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Don’t Go With The Flow!

Control and Management of UTIs in the Elderly

Ontario
Agency for Health Protection and Promotion
Agence de protection et de promotion de la santé

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Acknowledgements

Central West Infection Control Network

Toronto Central Infection Control Network

Erie St Clair Infection Control Network

South Western Ontario Infection Control Network

Questions…

- Why is this important?
- How can we recognize UTI's in the elderly?
- What are distractors and how can we deal with them?
- How do you collect a proper specimen and when to send?
- When should a UTI be treated?
- What information should we have **before** we contact the physician?
- How can we effectively control UTIs in our LTC homes?

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Why is This Important?

UTIs are the most misdiagnosed infections in the elderly!

> *"Unnecessary use of antimicrobials in elderly people can lead to adverse consequences including the development of multi-drug antimicrobial resistance, drug-related adverse effects, harmful drug interactions, and excessive costs."*

Loeb et al, BMJ,doi:10.1136/bmj.38602.586343.55

Risk Factors in Elderly?

- The presence of comorbid conditions
- Presence of an indwelling catheter
- Neurogenic bladder caused by conditions such as stroke, Alzheimer's disease or Parkinson's disease,
- Dehydration
- Risk factors differ for males and females
- Hormonal changes
- Immune system changes

Nicolle LE: Urinary tract infection in the elderly. J Antimicrob Chemother 1994; 33(Suppl A): 99-109

How do we recognize UTIs in the Elderly?

Urinary Tract Infections (UTIs) are the most common bacterial infection in the elderly

- 25% of all community acquired bacterial infections
- 30% of all bacterial infections in residents in LTC
- >30% of HAI's reported by acute care hospitals

Alberta Clinical Practice Guidelines Program. Towards Optimum Practice, UTI in LTC. 2010
CDC/ HICPAC. Guideline for Prevention of Catheter-Associated Urinary Tract Infections. 2009

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Challenges of Assessment in the Elderly

Diagnosis of infection can be difficult

- Elderly may not have a fever or chills
- May not have high WBC (leukocytosis) in their blood work
- Residents may have dementia and can't express pain or discomfort verbally
- Residents may have an atypical presentation of acute illness
- Other **distractors** may be present

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Distractors for UTIs

Family wants a sample sent

Asymptomatic UTI

Fever alone

Change in mental function alone

Change in function status alone

Cloudy urine (Pyuria)

