


Long Term Care

Christina McNamara, Queen Elizabeth II HSC and Jim Gauthier, Providence Care
Broadcast live from the 2014 IPAC Canada conference

Broadcast Live From

Long Term Care

Urinary Tract Infections –
Management, Antibiotic Use,
Dementia and Infections
Christina McNamara
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Why Granny Gets Sick: Training the
Non-Regulated Healthcare Worker
Jim Gauthier
Providence Care, Kingston

www.webbertraining.com May 27, 2014

Urinary Tract Infections in Older Adults

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Geriatric Medicine

WHY NOW?



“There’s *Something Going
On with Prince Phillip*”

The HEADLINES:

Prince Philip to miss the rest of
Jubilee weekend after being
hospitalized with infection (after
standing for four hours on that boat
in the freezing rain)

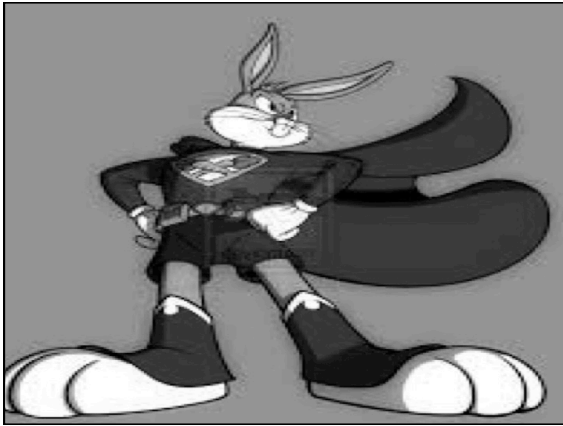
Why Now?

- It is the most common infection among LTC residents
- It is challenging to diagnose.
- It requires good intraprofessional communication.
- Nurses play a key role in proper assessment and appropriate treatment.

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Why Now?

Drug-resistant superbugs kill as many as people as the flu does each year, in the US.

The Center of Disease Control and Prevention (2013):

Why Now?



- "If we're not careful, the medicine chest will be empty" when we need infection-fighting drugs, said CDC Director Dr. Tom Frieden.

Objectives

- To define a urinary tract infection and terms related to a UTI.
- To discuss atypical disease presentation.
- To review the approach to the urinary tract infection in older adults.
- To review treatment options for the older adult.
- To evaluate a typical case presentation

Definitions

Urinary Tract Infection

- Significant bacterial count (10^8 cfu/L) present in a clean-catch or midstream urine specimen accompanied by symptoms of UTI (Table 1) and confirmed by urine culture and sensitivity (C&S)

Definitions

Asymptomatic Bacteriuria -ASB

- **High colonies of uropathogens**
- **High colony count $\geq 10^5$ cfu/L** (colony forming units)
- **Presence of bacteria without symptoms.**

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Definitions

Pyuria

- is the presence of pus (leukocytes or white blood cells) in the urine.
- Most common infection in the urinary system.

Definitions

Pyelonephritis

- Infection in the kidneys
- Can start in the kidneys
- Can be an ascending urinary tract infection.

Definitions

Acute Cystitis

- Urinary tract infection.
- High colony count greater than $\geq 10^5$ cfu/L
- With symptoms

Definitions

Relapse UTI's

- Repeat urinary tract infection within 4 weeks
- Same infecting organism

Definitions

Recurrent UTI

- >3 culture confirmed UTIs in 1 year. 3 with the same or different organisms
- >2 culture confirmed UTIs in 6 months with the same or different organisms

Symptoms

Symptoms of UTI in adults vary

- dysuria
- frequency
- urgency
- nocturia
- hematuria
- pyrexia (fever)

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Symptoms

- low back
- suprapubic pain
- urinary incontinence
- cloudy foul smelling urine

Thomas & Porter, 2011

Symptoms with a Catheter

- No other cause for infection
- Rigors
- New pain
- cloudy foul smelling urine

Thomas & Porter, 2011

Body Temperature

Is lowest in the predawn hours, at 36.1°C (97°F) or lower, and rises to 37.4°C (99.3°F) or higher in the afternoon.

Normal body temperature is maintained by thermoregulatory mechanisms that balance heat loss with heat production.

The Challenge

Elevated Temperature

What is this in the elderly?

