McGeer Criteria for Long Term Care Surveillance Definitions for Infections Updated 2012

Article on a review of the updated McGreer Criteria for Infections in LTC Facilities.
The updated criteria can be found at http://www.jstor.org/stable/10.1086/667743
Review of the Updated McGreer Criteria for Infections

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In October 2012, the Surveillance Definitions of Infections in Long-Term Care Facilities: Revisiting the McGreer Criteria was released. This position paper was first released in 1991, and since has not been updated. This criterion was determined by an expert consensus panel based on a structured review of research and evidenced-based literature. The criteria that define infections were systematically reviewed and have resulted in changes of the original consensus definitions also known as the McGreer Criteria.

Some notable changes in the criteria are the addition of definitions of constitutional criteria (Table 2.) in residents of long term care facilities. The decision was made to use these criteria to maintain consistency across different infection guidelines.

This Constitutional Criteria includes:

- Fever
- Leukocytosis
- Acute change in mental status from baseline (CAM criteria also found in MDS 3.0)
- Acute functional decline in activities of daily living (ADLs)
    - 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) Bed mobility, Transfer, Locomotion within LTCF, Dressing, Toilet use, Personal hygiene, Eating

The definition of fever was changed from a temperature greater than 100.4 degrees Fahrenheit and is consistent with the 2008 Infectious Disease of America (IDSA) guideline for evaluating fever and infection in older adults residing in long term care facilities (LTCFs):

1. A single oral temperature greater than37.8°C(100°F) or
2. Repeated oral temperatures greater than37.2°C(99°F)orrectaltemperaturesgreaterthan37.5°C (99.5°F)or
3. A single temperature greater than 1.1°C(2°F) over baseline from any site.

Attention should be paid the new surveillance definitions, especially for respiratory tract infection and urinary tract infections. The following are key changes to be aware of:

Respiratory Tract Infection

When reviewing for potential respiratory infection, it is important that other conditions are ruled out such as congestive heart failure, pulmonary embolism, atelectasis, etc..

- Removal of seasonal restrictions for influenza-like illness
- Pneumonia and lower respiratory tract infections- at least one respiratory symptom, and at least one constitutional criteria, along with radiographic findings to define pneumonia. This should facilitate the surveillance into three categories including radiography results, respiratory signs or symptoms and constitutional criteria.
- For lower respiratory tract infection oxygen saturation of <94% or <3% from baseline was added.

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Urinary Tract Infections (UTI's)

For Urinary Tract Infections without a catheter the new definitions differ substantially from the original guidelines. The definitions take into account the low probability of UTI in residents without catheters if symptoms are not present as well as they now take into account the need for a urine culture for microbiologic confirmation.

- Change in character of urine was removed
- Urine culture is now needed for diagnosis

New Criteria for UTI without a Catheter: (Both criteria 1 and 2 must be present)

Criteria 1

At least one of the following sign or symptom criteria:

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

b. Fever or leukocytosis (See Constitutional Criteria Table) **and at least one** 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 leukocystosis, **then 2 or more** of the following 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

Criteria 2

a. At least 105 cfu/mL of no more than 2 species of microorganisms in a voided urine sample
b. At least 102 cfu/mL of any number of organisms in a specimen collected by in-and-out catheter

With the new change in surveillance guidelines, it is not only important that we train our staff but that we look at how to operationalize infection prevention strategies.

Operational strategies for consideration:

UTI's:

- Educate staff on criteria for urinary tract infections
- Provide training on pericare and catheter care
- Encourage hydration
- Obtain baseline vital signs
- Obtain protocols to notify MD with change in condition
- Review medications

- Perform through assessment of urinary incontinence
- Provide training on pain assessment and management
- Referrals as needed to urology for chronic urinary tract infections

Respiratory Tract Infections

- Obtain a complete respiratory baseline during admission including lung sounds, observation of breathing and color as well as oxygen saturation ratings.

Source: Infection Control and Hospital Epidemiology Vol.33, No.10(October2012), pp. 965-977

If you want more detail to compare the old guidelines to the new guidelines, please see the table on the next page. The items in red are new, and the items that are struck thru have been removed.
(Shared with permission from Pathway Health Services)

