Infectious Diseases Society of America
Emerging Infections Network

Comments for Query: '*Diagnosis of Central Line-Associated Bloodstream Infections*'

Comments made by 92 respondents.
Pediatric responses are shown in blue font and State of practice shown in parentheses, e.g., *[CA]*

Comments about CLABSI Definitions (NHSN, IDSA, APIC)

- A significant number of BSI's are indeterminate in origin, and it would be helpful to include such a category, with specific criteria for inclusion (e.g. enterococcal bacteremia in a patient with a central venous catheter plus recent GI instrumentation, underlying GI disease, or other clinical conditions, though without a clearly identified GI primary source). *[ME]*
- Regarding the 2nd supplementary survey, I recommend the "objective" definition includes a need for the blood culture via the catheter to have a 2 or more hour lower incubation time to positive than the blood culture via the peripheral vein. In our current definition we are not allowed to use this data (or a positive culture via the catheter and a negative peripheral culture of a recognized pathogen). *[NY]*
- This is a morass of inconsistency and the data is "garbage in, garbage out". Data can be manipulated every which way and biased by wishful thinking. *[OR]*
- CLABSI definition shouldn't apply to the neutropenic patient noted above for obvious reasons. This should be an exception to the objective definition for CLABSIs. *[OH]*
- Until origin of BSI can be sorted out (by new technology?) immunosuppressed patients and short gut patients BSI should be reported in a separate category. They can skew the rate tremendously. *[IA]*
- 1. Our concern is that the NHSN criteria (which is for surveillance) is being used for 'dinging' an institution financially. It removes it from being a tool used to improve our services to patients (triggers reviews, etc, to improve quality of care -- ICPs are good guys) to being a source of anxiety and mistrust (our unit is being called dirty -- ICPs are bad guys). 2. We are trying to use NHSN criteria as closely as possible, understanding it is not a clinical tool. Although we do review all positives, in reality the ICP in charge of that particular unit's data has final say. This is to give some semblance of continuity to our data. 3. Just for fun: in the secondary survey, we actually went to NHSN criteria to justify our answer. However, a comment was made that we are now actively looking for secondary sources much more closely since the financial side has come in. Does this mean either we a) have bad old data as we called more CLABSIs in the past because criteria was not followed as closely, just if line was in at time of infection OR 2) are we throwing some CLABSIs out because we are being forced to look for secondary sources more closely due to newer pressures from outside-- sometimes I wonder.... *[NC]*
- We used to use time to positivity and differential time to positivity, but do not use them now due to NHSN CLABSI criteria. I think NHSN criteria should be revised with input from experts. *[CT]*
- Need better definitions *[NC]*
- IDSA definitions, CDC definitions, and APIC definitions all vary somewhat which makes this difficult for my ICPs who initially review all CLABSI's then send them to me to sort out yea or nay *[WI]*