1.1C above baseline

Febrile response if often delayed

Elevated temp. not specific for UTI's

The Challenge

One study found that less than 10% of all elevated temperatures in LTCF were due to a UTI

(Orr et al., 1996)

Malodorous



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Malodorous

One study of LTCF residents found that urine odor or absence of odor misled the diagnosis of bacteriuria in over one-third of all cases

Several studies have shown it is not a valid indicator of a UTI.

Improved toileting and hydration may improve this problem better than antibiotics

Midthun, Paur, & Lindseth, 2000

Frailty

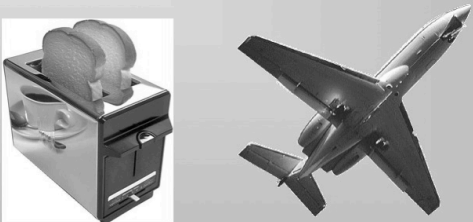
- How do we define frailty?
- What are the key factors that should go into a definition?
 - Weakness?
 - Malnutrition/cachexia?
 - Social isolation?
 - Cognitive impairment?
 - Comorbidities?
 - Problems with function or mobility?
 - Age?
 - Others?

Frailty: How to describe it...

- Campbell & Buchner, 1997:
- ‘a condition or syndrome which results from a multi-system reduction in reserve capacity to the extent that a number of physiological systems are close to or past the threshold of clinical failure’

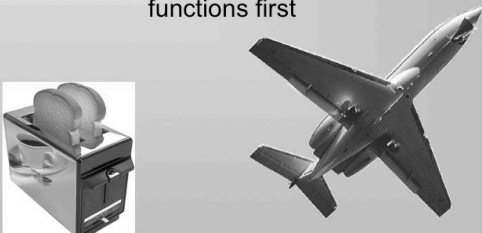
Campbell, A. J. & Buchner, D. M. (1997). Unstable disability and the fluctuations of frailty. *Age Ageing*, 26(4), 315-18.

Humans are complex systems



The image shows a toaster on the left and a fighter jet on the right, illustrating the concept of humans as complex systems.


When complex systems are frail, they clinically fail with their highest order functions first



The image shows a toaster on the left and a fighter jet on the right, illustrating the concept of humans as complex systems.

The highest order functions of humans:

- Ambulation
- Divided attention
- Use of tools
- Social graces




A small image of a fighter jet is positioned in the bottom right corner of the slide.

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Failures in the highest order functions → Geriatric Giants:

- Ambulation → Falls
- Divided attention → Delirium
- Use of tools → Functional decline
- Social graces → Incontinence and behavioral problems



Clinical Frailty Scale:



1. Very Fit
2. Well
3. Managing Well
4. Vulnerable
5. Mildly Frail
6. Moderately Frail
7. Severely Frail
8. Very Severely Frail
9. Terminally ill

1. Canadian Study on Health and Ageing
2. A. Fitzwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005; 173:462-467

Symptoms in the Older Adult in LTC

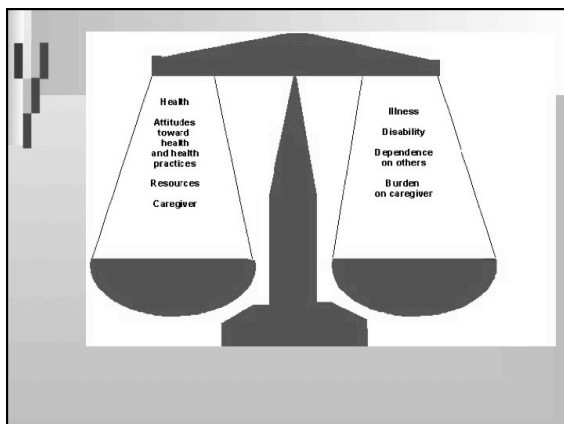
Falls – “take to bed”

Altered Cognition-Delirium “This is not my Mom”

Altered Level of Function
These patients may not be able to voice concerns.

Geriatric Emergency - Delirium

- Life threatening emergency, particularly for older adults,
- If unrecognized, can result from permanent disability or death.
- Health professionals do not recognize this & don't “listen”
- Ask “is this a change?”



Delirium

- Delirium is a sensitive, but non-specific marker of illness in frail older adults.
- Delirium occurs because staying alert is a complex function that requires high order integration of multiple systems; frail older adults lose this integrative ability.

