CARD – Myocarditis or Pericarditis

(Revised January 1, 2018)

DEFINITION: Myocarditis or pericarditis must meet at least **ONE** ☐ of the following criteria:

☐ **Criterion 1**: ***(Revised January 1, 2018)***

- Patient has organism(s) identified from **ONE** Δ of the following:
  - Δ pericardial tissue[#]
  - Δ pericardial fluid[#]

  [#] By a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example not Active Surveillance Culture/Testing (ASC/AST).

☐ **Criterion 2**: ***(Revised January 1, 2018)***

- Patient has at least **TWO** Δ of the following signs or symptoms: ***(* with no other recognized cause)***
  - Δ fever (>38.0°C)
  - Δ chest pain*
  - Δ paradoxical pulse*
  - Δ increased heart size*

AND

- Patient has at least **ONE** Δ of the following:
  - Δ abnormal EKG consistent with **ONE** ◊ of the following:
    - ◊ myocarditis
    - ◊ pericarditis
  - Δ evidence of with **ONE** ◊ of the following:
    - ◊ myocarditis on histologic examination of heart tissue
    - ◊ pericarditis on histologic examination of heart tissue
  - Δ 4-fold rise in paired sera from IgG antibody titer
  - Δ pericardial effusion identified by **ONE** ◊ of the following:
    - ◊ echocardiogram
    - ◊ CT scan
    - ◊ MRI
    - ◊ angiography

- **Criterion 3**: ***(Revised January 1, 2018)***
  - Patient ≤1 year of age has at least **TWO** Δ of the following signs or symptoms:

    (* with no other recognized cause)
    - Δ fever (>38.0°C)
    - Δ hypothermia (<36.0°C)
    - Δ apnea*
    - Δ bradycardia*
    - Δ paradoxical pulse*
    - Δ increased heart size*

  AND

  - Patient has at least **ONE** Δ of the following:
    - Δ abnormal EKG consistent with **ONE** ◊ of the following:
      - ◊ myocarditis
      - ◊ pericarditis
    - Δ evidence of **ONE** ◊ of the following:
      - ◊ myocarditis on histologic examination of heart tissue
      - ◊ pericarditis on histologic examination of heart tissue
    - Δ 4-fold rise in paired sera from IgG antibody titer
    - Δ pericardial effusion identified by **ONE** ◊ of the following:
      - ◊ echocardiogram
      - ◊ CT scan
      - ◊ MRI
      - ◊ angiography

COMMENT: ***(Revised Jan 1, 2018)***

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

ENDO – Endocarditis

(Revised January 1, 2018)

When meeting the Endocarditis (ENDO) definition:

- The ENDO Infection Window Period is defined as the 21 days during which all site-specific infection criteria must be met. It includes the date the first positive diagnostic test that is used as an element of the ENDO criterion was obtained, the 10 calendars days before and the 10 calendar days after. The Infection Window Period is lengthened for this event to accommodate the **extended** diagnostic timeframe that is frequently required to reach a clinical determination of endocarditis.
- The RIT for Endocarditis (ENDO) is extended to include the remainder of the patient's current admission.
- When meeting the Endocarditis (ENDO) definition, the secondary BSI attribution period includes the 21-day infection window period **and all subsequent days of the patient's current admission.**
    - As a result of this lengthy secondary BSI attribution period, secondary BSI pathogen assignment for ENDO is limited to organism(s) identified in blood specimen that match the organism(s) used to meet the ENDO definition.

      Example: If the ENDO definition was met using a site-specific specimen (for example, cardiac vegetation) or using a blood specimen with S. aureus as the identified organism, if a blood specimen collected during the ENDO secondary BSI attribution period is positive for S. aureus and E. coli, while the S. aureus can be assigned to the ENDO event, it cannot be assumed the E. coli can be assigned as a secondary BSI pathogen. The blood organism (E.coli) does not match the organism (S. aureus) used to meet the ENDO definition. If the blood specimen can be used to meet an ENDO definition criterion both organisms can be assigned. Otherwise the E.coli will need to be investigated as a separate BSI and identified as a secondary BSI to another site-specific infection or determined to be a primary BSI.

