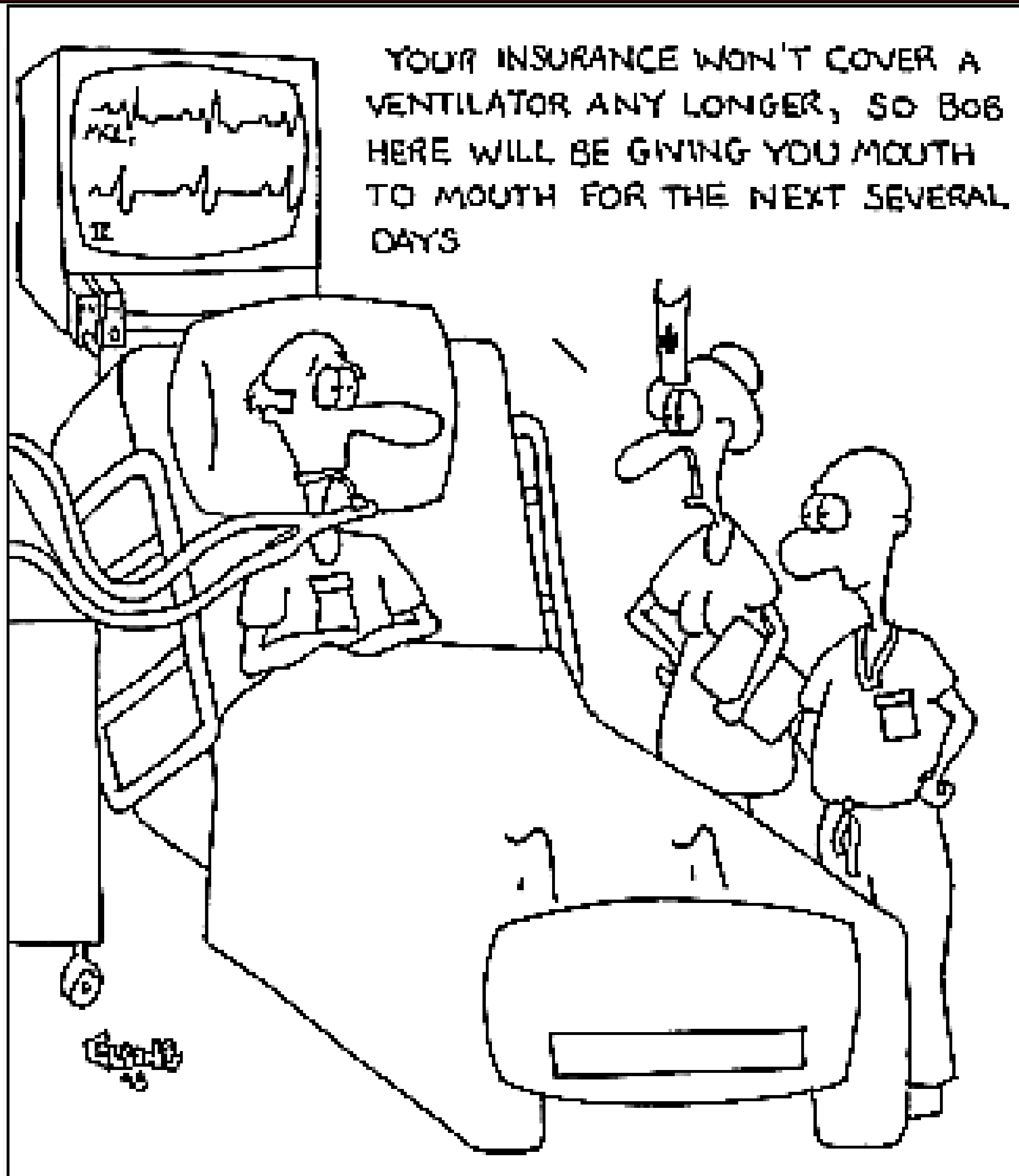
YOUR INSURANCE WON'T COVER A VENTILATOR ANY LONGER, SO BOB HERE WILL BE GIVING YOU MOUTH TO MOUTH FOR THE NEXT SEVERAL DAYS

LTCF Guidelines for the IP/ICP/IPC

Presented on behalf of

Robert Berg, CLS, CIC
Wendy Long-Brandt, RN
September 2010

Objectives

- Participant will be able to discuss the Definitions for HAI in LTCF
- Participant will be able to identify surveillance challenges in the LTCF
- Participant will be able to evaluate the differences between the HAI definitions in the Acute Care Facility vs LTCF

R

LTCF

- 1997-2006: Number of LTCF increased 8.8% per year
- Number of comorbidities significantly increased:
  - 5.0 (1997-2000)
  - 5.8 (2004-2006)
  - $p<.001$

Jeremy M. Kahn, MD, et al. *Long-term Acute Care Hospital Utilization After Critical Illness. JAMA.* 2010;303(22):2253-2259.

