

For the purpose of VICNISS surveillance this chapter contains the CDC/NHSN surveillance definition of healthcare-associated infection (HAI) and criteria for all specific types of HAI. These criteria include surgical site infection (SSI), pneumonia (PNEU), bloodstream infection [BSI] and urinary tract infection [UTI], as well as criteria for other types of HAI. Of particular importance, this chapter provides further required criteria for the specific event types that constitute organ/space SSIs (e.g., mediastinitis [MED] that may follow a coronary artery bypass graft, intra-abdominal abscess [IAB] after colon surgery). Additionally, it is necessary to refer to the criteria in this chapter when determining whether a positive blood culture represents a primary BSI or is secondary to a different type of HAI. The HAI must meet one of the criteria detailed in this chapter. Secondary BSIs are not reported to VICNISS, nor can they be associated with a central line.

CDC/NHSN Surveillance Definition of Healthcare-Associated Infection (HAI) and Criteria for Specific Types of Infections in the Acute Care Setting

For the purposes of NHSN surveillance in the acute care setting, the CDC defines a HAI as a localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s). There must be no evidence that the infection was present or incubating at the time of admission to the acute care setting.

HAIs may be caused by infectious agents from endogenous or exogenous sources.

- Endogenous sources are body sites, such as the skin, nose, mouth, gastrointestinal (GI) tract, or vagina that are normally inhabited by microorganisms.
- Exogenous sources are those external to the patient, such as patient care personnel, visitors, patient care equipment, medical devices, or the health care environment.

Other important considerations include the following:

- Clinical evidence may be derived from direct observation of the infection site (e.g., a wound) or review of information in the patient chart or other clinical records.
- For certain types of infection, a physician or surgeon diagnosis of infection derived from direct observation during a surgical operation, endoscopic examination, or other diagnostic studies or from clinical judgment is an acceptable criterion for an HAI, unless there is compelling evidence to the contrary. For example, one of the criteria for SSI is “surgeon or attending physician diagnosis.” Unless stated explicitly, physician diagnosis alone is not an acceptable criterion for any specific type of HAI.
- Infections occurring in infants that result from passage through the birth canal are considered HAIs.
- The following infections are not considered health care associated:
 - 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 ≤ 48 hours after birth; and
 - Reactivation of a latent infection (e.g., herpes zoster [shingles], herpes simplex, syphilis, or tuberculosis).
- The following conditions are not infections:

- Colonization, which means the presence of microorganisms on skin, on mucous membranes, in open wounds, or in excretions or secretions but are not causing adverse clinical signs or symptoms; and
- Inflammation that results from tissue response to injury or stimulation by non-infectious agents, such as chemicals.

Criteria for Specific Types of Infection

Once an infection is deemed to be health care associated according to the definition shown above, the specific type of infection should be determined based on the criteria detailed below. These have been grouped into 13 major type categories to facilitate data analysis. For example, there are 3 specific types of urinary tract infections (symptomatic urinary tract infection, Asymptomatic bacteraemic urinary tract infection, and other infections of the urinary tract) that are grouped under the major type of Urinary Tract Infection. The specific and major types of infection used in NHSN and their abbreviated codes are listed in Table 1, and the criteria for each of the specific types of infection follow it.

Table 1: CDC/NHSN major and specific types of healthcare associated infections

UTI	<u>Urinary tract infection</u> SUTI Symptomatic urinary tract infection ABUTI Asymptomatic bacteraemic urinary tract infection OUTI Other urinary tract infection (kidney, ureter, bladder, urethra, or tissue surrounding the retroperitoneal or perinephric space)	EENT	<u>Eye, ear, nose, throat, or mouth infection</u> CONJ Conjunctivitis EYE Eye, other than conjunctivitis EAR Ear, mastoid ORAL Oral cavity (mouth, tongue, or gums) SINU Sinusitis UR Upper respiratory tract, pharyngitis, laryngitis, epiglottitis
SSI	<u>Surgical site infection</u> Superficial incisional SSI Deep incisional SSI Organ/space SSI	GI	<u>Gastrointestinal system infection</u> GE Gastroenteritis GIT Gastrointestinal (GI) tract HEP Hepatitis IAB Intraabdominal, not specified elsewhere NEC Necrotizing enterocolitis
BSI	<u>Bloodstream infection</u> LCBI Laboratory-confirmed bloodstream infection	LRI	<u>Lower respiratory tract infection, other than pneumonia</u> BRON Bronchitis, tracheobronchitis, tracheitis, without evidence of pneumonia LUNG Other infections of the lower respiratory tract
PNEU	<u>Pneumonia</u> PNU1 Clinically defined pneumonia PNU2 Pneumonia with specific laboratory findings PNU3 Pneumonia in immunocompromised patient	REPR	<u>Reproductive tract infection</u> EMET Endometritis EPIS Episiotomy VCUF Vaginal cuff OREP Other infections of the male or female reproductive tract
BJ	<u>Bone and joint infection</u> BONE Osteomyelitis JNT Joint or bursa DISC Disc space	SST	<u>Skin and soft tissue infection</u> SKIN Skin ST Soft tissue DECU Decubitus ulcer BURN Burn BRST Breast abscess or mastitis UMB Omphalitis PUST Pustulosis CIRC Newborn circumcision
CNS	<u>Central nervous system</u> IC Intracranial infection MEN Meningitis or ventriculitis SA Spinal abscess without meningitis	SYS	<u>Systemic Infection</u> DI Disseminated infection
CVS	<u>Cardiovascular system infection</u> VASC Arterial or venous infection ENDO Endocarditis CARD Myocarditis or pericarditis MED Mediastinitis		

Urinary Tract Infection (UTI)

Symptomatic Urinary Tract Infection (SUTI)

A symptomatic urinary tract infection must meet at least 1 of the following criteria:

1. Patient had an indwelling urinary catheter in place at the time of the specimen collection and
has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), suprapubic tenderness, or costovertebral angle pain or tenderness and
a positive urine culture of $\geq 10^5$ colony-forming units (CFU)/ml with no more than 2 species of microorganisms.
2. Patient had an indwelling urinary catheter removed within 48 hours prior to specimen collection and
has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness and
a positive urine culture of $\geq 10^5$ CFU/ml with no more than 2 species of microorganisms.
3. Patient did not have an indwelling urinary catheter in place at the time of specimen collection nor within 48 hours prior to specimen collection and
has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$) in a patient that is ≤ 65 years of age, urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness and
a positive urine culture of $\geq 10^5$ CFU/ml with no more than 2 species of microorganisms.
4. Patient had an indwelling urinary catheter in place at the time of the specimen collection and
at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), suprapubic tenderness, or costovertebral angle pain or tenderness and
a positive urinalysis demonstrated by at least 1 of the following findings:
 - positive dipstick for leukocyte esterase and/or nitrate
 - pyuria (urine specimen with ≥ 10 white blood cell [WBC]/ mm^3 of unspun urine or ≥ 3 WBC/high power field of spun urine)
 - microorganisms seen on Gram stain of unspun urineand
a positive urine culture of $\geq 10^3$ and $< 10^5$ CFU/ml with no more than 2 species of microorganisms
5. Patient had an indwelling urinary catheter removed within 48 hours prior to specimen collection and
at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), urgency, frequency, dysuria, or suprapubic tenderness, or costovertebral angle pain or tenderness and
a positive urinalysis demonstrated by at least 1 of the following findings:

- positive dipstick for leukocyte esterase and/or nitrate
 - pyuria (urine specimen with ≥ 10 white blood cell [WBC]/ mm^3 of unspun urine or ≥ 3 WBC/high power field of spun urine)
 - microorganisms seen on Gram stain of unspun urine
- and
 a positive urine culture of $\geq 10^3$ and $< 10^5$ CFU/ml with no more than 2 species of microorganisms
6. Patient did not have an indwelling urinary catheter in place at the time of specimen collection nor within 48 hours prior to specimen collection
 and
 has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^\circ\text{C}$) in a patient that is ≤ 65 years of age, urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness
 and
 a positive urinalysis demonstrated by at least 1 of the following findings:
- positive dipstick for leukocyte esterase and/or nitrate
 - pyuria (urine specimen with ≥ 10 white blood cell [WBC]/ mm^3 of unspun urine or ≥ 3 WBC/high power field of spun urine)
 - microorganisms seen on Gram stain of unspun urine
- and
 a positive urine culture of $\geq 10^3$ and $< 10^5$ CFU/ml with no more than 2 species of microorganisms
7. Patient ≤ 1 year of age with or without an indwelling urinary catheter has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^\circ\text{C}$ core), hypothermia ($<36^\circ\text{C}$ core), apnoea, bradycardia, dysuria, lethargy, or vomiting
 and
 a positive urine culture of $\geq 10^5$ CFU/ml with no more than two species of microorganisms.
8. Patient ≤ 1 year of age with or without an indwelling urinary catheter has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^\circ\text{C}$ core), hypothermia ($<36^\circ\text{C}$ core), apnoea, bradycardia, dysuria, lethargy, or vomiting
 and
 a positive urinalysis demonstrated by at least 1 of the following findings:
- positive dipstick for leukocyte esterase and/or nitrate
 - pyuria (urine specimen with ≥ 10 WBC/ mm^3 of unspun urine or ≥ 3 WBC/high power field of spun urine)
 - microorganisms seen on Gram stain of unspun urine
- and
 a positive urine culture of between $\geq 10^3$ and $< 10^5$ CFU/ml with no more than 2 species of microorganisms