Dehydration

Smelly urine

Falls alone

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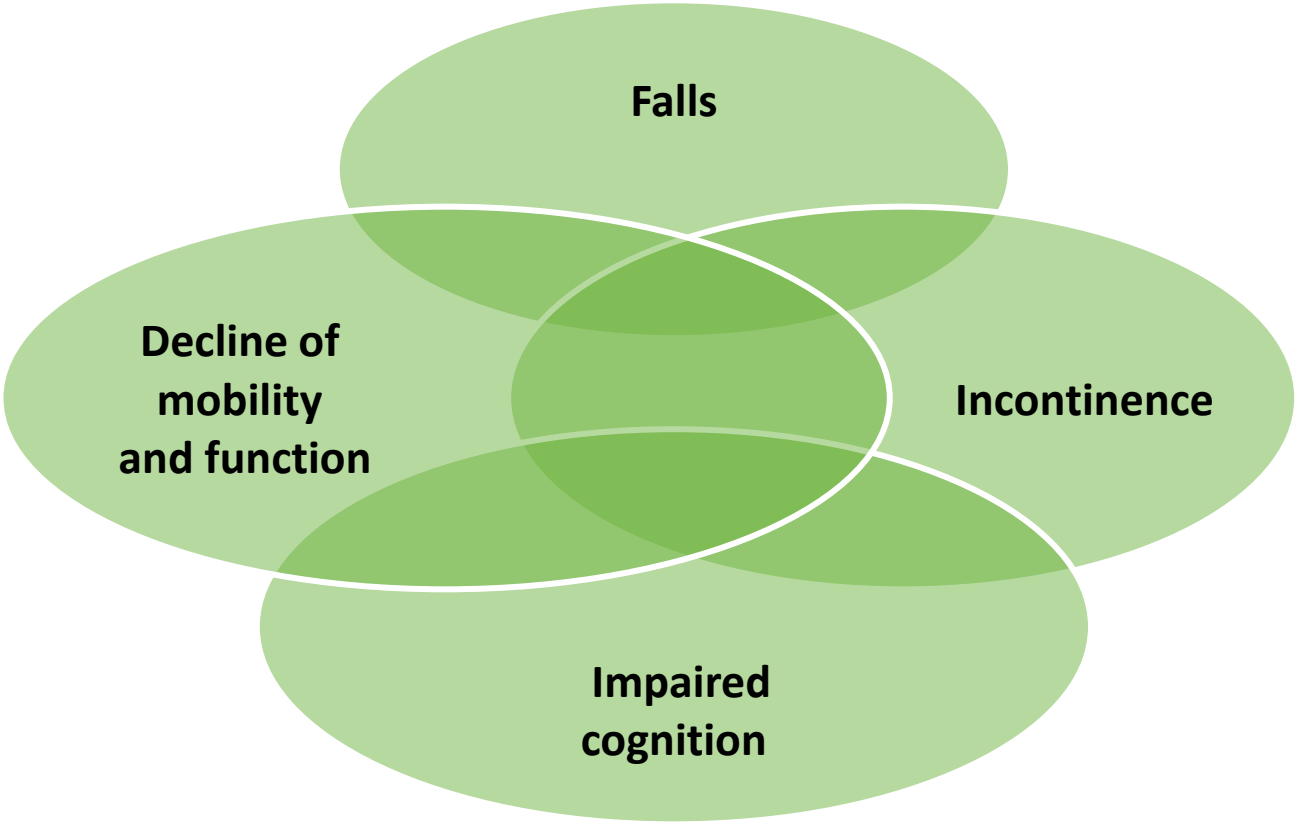
Atypical Presentation



Acute onset/change of geriatric symptom syndromes is a **RED FLAG**

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Importance of Assessment

- Rule out other causes
  - New medication?
  - Change in diet?
  - Drinking enough? Dehydrated?
    - Encourage fluids (Minimum 1-1.5 L/Day)
  - Other infections?
- Take vital signs:
  - Fever? Change in BP, Pulse, RR?
- Physical assessment for UTI symptoms

Pressure from family to treat?

- Educate: Newsletter or One on One as it comes up
  - Risk of Morbidity and Mortality (Nicolle et al 2000):

    "The presence of asymptomatic bacteriuria has not been shown to be associated with adverse outcomes in long-term-care facility residents. There is no evidence for accelerated functional decline with asymptomatic bacteriuria or development or progression of renal failure."
- Care conferences
- Physician involvement
- Case study example

Treatment of UTIs:

Asymptomatic

vs

Symptomatic

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Asymptomatic Bacteriuria and distractors -Treat?

NO!

4 randomized control trials showed no benefit of treatment in institutionalized elderly people

Loeb, M. et al. BMJ 2005;331:669

"Recommendations are clear….routine screening and treatment are not recommended. There have been several studies showing no benefits associated with the treatment of asymptomatic infections as measured by the rate of subsequent symptomatic infections, improvement of chronic urinary symptoms or survival"

Alberta Clinical Practice Guidelines Program. Towards Optimum Practice, UTI in LTC. 2010

Definitions

Bacteriuria = bacteria in the urine

Asymptomatic bacteriuria:

- Bacteriuria ***without*** apparent symptoms and,
- is defined for clinical purposes by the **presence of ≥ 10^5 cfu/mL of one or more organisms on two consecutive urine specimens** and,
- **absence of symptoms** attributable to urinary infection.

