

## Infection Control in Long Term Care Facilities

Joyce Hayes-Berkowitz, RN, BSN, MPH, CIC, CWCN  
Infection Control Specialist

### Introduction

- Long Term Care Facilities (LTCFs) are unique in the fact that a certain level of medical care is being provided in a homelike setting.
- There are many opportunities for shared communal contact with one another including daily social activities, rehabilitation services, family interactions, and residents dine together in communal dining rooms.
- All of these situations provide opportunity for infection.

### Long Term Care Settings

- Stand-alone facility
- Corporation owned
- Part of extended-life community
- Adult day care
- Sub-acute care units
- Facilities specializing in wound care, rehabilitation, and ventilator care

### Risk Factors for Infections in the Elderly

- Decreased or absent cough reflexes
- Thinned skin barriers
- Reduced tear production
- Blunted fever responses
- Multiple co-morbidities
- Medications that may increase susceptibility to infections

### Infection Prevention and Control in LTCFs – A Short History

- Regulatory Bodies and Standards:
  - Omnibus Budget Reconciliation Act – Internal and external systems that govern LTCFs are defined through federal regulations and standards established by the Omnibus Reconciliation Act of 1987 (OBRA).
  - OBRA mandated the Health Care Financing Administration (HCFA), renamed in 2001 as the Center for Medicare and Medicaid Services (CMS), to develop a process to survey LTCFs to ensure quality care is provided.

### Infection Prevention and Control in LTCFs – A Short History (Cont.)

- Occupational Safety and Health Administration (OSHA) is part of the U.S. Department of Labor. OSHA regulations are specifically designed to protect employees. LTCFs follow the same regulations as acute care hospitals. The two most common OSHA regulations are:
  - Bloodborne Pathogen Standard
  - Tuberculosis Guidelines
- The Joint Commission (TJC) is a voluntary process. TJC does not have deemed status in LTC as it does in hospitals; therefore, the survey process cannot take the place of a CMS (state) survey.

## Infection Prevention in LTC

- One person in the facility is appointed to take responsibility for the infection prevention program. This person is preferably a registered nurse with clinical experience and some knowledge of infectious diseases.
- Typically, this person has other responsibilities other than infection prevention.
- Support from administration and other key departments is essential.

## Infection Control Program Components

- The infection prevention program is an essential component of the facility's quality functions. The components of an effective infection prevention program include:
  - Facility risk assessment
  - Active surveillance process
  - Definitions of infections approved by the quality committee
  - Defined methods to calculate infection rates
  - Data analysis
  - Reporting structure
  - Immunization program
  - Standard and transmission-based precautions
  - Hand hygiene

## Identifying Infections in LTC

- LTCFs host a very susceptible population, and the regular use of medical devices and procedures has increased in recent years. There has been an increase use of empirical antimicrobials that may lead to drug-resistant microorganisms.
- Other factors include limited diagnostic workup of patients and shortages of clinical personnel.
- Patient acuity in the LTC is ever increasing and resembles a sub-acute hospital more than ever. In this environment, infection surveillance is critical.
  - Surveillance is a systematic method of collecting, consolidating and analyzing data concerning the distribution and determinants of a given disease or events, followed by dissemination of that information to those who can improve outcomes.

## Definitions of Infections

- Infection criteria or definitions are used by the infection preventionist to determine the presence of infection for surveillance purposes. Definitions must be established and used consistently to generate infection rates which can be compared within the facility over time.
- Many LTCFs use the McGeer definitions of infection for surveillance, published in the "American Journal of Infection Control" in 1991. The APIC – HICPAC Surveillance definitions for home health care can also be adapted to LTCFs.
- Whatever definitions are decided upon, they should be approved by the facility's quality committee.

## McGeer Criteria for Infections in LTCFs

- This set of definitions was developed at a consensus conference held in January 1989.
- Discussion at the conference was based on definitions developed at Yale University and revised by the Co-Operative Infection Control Committee.
- These definitions have held up over the years.
- Recently, with the increased acuity in LTCFs, these definitions needed to be updated.
- In January 2013, revised definitions were proposed. We will revisit the McGeer criteria later in this presentation.