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LTCF

- HAI range from 1.8 to 13.5 per 1000 resident days
- Death rate due to infections: 0.04 to 0.71 per 1000 resident days (esp: PNA)
- Most common infections in LTCF's include:
  - UTIs, Pneumonia, Influenza, Gastrointestinal infections, Skin and Soft Tissue infections and Conjuntivitis

Smith, PW MD, et al. *SHEA/APIC Guideline: Infection prevention and control in the long-term care facility.* July 2008

W

Systems Affecting LTCFs

- TJC, OSHA, AHA, American Assn of Homes for the Aging
- Reimbursement system (Prospective payment, insurance, private pay, Medicare, VA, etc)
- State: CDPH
- Federal: Omnibus Budget Reconciliation Act 1987 requires LTCF to have IC Program

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IC Program

- IC Program
  - Surveillance (systematic data collection to ID residents)
  - Outbreak Control
  - Isolation or Enhanced Standard Precautions (ESP)
  - IC P&P
  - Education
  - Resident health program
  - Antibiotic stewardship (system for abx review and control)
  - Disease reporting to public health
  - Facility mgmt (environmental control, waste mgmt, product eval, disinfection, sterilization and asepsis)
  - Resident safety
  - Preparedness planning
- Monitor and Document each infection
  - Line list of residents on ABX
    - May need to expand list to include all residents with communicable diseases (scabies)
  - Line list of residents with MDRO and CDAD history ("flag" the chart)

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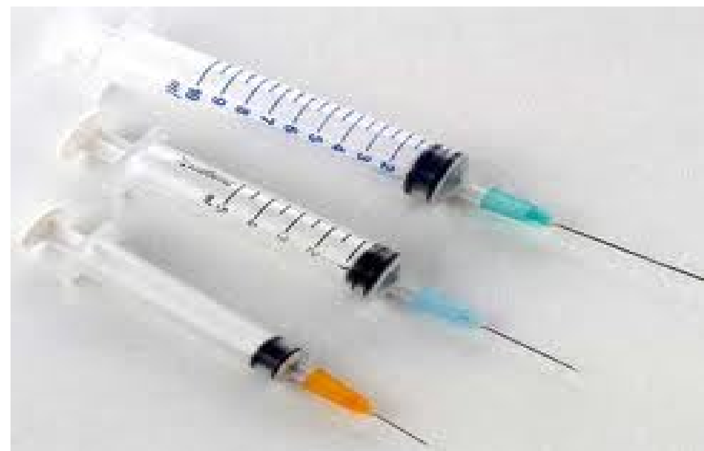
Residents' Health Program

- Vaccinations
  - Influenza
  - Pneumonia
  - Other
    - Monitor impact of treatment to the resident



- Monitoring for TB exposure/acquisition
  - 2 step TST upon admission for qualifying residents
- Yearly evaluation of BBP control Plan

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Documenting the effectiveness of your IC Program

- Report to PI or Quality Council at least Quarterly
  - Review actions and practices of IC Program
    - Surveillance and Investigations
    - Report any Preventative and Control measures done (this may include education to staff, family and visitors)
    - Reports to external agencies as required

Challenges: Surveillance

- Elderly present with atypical symptoms
  - Confusion rather than fever or hypotension is often seen in septic shock
  - Most residents with bacterial pneumonia do not have productive cough or signs of consolidation on physical exam
  - Some hospital-based definitions don't apply: urgency, dysuria, sore throat, nausea, extremity pain may not be reliably elicited from a population with high incidence of dementia.
- Clinical-based definitions is handicapped by:
  - Incompleteness of medical record
  - Brevity of nurses' notes
  - Infrequency of physician visits
- Ability to obtain cultures or CXR is hampered by availability and cost

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Challenges: Patient-Related

- Elderly population: increased incidence and severity of many infectious diseases; vulnerability due to:
  - Age-related decline in immunologic function and antibody production
  - Variety of local host defense problems predisposing patient to infection
    - Thinning of skin (cellulitis)
    - Gastric achlorhydria (salmonellosis)
    - Urinary retention (UTI)
    - Decreased mucociliary clearance of bacteria from airways (PNA)
    - Decreased tear production (conjuntivitis)
  - Underlying diseases (DM, malignancy, persistent vegetative state)
  - Depressed mental status (dementia) may lead to aspiration PNA and pressure ulcers

Challenges: Infection Preventionist

- May have multiple roles
  - Quality and Patient Safety
  - Occ Health
  - Risk Mgmt
  - Patient Care
- May lack resources for IC training and CE
- May lack medical director trained in epidemiology
- Regulatory bodies require training but not IC Certification

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Barriers to Infection Prevention

- Staffing
  - Nurse: Patient ratio is high
  - Staff may work in multiple LTCF or in unrelated fields
  - Staffing turnover
  - Contract employees: unfamiliar with IC policies and procedures
  - Staff require specialized training to care for this complex population

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Barriers to Infection Prevention

- LOS duration ≥25 days
- Resident supplies, personal items, and medical equipment may impede effective cleaning and disinfection
- Families less likely to comply with Transmission-based Precautions
- Resident may resist personal hygiene expectations of the facility