CARDIOVASCULAR SYSTEM (CVS)

DEFINITION: Endocarditis of a natural or prosthetic heart valve must meet at least **ONE** ☐ of the following criteria:

☐ **Criterion 1**: ***(Revised January 1, 2018)***

- Patient has organism(s) identified from **ONE** Δ of the following: #
  - Δ cardiac vegetation^ documented as originating from **ONE** ◊ of the following:
    - ◊ cardiac source
    - ◊ intracardiac abscess
  - Δ embolized vegetation (for example, solid organ abscess) documented as originating from **ONE** ◊ of the following:
    - ◊ cardiac source
    - ◊ intracardiac abscess

☐ **Criterion 2**: ***(Revised January 1, 2018)***

- Patient has organism(s) seen on histopathologic exam of **ONE** Δ of the following:
  - Δ cardiac vegetation
  - Δ embolized vegetation (for example, solid organ abscess) documented as originating from cardiac source
  - Δ intracardiac abscess

☐ **Criterion 3**: ***(Revised January 1, 2018)***

- Patient has endocarditis seen on histopathologic exam of **ONE** Δ of the following:
  - Δ cardiac vegetation
  - Δ intracardiac abscess

☐ **Criterion 4**: ***(Revised January 1, 2018)***

- Patient has at least **ONE** Δ of the following echocardiographic evidence of endocarditis^:
  - Δ vegetation on **ONE** ◊ of the following:
    - ◊ cardiac valve
    - ◊ supporting structures
  - Δ intracardiac abscess
  - Δ new partial dehiscence of prosthetic valve

AND

- at least **ONE** Δ of the following:
  - Δ typical infectious endocarditis organisms† (specifically., **Viridans group streptococci, *Streptococcus bovis*, *Haemophilus* spp., *Actinobacillus actinomycetemcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens*, *Kingella* spp., *Staphylococcus aureus*, *Enterococcus spp.*)** identified from ≥2 blood collections drawn on separate occasions with no more than 1 calendar day between specimens#
  - Δ *Coxiella burnetii* identified from blood# or identified by anti-phase I IgG antibody titer >1:800

☐ **Criterion 5**: ***(Revised January 1, 2018)***

- Patient has at least **THREE** Δ of the following:
  - Δ **ANY** ◊ of the following:
    - ◊ prior endocarditis
    - ◊ prosthetic valve
    - ◊ uncorrected congenital heart disease
    - ◊ history of rheumatic heart disease
    - ◊ hypertrophic obstructive cardiomyopathy
    - ◊ known IV drug use
  - Δ fever (>38.0°C)
  - Δ **ANY** ◊ of the following vascular phenomena:
    - ◊ **ANY** ✚ of the following major arterial emboli:
      - ✚ embolic stroke
      - ✚ renal infarct
      - ✚ splenic infarct or abscess
      - ✚ digital ischemic/gangrene from embolic source
    - ◊ septic pulmonary infarcts
    - ◊ mycotic aneurysm as seen by **ANY** ✚ of the following:
      - ✚ documented by imaging
      - ✚ seen in surgery
      - ✚ described in gross pathological specimen
    - ◊ intracranial hemorrhage
    - ◊ conjunctival hemorrhages
    - ◊ Janeway's lesions documented

- Δ ANY ◊ of the following immunologic phenomena:
  - ◊ glomuleronephritis as seen by ANY ✚ of the following:
    - ✚ documented in chart
    - ✚ white cell or red blood cell casts on urinalysis
  - ◊ Osler's nodes
  - ◊ Roth's spots
  - ◊ positive rheumatic factor

  AND
  - ◊ ONE ✚ of the following:
    - ✚ typical infectious endocarditis organism(s) (**specifically, Viridans group streptococci, *Streptococcus bovis*, *Haemophilus* spp., *Actinobacillus actinomycetemcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens*, *Kingella* spp., *Staphylococcus aureus, Enterococcus spp.)*** identified from ≥2 blood collections drawn on separate occasions with no more than 1 calendar day between specimens[#]
    - ✚ *Coxiella burnetii* identified from blood[#] or identified by anti-phase I IgG antibody titer >1:800

☐ **Criterion 6**: ***(Revised January 1, 2018)***

- ○ Patient has **at least one** Δ of the following:^[†]
  - Δ echocardiogram evidence of vegetation on at least ONE ◊ of the following:
    - ◊ cardiac valve
    - ◊ supporting structures
  - Δ intracardiac abscess seen on echocardiogram
  - Δ new partial dehiscence of prosthetic valve seen on echocardiogram

AND

- ○ Patient has **at least three** Δ of the following:
  - Δ ANY ◊ of the following:
    - ◊ prior endocarditis
    - ◊ prosthetic valve
    - ◊ uncorrected congenital heart disease
    - ◊ history of rheumatic heart disease
    - ◊ hypertrophic obstructive cardiomyopathy