Nicolle et al. ICHE 2001 Mar;22(3):167-75

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Asymptomatic Bacteriuria Prevalence

Community:

- Women: 20%
- Men >75: 6-15%

LTC:

- Women: 25-50%
- Men: 15-40%

Chronic indwelling cath

- 100%

Nicolle and Yoshikawa, CID 2000 31:757-761.
Foxman, B. Am J Med 2002; 113:5S-13S

Definitions

Pyuria = pus in the urine

- Over 90% of men or women with asymptomatic bacteriuria have associated pyuria
- 100% of symptomatic UTIs will have pyuria
- Pyuria does not differentiate asymptomatic from symptomatic
- Absence of pyuria is useful to exclude infection, but not to identify a UTI. Alone, it is not diagnostic

Pyuria **without** symptoms should **not** be treated.

Nicolle et al, CID 2005:40 (1 March)

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Surveillance Definitions for UTI

PIDAC. Best Practices for Surveillance of Health Care-Associated Infections in Patient and Resident Populations. June 2008.

http://www.oahpp.ca/resources/pidac-knowledge/best-practice-manuals/surveillance-of-health-care-associated-infections.html

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Definition of UTI – LTC

Symptomatic urinary tract infection

Does **NOT have an indwelling urinary catheter** and has at **least three** of the following signs and symptoms:

- Fever (≥38°C) or chills,
- New or increased burning pain on urination, frequency or urgency,
- New flank or suprapubic pain or tenderness,
- Change in character of urine (e.g., new bloody urine, foul smell or amount of sediment or as reported by the laboratory (new pyuria or microscopic hematuria)
- Worsening of mental or functional status (may be new or increased incontinence)

PIDAC 2008 as per

McGeer et al, Am J Infect Control 19(1): 1-7, 1991

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How do we recognize UTIs?

Adults

- Fever >38°C
- Urgency
- Frequency
- Dysuria
- Suprapubic tenderness

Elderly

Add:

- **Altered mental status**
- **New incontinence**
- **Nausea and vomiting**
- **Urinary retention**
- **30% may not have a fever**

Paediatric

(< 1 year)

- Fever >38°C rectally
- Hypothermia
  < 37 °C rectally
- Apnea
- Bradycardia
- Dysuria
- Lethargy
- Vomiting

Nicolle et al, CID 2000 31:757-761

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When/Why do YOU send urine specimens?

- Routine?
- On admission?
- Annually?
- Other reasons?

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Get rid of the dipstick test!

"In the absence of a minimum set of symptoms or signs of urinary tract infection, urine should not be cultured and antimicrobials should not be prescribed"

Loeb, M. et al. BMJ 2005;331:669

"Positive dipstick test for leukocyte esterase or nitrite is not diagnostic for a UTI".

Alberta Clinical Practice Guidelines Program. Towards Optimum Practice, UTI in LTC. 2010

