

Surveillance Definitions of Infections in Long-Term Care Facilities

Revisiting the McGeer Criteria

New guidelines for defining infections were made available in September, 2012. Many of the different categories were modified in one fashion or more.

Perhaps the most major change is that any infections that occur after 48 hours of admission are now considered HAI (facility acquired) infections.

An important feature added was Constitutional Criteria for Infections. This revised some of the previous criteria used and added Leukocytosis as one of the criteria. In addition, more defined descriptions (and what must be present) of Acute Change in Mental Status and Acute Functional Decline were established.

Definitions for Constitutional Criteria in Residents of Long-Term Care Facilities (LTCFs)

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A. Fever

1. Single oral temperature $>37.8^{\circ}\text{C}$ ($>100^{\circ}\text{F}$)

OR

2. Repeated oral temperatures $>37.2^{\circ}\text{C}$ (99°F) or rectal temperatures $>37.5^{\circ}\text{C}$ (99.5°F)

OR

3. Single temperature $>1.1^{\circ}\text{C}$ (2°F) over baseline from any site (oral, tympanic, axillary)

B. Leukocytosis

1. Neutrophilia ($>14,000$ leukocytes/ mm^3)

OR

2. Left shift ($>6\%$ bands or $\geq 1,500$ bands/ mm^3)

Left shift is a greater than normal percent of immature white blood cells present, an inflammatory response.

Definitions for Constitutional Criteria in Residents of Long-Term Care Facilities (LTCFs)

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C. Acute change in mental status from baseline (all criteria must be present)

1. Acute onset
2. Fluctuating course
3. Inattention

AND

4. Either disorganized thinking or altered level of consciousness

Confusion Assessment Method Criteria

Acute onset - Evidence of acute change in resident's mental status from baseline

Fluctuating Behavior - Fluctuating (eg, coming and going or changing in severity during the assessment)

Inattention - Resident has difficulty focusing attention (eg, unable to keep track of discussion or easily distracted)

Disorganized thinking - Resident's thinking is incoherent (eg, rambling conversation, unclear flow of ideas, unpredictable switches in subject)

Altered level of consciousness - Resident's level of consciousness is described as different from baseline (eg, hyperalert, sleepy, drowsy, difficult to arouse, nonresponsive)

Note that ALL FOUR criteria must be met in order to classify as Acute Change in Mental Status.

Definitions for Constitutional Criteria in Residents of Long-Term Care Facilities (LTCFs)

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D. Acute functional decline

1. A new 3-point increase in total activities of daily living (ADL) score (range, 0–28) from baseline, based on the following 7 ADL items, each scored from 0 (independent) to 4 (total dependence)

- a. Bed mobility
- b. Transfer
- c. Locomotion within LTCF
- d. Dressing
- e. Toilet use
- f. Personal hygiene
- g. Eating

Urinary Tract Infections

UTI Without Catheter

New

For residents without an indwelling catheter (both criteria 1 and 2 must be present)

1. At least 1 of the following sign or symptom subcriteria

a. Acute dysuria or acute pain, swelling, or tenderness of the testes, epididymis, or prostate

b. Fever or leukocytosis and at least 1 of the following localizing urinary tract subcriteria

- i. Acute costovertebral angle pain or tenderness
- ii. Suprapubic pain
- iii. Gross hematuria
- iv. New or marked increase in incontinence
- v. New or marked increase in urgency
- vi. New or marked increase in frequency

c. In the absence of fever or leukocytosis, then 2 or more

of the following localizing urinary tract subcriteria

- i. Suprapubic pain
- ii. Gross hematuria
- iii. New or marked increase in incontinence
- iv. New or marked increase in urgency
- v. New or marked increase in frequency

2. One of the following microbiologic subcriteria

a. At least 10^5 cfu/mL of no more than 2 species of microorganisms in a voided urine sample

b. At least 10^2 cfu/mL of any number of organisms in a specimen collected by in-and-out catheter

UTI Without Catheter

Prior

MUST HAVE at least 3 of the following:

- fever ($\geq 100^\circ\text{F}$) or chills
- new or increased burning, pain on urination,
- new flank/suprapubic pain or tenderness
- change in character of urine
- worsening of mental or functional status

Changes made:

Added

- ***Acute pain, swelling, or tenderness of the testes, epididymis, or prostate***
- ***Leukocytosis***
- ***Microbiologic subcriteria***

Removed

- ***Change in character of urine***
- ***Worsening of mental or functional status***

Revised

- ***Criteria needed to define infection***

UTI Without Catheter

Comments:

UTI should be diagnosed when there are localizing genitourinary signs and symptoms and a positive urine culture result. A diagnosis of UTI can be made without localizing symptoms if a blood culture isolate is the same as the organism isolated from the urine and there is no alternate site of infection. In the absence of a clear alternate source of infection, fever or rigors with a positive urine culture result in the noncatheterized resident or acute confusion in the catheterized resident will often be treated as UTI. However, evidence suggests that most of these episodes are likely not due to infection of a urinary source.