- ◊ known IV drug use
- Δ fever (>38.0°C)
- Δ ANY ◊ of the following vascular phenomena:
  - ◊ major arterial emboli, ANY ✚ of the following:
    - ✚ embolic stroke
    - ✚ renal infarct
    - ✚ splenic infarct or abscess
    - ✚ digital ischemic/gangrene from embolic source
  - ◊ septic pulmonary infarcts
  - ◊ mycotic aneurysm as seen by ANY ✚ of the following:
    - ✚ documented by imaging
    - ✚ seen in surgery
    - ✚ described in gross pathological specimen
  - ◊ intracranial hemorrhage
  - ◊ conjunctival hemorrhage
  - ◊ Janeway's lesions documented
- Δ ANY ◊ of the following immunologic phenomena:
  - ◊ glomuleronephritis as seen by ANY ✚ of the following:
    - ✚ documented in chart
    - ✚ white cell or red blood cell casts on urinalysis
  - ◊ Osler's nodes
  - ◊ Roth's spots
  - ◊ positive rheumatoid factor
- Δ identification of an organism(s) from the blood by at least ANY ◊ of the following methods:
  - ◊ recognized pathogen(s) identified from blood #
  - ◊ same common commensal organism(s) identified from ≥2 blood collections drawn on separate occasions on same or consecutive days #

☐ **Criterion 7:**

- ○ Patient meets ALL Δ of the following criteria:
  - Δ ANY ◊ of the following:
    - ◊ prior endocarditis
    - ◊ prosthetic valve

- ◊ uncorrected congenital heart disease
- ◊ history of rheumatic heart disease
- ◊ hypertrophic obstructive cardiomyopathy
- ◊ known IV drug use

Δ fever (>38.0°C)

Δ **ANY** ◊ of the following vascular phenomena:

- ◊ major arterial emboli, **ANY** ✚ of the following:
  - ✚ embolic stroke
  - ✚ renal infarct
  - ✚ splenic infarct or abscess
  - ✚ digital ischemic/gangrene from embolic source
- ◊ septic pulmonary infarcts
- ◊ mycotic aneurysm as seen by **ANY** ✚ of the following:
  - ✚ documented by imaging
  - ✚ seen in surgery
  - ✚ described in gross pathological specimen
- ◊ intracranial hemorrhage
- ◊ conjunctival hemorrhage
- ◊ Janeway's lesions documented

Δ **ANY** ◊ of the following immunologic phenomena:

- ◊ glomuleronephritis as seen by **ANY** ✚ of the following:
  - ✚ documented or chart
  - ✚ white cell or red blood cell casts on urinalysis
- ◊ Osler's nodes
- ◊ Roth's spots
- ◊ positive rheumatoid factor

Δ identification of an organism(s) from the blood by at least **ONE**◊ of the following methods:

- ◊ recognized pathogen(s) identified from blood [#]
- ◊ same common commensal organism(s) identified from ≥2 blood collections drawn on separate occasions on same or consecutive days [#]

CARDIOVASCULAR SYSTEM (CVS)

REPORTING INSTRUCTIONS: ***(Revised January 1, 2018)***

^ "Cardiac vegetation" includes vegetation on a pacemaker / defibrillator lead or ventricular assist devices (VAD) components within the heart.

 # By a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing (ASC/AST).

† Which if equivocal is supported by clinical correlation (specifically, physician documentation of antimicrobial treatment for endocarditis).

MED – Mediastinitis

(Revised January 1, 2018)

DEFINITION: Mediastinitis must meet at least **ONE** ☐ of the following criteria:

☐ **Criterion 1**: ***(Revised January 1, 2018)***

- Patient has organisms identified from **ONE** Δ of the following:
  - Δ mediastinal tissue#
  - Δ mediastinal fluid#

  #by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example not Active Surveillance Culture/Testing (ASC/AST)

☐ **Criterion 2**: ***(Revised January 1, 2018)***

- Patient has evidence of mediastinitis on **ONE** Δ of the following:
  - Δ gross anatomic exam
  - Δ histopathologic exam

☐ **Criterion 3**: ***(Revised January 1, 2018)***

- Patient has at least **ONE** Δ of the following signs or symptoms: ***(*with no other recognized cause)***
  - Δ fever (>38.0°C)
  - Δ chest pain*
  - Δ sternal instability*