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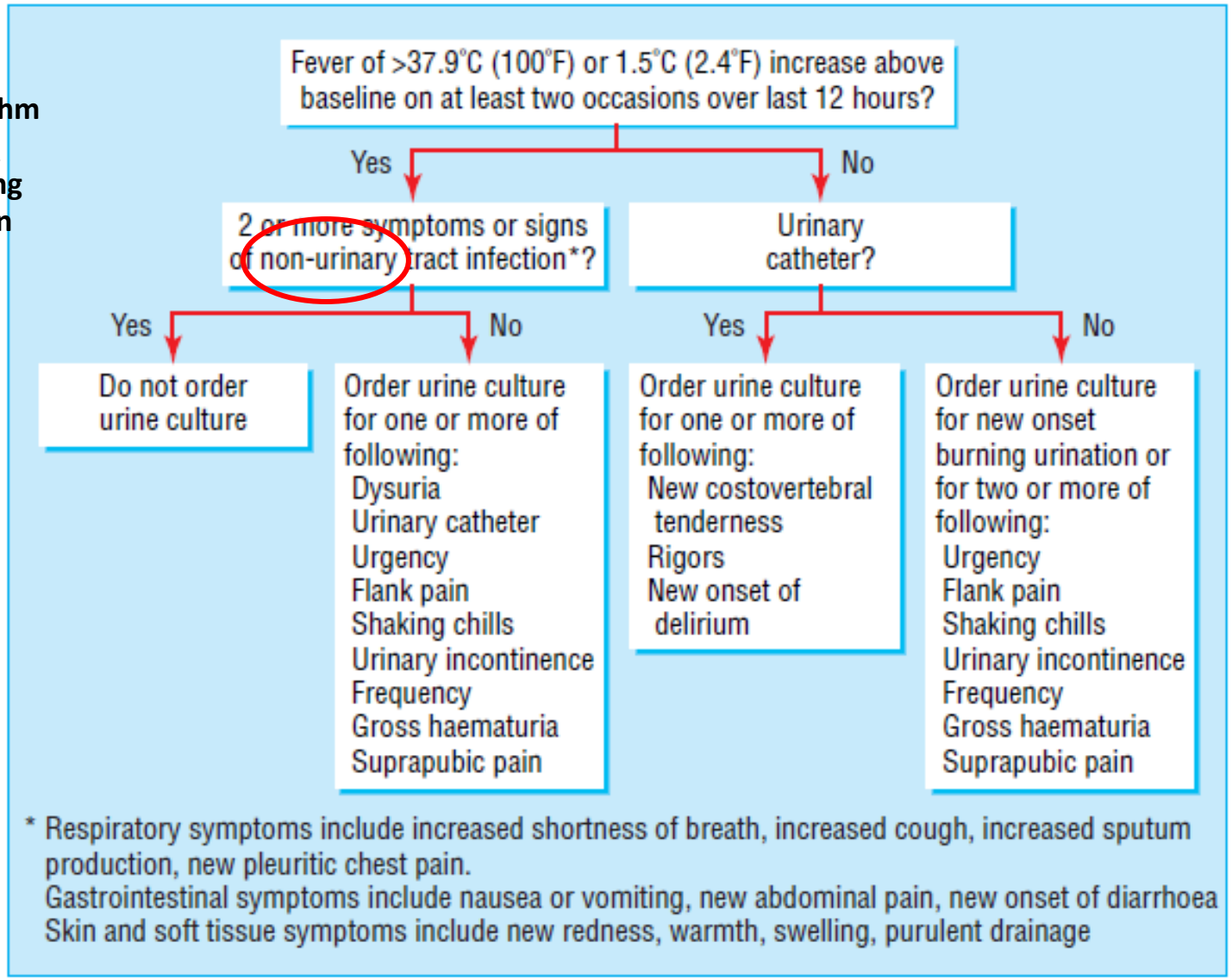
Ordering Cultures

Fig 1
Diagnostic algorithm for ordering urine cultures for nursing home residents [in intervention arm]



Loeb, M. et al. BMJ 2005;331:669

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Challenges of Specimen Collection

Procuring a good specimen can be difficult due to:

- Resident immobility
- Resident cognitive impairment
- Intrusion of “in and out” catheterization
- Incontinence

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How do you collect a proper specimen?

Urine Specimens (non-catheterized)

- Ensure good local cleaning (peri-care)
- Obtain clean catch *OR* mid-stream *OR*
- In and out catheterization - women *OR*
- Condom catheter - men (freshly applied)
- Label appropriately and thoroughly – include **date and time**
- Refrigerate and/or send immediately

"The use of bedpans or pedibags for collection of urine specimens from women is associated with substantial contamination and cannot currently be recommended."

Nicolle and Yoshikawa. CID (2000) 31 (3): 757-761.

