

# Managing Urinary Infection in Long Term Care

Dr. Lindsay Nicolle

A Webber Training Teleclass

## Managing Urinary Infection in Long Term Care

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Hosted by Paul Webber

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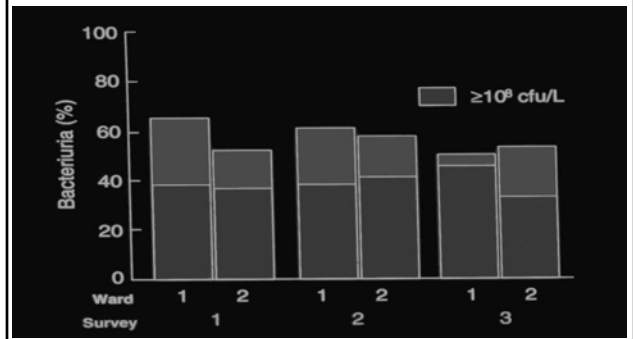
## UTI in the Elderly

- Asymptomatic/Symptomatic
- Clinical diagnosis of symptomatic infection
- Antimicrobial treatment
- Investigation

## Prevalence of Bacteriuria: Institutionalized

N	Prevalence %	
	Women	Men
500	34	31
100	17	26
257	42	15
352	27	19
88		37
123	55	

## Elderly Institutionalized Males



## Prevalence of Asymptomatic Bacteriuria Elderly Women

Abnutyn JAGS, 1991

Survey	LCC (343)	CL (362)	NH (160)
Mean age:	80.3	82.8	83.3
1	13.1	14.4	23.1
2	9.9	20.7	23.4
3	11.9	19.0	27.6
4	9.9	18.7	28.3
5	7.1	20.4	17.5
6	13.5	21.9	33.3
7	9.1	12.5	19.2
8	12.0	16.7	26.1

## Significant Association with Bacteriuria

Abnutyn et al Ann Intern Med 1994

### Elderly Ambulatory Women

- ↑ age
- ↑ number of diagnoses
- ↑ medications
- ↓ activities of daily living
- ↓ mental status
- ↓ walking ability
- ↑ global depression scale
- ↓ self-rated health

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## ASSOCIATIONS WITH BACTERIURIA

Nicolle et al

Institutionalized Elderly Men

- Not significant
  - age
  - number diagnoses
  - duration residence
  - mobility
- Significant
  - impaired mental status
  - urine incontinence
  - bowel incontinence

## FUNCTIONAL STATUS

Number of Residents (%)

Bacteriuria:	Continuous	Intermittent	None	p*
Confused/Demented	18 (78)	18(62)	15(42)	0.04
Incontinence:				
Urine	22(96)	18(66)	9(25)	<0.001
Bowel	12(52)	11(39)	2(5.5)	<0.002
Not ambulant	11(48)	13(38)	13(33)	0.53

\*Chi-square test. DF=2

## Long Term Care Treatment of Asymptomatic Bacteriuria

- No:
- ↓ chronic symptoms
  - ↓ acute episodes
  - ↓ bacteriuria
  - ↓ mortality
- Yes:
- ↑ adverse drug effects
  - ↑ resistance
  - ↑ costs

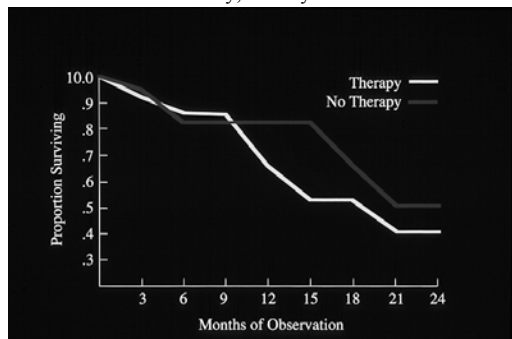
## Asymptomatic Bacteriuria: Elderly Men