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Type of Infection (✓)	Infection/Site	Criteria (symptoms must be new or increased)	Conditions/Comments
☐ Respiratory Tract	☐ Common cold syndrome ☐ Or Pharyngitis	MUST HAVE at least 2 of the following: ☐ Runny nose or sneezing ☐ Stuffy nose (nasal congestion) ☐ Sore throat or hoarseness or difficulty swallowing ☐ Dry cough ☐ Swollen or tender glands in neck (cervical lymphadenopathy)	Fever may or may not be present. Symptoms must be new and not attributable to allergies.
	☐ Influenza-like illness Did resident receive influenza vaccine for this flu season? ☐ YES ☐ NO	MUST HAVE: ☐Fever (≥ 100˚F taken at any site) AND MUST HAVE: at least 3 of the following: ☐ chills ☐ malaise or loss of appetite ☐ headache or eye pain ☐sore throat ☐ Mylagia/body aches ☐ New or increased dry cough	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.
	☐ Pneumonia	MUST HAVE: ☐ Chest x-ray demonstrating pneumonia, probable pneumonia or new infiltrate. AND MUST HAVE at least ~~2~~ 1 of the following ☐ New or increased cough ☐ 02 sat<94% or < 3% baseline ☐ pleuritic chest pain ☐ fever ~~≥ 100˚F~~ (see CC table 2) ☐ New or increased sputum production ☐ ~~crackles, rhonchi, or wheezes on chest exam~~ ☐ New or changed lung exam abnormalities ☐ respiratory rate (>25/minute) ☐ MUST HAVE ≥1: Constitutional Criteria (Fever, ADL, Mental change)	For both pneumonia and lower RTI, the presence of underlying conditions that could mimic the presentation of a RTI (eg, congestive heart failure or interstitial lung diseases) should be excluded by a review of clinical records and an assessment of presenting symptoms and signs.
	☐ ~~Other~~ Lower respiratory tract infection (bronchitis, tracheobronchitis)	MUST HAVE at least 3 of the following: 1. ☐ CXR not performed or negative results for pneumonia or new infiltrate 2. At least 2 of respiratory subcriteria above in pneumonia ~~☐ increased cough ☐ pleuritic chest pain~~ ~~☐ increased sputum production ☐ fever (≥ 100˚F)~~ ~~☐ crackles, rhonchi, or wheezes on chest exam~~ ~~☐ one or more of: shortness of breath, increased respiratory rate (>25/minute), worsening of mental or functional status~~ 3. At least 1 of the constitutional criteria (Table 2)	NOTE: This diagnosis can be made only if NO Chest x-ray was done OR if a CXR fails to confirm diagnosis of pneumonia. For both pneumonia and lower RTI, the presence of underlying conditions that could mimic the presentation of a RTI (e.g. congestive heart failure or interstitial lung diseases) should be excluded by a review of clinical records and assessment of s/sx
☐ Urinary Tract Infection	☐ UTI in resident WITHOUT catheter (any previous catheter must have been D/C'd at least 48 hrs before symptoms began)	~~MUST HAVE at least 3 of the following:~~ ~~☐ fever (≥ 100˚F) or chills~~ ~~☐ Burning pain on urination, frequency, or urgency~~ ~~☐ Flank or suprapubic pain or tenderness~~ ~~☐ Change in character of urine*~~ ~~☐ Worsening of mental or functional status (may be new or increased incontinence)~~ **Criteria 1 and 2 MUST be present** **Both criteria must be present:** **1. At least 1 of the following sub criteria:** ☐ Acute dysuria or acute pain, swelling, or tenderness of the testes, epididymis, or prostate ☐ Fever or leukocytosis *(See Constitutional Criteria Table)*	~~Include only if symptomatic regardless of UA/UC result. Many residents have bacteria in their urine as a baseline and are not infected. * Change in character of urine may be clinical (new bloody urine, foul smell, or increased amount of sediment) or as reported by lab (new pyuria or microscopic hematuria). If using lab changes, a previous urinalysis must have been negative.~~ 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 non-catheterized resident or acute confusion in the

		AND **At least 1 of the following subcriteria:** ○ Acute costovertebral angle pain or tenderness ○ Suprapubic pain ○ Gross hematuria ○ New or marked increase in incontinence ○ New or marked increase in urgency ○ New or marked increase in frequency ***In the absence of fever or leukocystosis*, then 2 or more of the following subcriteria:** ○ Suprapubic pain ○ Gross hematuria ○ New or marked increase in incontinence ○ New or marked increase in urgency ○ New or marked increase in frequency **AND** **2. 1 of the following subcriteria:** ☐ At least 10^5 cfu/mL of no more than 2 species of microorganisms in a voided urine sample ☐ At least 10^2 cfu/mL of any number of organisms in a specimen collected by in-and-out catheter	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 h. If urine specimens cannot be processed within 30 min of collection, they should be refrigerated. Refrigerated specimens should be cultured within 24 h.
	☐ UTI in resident WITH catheter (if symptoms begin within 48 hrs after discontinuing a catheter, count it as related to catheter)	~~MUST HAVE at least 2 of the following:~~ ~~☐ Fever (≥100˚F) or chills~~ ~~☐ Flank or suprapubic pain or tenderness~~ ~~☐ Change in character of urine*~~ ☐ ~~Worsening of mental or functional status~~ **Both criteria must be present:** **At least 1 of the following subcriteria:** ☐ Fever, rigors, or new-onset hypotension, with no alternate site of infection ☐ Either acute change in mental status or acute functional decline, with no alternate site of infection ☐ New-onset suprapubic pain or costovertebral angle pain or tenderness ☐ Purulent discharge from around the catheter or acute pain, swelling, or tenderness of the testes, epididymis, or prostate **AND** **Must have:** Urinary catheter specimen culture with at least 10^5 cfu/mL of any organism(s)	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 non-catheterized 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. 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 in place for >14 days).**
☐ **GastroIntestinal**	❒ Gastroenteritis	~~MUST HAVE at least 1 of the following:~~ ~~☐ 2 or more loose or watery stools above what is normal for resident within a 24 hr. period~~ ~~☐ 2 or more episodes of vomiting within a 24 hr. period~~ ~~☐ BOTH of the following:~~ ~~▪ stool culture positive for a pathogen (Slamonella, Shigella, E. Coli 0157:H7, Campylobacter(or a toxin assay positive for C. difficile toxin, AND at least one of the following: nausea, vomiting, diarrhea, abdominal pain or tenderness~~	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.