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Signs that a patient might be delirious

- **Patient exhibits:**
 - inattention
 - fluctuation
 - psychomotor retardation
 - psychomotor agitation

The Alberta Health Approach
LTC checklist

- **Typical Symptoms-Indwelling catheter**
- **Medical status- not deteriorating rapidly –Push fluids for 24 hours**
- **Align treatment with Goals of Care**

The Alberta Health Approach
LTC checklist

- **Additional information**
 - Creatinine Clearance
 - Allergies
- **Discussion with the team to ensure guidelines**
 - Bugs and Drugs
 - Anti –infective Guidelines

The Alberta Health Approach
Practice points

- **If more than 3 organisms- Contamination**
- **Consider clysis –oral intake<1L**
- **Do not repeat C&S after therapy**

The Alberta Health Approach
LTC checklist

- **Urine for C&S**
- **Results**
- **Antibiotic or Not**

Prevention

- ✓ **Limit the use of catheters**
- ✓ **Ensure proper hydration**
- ✓ **Good perineal hygiene**
- ✓ **Education**

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Diagnosis

Urine culture is gold standard for diagnosis of UTI

Midstream for urinalysis and urine culture is what is recommended.

In/Out Catheter

Treatment

Asymptomatic Bacteriuria is a benign condition and is not an independent risk factor for mortality in older adults.

Treatment of asymptomatic bacteriuria generally is not indicated, but symptomatic urinary tract infection of the lower or upper tract dictates antibiotic therapy.

The Anti-infective Review Panel (2010)

- Minimum criteria for antibiotic treatment for suspected UTI if no catheter:
 1. acute dysuria *alone* or
 2. fever and (at least one of) new or worsening urgency, frequency, suprapubic pain, gross hematuria, CVA tenderness, incontinence.

Antibiotic Therapy

- Minimum criteria with a catheter: (at least one of) fever, new CVA tenderness, rigors, or new onset of delirium.

Antibiotics Therapy

Consider the Creatinine Clearance
Macrobid (nitrofurantoin)

do not use if the renal function is under 40mls/min.

Septa DS brain and kidneys take a hit. High rates of delirium. Single strength used with caution

Antibiotic Therapy

Empiric antibiotic therapy should target ECOLI which causes 85-90% of all UTI's

There is increasing resistance of UTI pathogens to commonly used antibiotics

Common choices amoxicillin or Keflex – As long you don't have high resistance rates.

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Other than Ecoli:

Staphylococcus saprophyticus accounts for 5 - 15% of UTIs

Klebsiella, *Enterococci* bacteria, and *Proteus mirabilis* account for most of remaining bacterial organisms that cause UTIs. They are generally found in older women.

Consider other causes:

- Atrophic vaginitis
decrease in estrogen level after menopause
thinning, dryness and inflammation
- Consider estrogen as a treatment

Catheters and UTI

- Not every patient needs a Foley
- Last resort
- Biofilm build up
- Do not send specimen from a bag
- Change the catheter and Gold Standard
- Not every patient needs a Foley

Catheters and UTI

- – Discontinuation of Foley should occur as soon as the patient no longer meets criteria
- – Need for continuation of Foley should be evaluated on a daily basis

Consider Other Treatments

Estrogens:

Since it assists with the recurrence of lactobacilli that acts as a protective barrier to uropathogen. Cream versus estrogen vaginal ring showed better results than placebo (45% improved symptoms than 20%, Ericksen (1999)).

Cranberries

Ultra Cran 500mg bid daily

Cranberry juice has been effective as a home remedy because it prevents the Ecoli bacteria from adhering to the uroepithelial cells and thus the mucosal lining of the urinary tract can not support the uropathogen (SOGC, 2010).

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Acupuncture

Acupuncture treatments as prophylaxis demonstrated that it could be a worthwhile alternative to antibiotic (SOGC, 2012; Aune, Alreak, Lihua, Baerheim, 1998).

Mrs. R

- 80 year old lady from Cape Breton
- PMH- hypothyroid, depression, Osteoarthritis, rt. knee replacement
- Meds: Synthroid, Citalopram, Omeprazole, Vitamins
- Social history: lived with her husband, 5 children, and "Mim". LPN in a nursing home. Gr. 10 ed.

Mrs. R.