Nicolle et al NEJM, 1983

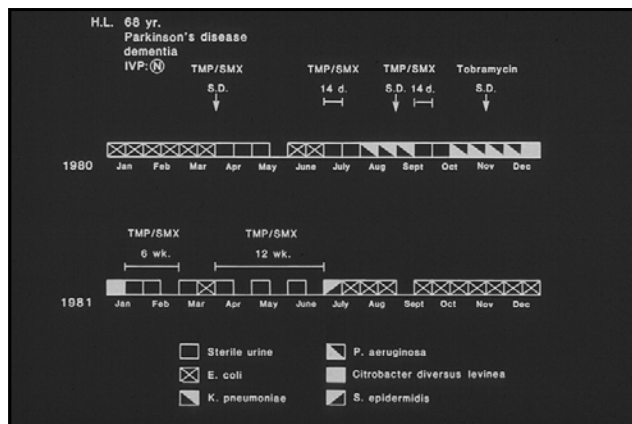
Episodes (incidence/resident yr)

	Therapy (N=16)	No Therapy (N=20)
Pneumonia	6 (0.43)	10 (0.56)
Febrile episode	5 (0.36)	6 (0.34)
Septicemia		1
Post-cystoscopy sepsis		1
Epididymo-orchitis	2	

Mortality, Elderly Men



NEJM, 1983



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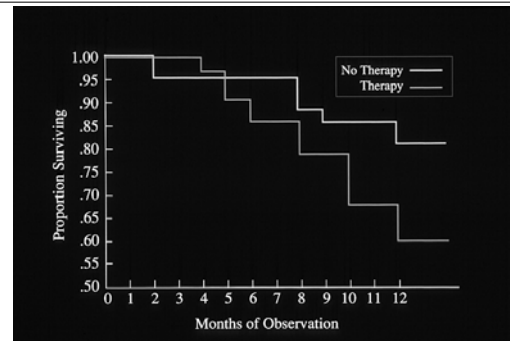
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### Morbidity: Elderly Women

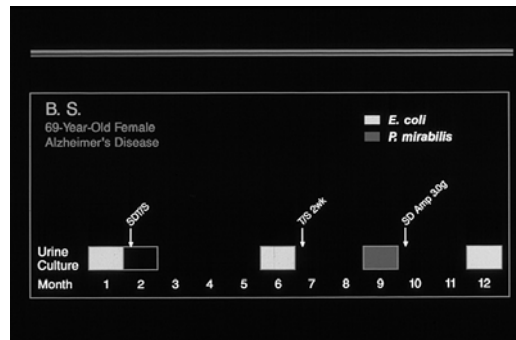
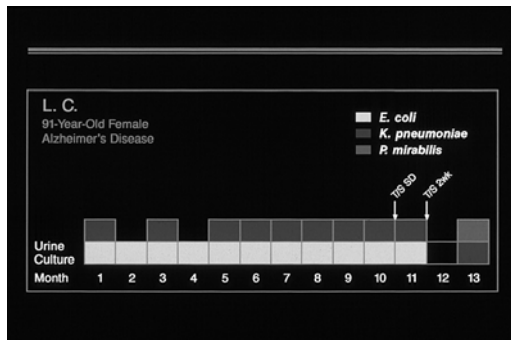
Nicolle et al

	Number Episodes/Residents	
	Therapy	No Therapy
Drug related adverse events*	11/9	1
Emergence of Resistance*		
Persistent/Relapsing ( $\geq 2$ wks)	7(37)	1 (6.7)
Genitourinary morbidity	20/13	14/10
Fever		1
Hematuria	1	1
Incontinence/dysuria	2	

### Asymptomatic Bacteriuric: Elderly Women



Amer J Med, 1987



### Elderly: Long Term Care

What is symptomatic UTI?

When to investigate?

### Morbidity of UTI Nursing Home

- symptomatic infection 0.1-2.4/1,000 days
- acute care transfer 1-8% total
- bacteremia >50% total episodes
- mortality rare

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## Incidence of Infections Nursing Homes

	Rate/1,000 patient days
• Respiratory infection	0.46-4.4
• Urinary infection	0.1-2.4
• Skin/soft tissue	<0.1-2.1
• Gastrointestinal	0-0.9

## SYMPTOMS IN 72 WOMEN WITH/WITHOUT BACTERIURIA Boscia et al Amer J Med 1986

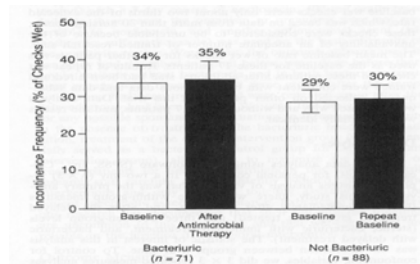
	Mean ± SE	
	Bacteriuria	Not Bacteriuric
• Incontinence – awake	1.5 ± 0.2	1.6 ± 0.1
• Incontinence – asleep	1.3 ± 0.1	1.3 ± 0.1
• Incontinence – cough or sneeze	1.1 ± 0.1	1.1 ± 0.1
• Frequency	1.1 ± 0.1	1.1 ± 0.1
• Urgency	1.2 ± 0.1	1.1 ± 0.1