Asymptomatic Bacteraemic Urinary Tract Infection (ABUTI)

Patient with or without an indwelling urinary catheter has no signs or symptoms (i.e., for any age patient, no fever ($>38^\circ\text{C}$), urgency, frequency, dysuria, suprapubic tenderness, or costovertebral angle pain or tenderness, OR for a patient ≤ 1 year of age, no fever ($>38^\circ\text{C}$ core), hypothermia ($<36^\circ\text{C}$ core), apnoea, bradycardia, dysuria, lethargy, or vomiting)
 and
 a positive urine culture of $>10^5$ CFU/ml with no more than 2 species of uropathogen microorganisms*
 and

a positive blood culture with at least 1 matching uropathogen microorganism to the urine culture, or at least 2 matching blood cultures drawn on separate occasions if the matching pathogen is a common commensal.

* Uropathogen microorganisms are: Gram-negative bacilli, *Staphylococcus* spp., yeasts, beta-haemolytic *Streptococcus* spp., *Enterococcus* spp., *G. vaginalis*, *Aerococcus urinae*, and *Corynebacterium* (urease positive).

Notes:

- Urinary catheter tips should not be cultured and are not acceptable for the diagnosis of a urinary tract infection.
- Urine cultures must be obtained using appropriate technique, such as clean catch collection or catheterization. Specimens from indwelling catheters should be aspirated through the disinfected sampling ports.
- In infants, urine cultures should be obtained by bladder catheterization or suprapubic aspiration; positive urine cultures from bag specimens are unreliable and should be confirmed by specimens aseptically obtained by catheterization or suprapubic aspiration.
- Urine specimens for culture should be processed as soon as possible, preferably within 1 to 2 hours. If urine specimens cannot be processed within 30 minutes of collection, they should be refrigerated, or inoculated into primary isolation medium before transport, or transported in an appropriate urine preservative. Refrigerated specimens should be cultured within 24 hours.
- Urine specimen labels should indicate whether or not the patient is symptomatic.
- Consider bloodstream infection secondary for all cases of Asymptomatic Bacteraemic Urinary Tract Infection (ABUTI).

Other Urinary Tract Infection (Kidney, Ureter, Bladder, Urethra, or Tissue Surrounding the Retroperitoneal or Perinephric Space) (OUTI)

Other infections of the urinary tract must meet at least 1 of the following criteria:

1. Patient has microorganisms isolated from culture of fluid (other than urine) or tissue from affected site.
2. Patient has an abscess or other evidence of infection seen on direct examination, during a surgical operation, or during a histopathologic examination.
3. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), localized pain, or localized tenderness at the involved site
and
at least 1 of the following:
 - purulent drainage from affected site
 - microorganisms cultured from blood that are compatible with suspected site of infection
 - radiographic evidence of infection (e.g., abnormal ultrasound, CT scan, magnetic resonance imaging [MRI], or radiolabel scan [gallium, technetium])
4. Patient ≤ 1 year of age has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnoea, bradycardia, lethargy, or vomiting
and
at least 1 of the following:
 - purulent drainage from affected site
 - organisms cultured from blood that are compatible with suspected site of infection
 - radiographic evidence of infection (e.g., abnormal ultrasound, CT scan, MRI, or radiolabel scan [gallium, technetium])

Surgical Site Infection (SSI)

Superficial Incisional SSI

A superficial incisional SSI must meet the following criteria:

Infection occurs within 30 days after the operative procedure
and
involves only skin and subcutaneous tissue of the incision
and
patient has at least 1 of the following:

- purulent drainage from the superficial incision
- organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision
- at least 1 of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness, or heat, and superficial incision is deliberately opened by surgeon and is culture positive or not cultured. A culture-negative finding does not meet this criterion.
- diagnosis of superficial incisional SSI by the surgeon or attending physician.

Notes:

- A stitch abscess (minimal inflammation and discharge confined to the points of suture penetration) is NOT an SSI.
- A localized stab wound infection is not an SSI, but could meet criteria as skin (SKIN), or soft tissue (ST), infection, depending on its depth.
- “Cellulitis”, by itself, does not meet the criteria for Superficial Incisional SSI.
- If the incisional site infection involves or extends into the fascial and muscle layers, report as a deep incisional SSI.
- Classify infection that involves both superficial and deep incision sites as deep incisional SSI.

Deep Incisional SSI

A deep incisional SSI must meet the following criteria:

Infection occurs within 30 days after the operative procedure if no implant* is left in place or within 1 year if implant is in place and the infection appears to be related to the operative procedure
and
involves deep soft tissues (e.g., fascial and muscle layers) of the incision
and
patient has at least 1 of the following:

- purulent drainage from the deep incision but not from the organ/space component of the surgical site
- a deep incision spontaneously dehisces or is deliberately opened by a surgeon and is culture-positive or not cultured when the patient has at least 1 of the following signs or symptoms: fever (>38°C), localized pain or tenderness. A culture-negative finding does not meet this criterion.
- an abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination
- diagnosis of a deep incisional SSI by a surgeon or attending physician.

*An implant is a nonhuman-derived object, material, or tissue that is permanently placed in a patient during an operative procedure and is not routinely manipulated for diagnostic or therapeutic purposes. Examples include: porcine or synthetic heart valves, mechanical heart, metal rods, mesh, sternal wires, screws, cements, and other devices

Notes:

- Classify infection that involves both superficial and deep incision sites as deep incisional SSI.

Organ/Space SSI

An organ/space SSI must meet the following criteria:

Infection occurs within 30 days after the operative procedure if no implant¹ is left in place or within 1 year if implant is in place and the infection appears to be related to the operative procedure
 and
 infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure
 and
 patient has at least 1 of the following:

- purulent drainage from a drain that is placed through a stab wound into the organ/space
- organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space
- an abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination
- diagnosis of an organ/space SSI by a surgeon or attending physician.

Notes:

- Occasionally an organ/space infection drains through the incision. Such infection generally does not involve reoperation and is considered a complication of the incision. Therefore, classify it as a deep incisional SSI.
- To identify further the location of the infection, specific sites are assigned to organ/space SSI (listed below). An example is appendectomy with subsequent sub diaphragmatic abscess, would be considered as an organ/space SSI at the intra-abdominal specific site (SSI-IAB).

BONE	Osteomyelitis	LUNG	Other infections of respiratory tract
BRST	Breast abscess or mastitis	MED	Mediastinitis
CARD	Myocarditis or pericarditis	MEN	Meningitis or ventriculitis
DISC	Disc space	ORAL	Oral cavity (mouth, tongue, or gums)
EMET	Endometritis	OUTI	Other infections of the urinary tract
ENDO	Endocarditis	SA	Spinal abscess without meningitis
EYE	Eye, other than conjunctivitis	SINU	Sinusitis
GIT	GI tract	UR	Upper respiratory tract
IAB	Intraabdominal, not specified else-where	VASC	Arterial or venous infection
IC	Intracranial, brain abscess or dura	VCUF	Vaginal cuff
JNT	Joint or bursa		

- Report mediastinitis following cardiac surgery that is accompanied by osteomyelitis as SSI-MED rather than SSI-BONE.
- If meningitis (MEN) and a brain abscess (IC) are present together after operation, report as SSI-IC.
- Report CSF shunt infection as SSI-MEN if it occurs \leq 1 year of placement; if later or after manipulation/access, it is considered CNS-MEN and is not reportable as an SSI
- Report spinal abscess with meningitis as SSI-MEN following spinal surgery.

