

Revisions to the CLABSI Definition

Effective 1st July 2008

FAQs

When will the revised definition start being used?

We are instructing all VICNISS participating hospitals to commence using the modified definition from **Tuesday 1st July 2008**. Until then, continue to use the current definition.

Why have the definitions been revised?

The modification has been introduced following local feedback, findings from our recent Infection Control survey and in order to keep in line with NHSN so international comparisons can be made.

What is the major difference?

Previously the criteria (2b) included the 'institution of appropriate antibiotic therapy'. This has now been removed.

How will it affect data collection?

It should make data collection easier as there is no requirement to determine if 'appropriate antibiotic therapy' has been commenced.

But my hospital wants me to continue to use the old definitions. Can I?

Yes. But you **MUST** indicate to VICNISS on which criteria you are reporting the CLABSI (i.e. Criteria 1, 2a, 2b etc). From Quarter 3 2008, VICNISS Reports will only include those CLABSI that have been reported using the modified definitions.

How will it affect my CLABSI rates?

This modification may result in a lowering of CLABSI rates as there is less criteria being applied, but this is yet to be demonstrated.

Will this change the way in which VICNISS report CLABSI?

In any surveillance program, a change in the definitions means that data not using those definitions should not be reported. Therefore, as of 1st July 2008, CLABSI reports from VICNISS will not include data submitted prior to that date. Comparisons between CLABSI identified before 1st July 2008 to those identified after 1st July 2008 will not be made by VICNISS, and will not be encouraged by the VICNISS Coordinating Centre. This means it will take some time to build up the database, hence we would expect to see wider confidence intervals [and possibly greater variation in quarterly rates] for a short while.

Can VICNISS staff come and explain the modifications to my staff?

Yes. The VICNISS Infection Control staff are available to visit you on site to discuss the modifications. Just contact them to arrange a visit.

Where can I get more information?

A User Group is being held on 14th May 2008 (for details, see www.vicniss.org.au/HCW/Type1/VUG.aspx) where the new modifications will be discussed. Also, the full definitions and further information which compares the old definitions with the new, including a flow chart are available below.

Intravascular Device Associated Bloodstream Infection Criteria

Intravascular device associated bloodstream infection criteria 1 and 2 may be used for patients of any age, including ≤ 1 year of age. Intravascular device associated bloodstream infection must meet one of the following criteria:

Criterion 1:

Patient has a recognised 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 & 2 below)

Criterion 2:

Patient has at least one of the following signs or symptoms: fever ($>38^{\circ}\text{C}$), 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 3,4 and 5 below)

Criterion 3:

Patient ≤ 1 year of age has at least one of the following signs or symptoms: fever ($>38^{\circ}\text{C}$, rectal), hypothermia ($<37^{\circ}\text{C}$, 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 “recognised 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 recognised pathogens are *S. aureus*, *Enterococcus spp.*, *E. coli*, *Pseudomonas spp.*, *Klebsiella spp.*, *Candida spp.*, etc
3. In criterion 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 drawn 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 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 criteria 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...
<i>S. epidermidis</i>	Coagulase-negative staphylococci	<i>S. epidermidis</i>
<i>Bacillus</i> spp. (not anthracis)	<i>B. cereus</i>	<i>B. cereus</i>
<i>S. salivarius</i>	<i>Strep viridans</i>	<i>S. salivarius</i>

- 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 VICNISS antibiogram reporting, the category interpretation of intermediate (I) should not be used to distinguish whether two organisms are different.

Organism Name	Isolate A	Isolate B	Interpret as...
<i>S. epidermidis</i>	All drugs S	All drugs S	Same
<i>S. epidermidis</i>	OX R CEFAZ R	OX S CEFAZ S	Different
<i>Corynebacterium</i> spp.	PENG R CIPRO S	PENG S CIPRO R	Different
<i>Strep viridans</i>	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.