- The fact that different but overlapping definitions for central line infections are used for determination of CLABSI (NHSN) and CRBSI (IDSA) has created much confusion among quality and administrative personnel. These definitions should be the same if possible. *[TX]*
- NHSN definitions need to be modified for cases as noted in Vignette #6! Gut translocation in transplant patient causing bacteremia in a child with CVL is not always a primary CLABSI. *[OR]*
- The current NHSN definitions do not take into consideration the unique physiologic/ pathologic state of the oncology/ stem cell transplantation patients, effects of the conditioning therapy on mucosal surfaces (GI/ Oral) and subsequent risk for translocation of gut flora as a cause for bacteremia. *[CA]*
- The surveillance definition and the clinical definition of CLABSI do not match in 20-30%. The surveillance definition UNDERESTIMATES compared to the clinical definition (usually blames the bacteremia on incidentally found positive cultures eg. candida in sputum, VRE in stool, MRSA).
- We have found the heme/BMT patient population to be a very challenging group to make a diagnosis of CLABSI. Because these patients only have one blood culture drawn, frequently from a line, it is difficult to apply NHSN criteria. In addition, the criteria do not allow for mucositis as a way to "rule out" based on presence of another source of infection. We have encountered several patients with severe mucositis with viridans group strep bacteremia or gram negative bacteremia whom we have been forced to call a CLABSI even though we do not feel that the central line is the source. The NHSN should develop separate criteria for evaluating CLABSI in hematology/BMT patients. *[CA]*
- We have been participating in CUSP for about a year now, which recommends peripheral cultures only; some ICUs have really embraced and enforced this while others, not so much. We are working on an institutional policy to recommend peripheral cultures as our preferred methodology, while still allowing MDs to order CL cultures if they felt that was necessary. The fact that IDSA recommends 1 peripheral + 1 CL (using the CR-BSI rather than CLABSI definition) has been a barrier. Also need to incorporate IDSA recs for neutropenic patients (1 from each lumen). So, it's turned out to be a lot more complicated and slower to implement that we would have thought. Lots of stakeholders to involve! Better guidance on this would be much appreciated! Thanks for survey... *[DE]*
- As NHSN definitions for a CLABSI do not include use of quantitative cultures in determining if infection is primary, we tend not to use this data even though often available. This likely leads to overcalling primary CLABSI at our institution. In above vignette, though the source is likely GI or oral for many of the organisms since there isn't a clear infection at another site, we would be stuck calling it a CLABSI--again, current definition leads to overcalling. New definitions should incorporate or allow institutions to incorporate use of quantitative cultures if they are available. This would lead to much more meaningful data that could be used to determine practice changes. *[TX]*
- CDC needs to update the definition for CLABSI and include an indeterminate category *[OH]*
- I presented an abstract on this very topic at the 2011 SHEA. I think the NHSN criteria are NOT valid, esp in ICU/Oncology. I think + BC for GNB/enterococcus/candida/alpha strep likely originate in GI tract! I would eliminate GNB/enterococcus/candida/alpha strep from the NHSN criteria in heme/onc/BMT/ICU pts with recent GI surgery or procedures on GI tract (likely ERCP) *[MN]*

Comments about the Source of Bloodstream Infections (the adjudication vignette), plus Public Reporting and Reimbursement Issues

- We adhere to CLABSI definitions, but there are numerous discrepancies, eg, some people would not consider diarrhea and abd pain a gastroenteritis, that would then be a focus of the bacteremia. We evaluate these carefully. If gastroenteritis is present, then it would be the source. *[CA]*
- Internal and external reporting has sparked a trend toward post-hoc adjudication of HAI cases. We need to ensure that the emperor has (objective) clothes as we pursue the critical goal of limiting HAI, including CLABSI. *[OH]*