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Barriers to Infection Prevention

- Incontinence
- Coughing
- Wounds or breaks in skin
- Long term invasive devices
- Immunocompromised
- Poor nutrition
- Communication barriers
- Poor mobility
- Scarcity of handwashing facilities
- Absence of private rooms
- Group socialization and activities (meals, games, ambulation, etc)
- Facilities often old with archaic ventilation and plumbing systems

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Gold Standard: CDC/NHSN Challenges: Surveillance

- NHSN definitions are largely *Lab-based* and lack **sensitivity** in LTCF
- *Clinical-based* definitions lack **specificity**
  - In LTCF, many diagnoses are made over the phone and the majority of abx are prescribed over the phone, therefore this lacks **specificity**

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Definitions for LTCF

- Historically, there have been no validation of any definitions for LTCF
- In 1991, Canadian consensus group developed set of definitions specific to LTCF
  - McGeer. et al: *Definitions of Infection for Surveillance in long-term care facilities, Am J Infect Control* 19(1):1-7, 1991). Still found on APIC web site
  - http://www.**apic**.org/AM/Template.cfm?Section=Definitions_and_Surveillance&Template=/CM/ContentDisplay.cfm&ContentFileID=24
  - http://www.**cdc**.gov/ncidod/dhqp/gl_longterm_care.html

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Principles

- All symptoms must be new or acutely worse.
  - Many residents have chronic conditions.
  - Look for change in status
- Noninfectious causes to be ruled out
- Use Micro and Radiological data only to confirm clinical evidence

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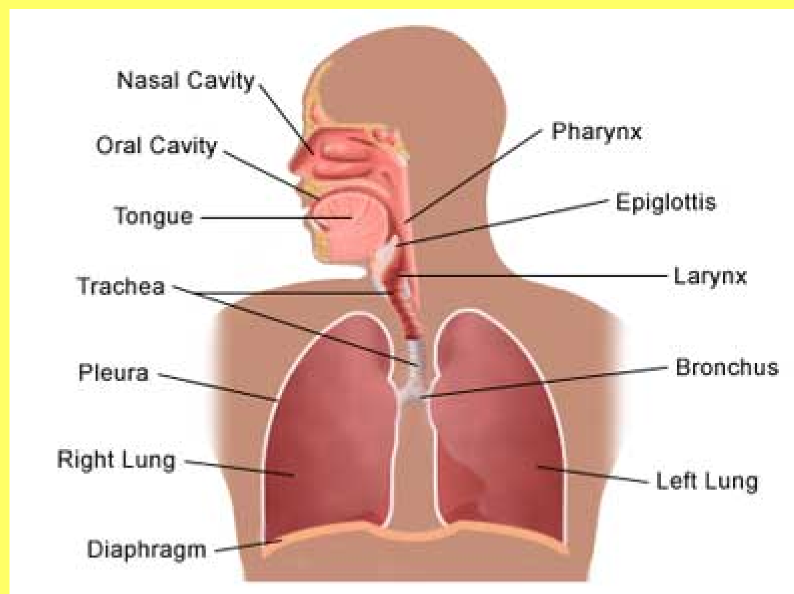
Respiratory Tract Infection



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Pneumonia

- Residents with PNA have higher mortality than elderly in the community
- Predisposing factors
  - Decreased clearance of bacteria from airways
  - Altered throat flora
  - Poor functional status
  - Presence of feeding tubes
  - Swallowing difficulties
  - Aspiration
  - Inadequate oral care
  - Underlying diseases (COPD and heart disease)

Pneumonia

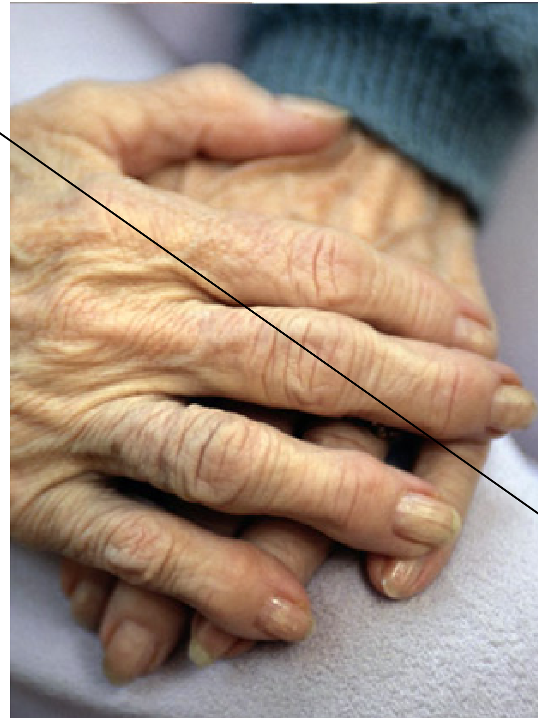
Clinical presentation often atypical

- 70% ▶ fever
- 61% ▶ new or increased cough
- 38% ▶ altered mental status
- 23% ▶ respiratory rate >30