Bloodstream Infection (BSI)

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 at least 1 of the following criteria:

1. Patient has a recognized pathogen cultured from 1 or more blood cultures and organism cultured from blood is not related to an infection at another site. (See Notes: 1 and 2)
2. Patient has at least 1 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 commensal (i.e., diphtheroids [*Corynebacterium* spp. not *C. diphtheriae*], *Bacillus* spp. [not *B. anthracis*], *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.
3. Patient ≤ 1 year of age has at least 1 of the following signs or symptoms: fever ($>38^{\circ}\text{C}$ core), hypothermia ($<36^{\circ}\text{C}$ core), apnoea, or bradycardia and signs and symptoms and positive laboratory results are not related to an infection at another site and common commensal (i.e., diphtheroids [*Corynebacterium* spp. not *C. diphtheriae*], *Bacillus* spp. [not *B. anthracis*], *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 3,4,5.)

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 commensals (see criteria 2 and 3 for a list of common commensals). 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 commensal (i.e., is a positive blood culture). (See # 4 for determining sameness of organisms.)
 - 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.
 - For example, a neonate has blood drawn for culture on Tuesday and again on Saturday and both grow the same common commensal. 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.

- A blood culture may consist of a single bottle for a paediatric 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 commensal.
4. If the common commensal is identified to the species level from one culture, and a companion culture is identified with only a descriptive name (e.g., to the genus level), then it is assumed that the organisms are the same. The organism identified to the species level should be reported as the infecting pathogen along with its antibiogram if available (see Table 1 below).

Culture Report	Companion Culture Report	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>

5. Only genus and species identification should be utilized to determine the sameness of organisms. No additional comparative methods should be used (e.g., morphology or antibiograms) because laboratory testing capabilities and protocols may vary between facilities. This will reduce reporting variability, solely due to laboratory practice, between facilities reporting LCBI meeting criterion 2. Report the organism to the genus/species level only once, and if antibiogram data are available, report the results from the most resistant panel.
6. LCBI criteria 1 and 2 may be used for patients of any age, including patients < 1 year of age.
7. 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).^{3,4} If your facility does not currently obtain specimens using this technique, you must 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.
8. Reporting Instructions:
- Report organisms cultured from blood as BSI – LCBI when no other site of infection is evident.
 - When there is a positive blood culture and clinical signs or symptoms of localized infection at a vascular access site, but no other infection can be found, the infection is considered a primary BSI.
 - Purulent phlebitis confirmed with a positive semi-quantitative culture of a catheter tip, but with either negative or no blood culture is considered a CVS-VASC, not a BSI or an SST-SKIN or ST infection.
 - Occasionally a patient with both peripheral and central IV lines develops a primary bloodstream infection (LCBI) that can clearly be attributed to the peripheral line (e.g., pus at the insertion site and matching pathogen from pus and blood). In this situation, it is not considered central line related.

Pneumonia (PNEU)

There are three specific types of pneumonia – see algorithms below

Clinically Defined Pneumonia (PNU1)

Radiology	Signs/Symptoms/Laboratory
<p>Two or more serial chest radiographs with at least one of the following^{1,2}:</p> <p>New or progressive and persistent infiltrate</p> <p>Consolidation</p> <p>Cavitation</p> <p>Pneumatoceles, in infants ≤ 1 year old</p>	<p>FOR ANY PATIENT, at least one of the following:</p> <ul style="list-style-type: none"> • Fever ($>38^{\circ}\text{C}$) with no other recognized cause • Leukopenia ($<4,000 \text{ WBC}/\text{mm}^3$) or leukocytosis ($\geq 12,000 \text{ WBC}/\text{mm}^3$) • For adults ≥ 70 years old, altered mental status with no other recognized cause <p>and</p> <p>at least two of the following:</p> <ul style="list-style-type: none"> • New onset of purulent sputum³, or change in character of sputum⁴, or increased respiratory secretions, or increased suctioning requirements • New onset or worsening cough, or dyspnoea, or tachypnoea⁵ • Rales⁶ or bronchial breath sounds • Worsening gas exchange (e.g. O₂ desaturations, e.g., PaO₂/FiO₂ <240)⁷, increased oxygen requirements, or increased ventilator demand)
<p>NOTE: In patients without underlying pulmonary or cardiac disease (e.g. respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary oedema, or chronic obstructive pulmonary disease), one definitive chest radiograph is acceptable.¹</p>	<p>ALTERNATE CRITERIA, for infants ≤ 1 year old:</p> <p>Worsening gas exchange (e.g., O₂ desaturations, increased O₂ requirements, or increased ventilator demand)</p> <p>and</p> <p>at least three of the following:</p> <ul style="list-style-type: none"> • Temperature instability with no other recognized cause • Leukopenia ($<4000 \text{ WBC}/\text{mm}^3$) or leukocytosis ($\geq 15,000 \text{ WBC}/\text{mm}^3$) and left shift ($\geq 10\%$ band forms) • New onset of purulent sputum³ or change in character of sputum⁴, or increased respiratory secretions or increased suctioning requirements • Apnoea, tachypnoea⁵, nasal flaring with retraction of chest wall or grunting • Wheezing, rales⁶, or rhonchi • Cough • Bradycardia ($<100 \text{ beats}/\text{min}$) or tachycardia ($>170 \text{ beats}/\text{min}$)
	<p>ALTERNATE CRITERIA, for child >1 year old or ≤ 12 years old, at least three of the following:</p> <ul style="list-style-type: none"> • Fever ($>38.4^{\circ}\text{C}$) or hypothermia ($<36.5^{\circ}\text{C}$) with no other recognized cause • Leukopenia ($<4000 \text{ WBC}/\text{mm}^3$) or leukocytosis ($\geq 15,000 \text{ WBC}/\text{mm}^3$) • New onset of purulent sputum³, or change in character of sputum⁴, or increased respiratory secretions, or increased suctioning requirements • New onset or worsening cough, or dyspnoea, apnoea, or tachypnoea⁵. • Rales⁶ or bronchial breath sounds. • Worsening gas exchange (e.g. O₂ desaturations, increased oxygen requirements, or increased ventilator demand)

Pneumonia with Common Bacterial or Filamentous Fungal Pathogens and Specific Laboratory Findings (PNU 2)

Radiology	Signs/Symptoms	Laboratory
<p>Two or more serial chest radiographs with at least one of the following^{1,2}:</p> <p>New or progressive and persistent infiltrate</p> <p>Consolidation</p> <p>Cavitation</p> <p>Pneumatoceles, in infants ≤ 1 year old</p> <p>NOTE: In patients without underlying pulmonary or cardiac disease (e.g. respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary oedema, or chronic obstructive pulmonary disease), <u>one</u> definitive chest radiograph is acceptable¹</p>	<p>At least one of the following:</p> <ul style="list-style-type: none"> • Fever ($>38^{\circ}\text{C}$) with no other recognized cause • Leukopenia (< 4000 WBC/mm^3) or leukocytosis ($\geq 12,000$ WBC/mm^3) • For adults ≥ 70 years old, altered mental status with no other recognized cause <p>and</p> <p>at least one of the following:</p> <ul style="list-style-type: none"> • New onset of purulent sputum³, or change in character of sputum⁴, or increased respiratory secretions, or increased suctioning requirements • New onset or worsening cough, or dyspnea or tachypnea⁵ • Rales⁶ or bronchial breath sounds • Worsening gas exchange (e.g. O_2 desaturations [e.g. $\text{PaO}_2/\text{FiO}_2 < 240$]⁷, increased oxygen requirements, or increased ventilator demand) 	<p>At least one of the following:</p> <ul style="list-style-type: none"> • Positive growth in blood culture⁸ not related to another source of infection • Positive growth in culture of pleural fluid • Positive quantitative culture⁹ from minimally contaminated LRT specimen (e.g., BAL or protected specimen brushing) • $\geq 5\%$ BAL-obtained cells contain intracellular bacteria on direct microscopic exam (e.g., Gram stain) • Histopathologic exam shows at least one of the following evidences of pneumonia: <ul style="list-style-type: none"> ○ Abscess formation or foci of consolidation with intense PMN accumulation in bronchioles and alveoli ○ Positive quantitative culture⁹ of lung parenchyma Evidence of lung parenchyma invasion by fungal hyphae or pseudohyphae

Viral, Legionella, and other Bacterial Pneumonias with Definitive Laboratory Findings (PNU2)