It is important to note that there is considerable conflicting evidence and variation among the studies that measure human temperature, but for surveillance purposes in this population, we will use the above values.

5.2.8 Specimen Collection Considerations

Ideally, blood specimens for culture should be obtained from two to four blood draws from separate venepuncture 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.

5.2.9 Reporting Instructions

- Purulent phlebitis confirmed with a positive culture of a catheter tip, but with either negative or no blood culture is not considered a BSI.
- Infections occurring as the result of the following special situations are not considered hospital-acquired:
 - Infections associated with complications or extensions of infections already present on admission, unless a change in pathogen or symptoms strongly suggests the acquisition of a new infection.
 - Infections in infants that have been acquired transplacentally (e.g., herpes simplex, toxoplasmosis, rubella, cytomegalovirus, or syphilis) and become evident \leq 48 hours after birth.

Modifications to the NHSN LCBI Definition

Summary of changes:

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.

Modified NHSN - Effective 1/1/08	Old NHSN/NNIS i.e. VICNISS definitions.
<i>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:</i>	
Criterion 1: Patient has a recognized pathogen cultured from one or more blood cultures <u>and</u> organism cultured from blood is <u>not</u> related to an infection at another site. (See Notes 1 and 2 below.)	Criterion 1: Patient has a recognized pathogen cultured from one or more blood cultures <u>and</u> organism cultured from blood is <u>not</u> related to an infection at another site.
Criterion 2: Patient has at least <u>one</u> of the following signs or symptoms: fever (>38 C), chills, or hypotension <u>and</u> signs and symptoms and positive laboratory results are <u>not</u> related to an infection at another site <u>and</u> common skin contaminant (i.e., diphtheroids [<i>Corynebacterium</i> spp.], <i>Bacillus</i> [not <i>B. anthracis</i>] spp., <i>Propionibacterium</i> spp., coagulase-negative staphylococci [including <i>S. epidermidis</i>], viridans group streptococci, <i>Aerococcus</i> spp., <i>Micrococcus</i> spp.) is cultured from <u>two</u> or more blood cultures drawn on separate occasions. (See Notes 3 and 4 below.)	Criterion 2: Patient has at least one of the following signs or symptoms: fever (>38oC), 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: a. common skin contaminant (e.g., diphtheroids, <i>Bacillus</i> sp., <i>Propionibacterium</i> sp., coagulase-negative staphylococci, or micrococci) is cultured from two or more blood cultures drawn on separate occasions b. common skin contaminant (e.g., diphtheroids, <i>Bacillus</i> sp., <i>Propionibacterium</i> 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

