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Revised LCBI Definition

Over the past year, primarily due to the focus on mandatory public reporting in some states, we have identified issues with the definition of laboratory-confirmed bloodstream infection (LCBI). We've paid very close attention to your comments and, as a result, we've made some revisions and clarifications to the definition. **The revised LCBI criteria will go into effect in NHSN beginning January 1, 2008**. Until that date, please continue to use the LCBI definition in the unrevised form (i.e., as it reads in the *NHSN Manual: Patient Safety Protocol.*

Although you can read the revised definition below, there are a few important items to point out:

1. Criteria 2b and 3b have been removed. These were the criteria that called for one positive skin contaminant culture in a patient with signs and symptoms who had an IV line and whose physician had instituted appropriate antimicrobial therapy. These criteria will no longer be used for identifying healthcare-associated BSI in NHSN.
2. Organisms have been added to the list of skin contaminants and language has been added to clarify the difference between a pathogen (criterion 1) and a skin contaminant (criteria 2 and 3).
3. Clarification has been made about the timing of blood draws when 2 blood cultures are required (criteria 2 and 3) and how to evaluate whether identified organisms are the same.
4. Considerations for specimen collection have been added.

Laboratory-confirmed bloodstream infection (LCBI)

LCBI criteria 1 and 2 may be used for patients of any age, including patients ≤ 1 year of age.

LCBI must meet one of the following three criteria:

Criterion 1: Patient has a recognized pathogen cultured from one or more blood cultures
and
organism cultured from blood is not related to an infection at another site. (See Notes 1 and 2 below.)

Criterion 2: Patient has at least one of the following signs or symptoms: fever (>38°C), chills, or hypotension
and
signs and symptoms and positive laboratory results are not related to an infection at another site
and
common skin contaminant (i.e., diphtheroids [*Corynebacterium* spp.], *Bacillus* [not *B. anthracis*] spp., *Propionibacterium* spp., coagulase-negative staphylococci [including *S. epidermidis*], viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp.) is cultured from two or more blood cultures drawn on separate occasions. (See Notes 3 and 4 below.)

Criterion 3: Patient ≤ 1 year of age has at least one of the following signs or symptoms: fever (>38°C, rectal), hypothermia (<37°C, rectal), apnea, or bradycardia
and
signs and symptoms and positive laboratory results are not related to an infection at another site
and
common skin contaminant (i.e., diphtheroids [*Corynebacterium* spp.], *Bacillus* [not *B. anthracis*] spp., *Propionibacterium* spp., coagulase-negative staphylococci [including *S. epidermidis*], viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp.) is cultured from two or more blood cultures drawn on separate occasions. (See Notes 3, 4 and 5 below)

Notes:

1. In criterion 1, the phrase "one or more blood cultures" means that at least one bottle from a blood draw is reported by the laboratory as having grown organisms (i.e., is a positive blood culture).
2. In criterion 1, the term "recognized pathogen" does not include organisms considered common skin contaminants (see criteria 2 and 3 for a list of common skin contaminants). A few of the recognized pathogens are *S. aureus*, *Enterococcus* spp., *E. coli*, *Pseudomonas* spp., *Klebsiella* spp., *Candida* spp., etc.

3. In criteria 2 and 3, the phrase "two or more blood cultures drawn on separate occasions" means 1) that blood from at least two blood draws were collected within two days of each other (e.g., blood draws on Monday and Tuesday or Monday and Wednesday would be acceptable for blood cultures drawn on separate occasions, but blood draws on Monday and Thursday would be too far apart in time to meet this criterion), and 2) that at least one bottle from each blood draw is reported by the laboratory as having grown the same common skin contaminant organism (i.e., is a positive blood culture). (See Note 4 for determining sameness of organisms.)
    a. For example, an adult patient has blood drawn at 8 a.m. and again at 8:15 a.m. of the same day. Blood from each blood draw is inoculated into two bottles and incubated (four bottles total). If one bottle from each blood draw set is positive for coagulase-negative staphylococci, this part of the criterion is met.
    b. For example, a neonate has blood drawn for culture on Tuesday and again on Saturday and both grow the same common skin contaminant. Because the time between these blood cultures exceeds the two-day period for blood draws stipulated in criteria 2 and 3, this part of the criterion is not met.
    c. A blood culture may consist of a single bottle for a pediatric blood draw due to volume constraints. Therefore, to meet this part of the criterion, each bottle from two or more draws would have to be culture-positive for the same skin contaminant.
4. There are several issues to consider when determining sameness of organisms.
    a. If the common skin contaminant is identified to the species level from one culture, and a companion culture is identified with only a descriptive name (i.e., to the genus level), then it is assumed that the organisms are the same. The speciated organism should be reported as the infecting pathogen (see examples below).

Culture	Companion Culture	Report as …
S. epidermidis	Coagulase-negative staphylococci	*S. epidermidis*
Bacillus spp. (not *anthracis*)	*B. cereus*	*B. cereus*
S. salivarius	*Strep* viridans	*S. salivarius*

b. If common skin contaminant organisms from the cultures are speciated but no antibiograms are done or they are done for only one of the isolates, it is assumed that the organisms are the same.
c. If the common skin contaminants from the cultures have antibiograms that are different for two or more antimicrobial agents, it is assumed that the organisms are not the same (see table below).
d. For the purpose of NHSN reporting, the interpretation of intermediate (I) should not be used to distinguish whether two organisms are different.