Radiology	Signs/Symptoms	Laboratory
<p>Two or more serial chest radiographs with at least one of the following^{1,2}:</p> <p>New or progressive and persistent infiltrate</p> <p>Consolidation</p> <p>Cavitation</p> <p>Pneumatoceles, in infants ≤ 1 year old</p> <p>NOTE: In patients without underlying pulmonary or cardiac disease (e.g. respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), one definitive chest radiograph is acceptable</p>	<p>At least one of the following:</p> <ul style="list-style-type: none"> • Fever ($>38^{\circ}\text{C}$) with no other recognized cause • Leukopenia (<4000 WBC/mm^3) or leukocytosis ($\geq 12,000$ WBC/mm^3) • For adults ≥ 70 years old, altered mental status with no other recognized cause <p>and</p> <p>at least one of the following:</p> <ul style="list-style-type: none"> • New onset of purulent sputum³, or change in character of sputum⁴, or increased respiratory secretions, or increased suctioning requirements • New onset or worsening cough or dyspnea, or tachypnea⁵ • Rales⁶ or bronchial breath sounds • Worsening gas exchange (e.g. O_2 saturations [e.g. $\text{PaO}_2/\text{FiO}_2 < 240$]⁷, increased oxygen requirements, or increased ventilator demand) 	<p>At least one of the following¹⁰⁻¹²:</p> <ul style="list-style-type: none"> • Positive culture of virus or <i>Chlamydia</i> from respiratory secretions • Positive detection of viral antigen or antibody from respiratory secretions (e.g., EIA, FAMA, shell vial assay, PCR) • Fourfold rise in paired sera (IgG) for pathogen (e.g., influenza viruses, <i>Chlamydia</i>) • Positive PCR for <i>Chlamydia</i> or <i>Mycoplasma</i> • Positive micro-IF test for <i>Chlamydia</i> • Positive culture or visualization by micro-IF of <i>Legionella</i> spp, from respiratory secretions or tissue. • Detection of <i>Legionella pneumophila</i> serogroup 1 antigens in urine by RIA or EIA • Fourfold rise in <i>L. pneumophila</i> serogroup 1 antibody titer to $\geq 1:128$ in paired acute and convalescent sera by indirect IFA.

Pneumonia in Immunocompromised Patients (PNU 3)

Radiology	Signs/Symptoms	Laboratory
<p>Two or more serial chest radiographs with at least one of the following^{1,2}:</p> <p>New or progressive <u>and</u> persistent infiltrate</p> <p>Consolidation</p> <p>Cavitation</p> <p>Pneumatoceles, in infants ≤ 1 year old</p> <p>NOTE: In patients without underlying pulmonary or cardiac disease (e.g. respiratory distress syndrome, bronchopulmonary dysplasia, pulmonary edema, or chronic obstructive pulmonary disease), <u>one definitive</u> chest radiograph is acceptable.¹</p>	<p>Patient who is immunocompromised¹³ has at least one of the following:</p> <ul style="list-style-type: none"> • Fever ($>38^{\circ}\text{C}$) with no other recognized cause • For adults ≥ 70 years old, altered mental status with no other recognized cause • New onset of purulent sputum³, or change in character of sputum⁴, or increased respiratory secretions, or increased suctioning requirements • New onset or worsening cough, or dyspnea, or tachypnea⁵ • Rales⁶ or bronchial breath sounds • Worsening gas exchange (e.g. O_2 desaturations [e.g., $\text{PaO}_2/\text{FiO}_2 \leq 240$]⁷, increased oxygen requirements, or increased ventilator demand) • Haemoptysis • Pleuritic chest pain 	<p>At least one of the following:</p> <ul style="list-style-type: none"> • Matching positive blood and sputum cultures with <i>Candida</i> spp.^{14,15} • Evidence of fungi or <i>Pneumocystis carinii</i> from minimally contaminated LRT specimen (e.g., BAL or protected specimen brushing) from one of the following: <ul style="list-style-type: none"> ○ Direct microscopic exam ○ Positive culture of fungi <p>Any of the following from: LABORATORY CRITERIA DEFINED UNDER PNU2</p>

Footnotes to Algorithms:

1. Occasionally, in non-ventilated patients, the diagnosis of healthcare-associated pneumonia may be quite clear on the basis of symptoms, signs, and a single definitive chest radiograph. However, in patients with pulmonary or cardiac disease (for example, interstitial lung disease or congestive heart failure), the diagnosis of pneumonia may be particularly difficult. Other non-infectious conditions (for example, pulmonary oedema from decompensated congestive heart failure) may simulate the presentation of pneumonia. In these more difficult cases, serial chest radiographs must be examined to help separate infectious from non-infectious pulmonary processes. To help confirm difficult cases, it may be useful to review radiographs on the day of diagnosis, 3 days prior to the diagnosis and on days 2 and 7 after the diagnosis. Pneumonia may have rapid onset and progression, but does not resolve quickly. Radiographic changes of pneumonia persist for several weeks. As a result, rapid radiographic resolution suggests that the patient does not have pneumonia, but rather a non-infectious process such as atelectasis or congestive heart failure.
2. Note that there are many ways of describing the radiographic appearance of pneumonia. Examples include, but are not limited to, “air-space disease”, “focal opacification”, “patchy areas of increased density”. Although perhaps not specifically delineated as pneumonia by the radiologist, in the appropriate clinical setting these alternative descriptive wordings should be seriously considered as potentially positive findings.
3. Purulent sputum is defined as secretions from the lungs, bronchi, or trachea that contain ≥ 25 neutrophils and ≤ 10 squamous epithelial cells per low power field (x100). If your laboratory reports these data qualitatively (e.g., “many WBCs” or “few squames”), be sure their descriptors match this definition of purulent sputum. This laboratory confirmation is required since written clinical descriptions of purulence are highly variable.
4. A single notation of either purulent sputum or change in character of the sputum is not meaningful; repeated notations over a 24 hour period would be more indicative of the onset of an infectious process. Change in character of sputum refers to the colour, consistency, odour and quantity.
5. In adults, tachypnoea is defined as respiration rate >25 breaths per minute. Tachypnoea is defined as >60 breaths per minute in patients <2 months old; >50 breaths per minute in patients 2-12 months old; and >30 breaths per minute in children >1 year old.
6. Rales may be described as “crackles”.
7. This measure of arterial oxygenation is defined as the ratio of the arterial tension (PaO₂) to the inspiratory fraction of oxygen (FiO₂).
8. Care must be taken to determine the aetiology of pneumonia in a patient with positive blood cultures and radiographic evidence of pneumonia, especially if the patient has invasive devices in place such as intravascular lines or an indwelling urinary catheter. In general, in an immunocompetent patient, blood cultures positive for coagulase negative staphylococci, common skin contaminants, and yeasts will not be the etiologic agent of the pneumonia.
9. Refer to Threshold values for cultured specimens in table 6.1 (below). An endotracheal aspirate is not a minimally contaminated specimen. Therefore, an endotracheal aspirate does not meet the laboratory criteria.
10. Once laboratory-confirmed cases of pneumonia due to respiratory syncytial virus (RSV), adenovirus, or influenza virus have been identified in a hospital, clinician’s presumptive diagnosis of these pathogens in subsequent cases with similar clinical signs and symptoms is an acceptable criterion for presence of healthcare-associated infection.
11. Scant or watery sputum is commonly seen in adults with pneumonia due to viruses and Mycoplasma although sometimes the sputum may be mucopurulent. In infants, pneumonia due to RSV or influenza yields copious sputum. Patients, except premature infants, with viral or mycoplasmal pneumonia may exhibit few signs or symptoms, even when significant infiltrates are present on radiographic exam.
12. Few bacteria may be seen on stains of respiratory secretions from patients with pneumonia due to Legionella spp, mycoplasma, or viruses.
13. Immunocompromised patients include those with neutropenia (absolute neutrophil count $<500/\text{mm}^3$), leukemia, lymphoma, HIV with CD4 count <200 , or splenectomy; those who are early post-transplant, are on cytotoxic chemotherapy, or are on high dose steroids (e.g., $>40\text{mg}$ of prednisone or its equivalent [$>160\text{mg}$ hydrocortisone, $>32\text{mg}$ methylprednisolone, $>6\text{mg}$ dexamethasone, $>200\text{mg}$ cortisone] daily for >2 weeks).
14. Blood and sputum specimens must be collected within 48 hours of each other.
15. Semiquantitative or nonquantitative cultures of sputum obtained by deep cough, induction, aspiration, or lavage are acceptable. If quantitative culture results are available, refer to algorithms that include such specific laboratory findings.