## McGeer Criteria Target Population

- Older adults
- Skilled nursing care
- Assistance in activities daily living (ADLs)
- Supervision – cognitively impaired
- Therapeutic options (IVs) limited
- Onsite diagnostics uncommon

## LTCF Criteria Guiding Principles

- Infection surveillance only
- Highly specific
- Applied retrospectively
- Focus on transmissible / preventable infections
  - Not for case finding
  - Not for diagnostic purposes
  - Not for clinical decision making

## LTCF Surveillance Definitions - All conditions Must be Met

- All symptoms must be new or acutely worse
- Alternative non-infectious causes of signs and symptoms should be considered first
- No infection can be based on a single piece of evidence
- Diagnosis by a physician insufficient

## LTCF Surveillance Programs What to Include?

Points to Consider	Infections	Comments
<i>A. Infections which should not be routinely included in surveillance</i>		
Limited		
1. Transmissibility	Ear, sinus, oral infections, fungal or viral (herpetic) skin infections	Rarely transmitted Associated co-morbid conditions
2. Preventability		
<i>B. Infections that should be routinely included in surveillance</i>		
1. Transmission evident	Influenza-like illness; <i>C. difficile</i> ; viral gastroenteritis and conjunctivitis	Associated outbreak in patients and HCW
2. Prevention possible		
3. Significant clinically	LRTI- Lower respiratory tract infection UTI- Urinary tract infection SSTI- Skin and soft tissue infection Pressure ulcers	These infections may be clinically significant in LTC. Protocols may help in prevention.
4. Serious outbreaks	Gr A Strep, scabies, flu, viral hepatitis, norovirus	Rare, highly contagious

## Surveillance in LTCF Proposed Revised Signs/Symptoms (McGeer Criteria)

- A. Fever
1. Oral single > 37.8°C (> 100°F) or
  2. Oral repeated > 37.2°C [99°F] or
  3. Any site > 1.1°C (2°F) over baseline
- B. Leukocytosis (New! This is a blood test)
1. Leukocytosis > 14,000 wbc/mm<sup>3</sup> or
  2. Left shift (>6% bands or ≥ 1,500 bands/mm)

**Note: for some elderly, a WBC of 10,000 or less may indicate infection!**

## Surveillance in LTCF Proposed New Signs and Symptoms (McGeer Criteria)

- C. Confusion Assessment Method – Mental status change from baseline. Remember! **Dehydration should be first consideration in mental status change.**
1. Acute onset and fluctuating course
  2. Inattention **AND**
  3. **Either** disorganized thought **or** altered level of consciousness
- D. Acute functional decline
1. New 3 point increase in total ADL score
    - a. 0-4 points per activity
    - b. 0-28 points per total score
  2. Activities that are assessed for ADL score
    - a. Bed mobility, transfers, locomotion, dressing, eating, toileting, personal hygiene

## Revised McGeer Criteria Definitions: No Changes

- Limited evidence to change definitions for:
  - Conjunctivitis
  - Ear infections
  - Sinusitis
  - Cold syndromes/pharyngitis
  - Cellulitis
  - Gastroenteritis
  - Systemic infections
  - Unexplained febrile episode

### Influenza-Like Illness: Proposed Revised Definition (McGeer Criteria)

- Both of the following criteria must be met:
  - Fever
  - Three or more new or increasing signs or symptoms
    - Chills
    - Headache or eye pain
    - Myalgias (muscle aches)
    - Malaise or anorexia
    - Sore throat
    - Dry cough
- Removed stipulation that diagnosis can only be made during flu season

### Pneumonia: Proposed Revised Definition (McGeer Criteria)

- All of the following criteria must be met:
  - CXR positive for:
    - Pneumonia or new infiltrate
  - One or more respiratory symptoms
    - Cough new/increased
    - Sputum new/increased
    - O2 sat < 94% or reduced 3% from baseline
    - Abnormal lung exam new or changed
    - Pleuritic chest pain
    - RR > 25 breaths/min
  - One or more changes in ability to perform ADLs
- Absence of other conditions such as CHF that could account for symptoms

### LRTI: (Bronchitis, Tracheitis) Proposed Revised Definition (McGeer)

- All of the following criteria must be met:
  - CXR not done or negative for:
    - Pneumonia or new infiltrate
  - Two or more respiratory symptoms:
    - Cough new/increased
    - Sputum new/increased
    - O2 sat < 94% or reduced 3% from baseline
    - Abnormal lung exam new or changed
    - Pleuritic chest pain
    - RR > 25 breaths/min
    - One or more changes in ability to perform ADLs
- Absence of other conditions such as CHF that could account for symptoms

### UTI: (No Catheter) Proposed Revised Definition (McGeer)

- Any one of the following:
  - Acute dysuria OR acute pain/testicular swelling, epididymis, or prostate
  - Fever OR increased WBC AND one or more of the following:
    - CVA/flank or SP (suprapubic) pain/tenderness, gross hematuria
    - New or marked increase in frequency, urgency, incontinence
  - Two or more new or increased:
    - Frequency, urgency, incontinence, SP pain, new gross hematuria
- AND
- Voided Urine culture with  $\geq 10^5$  cfu/ml any organism(s)
- UTI = Localizing signs and symptoms & urine culture (+)
- If no localizing S/S, UTI diagnosis made if: blood and urine positive with the same organism without alternate source
- Pyuria (white blood cells) alone does NOT differentiate UTI from asymptomatic bacteruria (organisms in urine)
- Absence of pyuria excludes UTI diagnosis
- In the absence of a clear source, fever or shaking chills with a positive urine culture are often treated. Evidence suggests that most episodes are NOT from a urinary source.