- The additional vignette is difficult to answer as the timing of the positive blood cultures in relation to admission is not given. *[CT]*
- The vignette on the next page was not fair. I would have had additional data upon which to decide. Having struggled with this, strictly objective reporting criteria will greatly over diagnose CLABSI. I hate the additional work and acknowledge that more subjective variability is introduced, but I want our data to be accurate. Don't get me started on VAP - you want subjectivity and variability? *[WI]*
- Used the attached vignette to QA our ICP group. Half answered primary... half secondary... and all agreed that with the information presented, assumptions were made that they would have confirmed prior to making a final assessment. All got out the NHSN definitions to defend their choices. I think this points to the value of being able to go back to definitions ... we do this routinely to come to consensus... ie, that we all agree with the final call, BASED on the DEFINITIONS. *[OH]*
- Public reporting of CLABSI discourages my institution from drawing BCs from central lines *[MA]*
- Please note in question 6 although my impression is that some of the GI bugs probably originate in the oral or gut mucosa, that I would follow the definition and assign them as CLAB. Given our high turnover of IP staff, ongoing training in the NHSN definitions is necessary to prevent a lot of our CLABSI from being assigned to concurrent urine cultures and other sites such as VAP. There is also considerable pressure from unit directors to reassign CLABSI. Many IPs are unaware of the rule that secondary bloodstream infections must be assigned to an infection meeting an NHSN definition. Although I appreciate the fact that these neutropenic blood cultures may originate elsewhere, if we fail to report them, we rob the database of information that would eventually lead to a reconsideration of the definition and/or standard rates for these areas, as well as the capability of tracking more resistant pathogens nationally. We cannot be keeping two sets of books. *[NM]*
- In our institution, we have started doing a mini root cause analysis on every CLABSI to determine the source for infection *[GA]*
- AML patients with mucositis & viridans streptococci in the blood always generate a great deal of discussion. *[CA]*
- Two comments: 1. I am not a big believer in gut translocation and thus tend to attribute bacteremias without an obvious source to the line. 2. With the advent of public reporting, I am convinced that infection prevention specialists deliberately err on the side of not reporting bacteremias as line-associated (e.g., the Michigan report in which over half of the participating hospitals had no central line infections in one year!) *[IL]*
- Bone marrow transplant patients are seen in medical ICU, not separate BMT ICU, so their rates are figured in to the total. Often difficult to adjudicate these cases. No other BMT program in the state. Makes interhospital comparisons difficult. Practice of culturing from lines is discouraged, based on CUSP/Stop BSI program recommendations. But IDSA guidelines recommend culturing one peripheral and one from line. Reconciled guidelines are needed. If interhospital comparisons are the purpose of surveillance (and I don't think should be) then objective criteria and risk adjustment are needed. Since specificity of the CLABSI case definition is not 100%, those who are "getting to zero" are probably being creative with their adjudication of bacteremias. *[OR]*
- There should be a differentiation of bacteremias in patients with mucositis and GI GVHD. *[AZ]*
- We would use time to positivity to help resolve the vignette of #6. I think commentary by Sexton, ICHE, 12/2010, summarized this problem very well. *[FL]*
- Thank you for conducting this survey. This is an area of tremendous focus especially as reimbursement is going to be tied to rates of CLABSI. There are a tremendous number of alterations and adjustments that are made to rate reporting in response to pressure to have low rates. I hope that some of the data about practices derived from this survey could be utilized to explore this topic further. *[GA]*
- We try to report honestly with the least possible "clinical judgment" intruding into our calls. That is why I favor an automated approach; accuracy is less important than consistency and a level playing field.

- There is often a strong (unvoiced) disincentive to recognize CLABSI. *[NH]*
- With reporting of nosocomial infections, hospitals are now using the strictest definition to exclude as many cases as possible. Reported rates are bordering on the improbable. *[KY]*
- This is a very important topic. I fear that with public reporting and all the complications that physicians will be hesitant to call CLABSI just what it is! With our current patient population and all the various factors of obesity, immunosuppressants and other factors there may not always be as obvious but we need the honest data for epidemiologic purposes. *[MI]*

Comments about Site from which Blood Cultures are Drawn

- Currently, ID approval needed for drawing from central line *[CT]*
- We ID physicians have very little control as to how the cultures are obtained. Parents often refuse to have their children poked if they have a central line, particularly in oncology. In the NICU, we often times draw from Broviac or PICC line. We are criticized for doing this, but I believe we have a higher rate of positive cultures. It is difficult often to obtain > 1 ml of blood for culture from a peripheral vein on these patients, and I worry low sensitivity will result in longer, broader antibiotic regimen. I really agonize over this one. *[CA]*
- It is often difficult to tell in the ICU where the blood cultures are drawn from. Our policy is to draw them from a peripheral stick but they could be drawn from a central line but that is not easy to decipher or track at our hospital. *[GA]*
- Blood cultures are usually drawn from all central catheter lumens in addition to peripherally in BMT.
- There are issues in accurately identifying the lines from which cultures were drawn, particularly in the ICU where many hematologic malignancy patients have multiple lines and other sources of infection.
- For question #3, my ranking is based on observations of what others do in the hospital. I generally recommend obtaining simultaneous blood cultures from all central line ports and the periphery. *[MA]*
- Our best performing ICUs made the decision a few years ago to follow CDC's recommendation of obtaining all blood cultures by peripheral draws, and also with the HCW using gloves and mask. We are planning to spread this protocol, as we believe cultures obtained through lines are more likely to contain contaminants. *[IN]*
- The main issue is always identifying if the blood cultures where truly taken from separate sites and at different times vs. a phlebotomist injecting 4 bottles with blood taken from 1 site (including peripheral IVs in patients with difficult access without letting the doctors know). Very infrequently the bottles are appropriately labeled and the micro lab doesn't get that information. *[FL]*
- Patients in ICU have severe edema, phlebotomists and nurses most of times cannot obtain one or two peripheral vein samples. It aggravates me when samples are not labeled. *[AL]*
- I have noticed there is a significant amount of disagreement even among those on EIN about whether or not to obtain cultures from the central line. *[SC]*
- There are sometimes issues with getting peripheral blood cultures although we request them - especially in burn patients or in patients with prolonged hospitalizations where it becomes difficult to obtain peripheral blood. *[AL]*
- I just wanted to point out some practical points and issues I have faced. 1. Phlebotomy draws have shown better documentation of site and less risk of contamination (CNS) as compared to nursing draws. 2. Although I am called abt inability to get a peripheral and ok to draw from line those cultures may still not be labelled as coming from a line. 3. Infection control does not always involve ID in every case of CLABSI unless there is confusion. 4. Hemodialysis cultures are not always paired with peripherals esp when outpt at dialysis centers. *[FL]*
- I strongly discourage central line blood cultures unless no other source. *[VA]*
- For question 4: I routinely draw 1 BC set from each lumen of a central line and 1 set peripherally, or 2 sets from different peripheral sites if no CL is in place. *[Manitoba]*