Notes:

- Physician's diagnosis of pneumonia alone is not an acceptable criterion for healthcare-associated pneumonia.
- Although specific criteria are included for infants and children, paediatric patients may meet any of the other pneumonia specific site criteria.
- Ventilator-associated pneumonia (i.e., pneumonia in persons who had a device to assist or control respiration continuously through a tracheostomy or by endotracheal intubation within the 48-hour period before the onset of infection, inclusive of the weaning period) should be so designated when reporting data.
- When assessing a patient for presence of pneumonia, it is important to distinguish between changes in clinical status due to other conditions such as myocardial infarction, pulmonary embolism, respiratory distress syndrome, atelectasis, malignancy, chronic obstructive pulmonary disease, hyaline membrane disease, bronchopulmonary dysplasia, etc. Also, care must be taken when assessing intubated patients to distinguish between tracheal colonization, upper respiratory tract infections (e.g., tracheobronchitis), and early onset pneumonia. Finally, it should be recognized that it may be difficult to determine healthcare-associated pneumonia in the elderly, infants, and immunocompromised patients since such conditions may mask typical signs or symptoms associated with pneumonia. Alternate specific criteria for the elderly, infants and immunocompromised patients have been included in this definition of healthcare-associated pneumonia.
- Healthcare-associated pneumonia can be characterized by its onset: early or late. Early onset pneumonia occurs during the first four days of hospitalization and is often caused by *Moraxella catarrhalis*, *H. influenzae*, and *S. pneumoniae*. Causative agents of late onset pneumonia are frequently gram negative bacilli or *S. aureus*, including methicillin-resistant *S. aureus*. Viruses (e.g., Influenza A and B or Respiratory Syncytial Virus) can cause early and late onset healthcare-associated pneumonia, whereas yeasts, fungi, legionellae, and *Pneumocystis carinii* are usually pathogens of late onset pneumonia.
- Pneumonia due to gross aspiration (for example, in the setting of intubation in the emergency room or operating room) is considered healthcare-associated if it meets any specific criteria and was not clearly present or incubating at the time of admission to the hospital.
- Multiple episodes of healthcare-associated pneumonia may occur in critically ill patients with lengthy hospital stays. When determining whether to report multiple episodes of healthcare-associated pneumonia in a single patient, look for evidence of resolution of the initial infection. The addition of or change in pathogen alone is not indicative of a new episode of pneumonia. The combination of new signs and symptoms and radiographic evidence or other diagnostic testing is required.
- Positive Gram stain for bacteria and positive KOH (potassium hydroxide) mount for elastin fibers and/or fungal hyphae from appropriately collected sputum specimens are important clues that point toward the etiology of the infection. However, sputum samples are frequently contaminated with airway colonizers and therefore must be interpreted cautiously. In particular, *Candida* is commonly seen on stain, but infrequently causes healthcare-associated pneumonia.

Bone and Joint Infection (BJ)

Osteomyelitis (BONE)

Osteomyelitis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from bone.
2. Patient has evidence of osteomyelitis on direct examination of the bone during a surgical operation or histopathologic examination.
3. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), localized swelling, tenderness, heat, or drainage at suspected site of bone infection
and
at least 1 of the following:
 - organisms cultured from blood
 - positive blood antigen test (e.g., *H influenzae*, *S pneumoniae*)
 - radiographic evidence of infection (e.g., abnormal findings on x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc]).

Joint or Bursa (JNT)

1. Patient has organisms cultured from joint fluid or synovial biopsy.
2. Patient has evidence of joint or bursa infection seen during a surgical operation or histopathologic examination.
3. Patient has at least 2 of the following signs or symptoms with no other recognized cause: joint pain, swelling, tenderness, heat, evidence of effusion or limitation of motion
and
at least 1 of the following:
 - organisms and white blood cells seen on Gram's stain of joint fluid
 - positive antigen test on blood, urine, or joint fluid
 - cellular profile and chemistries of joint fluid compatible with infection and not explained by an underlying rheumatologic disorder
 - radiographic evidence of infection (e.g., abnormal findings on x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc]).

Disc Space Infection (DISC)

Vertebral disc space infection must meet at least 1 of the following criteria:

1. Patient has organisms cultured from vertebral disc space tissue obtained during a surgical operation or needle aspiration.
2. Patient has evidence of vertebral disc space infection seen during a surgical operation or histopathologic examination.
3. Patient has fever ($>38^{\circ}\text{C}$) with no other recognized cause or pain at the involved vertebral disc space
and
radiographic evidence of infection, (e.g., abnormal findings on x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc]).
4. Patient has fever ($>38^{\circ}\text{C}$) with no other recognized cause and pain at the involved vertebral disc space
and
positive antigen test on blood or urine (e.g., *H influenzae*, *S pneumoniae*, *N meningitidis*, or Group B *Streptococcus*).

Central Nervous System Infection (CNS)

Intracranial Infection (Brain Abscess, Subdural or Epidural Infection, Encephalitis) (IC)

Intracranial infection must meet at least 1 of the following criteria:

1. Patient has organisms cultured from brain tissue or dura.
2. Patient has an abscess or evidence of intracranial infection seen during a surgical operation or histopathologic examination.
3. Patient has at least 2 of the following signs or symptoms with no other recognized cause: headache, dizziness, fever ($>38^{\circ}\text{C}$), localizing neurologic signs, changing level of consciousness, or confusion
and
at least 1 of the following:
 - organisms seen on microscopic examination of brain or abscess tissue obtained by needle aspiration or by biopsy during a surgical operation or autopsy
 - positive antigen test on blood or urine
 - radiographic evidence of infection, (e.g., abnormal findings on ultrasound, CT scan, MRI, radionuclide brain scan, or arteriogram)
 - diagnostic single antibody titre (IgM) or 4-fold increase in paired sera (IgG) for pathogenand
if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.
4. Patient ≤ 1 year of age has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnoea, bradycardia, localizing neurologic signs, or changing level of consciousness
and
at least 1 of the following:
 - organisms seen on microscopic examination of brain or abscess tissue obtained by needle aspiration or by biopsy during a surgical operation or autopsy
 - positive antigen test on blood or urine
 - radiographic evidence of infection, (e.g., abnormal findings on ultrasound, CT scan, MRI, radionuclide brain scan, or arteriogram)
 - diagnostic single antibody titre (IgM) or 4-fold increase in paired sera (IgG) for pathogenand
if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

Meningitis or Ventriculitis (MEN)

Meningitis or ventriculitis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from cerebrospinal fluid (CSF).
2. Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), headache, stiff neck, meningeal signs, cranial nerve signs, or irritability
and
at least 1 of the following:
 - increased white cells, elevated protein, and/or decreased glucose in CSF
 - organisms seen on Gram's stain of CSF
 - organisms cultured from blood
 - positive antigen test of CSF, blood, or urine
 - diagnostic single antibody titre (IgM) or 4-fold increase in paired sera (IgG) for pathogen

and

if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

3. Patient ≤ 1 year of age has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnoea, bradycardia, stiff neck, meningeal signs, cranial nerve signs, or irritability

and

at least 1 of the following:

- positive CSF examination with increased white cells, elevated protein, and/or decreased glucose
- positive Gram's stain of CSF
- organisms cultured from blood
- positive antigen test of CSF, blood, or urine
- diagnostic single antibody titre (IgM) or 4-fold increase in paired sera (IgG) for pathogen

and

if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

Notes:

- Meningitis in the newborn is considered health care associated unless there is compelling evidence indicating the meningitis was acquired transplacentally.
- CSF shunt infection is considered SSI-MEN if it occurs ≤ 1 year of placement; if later or after manipulation/access of the shunt, it is considered CNS-MEN.