### UTI: (Catheter\*) Proposed Revised Definition (McGeer)

- Any one of the following:
  - Fever, shaking chills, OR new onset hypotension with NO alternate site of infection
  - Either acute change in mental status OR acute functional decline with NO alternate diagnosis AND increase in WBC
  - New onset suprapubic or flank pain
  - Purulent discharge around catheter or acute pain, swelling, tenderness testes, epididymis, or prostate
- AND
- Urine culture with  $\geq 10^5$  cfu/ml any organism(s). Obtained after catheter replaced if in > 14 days
- Chronic indwelling catheters
- In the absence of a clear source, acute confusion in a patient with a catheter and a positive urine culture are often treated, but evidence suggests that most episodes are NOT from a urinary source.
- Recent catheter trauma, obstruction, or new onset hematuria are useful localizing signs consistent with UTI, but not necessary for diagnosis.

### Cellulitis/Soft Tissue/Wound Infection: Proposed Revised Definition (McGeer)

- One of the following criteria met:
  - Pus present at a wound, skin or soft tissue site.
  - Four or more new or increasing signs or symptoms at the site:
    - Heat
    - Redness
    - Swelling
    - Tenderness or pain
    - Serous drainage
    - One constitutional S/S
- One or more beta hemolytic streptococcal infections may suggest an outbreak
- Use National Healthcare Safety Network (NHSN) criteria for skin and soft tissue infections
- Superficial cultures of pressure ulcers are not sufficient for the diagnosis of infection

### Scabies: Proposed Revised Definition (McGeer)

- Both of the following criteria met:
  - A maculopapular (raised rash with white papules) and/or itching rash
  - AND
  - One of the following:
    - Physician diagnosis
    - Scraping or biopsy positive
    - Epidemiological linkage to a case of scabies with lab confirmation
- Rule out non-infectious skin conditions such as eczema, allergy and irritation.
- Epi link = common source exposure, temporally-related onset, & geographic proximity to the facility.

### Gastroenteritis: McGeer Current Definition - Unchanged

- One criteria must be met:
  - Two or more loose or watery stools above patient baseline in 24 hours
  - Two or more episodes of vomiting in 24 hours
  - Both of the following:
    - Stool specimen positive for bacterial or viral pathogen
    - At least one compatible GI symptom such as nausea, vomiting, pain, diarrhea
- Exclude non-infectious causes of symptoms due to medications or gallbladder disease.

### Norovirus Gastroenteritis: Proposed New Definition (McGeer)

- Both criteria must be met:
  - Two or more loose or watery, non-bloody stools above patient baseline OR two or more episodes of unexplained vomiting in 24 hours
  - Stool specimen positive for norovirus by electron microscopy, ELISA, or polymerase chain reaction (PCR)
- In an outbreak, confirm the cause
- When lab confirmation not possible, assume diagnosis by Kaplan Criteria
- All Kaplan Criteria (clinical criteria) must be met:
  - Vomiting > 50% affected
  - Mean (median) incubation period 24-48 hours
  - Mean (median) duration illness 12-60 hours
  - No bacterial cause identified

### *Clostridium difficile* Infection: Proposed New Definition (McGeer)

- Both criteria must be met:
  - Diarrhea = 3 or more loose or watery stools above patient baseline within 24 hours, or the presence of toxic megacolon (enlarged) by x-ray
  - One of the following:
    - Stool positive for toxin A or B, OR by Polymerase Chain Reaction (PCR)
    - White blood cells found at endoscopy, surgery, OR biopsy.
- Primary episode
  - No prior episode or
  - >8 weeks prior
- Recurrent episode
  - ≤ 8 weeks prior and symptoms had resolved

### Infection Surveillance Attribution to LTCF

- No evidence of incubation on admission
  - Based on documentation of signs and symptoms
  - Not just by screening microbiology data
- Onset > 3 calendar days post admission
- Debate surrounding *C. difficile*
- Consistent acute care reporting
- Critical role of nursing assessment of subtle changes and prompt follow up are key!

### Infection Surveillance in LTCF Summary

- Most McGeer criteria retained
- Most changes minor
- UTI revisions more specific
- New definitions for norovirus
- New definitions for *C. difficile*
- Consistent definitions needed
- Infection rates provide comparison over time with ability to develop actions items
- Critical role of nursing assessment of subtle changes with prompt follow up with primary clinician.