- Clinicians are encouraged NOT to use cultures drawn from central lines alone to determine the presence of a BSI as this can sometimes represent colonization. Peripheral cultures are encouraged. *[NC]*

Comments about Specific Institutional Practices

- We have a CLABSI rate of 0% for the last 4 quarters in the PICU *[CO]*
- The pulmonologists and hospitalists frequently draw cultures from the line which I generally do not want unless extenuating circumstances. I also periodically have to do battle with lab techs who will draw 2 sets of blood cultures from the same stick (but don't document the fact) and cultures return positive for coag neg Staph in both sets. Then I have to go on a mission to prove that blood cultures were actually from same stick to prove the patient did not have a bacteremia. It is a constant battle with lab turnover.
- We now have a team charged with placement of central lines (esp. PICC lines) who comply with the CDC recommended "bundle" (gown, mask, lg sterile drape, etc). However, other groups that insert CV lines (outside this team) may not always adhere to/comply with the bundle. *[MS]*
- Rates have decreased with strict guidelines on insertion and maintenance. *[NJ]*
- Always a challenge to interpret results from different colored ports of a central line or port. *[UT]*
- Local institution has 1250 beds. Often in adult medicine reflex to remove central venous access with fever - 50% not etiology of fever. Also PROBLEM: new PICC placed while old PICC or TLC in place, even if haemodynamically unstable. Plus ease of CV access with PICC allows overuse locally.
- 1. We have an epidemic of PICC lines placed for convenience. 2. High percentage of contaminants in blood cultures. *[TX]*
- We utilize different sets of definitions for CLABSI at our institution. An internally-used set of definitions utilizes delayed-time-to-positivity, presence of neutropenia, and the type of organism to define the presence of a CLABSI. *[WI]*
- We developed a guideline internal to the ID division regarding CLABSI (informed by IDSA guidelines, but not CDC/NHSN definition specifically) and continue to seek buy-in from other stakeholder subspecialties and to hardwire various aspects into order sets via CPOE. *[WA]*
- We continue to have a steady rate of CLABSI despite near-perfect insertion bundle adherence. *Candida* species continue to be very common. Would be curious to know how many respondents use CHG baths, ETOH locks, etc and what strategies are used to get lines removed faster. *[OR]*