Pneumonia

Recommendations for suspected PNA

- Pulse oximetry
- CXR
- CBC w/diff
- BUN



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Pneumonia

Etiologic agents

- 13% Strep pneumo
- 6.5% H. flu
- 6.5% Staph aureus
- 4.5% Moraxella catarrhalis
- 13% Gram negative coliforms

Pneumonia

Preventive strategies

- Hand washing after contact with respiratory secretions
- Glove use when suctioning
- Elevating head of bed 30-45° during and for ≥1hr after tube feeding
- Reducing sedative/hypnotic use
- Pneumococcal vaccination (residents ≥65yo)

Definition: Pneumonia

- Both of the following must be met
  - CXR demonstrates PNA, probable PNA, or the presence of infiltrate. If previous CXR is available, the infiltrate should be new, **AND**
  - The resident must have ≥2 s/s described under lower respiratory tract infections.
- Note: Rule out non-infectious causes (eg: CHF)

Definition:
Lower Respiratory Tract Infection,

other (bronchitis, tracheobronchitis)

- This dx can be made only if no CXR done or if CXR did not show PNA, **AND**
- ≥3 of the following

New or increased cough New or increased sputum production Fever ≥38C Pleuritic chest pain	New or increased findings on chest exam (rales, rhonchi, wheezes, BBS) One of the following indications of change in status or breathing difficulty: · New/increased SOB · Resp rate >25 · Worsening mental or functional status

Definition: Common Cold/Pharyngitis

Resident with or without fever

- ≥ 2 of the following
  - Runny nose or sneezing
  - Stuffy nose (congestion)
  - Sore throat or hoarseness or difficulty swallowing
  - Dry cough
  - Cervical lymphadenopathy

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Definition:
Influenza-like Illness (only during flu season)

- If criteria for flu is met along with another upper or lower respiratory infection, only flu-like illness should be recorded.
- Both of these to be met
  - Fever ≥38C, **AND**
  - ≥3 of the following:

Chills	Malaise or loss of appetite
New headache or eye pain	Sore throat
Myalgias	New or increased dry cough

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Urinary Tract Infection

Urinary Tract Infection--Background

- Symptomatic UTI less frequent than respiratory infections
- Predisposing factors
  - Stroke
  - Immobility
  - Incontinence
  - Catheterization
  - Abx prophylaxis
- Symptoms:
  - Dysuria/frequency (cystitis)
  - Fever/flank pain (pyelonephritis)
- Elderly may have atypical/non-localizing symptoms
- Bacteriuria prevalence is high: positive urine culture, with or w/o pyuria (>10wbc/hpf), is not sufficient to dx UTI.

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Urinary Tract Infection--Background

- Foley: 7% to 10% prevalence
- Catheterized urinary tract is most common source of bacteremia in LTCF
- Fever presentation (alone) is common
- Residents with Foley are uniformly colonized with bacteria (dt: biofilm on catheter)
- Asymptomatic bacteriuria: don't screen; don't work-up; don't treat

Urinary Tract Infection--Background

- Specimens collected through catheter present for more than a few days represent biofilm microbiology
- Therefore: change Foley prior to urine collection (to get bladder specimen)
- Changing Foley associated with more rapid subsidence of fever and lower risk of early symptomatic relapse post-therapy

Urinary Tract Infection--Background

Preventive Strategies

- Aseptic insertion of Foleys by trained personnel
- Hand hygiene before and after manipulation
- Maintain closed system
- Do not irrigate unless obstructed
- Keep collection bag below bladder and keep tubing uncoiled
- Adequate resident hydration
- Use smallest sized Foley as possible
- Use a securement/stablization device

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Definition:
Urinary Tract Infection

- With Indwelling Catheter
  - Must have ≥2 of the following:
    - Fever ≥38C or chills
    - New flank or suprapubic pain or tenderness
    - Change in character of urine (ie: new bloody, foul smell, amount of sediment, new pyuria, new microscopic hematuria)
    - Worsening of mental or functional status (may be as simple as new or increased incontinence)

A change in character of urine (color, foul smell, amount of sediment) may be indication of dehydration; increase fluid intake for 2-4 hours before obtaining specimen for laboratory analysis

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Definition: Urinary Tract Infection

- No Foley
  - Must have ≥3 of the following:
    - Fever ≥38C or chills
    - New or increased burning pain on urination, frequency, or urgency
    - New flank or suprapubic pain or tenderness
    - Change in character of urine (ie: new bloody, foul smell, amount of sediment, new pyuria, new microscopic hematuria)
    - Worsening of mental or functional status (may be as simple as new or increased incontinence)

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Urinary Tract Infection Notes:

- Urine culture results are not included in the criteria
- Most common occult infectious source of fever in catheterized residents is the urinary tract: therefore the combination of fever and worsening mental or functional status in such residents meets the criteria for UTI…take care to R/O other causes of these symptoms

Definition: Eye

- Conjunctivitis (need one of the following)
  - Pus from one or both eyes; present for ≥24hrs
  - New or increased conjunctival redness, w/ or w/o itching or pain, present for ≥24hrs (aka: pink eye)

- Note: symptoms must not be due to allergy or trauma to the conjunctiva

Eye (Conjunctivitis)

- May be sporadic or outbreak-associated
- May be viral or bacterial
- S. aureus $\Rightarrow$ most frequent bacterial isolate
- Epidemic conjunctivitis may spread rapidly
- Transmission occurs thru contaminated eye drops or hand cross contamination
- Gloves to be worn for contact with eyes or ocular secretions, with HH performed immediately after removal of gloves.