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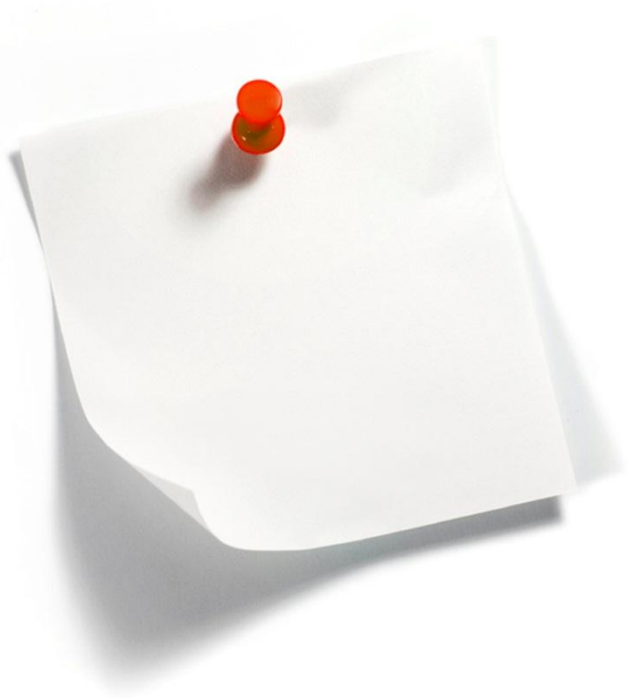
Improving specimen collection

- Poster reminders and/or procedures
- Staff education
- Make it part of the paper work (how was the specimen collected?)



Urine Specimens – Handling and Transportation

Laboratory Recommendations

- Refrigerate at 4◦C
- Transport to lab (by cooler bag) **within 2 hours**
- Sitting at room temperature, the bacteria will multiply over time
- If the lab sees more than 3 colonies, usual practice is not to process it further and request a repeat specimen

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Consensus Guidelines re: Treatment of UTIs

Loeb M et al (2001) **Development of minimum criteria for the initiation of antibiotics in residents of long-term-care facilities: results of a consensus conference.**

Infection Control & Hospital Epidemiology. 22(2):120-4, 2001 Feb.

Loeb et al (2005). **Effect of a multifaceted intervention on number of antimicrobial prescriptions for suspected urinary tract infections in residents of nursing homes: cluster randomized controlled trial.**

BMJ, doi:10.1136/bmj.38602.586343.55

- 2 algorithms:
  - When to order a urine culture
  - When to treat with antibiotics

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Treatment Algorithm

Fig 2

Treatment algorithm for prescribing antimicrobials to nursing home residents in intervention arm