Modified NHSN - Effective 1/1/08	Old NHSN/NNIS i.e. VICNISS definitions.
<p>Criterion 3: Patient \leq 1 year of age has at least <u>one</u> of the following signs or symptoms: fever (>38 C, rectal), hypothermia (<37 C, rectal), apnea, or bradycardia <u>and</u> signs and symptoms and positive laboratory results are <u>not</u> related to an infection at another site <u>and</u> common skin contaminant (i.e., diphtheroids [<i>Corynebacterium</i> spp.], <i>Bacillus</i> [not <i>B. anthracis</i>] spp., <i>Propionibacterium</i> spp., coagulase-negative staphylococci [including <i>S. epidermidis</i>], viridans group streptococci, <i>Aerococcus</i> spp., <i>Micrococcus</i> spp.) is cultured from <u>two</u> or more blood cultures drawn on separate occasions. (See Notes 3, 4 and 5 below.)</p>	<p>Criterion 3: Patient $<$ 1 year of age has at least one of the following signs or symptoms: fever (>38oC, rectal), hypothermia (<37oC, rectal), apnea, or bradycardia and signs and symptoms and positive laboratory results are not related to an infection at another site <u>and</u> at least <u>one</u> of the following: a. common skin contaminant (e.g., diphtheroids, <i>Bacillus</i> sp., <i>Propionibacterium</i> sp., coagulase-negative staphylococci, or micrococci) is cultured from <u>two</u> or more blood cultures drawn on separate occasions b. common skin contaminant (e.g., diphtheroids, <i>Bacillus</i> sp., <i>Propionibacterium</i> sp., coagulase-negative staphylococci, or micrococci) is cultured from at least one blood culture from a patient with an intravascular line, and physician institutes appropriate antimicrobial therapy</p>
<p>Notes:</p> <ol style="list-style-type: none"> 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 <u>not</u> 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 <i>S. aureus</i>, <i>Enterococcus</i> spp., <i>E. coli</i>, <i>Pseudomonas</i> spp., <i>Klebsiella</i> spp., <i>Candida</i> spp., etc. 3 In criteria 2 and 3, the phrase "<u>two</u> 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.) <ol style="list-style-type: none"> 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 criteria is <u>not</u> met. 	<p>Notes:</p> <p>The term "physician institutes appropriate antimicrobial therapy" means that an antimicrobial agent with activity against the organism is started by the physician. This will likely be empirically selected since it would be started before the results of cultures were ready. If the agent is stopped because either no organism is identified or the one identified is not sensitive to the agent being used for therapy, then this criterion is not met. If the organism is susceptible to the agent but the agent is discontinued, then this criterion is met. The language of the criterion does not state that a full course of therapy must be completed, rather it says it only needs to be initiated</p>

Modified NHSN - Effective 1/1/08

Old NHSN/NNIS i.e. VICNISS definitions.

- 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).
- 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 antibiogram reporting, the category interpretation of intermediate (I) should not be used to distinguish whether two organisms are different.

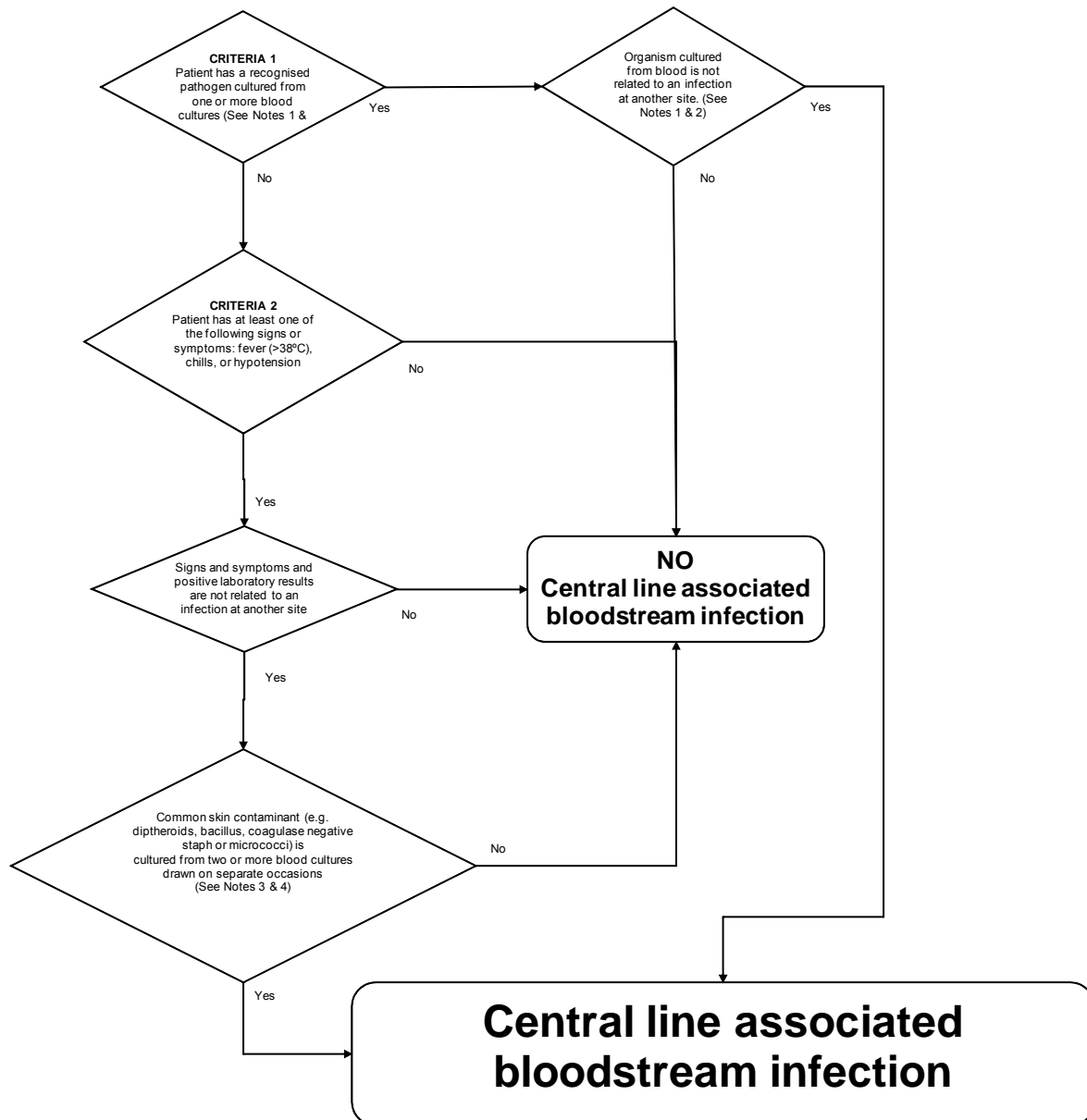
Culture	Companion Culture	Report as...
<i>S. epidermidis</i>	<i>Coagulase-negative staphylococci</i>	<i>S. epidermidis</i>
<i>Bacillus</i> spp. (not <i>anthracis</i>)	<i>B. cereus</i>	<i>B. cereus</i>
<i>S. salivarius</i>	<i>Strep viridans</i>	<i>S. salivarius</i>