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Definition: Ear

- Ear infection (need one of the following)
  - Dx by physician* of any ear infection
  - New drainage from one or both ears. (non-purulent drainage must be accompanied by additional symptoms, such as ear pain or redness)
- * Notes:
  - Requires written documentation by physician specifying dx, usually implies direct assessment of resident by physician/PA/NP.
  - Antibiotic order alone does NOT fulfill this criterion.

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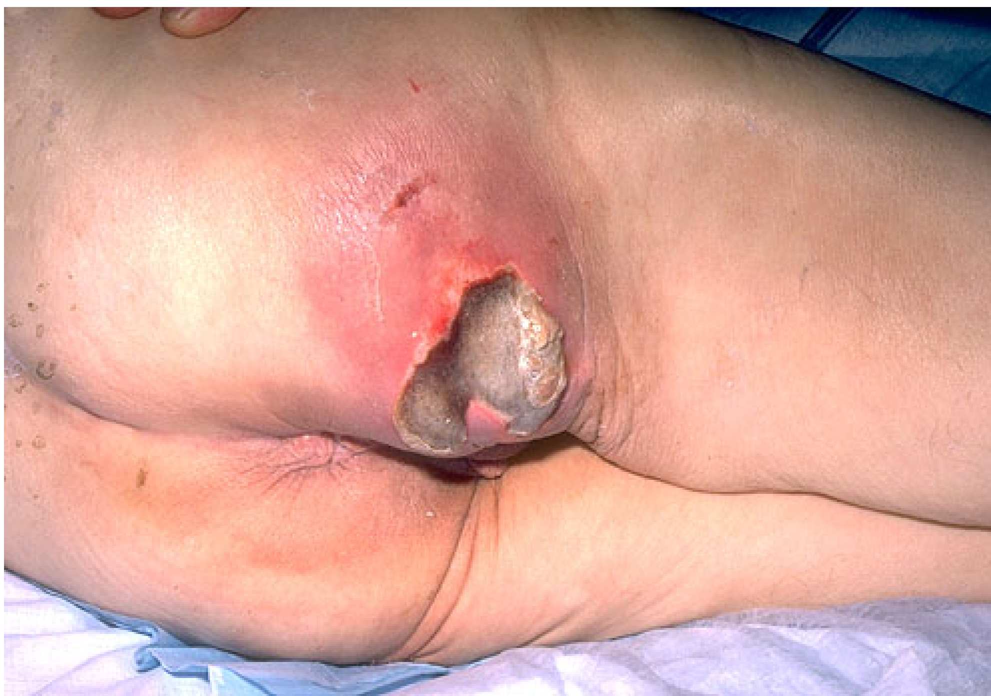
Definition: Mouth / Sinus

- Oral and peri-oral infections, including thrush, must be diagnosed by physician or dentist

- Sinusitis must be diagnosed by physician

Skin / Soft Tissue Infection

- Decub's ⇒ up to 20% of residents
- Sequellae: cellulitis, osteomyelitis, bacteremia
- Secondary bacteremic infections ⇒ 50% mortality



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Definition:
Skin Infection (Cellulitis / Soft Tissue / Wound)

- ≥1 of the following:
  - Pus present at a wound, skin, or soft tissue site
  - Resident must have ≥4 of the following s/s:
    - Fever ≥38C or worsening mental/functional status
    - Presence of new or increasing **heat** at the site
    - Presence of new or increasing **redness** at the site
    - Presence of new or increasing **swelling** at the site
    - Presence of new or increasing **tenderness/pain** at the site
    - Presence of new or increasing **serous drainage**

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Definition:
Skin Infection (Fungal Skin Infection)

- Must have both:
  - Maculopapular rash
  - Either physician dx or laboratory confirmation

- Note:
  - Lab confirmation = positive smear for yeast or culture for *Candida* spp
  - Care must be taken to ensure that rash is not allergic or secondary to skin irritation

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Definition:
Skin Infection (Herpes [zoster or simplex])

- Must have both:
  - Vesicular rash
  - Either physician dx or laboratory confirmation

- Note:
  - Lab confirmation = positive electron microscopy or positive culture of scraping or swab
  - Care must be taken to ensure that rash is not allergic or secondary to skin irritation