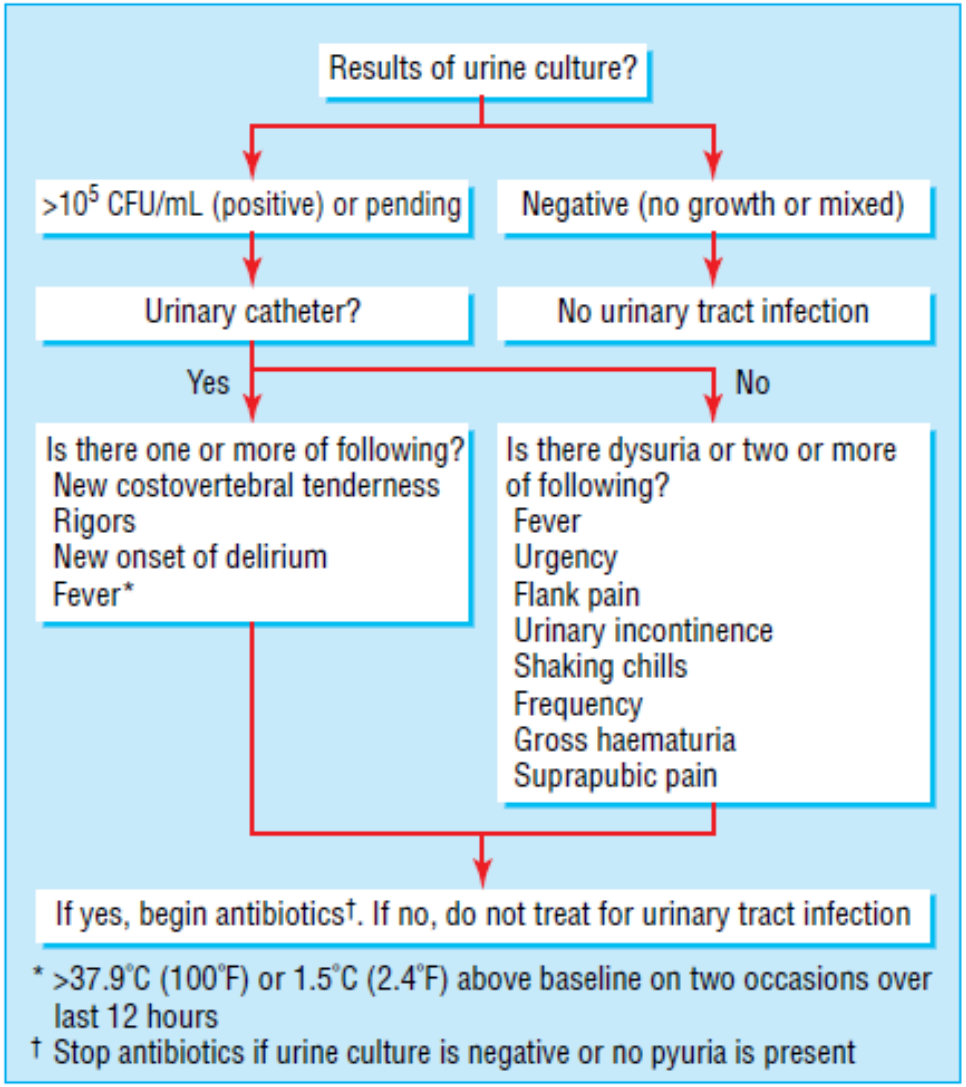

Fig 2 Treatment algorithm for prescribing antimicrobials to nursing home residents in intervention arm

Loeb, M. et al. BMJ 2005;331:669

Main Microbial Strains Responsible for UTIs

Escherichia coli – accounts for 40% of CAUTIs

Klebsiella pneumoniae

Proteus mirabilis and ***Proteus vulgaris*** and ***Morganella morganii*** – more common in men than women

Proteus - common in those who are chronically catheterized

Gram negative organisms – (other than *E. coli* are isolated more frequently and tend to be more resistant)

Gram positive organisms – including **Enterococci**, coagulase negative **Staphylococci** and **group B Streptococci** are frequently isolated

Alberta Clinical Practice Guidelines Program. Towards Optimum Practice, UTI in LTC. 2010

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Microbiology Results and Treatment

- Facility physician usually determines whether to treat
- What is a significant result?
  - Mixed flora – 50-100,000 + asymptomatic – don't treat
  - ***E. coli* >10^5 + symptoms → treat**
  - Mixed flora **and** symptomatic – **maybe** treat - empirical antibiotic therapy **may** potentially relieve symptoms of acute dysuria
- Remember to look at the **sensitivity on lab results**
- Check whether the organisms are **susceptible** to the antibiotic ordered

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General Measures and Considerations

- Avoid catheters!
  - Consider residents on intermittent caths or condom caths in the same category as residents with no indwelling cath
- Nursing care:
  - Promote fluid intake (as tolerated) - urine won't be concentrated and foul smelling. (Dehydration is a problem in LTC – but does not "cause" UTIs)
  - Maximize function and mobility
  - Toilet q 2-3 h during waking hours
  - Provide meticulous continence care, peri-care and catheter care

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Other Issues and Common Questions in LTC

- Frequency of changing an indwelling catheter and catheter bags
- Changing from a catheter bag to a leg bag
- Clean technique vs sterile insertion of catheters
- Calling the doctor too soon without enough information

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How do you manage catheters?

- Are there any in the home that are not necessary?
- Do you follow these Best Practices for managing catheters?

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Changing Indwelling Catheters and Catheter Bags

- Do not change indwelling catheters or urinary drainage bags at arbitrary fixed intervals.