AND

- Patient has at least **ONE** Δ of the following:
  - Δ purulent drainage from mediastinal area
  - Δ mediastinal widening on imaging test

☐ **Criterion 4**: ***(Revised January 1, 2018)***

- Patient ≤1 year of age has at least **ONE** Δ of the following signs or symptoms:

  (* with no other recognized cause)
  - Δ fever (>38.0°C)
  - Δ hypothermia (<36.0°C)
  - Δ apnea*
  - Δ bradycardia*
  - Δ sternal instability*

AND

- Patient has at least **ONE** Δ of the following:
  - Δ purulent discharge from mediastinal area
  - Δ mediastinal widening on imaging test

REPORTING INSTRUCTIONS: ***(Revised January 1, 2018)***

- Mediastinal space is the area under the sternum and in front of the vertebral column, containing the heart and its large vessels, trachea, esophagus, thymus, lymph nodes, and other structures and tissues. It is divided into anterior, middle, posterior, and superior regions.
- Report mediastinitis (MED) following cardiac surgery that is accompanied by osteomyelitis as SSI-MED rather than SSI-BONE.

VASC – Arterial or Venous Infection

(Revised January 1, 2018)

Note: If a patient meets the criteria for an LCBI in the presence of an intravascular infection report as an LCBI not has a VASC.

DEFINITION: Arterial or venous infection must meet at least **ONE** ☐ of the following criteria:

☐ **Criterion 1**: ***(Revised January 1, 2018)***

- Patient has organism(s) identified from **ONE** Δ of the following:[#]
  - Δ extracted arteries
  - Δ extracted veins

☐ **Criterion 2**: ***(Revised January 1, 2018)***

- Patient has evidence of **ONE** Δ of the following:
  - Δ arterial infection seen during **ONE** ◊ of the following:
    - ◊ gross anatomic exam
    - ◊ histopathologic exam
  - Δ venous infection seen during **ONE** ◊ of the following:
    - ◊ gross anatomic exam
    - ◊ histopathologic exam

☐ **Criterion 3**: ***(Revised January 1, 2018)***

- Patient has at least **ONE** Δ of the following signs or symptoms:
  - Δ fever (>38.0^{o}C)
  - Δ pain*
  - Δ erythema*
  - Δ heat at involved vascular site*

AND

- Patient has more than 15 colonies cultured from intravascular cannula tip using semi-quantitative culture method.

☐ **Criterion 4**: ***(Revised January 1, 2018)***

- Patient has purulent drainage at involved vascular site.

CARDIOVASCULAR SYSTEM (CVS)

Criterion 5: *(Revised January 1, 2018)*

- Patient ≤1 year of age has at least **ONE** Δ of the following signs or symptoms:
  - Δ fever (>38.0°C)
  - Δ hypothermia (<36.0°C)
  - Δ apnea*
  - Δ bradycardia*
  - Δ lethargy*
  - Δ pain*
  - Δ erythema*
  - Δ heat at involved vascular site*

AND

- Patient has more than 15 colonies cultured from intravascular cannula tip using semi quantitative culture method.

With no other recognized cause

#by a culture or non-culture based microbiological testing method which is performed for purposes of clinical diagnosis or treatment (for example not Active Surveillance Culture/Testing (ASC/AST).

CARDIOVASCULAR SYSTEM (CVS)

REPORTING INSTRUCTIONS: ***(Revised January 1, 2018)***

- Report infections of an arteriovenous graft, shunt, or fistula or intravascular cannulation site without organism(s) cultured from blood as CVS-VASC.
- Report Organ Space VASC infections as an SSI and not an LCBI when you have an SSI with secondary BSI.
- Report intravascular infections with organism(s) identified from the blood and meeting the LCBI criteria, as BSI-LCBI. However, if the BSI meets the CLABSI criteria and **BOTH** of the following are present within the Infection Window period, mark the data field for risk factor "Central line" as "No":
    - Pus at the site

    AND

    - Specimen collected from the site of one of the following, has at least one matching organism(s) identified in a blood specimen:
        - Arterial catheters
        - Arteriovenous fistula
        - Arteriovenous graft
        - Atrial catheters (also known as transthoracic intra-cardiac catheters, those catheters inserted directly into the right or left atrium via the heart wall)
        - Hemodialysis reliable outflow (HERO) dialysis catheters
        - Intra-aortic balloon pump (IABP) devices
        - Non-accessed central line (not accessed nor inserted during the hospitalization)
        - Peripheral IV or midlines