- September 20th, 2011 we diagnosed her with moderate stage of AD and started her on Reminyl 8mg.
- MMSE was 16/30 (0/3), MoCA 8/30, FAB 5/18
- Function- repetitive dressing, repetition in her conversation, decreased initiative.

Mrs. R.

- By November: Reminyl 16mg
- Call from the family, she was worse.
- Home Visit for assessment. We decreased the Reminyl, because of her behaviors. Could this be meds?
- By the weekend she was much worse and in Cobequid for Delirium work up.
- UTI and dehydrated

Diagnosis: *Delirium*

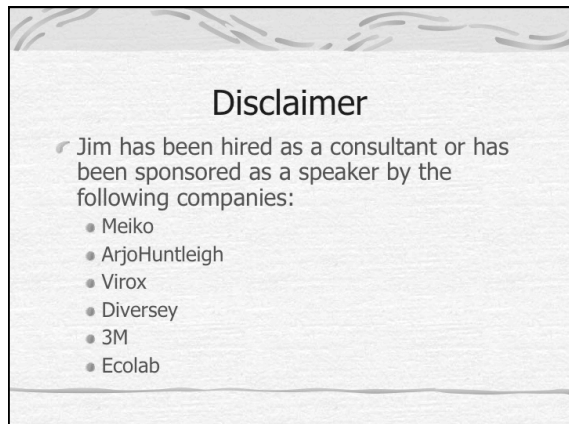
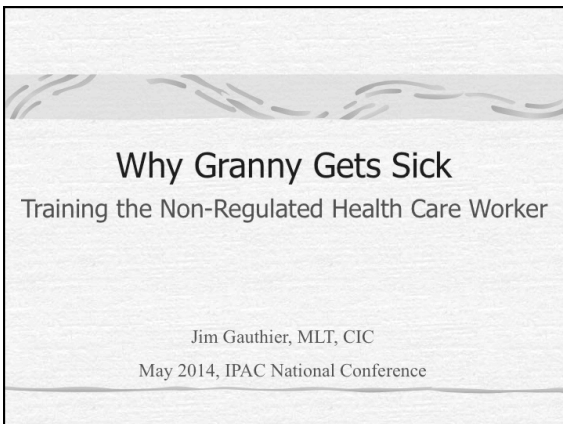
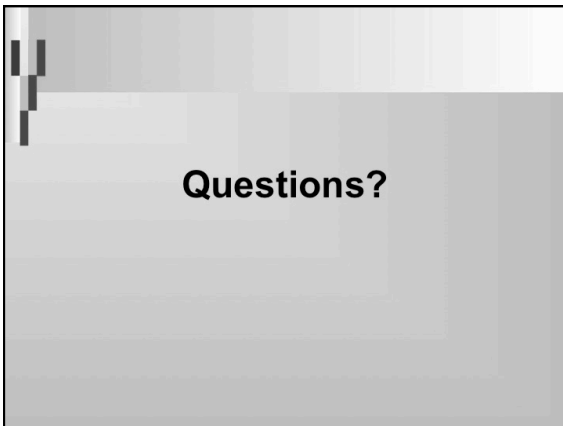
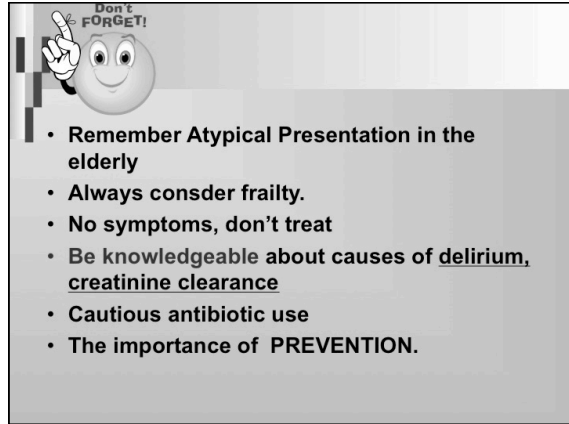
Mrs. R moved to LTC



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- None of these companies have had any influence on the content of this presentation

Objectives

- The participant will understand why the elderly are at higher risk of numerous illnesses.
- The participant will recognize care routines by non-regulated healthcare providers that might exacerbate current condition in the elderly, or predispose the client to an infection

What is Old?



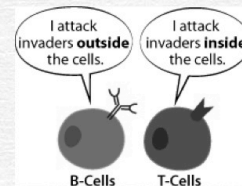
<http://othersiderainbow.blogspot.ca/2010/02>

Immune System Decline

- Not only do you forget where you left your keys...
- You forget to mount a strong immune response to challenges!

