of common commensal organisms	
Aerococcus species	Rhodococcus equi
Aerococcus urinae	Rhodococcus species
Aerococcus viridans	Staphylococcus auricularis
Bacillus cereus	Staphylococcus capitis ss capitis
Bacillus species (not B. anthracis)	Staphylococcus capitis ss unspecified
Bacillus subtilis	Staphylococcus capitis ss urealyticus
Corynebacterium aquaticum	Staphylococcus coagulase negative
Corynebacterium bovis	Staphylococcus cohnii
Corynebacterium cystitidis	Staphylococcus epidermidis
Corynebacterium glutamicum	Staphylococcus gallinarum
Corynebacterium group G-2	Staphylococcus haemolyticus
Corynebacterium jeikeium	Staphylococcus hominis
Corynebacterium kutscheri	Staphylococcus lentus
Corynebacterium matruchotii	Staphylococcus lugdunensis
Corynebacterium minutissimum	Staphylococcus saccharolyticus
Corynebacterium mycetoides	Staphylococcus saprophyticus
Corynebacterium pilosum	Staphylococcus schleiferi
Corynebacterium pseudodiphtheriticum	Staphylococcus sciuri
Corynebacterium pseudotuberculosis	Staphylococcus simulans
Corynebacterium renale	Staphylococcus species
Corynebacterium species	Staphylococcus warneri
Corynebacterium striatum	Staphylococcus xylosus
Corynebacterium ulcerans	Streptococcus anginosus
Corynebacterium urealyticum	Streptococcus bovis
Corynebacterium xerosis	Streptococcus mitis
Diphtheriods	Streptococcus mutans
Gram-positive cocci unspecified	Streptococcus salivarius
Micrococcus species	Streptococcus viridans species
Propionibacterium acnes	
Propionibacterium avidum	
Propionibacterium granulosum	
Propionibacterium lymphophilum	
Propionibacterium propionicum	
Propionibacterium species	

Previously posted list of logical pathogens
has been redacted because it was not intended for surveillance use.
NHSN does not provide a reference list of logical pathogens

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