Spinal Abscess without Meningitis (SA)

An abscess of the spinal epidural or subdural space, without involvement of the cerebrospinal fluid or adjacent bone structures, must meet at least 1 of the following criteria:

1. Patient has organisms cultured from abscess in the spinal epidural or subdural space.
2. Patient has an abscess in the spinal epidural or subdural space seen during a surgical operation or at autopsy or evidence of an abscess seen during a histopathologic examination.
3. Patient has at least 1 of the following signs or symptoms with no other recognised cause: fever ($>38^{\circ}\text{C}$), back pain, focal tenderness, radiculitis, paraparesis, or paraplegia

and

at least 1 of the following:

- organisms cultured from blood
- radiographic evidence of a spinal abscess (e.g., abnormal findings on myelography, ultrasound, CT scan, MRI, or other scans [gallium, technetium, etc]).

and

if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

Cardiovascular System Infection (CVS)

Arterial or Venous Infection (VASC)

Arterial or venous infection must meet at least 1 of the following criteria:

1. Patient has organisms cultured from arteries or veins removed during a surgical operation and blood culture not done or no organisms cultured from blood.
2. Patient has evidence of arterial or venous infection seen during a surgical operation or histopathologic examination.
3. Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), pain, erythema, or heat at involved vascular site

- and
 more than 15 colonies cultured from intravascular cannula tip using semiquantitative culture method
 and
 blood culture not done or no organisms cultured from blood.
4. Patient has purulent drainage at involved vascular site
 and
 blood culture not done or no organisms cultured from blood.
 5. Patient ≤ 1 year of age has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnoea, bradycardia, lethargy, or pain, erythema, or heat at involved vascular site
 and
 more than 15 colonies cultured from intravascular cannula tip using semiquantitative culture method
 and
 blood culture not done or no organisms cultured from blood.

Notes:

- If infections of an arteriovenous graft, shunt, or fistula or intravascular cannulation site occur without organisms cultured from blood see CVS-VASC.
- Intravascular infections with organisms cultured from the blood are BSI-LCBI.

Endocarditis (ENDO)

Endocarditis of a natural or prosthetic heart valve must meet at least 1 of the following criteria:

1. Patient has organisms cultured from valve or vegetation.
2. Patient has 2 or more of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), new or changing murmur, embolic phenomena, skin manifestations (i.e., petechiae, splinter haemorrhages, painful subcutaneous nodules), congestive heart failure, or cardiac conduction abnormality
 and
 at least 1 of the following:
 - organisms cultured from 2 or more blood cultures
 - organisms seen on Gram's stain of valve when culture is negative or not done
 - valvular vegetation seen during a surgical operation or autopsy
 - positive antigen test on blood or urine (e.g., *H influenzae*, *S pneumoniae*, *N meningitidis*, or Group B *Streptococcus*)
 - evidence of new vegetation seen on echocardiogram
 and
 if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.
3. Patient ≤ 1 year of age has 2 or more of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnoea, bradycardia, new or changing murmur, embolic phenomena, skin manifestations (i.e., petechiae, splinter haemorrhages, painful subcutaneous nodules), congestive heart failure, or cardiac conduction abnormality
 and
 at least 1 of the following:
 - organisms cultured from 2 or more blood cultures
 - organisms seen on Gram's stain of valve when culture is negative or not done
 - valvular vegetation seen during a surgical operation or autopsy
 - positive antigen test on blood or urine (e.g., *H influenzae*, *S pneumoniae*, *N meningitidis*, or Group B *Streptococcus*)

- evidence of new vegetation seen on echocardiogram
and
if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

Myocarditis or Pericarditis (CARD)

Myocarditis or pericarditis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from pericardial tissue or fluid obtained by needle aspiration or during a surgical operation.
2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), chest pain, paradoxical pulse, or increased heart size
and
at least 1 of the following:
 - abnormal EKG consistent with myocarditis or pericarditis
 - positive antigen test on blood (e.g., *H influenzae*, *S pneumoniae*)
 - evidence of myocarditis or pericarditis on histologic examination of heart tissue
 - 4-fold rise in type-specific antibody with or without isolation of virus from pharynx or faeces
 - pericardial effusion identified by echocardiogram, CT scan, MRI, or angiography.
3. Patient ≤ 1 year of age has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnoea, bradycardia, paradoxical pulse, or increased heart size
and
at least 1 of the following:
 - abnormal EKG consistent with myocarditis or pericarditis
 - positive antigen test on blood (e.g., *H influenzae*, *S pneumoniae*)
 - histologic examination of heart tissue shows evidence of myocarditis or pericarditis
 - 4-fold rise in type-specific antibody with or without isolation of virus from pharynx or faeces
 - pericardial effusion identified by echocardiogram, CT scan, MRI, or angiography.

Notes:

- Most cases of post cardiac surgery or post myocardial infarction pericarditis are not infectious.

Mediastinitis (MED)

Mediastinitis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from mediastinal tissue or fluid obtained during a surgical operation or needle aspiration.
2. Patient has evidence of mediastinitis seen during a surgical operation or histopathologic examination.
3. Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), chest pain, or sternal instability
and
at least 1 of the following:
 - purulent discharge from mediastinal area
 - organisms cultured from blood or discharge from mediastinal area
 - mediastinal widening on x-ray.

4. Patient \leq 1 year of age has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnoea, bradycardia, or sternal instability
and
at least 1 of the following:
 - purulent discharge from mediastinal area
 - organisms cultured from blood or discharge from mediastinal area
 - mediastinal widening on x-ray.

Eye, Ear, Nose, Throat, or Mouth Infection (EENT)

Conjunctivitis (CONJ)

Conjunctivitis must meet at least 1 of the following criteria:

1. Patient has pathogens cultured from purulent exudates obtained from the conjunctiva or contiguous tissues, such as eyelid, cornea, meibomian glands, or lacrimal glands.
2. Patient has pain or redness of conjunctiva or around eye
and
at least 1 of the following:
 - WBCs and organisms seen on Gram's stain of exudates
 - purulent exudates
 - positive antigen test (e.g., ELISA or IF for *Chlamydia trachomatis*, herpes simplex virus, adenovirus) on exudate or conjunctival scraping
 - multinucleated giant cells seen on microscopic examination of conjunctival exudates or scrapings
 - positive viral culture
 - diagnostic single antibody titre (IgM) or 4-fold increase in paired sera (IgG) for pathogen.

Notes:

- Chemical conjunctivitis caused by silver nitrate (AgNO_3) is not a health care-associated infection.
- Do not include conjunctivitis that occurs as a part of a more widely disseminated viral illness (such as measles, chickenpox, or a URI).

Eye, other than Conjunctivitis (EYE)

An infection of the eye, other than conjunctivitis, must meet at least 1 of the following criteria:

1. Patient has organisms cultured from anterior or posterior chamber or vitreous fluid.
2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: eye pain, visual disturbance, or hypopyon
and
at least 1 of the following:
 - physician diagnosis of an eye infection
 - positive antigen test on blood (e.g., *H influenzae*, *S pneumoniae*)
 - organisms cultured from blood.

Ear Mastoid (EAR)

Ear and mastoid infections must meet at least 1 of the following criteria:

Otitis externa must meet at least 1 of the following criteria:

1. Patient has pathogens cultured from purulent drainage from ear canal.
2. Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), pain, redness, or drainage from ear canal and organisms seen on Gram's stain of purulent drainage.

Otitis media must meet at least 1 of the following criteria:

1. Patient has organisms cultured from fluid from middle ear obtained by tympanocentesis or at surgical operation.
2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), pain in the eardrum, inflammation, retraction or decreased mobility of eardrum, or fluid behind eardrum.

Otitis interna must meet at least 1 of the following criteria:

1. Patient has organisms cultured from fluid from inner ear obtained at surgical operation.
2. Patient has a physician diagnosis of inner ear infection.

Mastoiditis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from purulent drainage from mastoid.
2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), pain, tenderness, erythema, headache, or facial paralysis and at least 1 of the following:
 - organisms seen on Gram's stain of purulent material from mastoid
 - positive antigen test on blood.

Oral Cavity (Mouth, Tongue, or Gums) (ORAL)

Oral cavity infections must meet at least 1 of the following criteria:

1. Patient has organisms cultured from purulent material from tissues of oral cavity.
2. Patient has an abscess or other evidence of oral cavity infection seen on direct examination, during a surgical operation, or during a histopathologic examination.
3. Patient has at least 1 of the following signs or symptoms with no other recognized cause: abscess, ulceration, or raised white patches on inflamed mucosa, or plaques on oral mucosa and at least 1 of the following:
 - organisms seen on Gram's stain
 - positive KOH (potassium hydroxide) stain
 - multinucleated giant cells seen on microscopic examination of mucosal scrapings
 - positive antigen test on oral secretions
 - diagnostic single antibody titre (IgM) or 4-fold increase in paired sera (IgG) for pathogen
 - physician diagnosis of infection and treatment with topical or oral antifungal therapy.

Notes:

- Consider health care-associated primary herpes simplex infections of the oral cavity as ORAL; recurrent herpes infections are not health care-associated.