Urine specimens for culture should be processed as soon as possible, preferably within 1–2 hours. If urine specimens cannot be processed within 30 minutes of collection, they should be refrigerated. Refrigerated specimens should be cultured within 24 hours.

New

UTI Without Catheter

Comments:

This category includes only symptomatic urinary tract infections. Because many resident have bacteria in their urine as a baseline status, surveillance for asymptomatic bacteriuria is not recommended.

* fever (oral temp > 100 degrees F or 2 degrees above resident's baseline)

* change in character of urine; new bloody urine, foul smell, amount of sediment, lab report = new pyuria or hematuria, positive leukocyte esterase nitrates via urine dipstick.

* worsening mental/functional status; confusion, lethargy, new or increased incontinence, decreased activity, decreased appetite, falls.

Prior

UTI With Catheter

New

For residents with an indwelling catheter (both criteria 1 and 2 must be present)

1. At least 1 of the following sign or symptom subcriteria

- a. Fever, rigors, or new-onset hypotension, with no alternate site of infection
- b. Either acute change in mental status or acute functional decline, with no alternate diagnosis and leukocytosis
- c. New-onset suprapubic pain or costovertebral angle pain or tenderness
- d. Purulent discharge from around the catheter or acute pain, swelling, or tenderness of the testes, epididymis, or prostate

2. Urinary catheter specimen culture with at least 10^5 cfu/mL of any organism(s)

Comment:

Recent catheter trauma, catheter obstruction, or new onset hematuria are useful localizing signs that are consistent with UTI but are not necessary for diagnosis.

Urinary catheter specimens for culture should be collected following replacement of the catheter (if current catheter has been in place for >14 days).

UTI With Catheter

Prior

MUST HAVE at least 2 of the following:

- fever ($\geq 100^\circ\text{F}$) or chills
- new flank/suprapubic pain or tenderness
- change in character of urine
- worsening of mental status or functional

Comment:

Because the most common occult infectious source of fever in catheterized residents is the urinary tract, the combination of fever and worsening functional status in such residents meets the criteria for UTI.

However, care should be taken to rule out other causes of these symptoms. If a catheterized resident with only fever and worsening mental/functional status meets criteria for infection at a site other than the urinary tract, only the diagnosis of infection at the other site should be made.

Changes made:

Added

- ***Purulent discharge from around the catheter or acute pain, swelling, or tenderness of the testes, epididymis, or prostate***
- ***Microbiologic criteria***

Removed

- ***Change in character of urine***

Respiratory Tract Infections

Common Cold Syndrome

Common cold syndrome or pharyngitis (at least 2 criteria must be present)

1. Runny nose or sneezing
2. Stuffy nose (ie, congestion)
3. Sore throat or hoarseness or difficulty in swallowing
4. Dry cough
5. Swollen or tender glands in the neck (cervical lymphadenopathy)

Comment:

Fever may or may not be present. Symptoms must be new and not attributable to allergies.

New

Common Cold Syndrome

MUST HAVE at least 2 of the following:

- Runny nose or sneezing
- Stuffy nose (nasal congestion)
- Sore throat, hoarseness or difficulty swallowing
- Dry cough
- Swollen or tender glands in neck (cervical lymphadenopathy)

Comment:

Fever may or may not be present. Symptoms must be acute and not caused by an allergy (seasonal or medicinal).

Prior

No changes other than comment that symptoms must be new rather than acute.

Influenza-Like Illness

Influenza-like illness (both criteria 1 and 2 must be present)

1. Fever
2. At least 3 of the following influenza-like illness subcriteria
 - a. Chills
 - b. New headache or eye pain
 - c. Myalgias or body aches
 - d. Malaise or loss of appetite
 - e. Sore throat
 - f. New or increased dry cough

Comment:

If criteria for influenza-like illness and another upper or lower RTI are met at the same time, only the diagnosis of influenza-like illness should be recorded. Because of increasing uncertainty surrounding the timing of the start of influenza season, the peak of influenza activity, and the length of the season, “seasonality” is no longer a criterion to define influenza-like illness.