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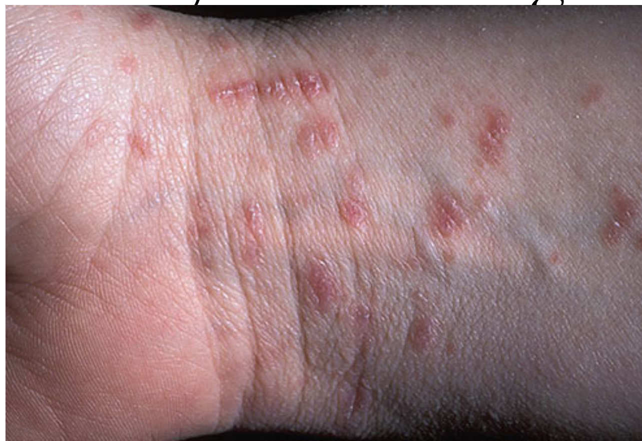
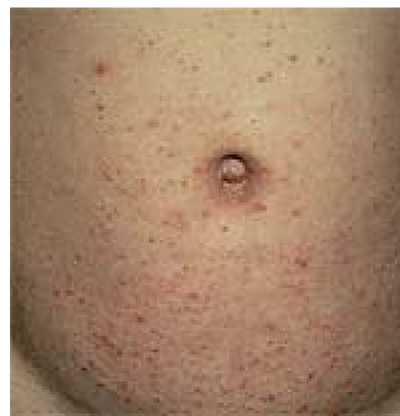
Skin Infection (Scabies)

- Typical presentation:
  - Erythema and excoriations (inter-digital spaces of fingers, palms, wrists, axilla, waiste, buttocks and perineal area)
- Atypical presentation (usual for LTCF):
  - Any rash ⇒ high index of suspicion





Definition:
Skin Infection (Scabies)

- Must have both:
  - Maculopapular and/or itching rash
  - Either physician dx or laboratory confirmation

- Note:
  - Lab confirmation = positive microscopic examination of skin scrapings
  - Care must be taken to ensure that rash is not allergic reaction or secondary to skin irritation

GI Tract Infection--Gastroenteritis

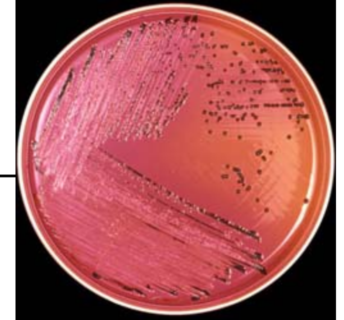
- Viral (rotavirus, enterovirus, norovirus)
- Bacterial (Cdiff, Bacillus cereus, E.coli, Campy spp, C.perfringens, Salmonella, etc)
- Parasites (Giardia)

- Increased risk:
  - Achlorhydria
  - Person to person spread (shared bathroom, dining, rehab facilities)

GI Tract Infection—Foodborne Illness

- Spreads rapidly (fecal/oral route)
- Viruses, Salmonella, Shigella, C.perfringens, Rotavirus
- Case fatality rate: ~10x higher than other settings.

GI Tract Infection—Foodborne Illness Salmonella outbreak



Preventive Strategies

- Thorough cooking of all meet and poultry
- Rapid chilling of any cooked food to be used later
- Preventing contamination of cooked food by raw food in prep areas
- Particular care with egg use in cooking (egg shells = source of salmonella)

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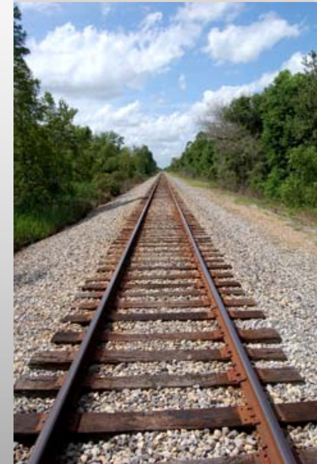
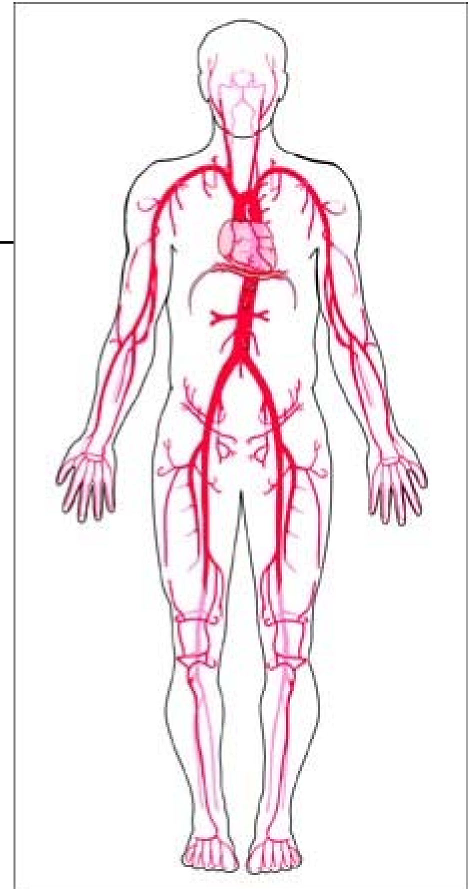
Definition:
GI Track Infection