Immune System Decline

- Referred to as immune senescence or dysregulation affecting:
 - Cell mediated immunity
 - phagocytes, T and B cells
 - Humoral immunity
 - immunoglobulin, complement



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Immune System

- As cell mediated immunity decreases, there is an increase in vulnerability to viral, fungal and mycobacterial diseases
 - Can't have staff coming to work sick
 - Need to screen for tuberculosis
 - Or watch for symptoms
 - Need to be careful with construction dust

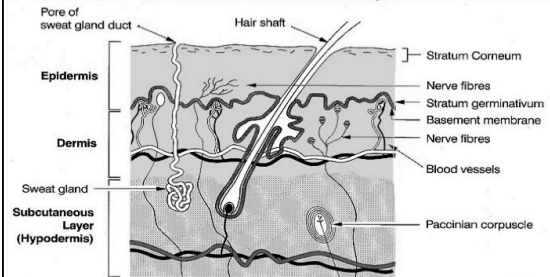
Immune System

- As humoral immunity decreases, there is an decrease response to immunizations with pneumococcal polysaccharide, tetanus toxoid, hepatitis B and influenza vaccines
 - Influenza vaccination of staff protects elderly (Amodio 2014)

Skin



Skin Anatomy



http://www.nurse-prescriber.co.uk/education/visual_lib/v1/skincondprep.htm

Skin

- epidermal thinning
- flattening of dermo-epidermal junction
- decreased elasticity
- decreased subcutaneous tissue
- decreased vascularity



Skin

- All leading to increased susceptibility to trauma, pressure sores and delayed healing

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Skin Damage

- Friction
 - Pulling across sheets
 - Use of draw sheets or lifts for repositioning
- Pressure
 - Immobility
 - Regular repositioning of resident
 - Cushions to protect bony prominences

Skin Damage

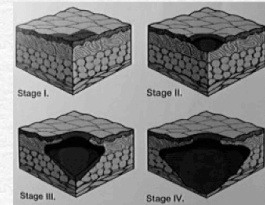
- Shear
 - sliding down in chair
 - Reposition hourly
- Other Causes
 - Moisture, incontinence, steroids, malnutrition, infection

Infected Pressure Ulcers

- Occurs in up to 20% of residents of LTC Facilities, and up to 38% in Acute Care
- Susceptible Patients
 - Diabetes, vascular insufficiency, vasculitis, malignancy

Infected Pressure Ulcers

- Stage 1
 - Inflammation and erythema with no breaks in skin
- Stage 2
 - Inflammation and erythema with ulceration through the epidermis (blister or superficial skin breaks)



Infected Pressure Ulcers

- Stage 3
 - Inflammation and erythema with ulceration through both layers of skin
- Stage 4
 - Ulceration exposing muscle and / or bone
- Unstageable
 - Depth obscured by slough and or eschar

Malnutrition

- Studies have shown 30-85% of residents may have signs of malnutrition.
- Causes a decrease in cell mediated immunity
- Leads to delayed wound healing, decrease level of consciousness, decline in functional status

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Causes

- ✓ Depression
- ✓ Dementia
- ✓ Malabsorption
- ✓ Change in smell or taste sense
- ✓ Dysphagia

Dysphagia

- ✓ 40-60% of residents in LTC can experience dysphagia
 - Keep patient upright, arms and legs supported, head midline, chin tucked slightly helps with aspiration prevention
 - Good assessment of clients is needed
 - Modified diets and/or consistencies

Malnutrition

- ✓ Weight loss predictive of mortality if:
 - 2% decrease in baseline body weight in 1 month
 - 5% loss in 3 months
 - 10% loss in 6 months

Malnutrition

- ✓ Need to increase calorie count
 - Ideally through consumption of food
 - Protein drinks (liquid caloric supplements)
- ✓ Assistance with meals
 - Pureed, thickened
 - Need adequate time, variety

Respiratory

- ✓ Decreased mucociliary transport → decreased clearance of secretions
- ✓ Decline in cough reflex → aspiration
 - Micro-aspiration occurs commonly to all of us
 - poorer clearing in the elderly