New

Change made to the reporting period of ILI

Influenza-Like Illness

MUST HAVE:

Fever ($\geq 100^{\circ}\text{F}$ taken at any site) and

AND

MUST HAVE at least 3 of the following:

- chills
- dry cough
- malaise or loss of appetite
- myalgias (muscle aches)
- sore throat
- headache or eye pain

Comment:

The diagnosis can only be made during influenza season (October through March). During this season, if criteria for influenza-like illness and another upper or lower respiratory tract infection are met at the same time, only the diagnosis of influenza-like illness should be recorded.

Prior

Pneumonia

Pneumonia (all 3 criteria must be present)

1. Interpretation of a chest radiograph as demonstrating pneumonia or the presence of a new infiltrate

2. At least 1 of the following respiratory subcriteria

- a. New or increased cough
- b. New or increased sputum production
- c. O_2 saturation $<94\%$ on room air or a reduction in O_2 saturation of $>3\%$ from baseline
- d. New or changed lung examination abnormalities
- e. Pleuritic chest pain
- f. Respiratory rate of ≥ 25 breaths/min

3. At least 1 of the constitutional criteria

- a. Fever
- b. Leukocytosis
- c. Acute change in mental status from baseline
- d. Acute functional decline

New

Changes made:

Added

- O_2 saturation levels
- Constitutional criteria

Pneumonia

MUST HAVE:

- Chest x-ray demonstrating pneumonia, probable pneumonia, or infiltrate and

MUST HAVE at least 2 of the following:

- increased cough
- pleuritic chest pain
- increased sputum production
- rales, rhonchi, wheezes on chest exam
- fever ($\geq 100^\circ\text{F}$)
- one or more of: new shortness of breath, increased respiratory rate ($>25/\text{min.}$), worsening mental/functional status.

Prior

Lower Respiratory Tract

Lower respiratory tract (bronchitis or tracheobronchitis; all 3 criteria must be present)

1. Chest radiograph not performed or negative results for pneumonia or new infiltrate

2. At least 2 of the following respiratory subcriteria

- a. New or increased cough
- b. New or increased sputum production
- c. O₂ saturation <94% on room air or a reduction in O₂ saturation of >3% from baseline
- d. New or changed lung examination abnormalities
- e. Pleuritic chest pain
- f. Respiratory rate of ≥25 breaths/min

3. At least 1 of the constitutional criteria

- a. Fever
- b. Leukocytosis
- c. Acute change in mental status from baseline
- d. Acute functional decline

New

Lower Respiratory Tract

MUST HAVE at least 3 of the following:

- increased cough
- pleuritic chest pain
- increased sputum production
- rales, rhonchi, wheezes on chest exam
- fever (≥100°F)
- one or more of: new shortness of breath, increased respiratory rate (>25/min.), worsening mental/functional status.

Prior

Changes made:

Added

- ***No chest radiograph performed or negative for pneumonia/new infiltrate***
- ***O₂ saturation levels***
- ***Constitutional criteria***

Revised

Total number of criteria needed to define infection

Skin, Tissue, and Mucosal Infections

NOTE: The Eye, Ear, Nose, Mouth 'Category' has been eliminated. All infections that previously fell within that area are now included in the Skin, Tissue, and Mucosal category.

Cellulitis, soft tissue or wound infection

Cellulitis, soft tissue, or wound infection (at least 1 of the following criteria must be present)

1. Pus present at a wound, skin, or soft tissue site
2. New or increasing presence of at least 4 of the following sign or symptom subcriteria

- A. Heat at the affected site
- B. Redness at the affected site
- C. Swelling at the affected site
- D. Tenderness or pain at the affected site
- E. Serous drainage at the affected site
- F. One constitutional criterion

- a. Fever
- b. Leukocytosis
- c. Acute change in mental status from baseline
- d. Acute functional decline

Comments:

Presence of organisms cultured from the surface (eg, superficial swab sample) of a wound is not sufficient evidence that the wound is infected. More than 1 resident with streptococcal skin infection from the same serogroup (eg, A, B, C, G) in a long-term care facility (LTCF) may indicate an outbreak.