Sinusitis (SINU)

Sinusitis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from purulent material obtained from sinus cavity.
2. Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), pain or tenderness over the involved sinus, headache, purulent exudate, or nasal obstruction
and
at least 1 of the following:
 - positive transillumination
 - positive radiographic examination (including CT scan).

Upper Respiratory Tract, Pharyngitis, Laryngitis, Epiglottitis (UR)

Upper respiratory tract infections must meet at least 1 of the following criteria:

1. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), erythema of pharynx, sore throat, cough, hoarseness, or purulent exudate in throat
and
at least 1 of the following:
 - organisms cultured from the specific site
 - organisms cultured from blood
 - positive antigen test on blood or respiratory secretions
 - diagnostic single antibody titre (IgM) or 4-fold increase in paired sera (IgG) for pathogen
 - physician diagnosis of an upper respiratory infection.
2. Patient has an abscess seen on direct examination, during a surgical operation, or during a histopathologic examination.
3. Patient ≤ 1 year of age has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), hypothermia ($<37^{\circ}\text{C}$ rectal), apnoea, bradycardia, nasal discharge, or purulent exudate in throat
and
at least 1 of the following:
 - organisms cultured from the specific site
 - organisms cultured from blood
 - positive antigen test on blood or respiratory secretions
 - diagnostic single antibody titre (IgM) or 4-fold increase in paired sera (IgG) for pathogen
 - physician diagnosis of an upper respiratory infection.

Gastrointestinal System Infection (GI)

Gastroenteritis (GE)

Gastroenteritis must meet at least 1 of the following criteria:

1. Patient has an acute onset of diarrhoea (liquid stools for more than 12 hours) with or without vomiting or fever ($>38^{\circ}\text{C}$) and no likely non-infectious cause (e.g., diagnostic tests, therapeutic regimen other than antimicrobial agents, acute exacerbation of a chronic condition, or psychologic stress).

2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: nausea, vomiting, abdominal pain, fever ($>38^{\circ}\text{C}$), or headache
and
at least 1 of the following:
 - an enteric pathogen is cultured from stool or rectal swab
 - an enteric pathogen is detected by routine or electron microscopy
 - an enteric pathogen is detected by antigen or antibody assay on blood or faeces
 - evidence of an enteric pathogen is detected by cytopathic changes in tissue culture (toxin assay)
 - diagnostic single antibody titre (IgM) or 4-fold increase in paired sera (IgG) for pathogen.

Gastrointestinal Tract (Oesophagus, Stomach, Small and Large Bowel, and Rectum) excluding Gastroenteritis and Appendicitis (GIT)

Gastrointestinal tract infections, excluding gastroenteritis and appendicitis, must meet at least 1 of the following criteria:

1. Patient has an abscess or other evidence of infection seen during a surgical operation or histopathologic examination.
2. Patient has at least 2 of the following signs or symptoms with no other recognized cause and compatible with infection of the organ or tissue involved: fever ($>38^{\circ}\text{C}$), nausea, vomiting, abdominal pain, or tenderness
and
at least 1 of the following:
 - organisms cultured from drainage or tissue obtained during a surgical operation or endoscopy or from a surgically placed drain
 - organisms seen on Gram's or KOH stain or multinucleated giant cells seen on microscopic examination of drainage or tissue obtained during a surgical operation or endoscopy or from a surgically placed drain
 - organisms cultured from blood
 - evidence of pathologic findings on radiographic examination
 - evidence of pathologic findings on endoscopic examination (e.g., Candida oesophagitis or proctitis).

Hepatitis (HEP)

Hepatitis must meet the following criterion:

Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), anorexia, nausea, vomiting, abdominal pain, jaundice, or history of transfusion within the previous 3 months

and

at least 1 of the following:

- positive antigen or antibody test for hepatitis A, hepatitis B, hepatitis C, or delta hepatitis
- abnormal liver function tests (e.g., elevated ALT/AST, bilirubin)
- cytomegalovirus (CMV) detected in urine or oropharyngeal secretions.

Notes:

- Do not include hepatitis or jaundice of non-infectious origin (alpha-1 antitrypsin deficiency, etc).
- Does not include hepatitis or jaundice that results from exposure to hepatotoxins (alcoholic or acetaminophen-induced hepatitis, etc).
- Does not include hepatitis or jaundice that results from biliary obstruction (cholecystitis).

Intraabdominal, not specified elsewhere including Gallbladder, Bile Ducts, Liver (Excluding Viral Hepatitis), Spleen, Pancreas, Peritoneum, Subphrenic or Subdiaphragmatic Space, or other Intraabdominal Tissue or area not specified elsewhere (IAB)

Intraabdominal infections must meet at least 1 of the following criteria:

1. Patient has organisms cultured from purulent material from intraabdominal space obtained during a surgical operation or needle aspiration.
2. Patient has abscess or other evidence of intraabdominal infection seen during a surgical operation or histopathologic examination.
3. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), nausea, vomiting, abdominal pain, or jaundice
and
at least 1 of the following:
 - organisms cultured from drainage from surgically placed drain (e.g., closed suction drainage system, open drain, T-tube drain)
 - organisms seen on Gram's stain of drainage or tissue obtained during surgical operation or needle aspiration
 - organisms cultured from blood and radiographic evidence of infection (e.g., abnormal findings on ultrasound, CT scan, MRI, or radiolabel scans [gallium, technetium, etc] or on abdominal x-ray).

Notes:

- Do not include pancreatitis (an inflammatory syndrome characterized by abdominal pain, nausea, and vomiting associated with high serum levels of pancreatic enzymes) unless it is determined to be infectious in origin.

Necrotizing Enterocolitis (NEC)

Necrotizing enterocolitis in infants must meet the following criterion:

Infant has at least 2 of the following signs or symptoms with no other recognized cause: vomiting, abdominal distension, or pre-feeding residuals
and
persistent microscopic or gross blood in stools
and

at least 1 of the following abdominal radiographic abnormalities:

- Pneumoperitoneum
- pneumatosis intestinalis
- unchanging "rigid" loops of small bowel.

Lower Respiratory Tract Infection, Other Than Pneumonia (LRI)

Bronchitis, Tracheobronchitis, Bronchiolitis, Tracheitis, without evidence of Pneumonia (BRON)

Tracheobronchial infections must meet at least 1 of the following criteria:

1. Patient has no clinical or radiographic evidence of pneumonia
and
patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), cough, new or increased sputum production, rhonchi, wheezing
and
at least 1 of the following:

- positive culture obtained by deep tracheal aspirate or bronchoscopy
 - positive antigen test on respiratory secretions.
2. Patient \leq 1 year of age has no clinical or radiographic evidence of pneumonia and patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$ rectal), cough, new or increased sputum production, rhonchi, wheezing, respiratory distress, apnoea, or bradycardia and at least 1 of the following:
- organisms cultured from material obtained by deep tracheal aspirate or bronchoscopy
 - positive antigen test on respiratory secretions
 - diagnostic single antibody titre (IgM) or 4-fold increase in paired sera (IgG) for pathogen.

Notes:

- Do not include chronic bronchitis in a patient with chronic lung disease unless there is evidence of an acute secondary infection, manifested by change in organism.

Other Infections of the Lower Respiratory Tract (LUNG)

Other infections of the lower respiratory tract must meet at least 1 of the following criteria:

1. Patient has organisms seen on smear or cultured from lung tissue or fluid, including pleural fluid.
2. Patient has a lung abscess or empyema seen during a surgical operation or histopathologic examination.
3. Patient has an abscess cavity seen on radiographic examination of lung.

Notes:

- Consider concurrent lower respiratory tract infection and pneumonia with the same organism(s) as PNEU.
- Includes lung abscess or empyema without pneumonia

Reproductive Tract Infection (REPR)

Endometritis (EMET)

Endometritis must meet at least 1 of the following criteria:

1. Patient has organisms cultured from fluid or tissue from endometrium obtained during surgical operation, by needle aspiration, or by brush biopsy.
2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$), abdominal pain, uterine tenderness, or purulent drainage from uterus.

Notes:

- Include postpartum endometritis as a health care-associated infection unless the amniotic fluid is infected at the time of admission or the patient was admitted 48 hours after rupture of the membrane.

Episiotomy (EPIS)

Episiotomy infections must meet at least 1 of the following criteria:

1. Post vaginal delivery patient has purulent drainage from the episiotomy.

2. Post vaginal delivery patient has an episiotomy abscess.

Notes:

- Episiotomy is not considered an operative procedure in NHSN.