## SYMPTOMS IN 72 WOMEN WITH/WITHOUT BACTERIURIA (cont'd) Boscia et al Amer J Med 1986

	Mean ± SE	
	Bacteriuria	Not Bacteriuric
• Anorexia	3.9±0.3	3.8±0.3
• Difficulty falling asleep	4.4±0.3	4.6±0.3
• Difficulty staying asleep	4.5±0.3	4.6±0.3
• Fatigue	5.3±0.3	5.3±0.3
• Malaise	4.7±0.3	5.1±0.3
• Weakness	5.0±0.3	5.1±0.3

## Chronic Incontinence

Ouslander et al Ann Int Med 122: 753



## Conclusions

A positive urine culture with

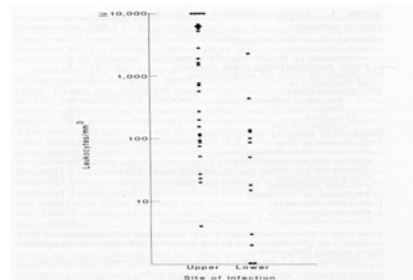
- chronic genitourinary symptoms
- non-localizing chronic symptoms

is not symptomatic UTI

## Elderly Women with Bacteriuria

### Pyuria

Nicolle et al, 1988



# Managing Urinary Infection in Long Term Care

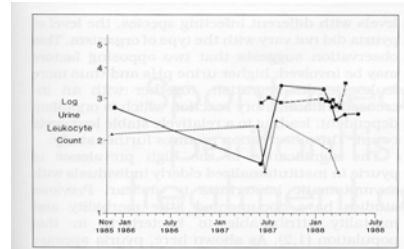
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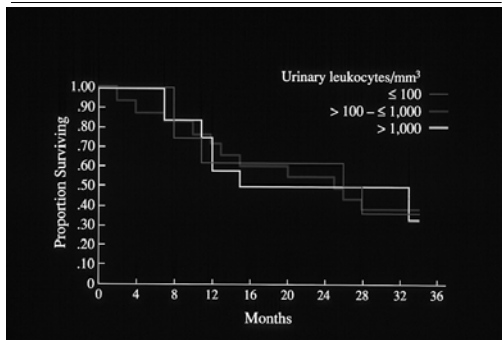
#### Pyuria: Institutionalized Elderly

#### Elderly Bacteriuric Men: Pyuria

Rodgers et al, 1991



#### Elderly Men and Women



JAGS, 1993

#### Conclusion

A positive urine culture with pyuria is not symptomatic UTI

#### Long Term Care:

When is fever UTI?

#### EPISODES OF FEVER

Orr et al 1996

	<u>Fever</u>	<u>Enrolled</u>
Episodes	491	371(76%)
Residents	257	187(73%)

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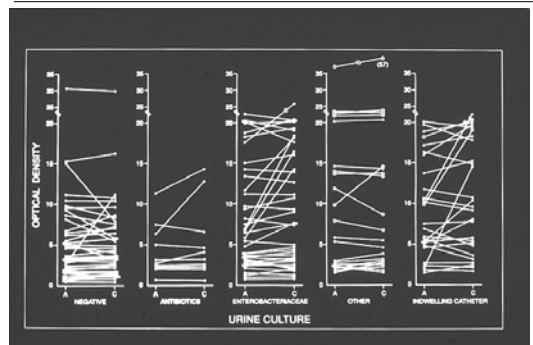
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### FEVER IN NURSING HOMES

Amer J Med, 1996

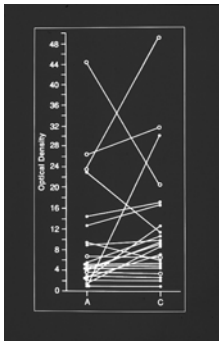
Clinical site	Episodes	Urine Culture Positive (%)	
		Initial	Four weeks
Unknown	151	58	56
Respiratory	140	32	30
Genitourinary	26	88	50
Gastrointestinal	25	75	63
Skin/Soft tissue	13	38	44
All	356	50	45