- One of the following:
  - ≥2 loose or watery stools above what is normal for the resident within a 24-hr period
  - ≥2 episodes of vomiting in a 24-hr period
  - Both of the following:
    - Stool culture positive for pathogen (Salmonella, Shigella, Ecoli O157:H7, Campy) or a toxin assay positive for C.diff
    - ≥1 s/s of GI tract infection
      - Nausea
      - Vomiting
      - Abdominal pain or tenderness
      - Diarrhea
- Note: care must be taken to R/O noninfectious causes of symptoms (new meds, gallbladder disease, etc)

Blood Stream Infection



- Very rare but can be Primary or Secondary
- Primary: becoming more common due to increased acuity of residents and use of IV devices
- Secondary: most common source is UTI (E.coli $\Rightarrow$ 50% of cases)

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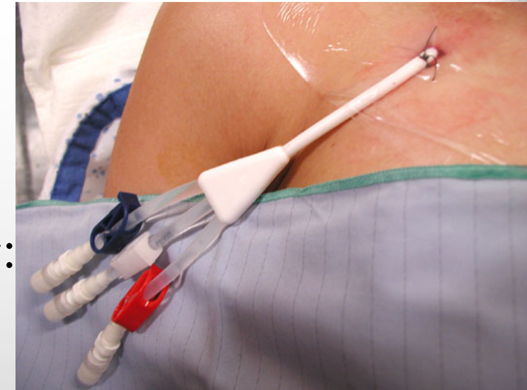
Definition: Systemic Infection (Primary BSI)



- One of the following:
  - ≥2 blood cultures positive for same organism
  - A single blood culture with an organism thought not to be a contaminant AND ≥1 of the following:
    - Fever ≥38C
    - New hypothermia (<34.5C or does not register on thermometer being used)
    - Drop in systolic BP of >30 mm Hg from baseline
    - Worsening mental/functional status
- Note: BSI related to infection at another site are reported as secondary BSI and are not included as separate infections.

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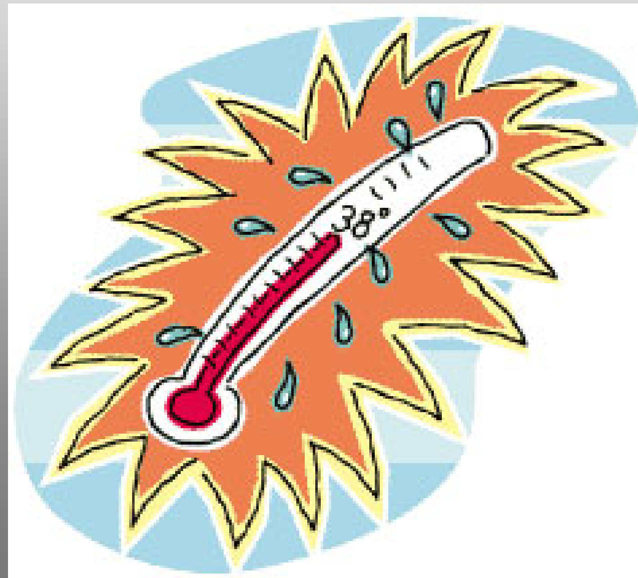
Definition: Unexplained Febrile Episode

- Resident must have documentation in the chart of fever ≥38C on ≥2 occasions at least 12 hrs apart in any 3-day period, with no known infectious or non-infectious cause



Initiation of Abx in LTCF

Loeb, M et al, Development of minimum criteria for initiation of antibiotics in residents of long-term-care facilities: results of a consensus conference. Infect Control Hosp Epid 2001;22:120-124.

- Bacterial infections common in LTCF, yet studies range from 22% to 89% of abx in this population as inappropriate
- Clinical decision challenging
  - Difficult to establish dx (diagnostic accuracy and reproducibility of clinical features of infections that occur in this population are poor.
  - Difficult to obtain hx
  - Since diagnostic testing may be difficult in institutionalized pts, empiric prescribing is common.

Initiation of Abx in LTCF Skin and Soft Tissue Infections

- New or increasing purulent drainage at a wound, skin, or soft-tissue site
- Or, ≥2 of the following
  - Fever >37.9C, or ≥1.5C above baseline temp
  - Redness
  - Tenderness
  - Warmth at site
  - New or increasing swelling at site

Minimum Criteria for Abx Initiation Respiratory Infections -- Febrile

- Febrile Resident (>38.9C)
  - ≥1 of the following
    - Resp rate >25 per min
    - Productive cough
- Febrile Resident (38C to 38.9C or >1.5C increase above baseline temp)
  - Must have cough **AND** at least 1 of the following
    - Pulse >100bpm
    - Delirium (disturbance of consciousness with reduced ability to focus, shift, or sustain attention; change in cognition or development of a perceptual disturbance not netter accounted for by dementia; and development of symptoms over a short period of time)
    - Rigors (shaking, chills)
    - Resp rate >25