Vaginal Cuff (VCUF)

Vaginal cuff infections must meet at least 1 of the following criteria:

1. Post hysterectomy patient has purulent drainage from the vaginal cuff.
2. Post hysterectomy patient has an abscess at the vaginal cuff.
3. Post hysterectomy patient has pathogens cultured from fluid or tissue obtained from the vaginal cuff.

Notes:

- Vaginal cuff infections considered as SSI-VCUF.

Other Infections of the Male or Female Reproductive Tract (Epididymis, Testes, Prostate, Vagina, Ovaries, Uterus, or other Deep Pelvic Tissues, excluding Endometritis or Vaginal Cuff Infections) (OREP)

Other infections of the male or female reproductive tract must meet at least 1 of the following criteria:

1. Patient has organisms cultured from tissue or fluid from affected site.
2. Patient has an abscess or other evidence of infection of affected site seen during a surgical operation or histopathologic examination.
3. Patient has 2 of the following signs or symptoms with no other recognized cause: fever (>38°C), nausea, vomiting, pain, tenderness, or dysuria and
at least 1 of the following:
 - organisms cultured from blood
 - physician diagnosis.

Skin and Soft Tissue Infection (SST)

Skin (SKIN)

Skin infections must meet at least 1 of the following criteria:

1. Patient has purulent drainage, pustules, vesicles, or boils.
2. Patient has at least 2 of the following signs or symptoms with no other recognized cause: pain or tenderness, localized swelling, redness, or heat and
at least 1 of the following:
 - organisms cultured from aspirate or drainage from affected site; if organisms are normal skin flora (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), they must be a pure culture
 - organisms cultured from blood
 - positive antigen test performed on infected tissue or blood (e.g., herpes simplex, varicella zoster, *H influenzae*, *N meningitidis*)
 - multinucleated giant cells seen on microscopic examination of affected tissue

- diagnostic single antibody titre (IgM) or 4-fold increase in paired sera (IgG) for pathogen.

Notes:

- Even if there are clinical signs or symptoms of localised infection at a vascular access site, but no other infection can be found, the infection is considered primary BSI
- Oomphalitis in infants, see UMB.
- Infections of the circumcision site in newborns, see CIRC.
- Pustules in infants, see PUST.
- Infected decubitus ulcers, see DECU.
- Infected burns, see BURN.
- Breast abscesses or mastitis, see BRST.

Soft tissue (Necrotizing Fasciitis, Infectious Gangrene, Necrotizing Cellulitis, Infectious Myositis, Lymphadenitis, or Lymphangitis) (ST)

Soft tissue infections must meet at least 1 of the following criteria:

1. Patient has organisms cultured from tissue or drainage from affected site.
2. Patient has purulent drainage at affected site.
3. Patient has an abscess or other evidence of infection seen during a surgical operation or histopathologic examination.
4. Patient has at least 2 of the following signs or symptoms at the affected site with no other recognized cause: localized pain or tenderness, redness, swelling, or heat and
at least 1 of the following:
 - organisms cultured from blood
 - positive antigen test performed on blood or urine (e.g., H influenzae, S pneumoniae, N meningitidis, Group B Streptococcus, Candida spp)
 - diagnostic single antibody titre (IgM) or 4-fold increase in paired sera (IgG) for pathogen.

Notes:

- Infected decubitus ulcers, see DECU.
- Infection of deep pelvic tissues, see OREP.

Decubitus Ulcer, including both Superficial and Deep Infections (DECU)

Decubitus ulcer infections must meet the following criterion:

Patient has at least 2 of the following signs or symptoms with no other recognized cause: redness, tenderness, or swelling of decubitus wound edges
and

at least 1 of the following:

- organisms cultured from properly collected fluid or tissue (see notes)
- organisms cultured from blood.

Notes:

- Purulent drainage alone is not sufficient evidence of an infection.
- Organisms cultured from the surface of a decubitus ulcer are not sufficient evidence that the ulcer is infected. A properly collected specimen from a decubitus ulcer involves needle aspiration of fluid or biopsy of tissue from the ulcer margin.

Burn (BURN)

Burn infections must meet at least 1 of the following criteria:

1. Patient has a change in burn wound appearance or character, such as rapid eschar separation, or dark brown, black, or violaceous discoloration of the eschar, or oedema at wound margin and histologic examination of burn biopsy shows invasion of organisms into adjacent viable tissue.
2. Patient has a change in burn wound appearance or character, such as rapid eschar separation, or dark brown, black, or violaceous discoloration of the eschar, or oedema at wound margin and at least 1 of the following:
 - organisms cultured from blood in the absence of other identifiable infection
 - isolation of herpes simplex virus, histologic identification of inclusions by light or electron microscopy, or visualization of viral particles by electron microscopy in biopsies or lesion scrapings.
3. Patient with a burn has at least 2 of the following signs or symptoms with no other recognized cause: fever ($>38^{\circ}\text{C}$) or hypothermia ($<36^{\circ}\text{C}$), hypotension, oliguria ($<20\text{ ml/hr}$), hyperglycaemia at previously tolerated level of dietary carbohydrate, or mental confusion and at least 1 of the following:
 - histologic examination of burn biopsy shows invasion of organisms into adjacent viable tissue
 - organisms cultured from blood
 - isolation of herpes simplex virus, histologic identification of inclusions by light or electron microscopy, or visualization of viral particles by electron microscopy in biopsies or lesion scrapings.

Notes:

- Purulence alone at the burn wound site is not adequate for the diagnosis of burn infection; such purulence may reflect incomplete wound care.
- Fever alone in a burn patient is not adequate for the diagnosis of a burn infection because fever may be the result of tissue trauma or the patient may have an infection at another site.

Breast Abscess or Mastitis (BRST)

A breast abscess or mastitis must meet at least 1 of the following criteria:

1. Patient has a positive culture of affected breast tissue or fluid obtained by incision and drainage or needle aspiration.
2. Patient has a breast abscess or other evidence of infection seen during a surgical operation or histopathologic examination.
3. Patient has fever ($>38^{\circ}\text{C}$) and local inflammation of the breast and physician diagnosis of breast abscess.

Notes:

- Breast abscesses occur most frequently after childbirth. Those that occur within 7 days after childbirth should be considered health care associated.

Omphalitis (UMB)

Omphalitis in a newborn (≤ 30 days old) must meet at least 1 of the following criteria:

1. Patient has erythema and/or serous drainage from umbilicus and at least 1 of the following:
 - organisms cultured from drainage or needle aspirate
 - organisms cultured from blood.
2. Patient has both erythema and purulence at the umbilicus.

Notes:

- Infection of the umbilical artery or vein related to umbilical catheterization is considered VASC if there is no accompanying blood culture or a blood culture is negative.
- If infection occurs in a newborn within 7 days of hospital discharge considered health care associated.

Infant Pustulosis (PUST)

Pustulosis in an infant (≤ 1 year old) must meet at least 1 of the following criteria:

1. Infant has 1 or more pustules and physician diagnosis of skin infection.
2. Infant has 1 or more pustules and physician institutes appropriate antimicrobial therapy.

Notes:

- Do not include erythema toxicum and non-infectious causes of pustulosis.
- Considered health care associated if pustulosis occurs in an infant within 7 days of hospital discharge.

Newborn Circumcision (CIRC)

Circumcision infection in a newborn (≤ 30 days old) must meet at least 1 of the following criteria:

1. Newborn has purulent drainage from circumcision site.
2. Newborn has at least 1 of the following signs or symptoms with no other recognized cause at circumcision site: erythema, swelling, or tenderness and pathogen cultured from circumcision site.
3. Newborn has at least 1 of the following signs or symptoms with no other recognized cause at circumcision site: erythema, swelling, or tenderness and 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 circumcision site and physician diagnosis of infection or physician institutes appropriate therapy.

Systemic Infection (Sys)

Disseminated Infection (DI)

Disseminated infection is infection involving multiple organs or systems, without an apparent single site of infection, usually of viral origin, and with signs or symptoms with no other recognized cause and compatible with infectious involvement of multiple organs or systems.

Notes:

- Includes viral infections involving multiple organ systems (e.g., measles, mumps, rubella, varicella, erythema infectiosum). These infections often can be identified by clinical criteria alone. Do not include infections with multiple metastatic sites, such as with bacterial endocarditis; only the primary site of these infections should be considered as health care-associated.
- Do not include fever of unknown origin (FUO) as DI.
- Include viral exanthems or rash illness as DI.

References

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