Respiratory

- ✓ Abnormal gag and swallowing
 - Neurological deficits, esophageal motility disorders, reflux, oral cancer
- ✓ Loss of elastic tissue → decrease lung expansion
- ✓ Increase Gram negative colonization of oropharynx → reservoir of lower respiratory pathogens

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Respiratory

- ✓ Altered consciousness
 - Sedatives, alcoholism, seizure disorder, CVA, general anesthesia
- ✓ Diminished IgA secretion → increased susceptibility to pathogens
 - IgA protects external surfaces and predominates in GI and respiratory mucous secretions

Respiratory Prevention

- ✓ Do not lie flat if receiving tube feedings
- ✓ Care with dysphagia
- ✓ Pneumococcal/influenza vaccine

Urinary Tract



Urinary

- ✓ Females
 - Hormonal changes in urinary system leads to perineal colonization, vaginitis.
- ✓ Males
 - Prostate enlargement → urinary stasis, bacterial colonization
 - Decreased prostatic secretions → decrease in antibacterial activity and uro-mucoid protection

Urinary

- ✓ Decreased renal ability to excrete acid or urea → increased bacterial colonization of bladder.

Urine

- ✓ Adequate hydration is difficult
 - Offer water constantly!
- ✓ Wiping front to back
- ✓ Emptying bladder after sexual intercourse

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Gastrointestinal

- Decrease in gastric acidity leads to an increased susceptibility to Salmonella and other enteric pathogens.
- Surgery or Antacids decrease gastric acidity
 - Acid suppression now linked to *Clostridium difficile* acquisition

Gastrointestinal

- Mucosal layer deteriorates with age
- Dehydration is serious concern for resident

Gastrointestinal

- The human gastrointestinal tract contains as much lymphoid tissue as the spleen
- Approximately 80% of all immunoglobulin-producing cells in the body are in the intestinal mucosa.

Gastroenteritis - Viral

- abrupt onset, lasts 1-5 days
- malaise, anorexia, abdominal cramping, large watery stools, no blood or mucous

Gastroenteritis - Bacterial

- gradual onset
- fever, loose bloody stools or stools with occult blood, WBC in stool (except *Campylobacter*)

Gastroenteritis – Toxins

- abrupt nausea, no abdominal pain, watery stool free of blood

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Gastroenteritis

- ✓ Safe food handling
- ✓ Hoarding of perishable foods
- ✓ Hand Hygiene!
 - Residents
 - Staff

Medications

- ✓ Sedatives, narcotic analgesics
 - decrease level of consciousness
- ✓ Antihypertensives
 - cause urinary retention
- ✓ H₂ blockers
 - decrease gastric acidity

Medications

- ✓ Corticosteroids
 - reduce immune function
- ✓ Antibiotics
 - encourage colonization

Invasive Devices

- ✓ Urinary catheters
- ✓ tracheostomies
- ✓ feeding tubes
- ✓ central venous access (Hickman, PICC)
- ✓ intravenous access

Invasive Devices

- ✓ Need clear understanding of risk of infection
 - Chain of infection: portal of entry

Atypical Clinical Manifestations

- ✓ Subtle - listen to staff, family and visitors
- ✓ Altered inflammatory response
 - temperature elevations may be blunted or absent in 1 of 3 residents
 - 1.3°C increase over normal baseline should be considered a fever

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Atypical Clinical Manifestations

- Hypothermia can be a symptom (35°C)
- Leukocyte increase in bacteremia may be absent

Dementia

- Pump Soap or ABHR are not familiar to them
 - Used bar soap at home
- Must remind or assist with hand hygiene before meals
 - Ongoing assessment of hand hygiene capabilities

Summary

- Growing old is not for sissies
- Understanding why the elderly get sick will help us prevent some common problems
- Education of our non-regulated HCW can also help prevent problems

References

- Amodio E., et al. Can influenza vaccination coverage among healthcare workers influence the risk of nosocomial influenza-like illness in hospitalized patients? *J Hosp Inf* 2014;86:182-7
- Cuddigan J, et al. Pressure Ulcers in America. *Skin and Wound Care* 2001;14(4):208-15.
- Gerontological Nursing – Competencies for Care. 2014. Mauk, KL, Ed. Jones and Bartlett Learning Burlington MA.
- Oxford Handbook of Geriatric Medicine. 2012. Bowker LK, Price JD, Smith SC eds. Oxford University Press

Questions and Discussion

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