New

Cellulitis, soft tissue or wound infection

MUST HAVE at least 1 of the following:

Pus at a wound, skin or soft tissue site

OR

4 or more of the following:

- fever ($\geq 100^{\circ}\text{F}$ taken at any site)
- worsening mental/functional status
- heat at site
- redness at site
- swelling at site
- tenderness or pain at site
- serous drainage from site

Prior

Changes made:

Added

• **Constitutional criteria**

Scabies

Scabies (both criteria 1 and 2 must be present)

1. A maculopapular and/or itching rash
2. At least 1 of the following scabies subcriteria
 - a. Physician diagnosis
 - b. Laboratory confirmation (scraping or biopsy)
 - c. Epidemiologic linkage to a case of scabies with laboratory confirmation

Comments:

An epidemiologic linkage to a case can be considered if there is evidence of geographic proximity in the facility, temporal relationship to the onset of symptoms, or evidence of common source of exposure (ie, shared caregiver). Care must be taken to rule out rashes due to skin irritation, allergic reactions, eczema, and other noninfectious skin conditions

Changes made:

Added

- ***Linkage to a previous confirmed case of Scabies in geographical proximity.***

New

Scabies

MUST HAVE BOTH:

A maculopapular and/or itching rash

AND

Either physician diagnosis or lab confirmation

Comments:

Care must be taken to assure that rash is not allergic or secondary to skin irritation.

Lab diagnosis consists of microscopic examination of skin scrapings.

Prior

Fungal oral or perioral and skin infections

Fungal oral or perioral and skin infections

1. Oral candidiasis (both criteria a and b must be present)

a. Presence of raised white patches on inflamed mucosa or plaques on oral mucosa

b. Diagnosis by a medical or dental provider

2. Fungal skin infection (both criteria a and b must be present)

a. Characteristic rash or lesions

b. Either a diagnosis by a medical provider or a laboratory confirmed fungal pathogen from a scraping or a medical biopsy

New

Fungal oral or perioral and skin infections

Mouth or peri-oral infection

MUST HAVE:

Diagnosis by physician or dentist

Fungal skin infection

MUST HAVE BOTH:

A maculopapular rash, and

Either physician diagnosis or lab confirmation

Prior

Changes made:

Added

• Presence of raised white patches on inflamed mucosa or plaques on oral mucosa (for oral candidiasis)

Herpesvirus skin infections

1. Herpes simplex infection (both criteria a and b must be present)

- a. A vesicular rash
- b. Either physician diagnosis or laboratory confirmation

2. Herpes zoster infection (both criteria a and b must be present)

- a. A vesicular rash
- b. Either physician diagnosis or laboratory confirmation

Comment:

Reactivation of herpes simplex (“cold sores”) or herpes zoster (“shingles”) is not considered a healthcare associated infection. Primary herpesvirus skin infections are very uncommon in a LTCF except in pediatric populations, where it should be considered healthcare associated.

New

Herpes Simplex/Herpes Zoster (Shingles)

Herpes Simplex

MUST HAVE BOTH:

- A vesicular rash, and
- Either physician diagnosis or lab confirmation

Herpes Zoster

MUST HAVE BOTH:

- A vesicular rash, and
- Either physician diagnosis or lab confirmation

Prior

Important Note:

Reactivation of any Herpes Zoster or Herpes Simplex is no longer considered an HAI infection.

Conjunctivitis

Conjunctivitis (at least 1 of the following criteria must be present)

1. Pus appearing from 1 or both eyes, present for at least 24 hours
2. New or increased conjunctival erythema, with or without itching
3. New or increased conjunctival pain, present for at least 24 hours

Comment:

Conjunctivitis symptoms (“pink eye”) should not be due to allergic reaction or trauma.

New

Changes made:

Added

- ***New or increased conjunctival pain, present for at least 24 hours***

Conjunctivitis

MUST HAVE at least 1 of the following:

- Pus from one or both eyes, present for at least 24 hours
- Conjunctival redness with or without itching or pain present for at least 24 hours (pink eye)

Comment:

Care must be taken to rule out:

1. Allergies.
2. Trauma.
3. Medications may cause dry eye.

Prior

Gastro Intestinal Infections

Two new 'Types' of GI Infections are added – Clostridium difficile and Norovirus

Gastroenteritis

New

Gastroenteritis (at least 1 of the following criteria must be present)