APIC Infection Prevention Manual for LTC Facilities, 2009
Note: (No HICPAC guideline regarding frequency of change)

- Keep system closed/Minimize unnecessary opening of the closed system

HICPAC Guideline 2009, APIC Infection Prevention Manual for LTC Facilities, 2009

- Change based on clinical indications such as infection, obstruction or when the closed system is compromised

Alberta Clinical Practice Guidelines Program. Towards Optimum Practice, UTI in LTC. 2010

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Changing Indwelling Catheters and Catheter Bags

"Change bags when the Foley catheter is changed and as needed because of accumulation of sediment, discolouration of the bag, odour, leakage, etc. When the bag is replaced, care should be taken to prevent contamination of the closed system "

APIC Infection Prevention Manual for LTC Facilities, 2009

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Changing from catheter bag to leg bag

- Disconnection of the drainage system is a risk factor for bacteriuria

HICPAC Guideline 2009

- Change from catheter bag to leg bag – nursing policy

APIC Infection Prevention Manual for LTC Facilities, 2009
(no recommendations for cleaning)

- If the drainage tubing becomes disconnected, do not touch the ends of the catheter or tubing. Wipe the ends of the catheter and tubing with an antiseptic solution before reconnecting them.

APIC Infection Prevention Manual for LTC Facilities, 2009

General Measures and Considerations

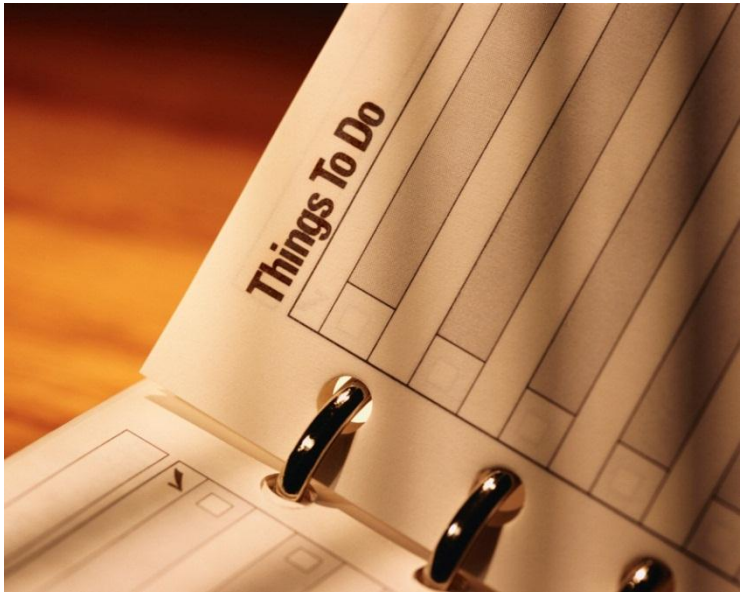
- Cranberry juice
  - Studies show mixed results
  - One study showed a minimum of 300-400 mg twice daily in tablet form or 8-16 ounces >30% cranberry juice blend is needed for therapeutic effect

- ***Foul smelling or cloudy urine is not a valid reason to initiate antibiotics***

What information should we have BEFORE we contact the physician?

Ensure you carry out an assessment first and look for:

- Symptoms of symptomatic UTI
- Rule out other causes
- Hydrate
- Vital signs
- Pain – suprapubic or flank
- New incontinence
- Behavioural change reasons
- Consider medical directives that follow the Loeb et al algorithms mentioned earlier



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Summary of UTI and The Elderly

DON'Ts:

- Assuming a behavioural change (single symptom) is indicative of a UTI
- Treating asymptomatic bacteriuria or distractors
- Ordering antibiotics when microbiology culture reports show mixed flora (indicating a contaminated specimen)
- Using antibiotics if no infection is identified on C & S
- Using antibiotics ordered empirically when they shows resistance. Treat according to sensitivities
- Routine screening and treatment for asymptomatic bacteriuria in NH residents
- Repeating urine cultures after a course of antibiotics

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Summary of UTI and The Elderly

DO'S

- Send specimens for symptomatic UTIs only
- Reserve antibiotic therapy for symptomatic UTIs based on sensitivity profile
- Focus on prevention and proper assessment as opposed to treatment
- Remember that antibiotic misuse can lead to unfavorable consequences such as antibiotic resistant organisms like MRSA, VRE and *C. difficile*

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Be sure that you are headed in the right direction by using best practices and consensus-based guidelines

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