Comments about Specific Diagnostic Tests / Laboratory Issues

- We have stopped culturing catheter tips most of the time. *[NY]*
- I use time to positive cultures frequently. If peripheral significantly sooner (hours) positive than the line, my opinion is less likely to be CLABSI. *[GA]*
- We do isolators-but don’t get quantitation. I am a consultant usually-I rarely see cultures from all lumens and catheters=we recommend. *[MA]*
- We are currently struggling mightily with this in coming up with a blood culturing policy; I do think that differential time to positivity if the BC are drawn and inoculated nearly simultaneously may be a marker to use for the definition. Especially problematic in the kids where periph cultures are not done by tradition (the hemeonc population). *[TX]*
- Question #6--would like differential time to positivity to answer. *[TN]*
- Lab order package gives option for paired BC's (CVC & peripheral) for using differential time to positivity. *[NY]*
- The reporting of quantitation is commonly in ranges that make it difficult to compare for purposes of assessing source (e.g., 100-200 vs. 200-500 vs. 500-1000, then >1000 CFU/ml). *[TX]*
- The time to positivity and differential time needs to be calculated by me and is not provided by EMR
- Unless equal volume of blood can be confidently collected in each blood culture, not sure time to positivity or quantitative cultures are valid. *[PA]*

- We published many years ago on the value of Lysis/Centrifugation (eg, Isolator) in the NICU, and still use these criteria for the NICU: Bacteremia detected by lysis direct plating in a neonatal intensive care unit. J Clin Microbiol. 1990 Jan;28(1):1-4. *[CA]*
- Time to positivity is available only by interrogating the BACTEC computer for each accession number in micro. The TTP is not reported otherwise, mostly because of concerns that the method will be thrown off by high volumes collected via lines. Part of my TTP evaluation is to actually find the bottles in micro and set them side by side (venous vs. line) to ensure that they have equal fill volumes.

Pediatric-specific Issues

- This is an extremely difficult area. Our biggest problem in my opinion is in our NICU where a single culture is done, often only a cc of blood, and antibiotics started. If coag negative staphylococci are recovered, it is considered an infection by our neonatologists since the newborn was "symptomatic". To me this makes no sense since of course the baby is symptomatic, that is why the culture was done, but babies with negative cultures are symptomatic and not infected so why would a single positive convince me that there must be an infection. It is very hard to convince the group to do multiple cultures as it costs blood, time and trauma to the baby. I have an excellent group of neonatologist who are quick to stop antibiotics when cultures are negative and who use narrow spectrum drugs. *[NJ]*
- NICU and PICU are not problems for us, as ICU attendings are willing to take peripheral cultures, but we have a problem with the heme/onc lines. Most of our lines are totally implanted and blood cultures are drawn from the special needle and tubing, which may have been in place for many days. Also our heme/onc attendings are very reluctant to draw peripheral blood cultures in these patients- apparently their community in general do not see the need for peripheral blood cultures to aid in the diagnosis of central line infections, although all the ID policies have remained the same. *[NY]*
- We are a pediatric group--our evolution of this was qualitative and quantitative cultures from all catheter lumens and at least one peripheral culture until about 6 years ago when the microbiology lab became worried that the workload on the qualitative cultures was becoming too much. Then, about 5 years ago, the oncology team wanted to stop doing peripheral cultures because it didn't usually affect management and the parents were complaining. About 2 months ago, we started to get peripheral and catheter cultures with any new fever in an attempt to better identify if the catheter is the source. *[NJ]*
- Controversy regarding whether NICU central line bundles should EXCLUDE drawing blood cultures through the central line, as it would involve another episode of breaking into the line. The majority in my division feel that this will falsely decrease the CLABSI rate and impair clinical care. *[TX]*
- Getting a peripheral culture from any pediatric patient w/ central line is like pulling teeth *[WA]*

Other Comments

- Surprising rarity of + PICC tips *[SC]*
- As a cost savings measure, consider forbidding hospitals from devoting resources to reporting CLABSI. Other problems: longstanding chemotherapy ports, dialysis catheters. *[NE]*
- Good query, common issue. *[CO]* Thank you for this interesting survey *[NY]*
- Seems like this survey had some inconsistencies. One question offered "don't know" as an option; all should have. Some questions asked about general practice patterns at my institution, others asked about what I order (even though I rarely actually enter orders; maybe the intended meaning was what do I recommend). "Time to positivity" is part of "Differential time to positivity", but I don't understand it as a stand-alone. *[MN]*
- Our infection control was developed without anything but nurse input till 36 months ago; seems much more influenced by custom rather than Maki science *[WA]*
- What is usually done in my facility is not the way I would evaluate. An interesting question is: What really happens vs what is specified by facility policy, guidelines or procedure? *[MN]*