Organism Name	Isolate A	Isolate B	Interpret as…
S. epidermidis	All drugs **S**	All drugs **S**	Same
S. epidermidis	OX **R** CEFAZ **R**	OX **S** CEFAZ **S**	Different
Corynebacterium spp.	PENG **R** CIPRO **S**	PENG **S** CIPRO **R**	Different
Strep viridans	All drugs **S**	All drugs **S** except ERYTH (**R**)	Same

5. For patients ≤ 1 year of age, the following temperature equivalents for fever and hypothermia may be used:
Fever: 38°C rectal/tympanic/temporal artery = 37°C oral = 36°C axillary
Hypothermia: 37°C rectal/tympanic/temporal artery = 36°C oral = 35°C axillary.

Specimen Collection Considerations

Ideally, blood specimens for culture should be obtained from two to four blood draws from separate venipuncture sites (e.g., right and left antecubital veins), not through a vascular catheter. These blood draws should be performed simultaneously or over a short period of time (i.e., within a few hours).[1,2] If your facility does not currently obtain specimens using this technique, you may still report BSIs using the criteria and notes above, but you should work with appropriate personnel to facilitate better specimen collection practices for blood cultures.

[1] Clinical and Laboratory Standards Institute (CLSI). *Principles and Procedures for Blood Cultures; Approved Guideline*. CLSI document M47-A (ISBN 1-56238-641-7). Clinical and Laboratory Standards Institute, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania 19087-1898 USA, 2007.
[2] Baron EJ, Weinstein MP, Dunne Jr WM, Yagupsky P, Welch DF, and Wilson DM. Blood Cultures IV. ASM Press: Washington, DC; 2005

Reporting Instructions

- Purulent phlebitis confirmed with a positive semiquantitative culture of a catheter tip, but with either negative or no blood culture is considered a CVS-VASC, not a BSI.
- Report organisms cultured from blood as BSI – LCBI when no other site of infection is evident.

Annual Application for a New Digital Certificate

When your digital certificate approaches 12 months old, you will be asked to apply for a new one. During the application process, you will be asked to select an activity. The only activity that should be requested is **NHSN Reporting**. Do not request NHSN Enrollment or NHSN Upload. NHSN Enrollment is only for new facilities that are not currently enrolled in NHSN. NHSN Upload is not an available activity.

Adding Users

NHSN Facility Administrators – please do not allow new users to apply for a digital certificate until you have added them to your organization as a user and they have agreed to the rules of behavior. The correct steps are outlined in the NHSN User Start-up Guide, http://www.cdc.gov/ncidod/dhqp/pdf/nhsn/NHSN_User_StartUp_Guide_032307.pdf, and should be followed exactly. When actions are initiated out of sequence, it can become very frustrating and take much longer to complete.

Protocol Updates

When changes are made to the *NHSN Manual: Patient Safety Component Protocol* which impact data collection, it should be assumed that NHSN data should be collected using the information in the new manual from the date of the manual forward. For example, there were changes made in the Principal Operative Procedure Selection List for SSIs (Table 13) in the NHSN Manual dated October 2007. These lists should be used for the reference for data collection from October 1 forward. Likewise, the revised ICD-9-CM code updates from the October 2007 manual should be used to define procedures beginning October 1.

End of Year Reminder – Get your data in!

It's that time of year when facilities should be making a push to get your data entered into NHSN. Starting in January, we will begin to look at all facilities to check for compliance. Specifically, what we'll be looking for, as we get ready to aggregate the data for the next NHSN Report, is that each facility has submitted at least 6 months of data in 2007. This means that every facility will be reviewed to make sure that

6 Monthly Reporting Plans include at least one Device-associated, Procedure-associated, or Medication-associated event and that there are corresponding denominator data for that event entered into NHSN. Keep in mind that this is a requirement for continued participation in NHSN, even for those members who are required to use NHSN for mandatory state reporting.

Protocol Pointers

CAUTI Events

Please remember that if CAUTI is selected for monitoring in your Monthly Reporting Plan, you are required to enter both symptomatic UTI (SUTI) and asymptomatic bacteriuria (ASB) events.

Cellulitis

When monitoring for Surgical Site Infections (SSI) following NHSN operative procedures, please remember that cellulitis, by itself, does not meet the criteria for a superficial incisional SSI. If the superficial incision demonstrates cellulitis (i.e., localized swelling, redness, or heat) the superficial incision still must be deliberately opened by the surgeon and, either be culture-positive or not cultured.

NHSN Statistics – November 28, 2007

Facilities reporting in NHSN	**~800**
Monthly Reporting Plans	**10,330**
Patients entered	**421,953**
Summary Data Records	**24,444**
Events	
BSI	**17,299**
PNEU	**8,746**
SSI	**15,859**
UTI	**13,689**
DE	**9,630**
Procedures	**408,399**
Facilities importing OR records	**78**
Output (Rates, graphs, etc.) generated	**71,879**