1. Diarrhea: 3 or more liquid or watery stools above what is normal for the resident within a 24-hour period

2. Vomiting: 2 or more episodes in a 24-hour period

3. Both of the following sign or symptom subcriteria

a. A stool specimen testing positive for a pathogen (eg, Salmonella, Shigella, Escherichia coli O157 : H7, Campylobacter species, rotavirus)

b. At least 1 of the following GI subcriteria

i. Nausea

ii. Vomiting

iii. Abdominal pain or tenderness

iv. Diarrhea

Comment:

Care must be taken to exclude noninfectious causes of symptoms. For instance, new medications may cause diarrhea, nausea, or vomiting; initiation of new enteral feeding may be associated with diarrhea; and nausea or vomiting may be associated with gallbladder disease. Presence of new GI symptoms in a single resident may prompt enhanced surveillance for additional cases. In the presence of an outbreak, stool specimens should be sent to confirm the presence of norovirus or other pathogens (eg, rotavirus or E. coli O157 : H7).

Gastroenteritis

Prior

MUST HAVE at least 1 of the following:

- 2 or more loose or watery stools above what is normal for resident within a 24 hour period
- 2 or more episodes of vomiting within a 24 hour period

- BOTH of the following:
Stool culture positive for pathogen: Salmonella, E. coli O157:H7, Campylobacter or a toxin assay positive for C. difficile toxin

AND

At least 1 of the following: nausea, vomiting, diarrhea, abdominal pain or tenderness

Comment:

Care must be taken to rule out noninfectious causes of symptoms:

1. Tube feedings.
2. New medications may cause both diarrhea and vomiting.
3. Gall bladder disease may cause vomiting.

If residents with gastroenteritis have uncontained loose or watery stools, consider placing in isolation until symptoms have improved.

Changes made:

Revised

• Number of liquid or watery stools within a 24 hour period (above what is normal for the patient) increased from 2 or more to 3 or more

Norovirus

Norovirus gastroenteritis (both criteria 1 and 2 must be present)

1. At least 1 of the following GI subcriteria

a. Diarrhea: 3 or more liquid or watery stools above what is normal for the resident within a 24-hour period

b. Vomiting: 2 or more episodes of in a 24-hour period

2. A stool specimen for which norovirus is positively detected by electron microscopy, enzyme immunoassay, or molecular diagnostic testing such as polymerase chain reaction (PCR)

New

Comment:

In the absence of laboratory confirmation, an outbreak (2 or more cases occurring in a long-term care facility [LTCF]) of acute gastroenteritis due to norovirus infection may be assumed to be present if all of the following criteria are present (“Kaplan Criteria”): (a) vomiting in more than half of affected persons; (b) a mean (or median) incubation period of 24–48 hours; (c) a mean (or median) duration of illness of 12–60 hours; and (d) no bacterial pathogen is identified in stool culture.

Note the ‘Kaplan Criteria’ in the comment section.

Clostridium difficile

Clostridium difficile infection (both criteria 1 and 2 must be present)

1. One of the following GI subcriteria

a. Diarrhea: 3 or more liquid or watery stools above what is normal for the resident within a 24-hour period

b. Presence of toxic megacolon (abnormal dilatation of the large bowel, documented radiologically)

2. One of the following diagnostic subcriteria

a. A stool sample yields a positive laboratory test result for C. difficile toxin A or B, or a toxin-producing C. difficile organism is identified from a stool sample culture or by a molecular diagnostic test such as PCR

b. Pseudomembranous colitis is identified during endoscopic examination or surgery or in histopathologic examination of a biopsy specimen

New

Comment:

A “primary episode” of C. difficile infection is defined as one that has occurred without any previous history of C. difficile infection or that has occurred >8 weeks after the onset of a previous episode of C. difficile infection. A “recurrent episode” of C. difficile infection is defined as an episode of C. difficile infection that occurs 8 weeks or sooner after the onset of a previous episode, provided that the symptoms from the earlier (previous) episode have resolved. Individuals previously infected with C. difficile may continue to remain colonized even after symptoms resolve. In the setting of an outbreak of GI infection, individuals could have positive test results for presence of C. difficile toxin because of ongoing colonization and also be coinfecting with another pathogen. It is important that other surveillance criteria be used to differentiate infections in this situation.

Special Note:

The comment indicates that any incidence of C. difficile within 8 weeks of a previous documented occurrence is NOT a new infection but rather a recurrence of the previous documented infection.