Organism Name	Isolate A	Isolate B	Interpret as...
<i>S. epidermidis</i>	All drugs S	All drugs S	Same
<i>S. epidermidis</i>	OX R CEFAZ R	OX S CEFAZ S	Different
<i>Corynebacterium</i> spp.	PENG R CIPRO S	PENG S CIPRO R	Different
<i>Strep viridans</i>	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.

<p>Modified NHSN - Effective 1/1/08</p>	<p>Old NHSN/NNIS i.e. VICNISS definitions.</p>
<p><u>Specimen Collection Considerations</u> 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). 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.</p>	
<p><u>Reporting Instructions</u> 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.</p>	<p><u>Reporting Instructions</u> • 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 • Report organisms cultured from blood as BSI - LCBI when no other site of infection is evident • For neonates and infants, the CDC criteria typically specify that fever is >38°C rectal and hypothermia is <37°C rectal. Since axillary or tympanic temperatures are more often done in this population, the following equivalencies can be used:</p> <p>38°C Rectal/Tympanic/temporal artery = 37°C Oral = 36°C Axillary 37°C Rectal/Tympanic/temporal artery = 36°C Oral = 35°C Axillary</p> <p>It is important to note that there is considerable conflicting evidence and variation among the studies that measure human temperature, but for surveillance purposes in this population, we will use the above values.</p> <p>Note also that "strip thermometers" measure the temperature of the skin, not the body's core and cannot be used to meet the temperature criteria for NHSN surveillance.</p>

Central line associated bloodstream infection - NEW NHSN Criteria 2008



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 criterion 2 the phrase "two or more blood cultures drawn on separate occasions" means:
a) 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
b) 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).

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).
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 antibiogram reporting, the category interpretation of intermediate (I) should not be used to distinguish whether two organisms are different.