☐ **Gastrointestinal Tract**		**At least 1 criteria must be present:** ▪ Diarrhea: 3 or more liquid or watery stools above what is normal for the resident within a 24-hour period ▪ Vomiting: 2 or more episodes in a 24-hour period **OR** **Both of the following subcriteria:** ☐ A stool specimen testing positive for a pathogen (eg, *Salmonella, Shigella, Escherichia coli* O157 : H7, *Campylobacter* species, rotavirus) ☐ **At least one of the following subcriteria:** ○ Nausea ○ Vomiting ○ Abdominal pain or tenderness ○ Diarrhea	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 (e.g., rotavirus or *E. coli* O157 : H7)
	☐ Norovirus Gastro-enteritis	**Both criteria must be present:** **At least 1 of the following subcriteria:** ☐ Diarrhea: 3 or more liquid or watery stools above what is normal for the resident within a 24-hour period ☐ Vomiting: 2 or more episodes in a 24-hour period **AND** **Must have:** A stool specimen for which norovirus is positively detected by electron microscopy, enzyme immunoassay, or molecular diagnostic testing such as polymerase chain reaction (PCR)	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.
	❒Clostridium difficile infection	**Both criteria must be present:** **At least 1 of the following subcriteria:** ☐ Diarrhea: 3 or more liquid or watery stools above what is normal for the resident within a 24-hour period ☐ Presence of toxic megacolon (abnormal dilatation of the large bowel, documented radiologically)	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 >8weeks after the onset of a previous episode of *C. difficile* infection.
		AND **At least 1 of the following subcriteria:** ☐ 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 ☐ Pseudomembranous colitis is identified during endoscopic examination or surgery or in histopathologic examination of a biopsy specimen	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 coinfected with another pathogen. It is important that other surveillance criteria be used to differentiate infections in this situation.

☐ **Skin** **NOTE: Assure that personnel wear gloves for contact with rash or skin lesions and perform hand hygiene after glove removal**	☐ Cellulitis/soft tissue/wound	**At least 1 criteria must be present:** ☐ Pus present at a wound, skin, or soft tissue site ☐ New or increasing presence of at least 4 of the following subcriteria: ○ Heat at the affected site ○ Redness at the affected site ○ Swelling at the affected site ○ Tenderness of pain at the affected site ○ Serous drainage at the affected site One (1) Constitutional Criteria (see Table 2)	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.
	☐ Scabies	**Both criteria must be present:** ☐ A maculopapular and/or itching **AND** **At least 1 of the following subcriteria:** ☐ Physician diagnosis ☐ Laboratory confirmation (scraping or biopsy) ☐ Epidemiologic linkage to a case of scabies with laboratory confirmation	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.

Table 2: Definitions for Constitutional Criteria in Residents of Long-Term Care Facilities (LTCFs)

Fever	**1.** Single oral temperature >100°F OR **2.** Repeated oral temperatures >99°F OR **3.** Single temperature >2°F over baseline from any site (oral, tympanic, axillary)
Leukocytosis	**1.** Neutrophilia (>14,000 leukocytes/mm^3) OR **2.** Left shift (>6% bands or ≥1,500 bands/mm^3)
Acute change in mental status from baseline	**All criteria must be present:** **1. Acute onset** (Evidence of acute change in resident's mental status from baseline) **2. Fluctuating course** (Behavior fluctuating: eg, coming and going or changing in severity during the assessment) **3. Inattention** (Resident has difficulty focusing attention: eg, unable to keep track of discussion or easily distracted) **4. Either disorganized thinking or altered level of consciousness** a. **Disorganized thinking** (Resident's thinking is incoherent: eg, rambling conversation, unclear flow of ideas, unpredictable switches in subject) OR b. **Altered level of consciousness** (Resident's level of consciousness is described as different from baseline: eg, hyperalert, sleepy, drowsy, difficult to arouse, nonresponsive)
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)** **Bed mobility, Transfer, Locomotion within LTCF, Dressing, Toilet use, Personal hygiene Eating**