Minimum Criteria for Abx Initiation Respiratory Infections -- Afebrile

- Afebrile Resident **with** COPD
  - New or increased cough with purulent sputum production
- Afebrile Resident **without** COPD
  - New or increased cough with purulent sputum production
  - AND at least 1 of the following
    - Respiratory rate >25
    - Delirium

Minimum Criteria for Abx Initiation Respiratory Infections -- CXR

- CXR ⇒ new infiltrate thought to represent PNA, any one of the following would constitute minimum criteria to initiate Abx
  - Resp rate >25
  - Productive cough
  - Fever >37.9C or ≥1.5C increase above baseline
- Refer to ICHE document for more specifics

Minimum Criteria for Abx Initiation UTI – **with** Catheter (foley or suprapubic)

- Presence of at least 1 of the following:
  - Fever >37.9C (or ≥1.5C increase over baseline)
  - New costovertebral tenderness
  - Rigors with or without identified cause
  - New onset of delirium

Minimum Criteria for Abx Initiation UTI – **without** Catheter (foley or suprapubic)

- Acute dysuria alone
- Or, fever >37.9C (or ≥1.5C increase over baseline)
- AND at least one of the following
  - New or worsening urgency, frequency, suprapubic pain, gross hematuria, costovertebral angle tenderness, rigors with or without identified cause, or urinary incontinence

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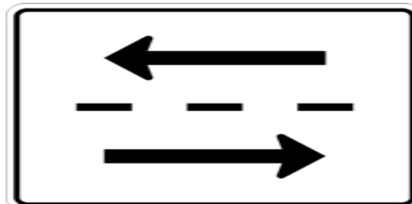
Acute Care  LTCF

Two-way Street

- Communication is a 2-way Street
  - MDRO hx
  - Vaccination hx
  - Infectious diseases in last 3 months
  - Co-morbidities
  - Current problems

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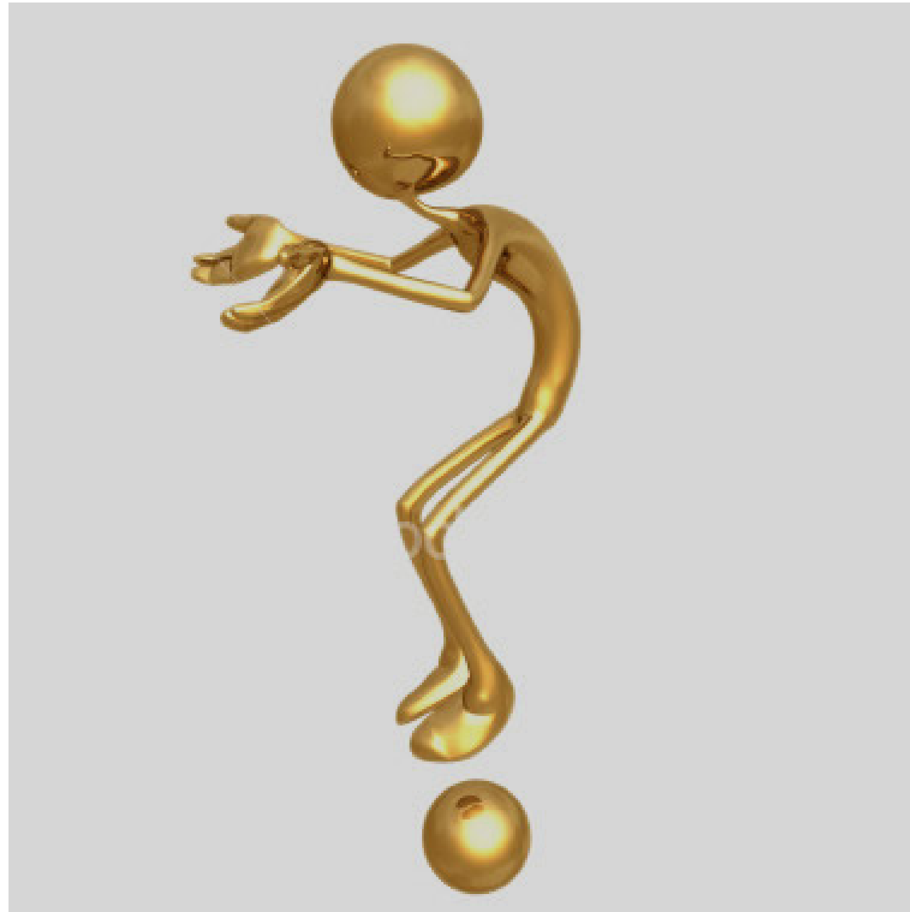
No Worries

According to CMS, if HCP are in compliance with facility infection prevention process measures the occurrence of HAI should be low.

California Department of Public Health AFL 10-27, September 7, 2010

Questions ??



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