### Fever, Unknown Source: Antibody Response



Am J Med, 1996

### Fever, Urinary Source: Antibody Response



Am J Med, 1996

### FEVER IN NURSING HOMES Antibody Response to Urinary Infection

Orr et al 1996

<u>Clinical</u>	<u>Response</u>	
Genitourinary	10/23	43%
Unknown	14/132	11%
Gastrointestinal	1/25	4%
Respiratory	1/122	0.8%

### FEVER: UNKNOWN SOURCE Positive Urine Culture

Antibody increase	17%
Indwelling catheter	33%
No indwelling catheter	8.2%

### FEVER AND POSITIVE URINE CULTURES Positive Predictive Value for Infection

No localizing symptoms	12%
Genitourinary or no localizing symptoms	19%

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## Symptomatic UTI

Invasive	pyelonephritis
	bacteremia
Irritative*	dysuria
	frequency
	urgency
	incontinence

\* acute only

## Nursing Home: Not Symptomatic UTI

- clinical deterioration
- foul-smelling urine
- cloudy urine

## Long Term Care

Antibiotic Treatment of UTI  
When to treat?

## Ontario Chronic Care Facilities

Loeb et al

### Meeting Standardized Surveillance Definitions

Lower respiratory infection	58%
Urinary infections	28%
Skin/soft tissue infections	65%

## Treatment of Symptomatic UTI in Older Women

Takahashi et al, JAM Dir Assoc, 2002

NH (N=44) versus Community (N=152)

	OR
Prolonged antimicrobial therapy (>7days)	82.7 (11.1-617.7)
Excessive antibiotic dose	7.3
Adverse drug effects	9.6
Retreatment within one week	2.6

## Consensus Conference

### Minimum Criteria for Initiation of Antibiotics in LTCF

Loeb et al 2001; 22:120-

#### Urinary tract infections

no indwelling catheter:

acute dysuria or T >37.9°C and one of:

- new or worsening urgency, frequency, supra-pubic pain, gross hematuria, CVA tenderness, urinary incontinence

chronic indwelling catheter

one or more of: T>39.9°C, new CVA tenderness, rigors, new delerium

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### Antibiotic Treatment

- no different for elderly  
? flouroquinolones
- cystitis: ? duration

### Urinary Infection in Elderly

Standard therapy:

- acute infection, localizing symptoms
- ? non-localizing symptoms
- ? questionable symptoms

Long-term therapy

- prophylaxis
  - antibiotic
  - intravaginal estrogen
- suppressive

### Bacteriuria in Elderly Institutionalized Men

Nicolle et al, 1983

Bacteriuria	48/88	(55%)
Previous urologic intervention	24/48	(50%)
Intravenous pyelograms	23/48	(48%)
Abnormal	7/23	(30%)
bilateral calyceal clubbing	4	
minor unilateral clubbing	2	
bladder calculi	1	

### Urinary Infection in Elderly\* Investigation

No indwelling catheter

- bacteremia
- recurrent fever
- gross hematuria
- renal failure
- acute retention
- ? other

Indwelling catheter

- recurrent urosepsis
- renal failure
- gross hematuria  
without catheter trauma

\* consider advance directives, general status

### Other Winter 2005 Teleclasses

For more information, refer to [www.webbertraining.com/schedule.cfm](http://www.webbertraining.com/schedule.cfm)

- January 27 – **Community Issues Concerning Antibiotic Practices**  
with Dr. Elaine Larson
- February 10 – **Surgical Site Infections, Surveillance and Management**  
with Dr. Dick Zoutman
- February 15 – **Endemic Influenza, Pandemic Influenza, and Avian Flu**  
with Dr. Stephano Lazzari
- February 17 – **Sad Cows and Englishmen, Predicaments and Predictions for Spongiform Encephalopathies** with Dr. Corrie Brown
- February 24 – **Sneezes, Coughs and Drips: Respiratory and GI Outbreaks in Long Term Care** with Dr. Chesley Richards
- March 17 – **Biocide Use in a Healthcare Environment**  
with Dr. Jean-Yves Maillard