

**Granny as the Susceptible Host**  
Prevention Tips for Health Care Providers

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**Disclosure**

\* Jim is employed by Diversey. His expenses to attend this meeting (travel, accommodation, and salary) are paid by this company. Diversey has had no input into this presentation from a commercial interest.

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**Objectives**

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

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### Immune System Decline

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

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### 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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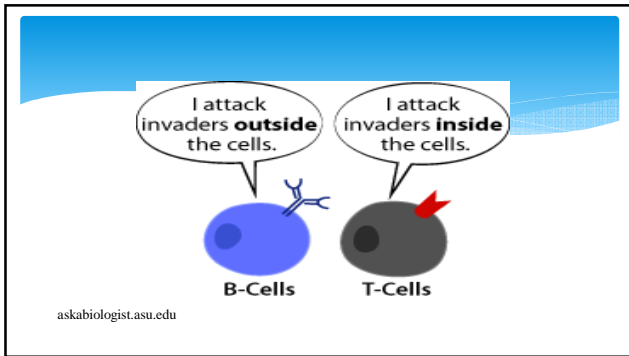
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### Immune System

- \* 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

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### Immune System

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

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# Skin



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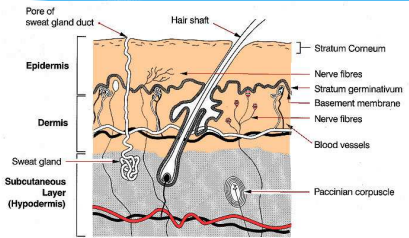
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# Skin Anatomy



[http://www.nurse-prescriber.co.uk/education/visual\\_lib/vl\\_skincontprep.htm](http://www.nurse-prescriber.co.uk/education/visual_lib/vl_skincontprep.htm)

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# Skin

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



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**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 patient
  - \* Cushions to protect bony prominences

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**Skin Damage**

- \* Shear
  - \* Sliding down in chair
  - \* Reposition hourly
- \* Other Causes
  - \* Moisture, incontinence, steroids, malnutrition, infection

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## Infected Pressure Injuries

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

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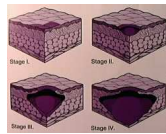
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## Infected Pressure Injuries

- \* 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)



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## Infected Pressure Injuries

- \* 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

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## Malnutrition

- \* Studies have shown 30-85% of patients 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

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## Dysphagia

- \* 40-60% of patients 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

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## 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

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## 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**

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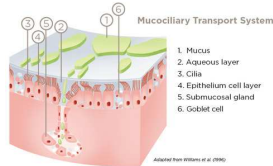
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## Respiratory

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



<https://www.fphcare.co.nz>

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### 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

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### Respiratory Prevention

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

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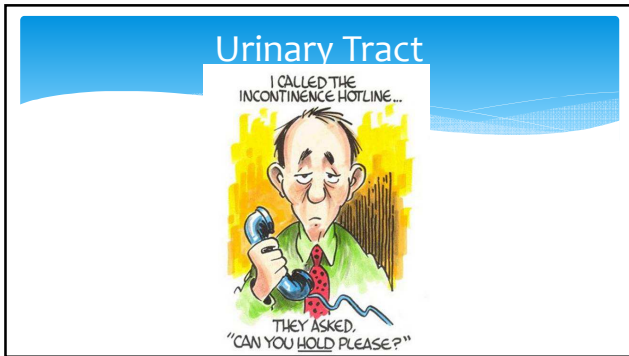
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### Urinary

- \* 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

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### Urinary

- \* Decreased renal ability to excrete acid or urea → increased bacterial colonization of bladder

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## Urinary Signs and Symptoms: NOT!

- \* Cloudy, milky or turbid urine
- \* Malodorous urine
- \* Change in urine colour
- \* Falls
- \* **Behavioural changes** without additional clinical symptoms of a UTI: worsening functional status or worsening mental status (e.g., new behavioural changes, increased confusion, acute delirium or agitation).

<https://www.publichealthontario.ca/en/health-topics/antimicrobial-stewardship/uti-program>

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## Urinalysis Sticks

- \* A negative dip stick indicates the patient does not have a UTI
- \* A POSITIVE DIP STICK TELLS YOU NOTHING!
- \* Collection important: MSU or in/out catheter!

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## Urine

- \* Adequate hydration is difficult
- \* Dehydration can cause confusion
  - \* 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
  - \* H2 Antagonists, Proton Pump inhibitors

Xavier 2018

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**Gastrointestinal**

- \* Mucosal layer deteriorates with age
- \* Dehydration is serious concern for patient

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**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

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### Gastroenteritis - Viral

- \* Abrupt onset, lasts 1-5 days
- \* Malaise, anorexia, abdominal cramping, large watery stools, no blood or mucous

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### Gastroenteritis - Bacterial

- \* Gradual onset
- \* Fever, loose bloody stools or stools with occult blood, WBC in stool (except *Campylobacter*)

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### 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!
  - \* Patients
  - \* Staff

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## Medications

- \* Sedatives, narcotic analgesics
  - \* decrease level of consciousness
- \* Antihypertensives
  - \* cause urinary retention
- \* H<sub>2</sub> blockers/Proton Pump Inhibitors (PPI)
  - \* decrease gastric acidity

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## Medications

- \* Corticosteroids
  - \* reduce immune function
- \* Antibiotics
  - \* encourage colonization
    - \* Yeast infections
  - \* Higher odds of being on antibiotics in 2015 vs 2012 survey (Cohen)

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### Invasive Devices

- \* Urinary catheters
- \* Tracheostomies
- \* Feeding tubes
- \* Central venous access (Hickman, PICC)
- \* Intravenous access

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### Invasive Devices

- \* Need clear understanding of risk of infection
  - \* Chain of infection: portal of entry

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### Atypical Clinical Manifestations

- \* Subtle - listen to staff, family and visitors
- \* Altered inflammatory response
  - \* temperature elevations may be blunted or absent in 1 of 3 patients
  - \* 1.3°C (-2.4°F) increase over normal baseline should be considered a fever

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## Atypical Clinical Manifestations

- \* Hypothermia can be a symptom (35°C/95°F)
- \* Leukocyte increase in bacteremia may be absent

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## 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

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## Summary

- \* Growing old is not for sissies – Jerry Gau
- \* Understanding why the elderly get sick prevent some common problems
- \* Education of our non-regulated HCW can prevent problems



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## Questions and Discussion

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