



*Urinary tract infections : new concepts
supported jointly by*



Acute male urinary tract infection (UTI): prostatitis... what else?

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Déclaration d'intérêts de 2013 à 2016

- **Aucun lien d'intérêts en rapport avec cette présentation**

Male UTI: prostatitis...

1/ 60 years old, frequency, acute dysuria, 38°C, tender prostate at digital rectal examination (DRE)

2/ 60 years old, frequency, acute dysuria, 38°C, lumbar pain, normal prostate at DRE

3/ 60 years old, 37°C, frequency, no lumbar pain, no prostatic pain at DRE

Evidence-based care of these patients?

1/ 60 years old, frequency, acute dysuria, 38°C, tender prostate at DRE

- **Diagnosis:** acute bacterial prostatitis
- **Differential diagnosis:** almost none

TABLE 1: NIH CLASSIFICATION AND DEFINITION OF THE CATEGORIES OF 'PROSTATITIS'

NIH classification	Definition
I: Acute bacterial prostatitis	■ Acute infection of the prostate gland
II: Chronic bacterial prostatitis	■ Chronic or recurrent infection of the prostate
III: Chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS)	■ No demonstrated infection
IIIa: Inflammatory CPPS ^a	■ White cells in semen and/or EPS or VB3 after prostatic massage
IIIb: Non-inflammatory CPPS ^a	■ No white cells in semen/EPS/VB3
IV: Asymptomatic inflammatory prostatitis	■ No subjective symptoms detected ■ Inflammation shown either by prostate biopsy or the presence of white cells in EPS/semen during evaluation for infertility or other disorders

1/ 60 years old, frequency, acute dysuria, 38°C, tender prostate at DRE

- **Rapid urine test** (leukocytes or nitrites):

→no differential diagnosis→ high pretest likelihood

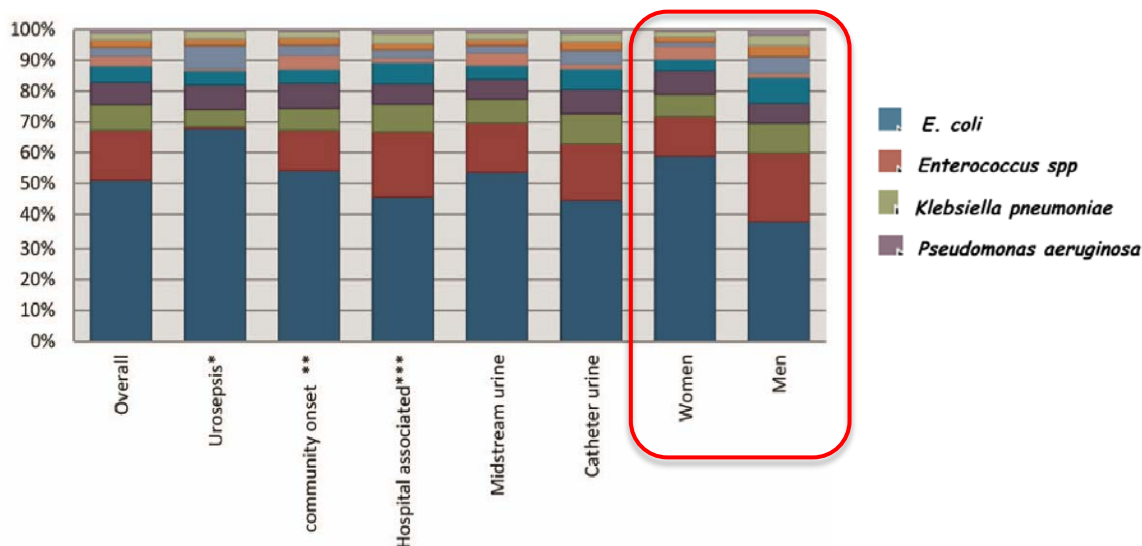
→ high PPV low NPV (vs high NPV in female UTI)

Finding	Bacteria load, $\geq 10^3$ cfu/mL			
	Sensitivity, %	Specificity, %	PPV, %	NPV, %
Leukocyte detection	81	71	89	57
Nitrite detection	55	94	97	42
Leukocyte and nitrite detection	50	97	98	40
Leukocyte or nitrite detection	87	69	89	65

1/ 60 years old, frequency, acute dysuria, 38°C, tender prostate at DRE

Epidemiology: heterogeneous data depending on microbiological diagnosis criteria/community vs healthcare...

- more diverse (*E. coli* < 70%, *Enterococcus spp.* and *Pseudomonas spp.* ≥ 10%) than in female UTI



Epidemiology not predictable
→ urine culture mandatory

1/ 60 years old, frequency, acute dysuria, 38°C, tender prostate at DRE

Epidemiology of resistance: few data, highly depending on: community vs healthcare
 - more resistance (FQ>15%, CoT>20%) compared to female UTI

Bacteriological results of urine cultures

	Total patients n = 371	Community-acquired AP n = 295	Nosocomial AP n = 76	Community-acquired versus nosocomial AP p value
Urine culture	347 (94%)	271 (92%)	76 (100%)	0.02
Isolated strains	270	213 (79%)	57 (21%)	< 0.001
<i>E. coli</i>				
All types	157 (58%)	142 (68%)	15 (26%)	< 0.01
Ampicillin-S	95 (61%)	88 (62%)	7 (50%)	0.4
Nalidixic acid-S	119 (76%)	110 (78%)	9 (57%)	0.2
Ofloxacin-S	130 (83%)	120 (85%)	10 (64%)	0.2
Cotrimoxazole-S	122 (78%)	115 (81%)	7 (43%)	< 0.01

Higher resistance rates

→ urine culture mandatory

1/ 60 years old, frequency, acute dysuria, 38°C, tender prostate at DRE

FQ treatment duration:

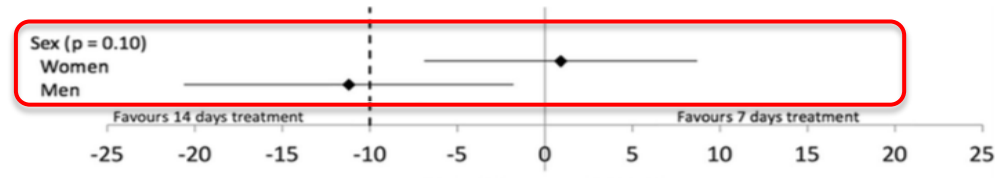
- Randomized therapeutic for FQ : CIP 14d vs 28d : **14d enough ?**

	Ciprofloxacin 500 mg b.i.d.	
	2 weeks (<i>n</i> = 38)	4 weeks (<i>n</i> = 34)
Clinical cure rate		
2 weeks post-treatment Cure	<i>n</i> = 38 35 (92)	<i>n</i> = 34 33 (97)
After 3 months Cure	<i>n</i> = 36 30 (83)	<i>n</i> = 34 30 (88)
After 12 months Cure	<i>n</i> = 32 23 (72)	<i>n</i> = 33 27 (82)

1/ 60 years old, frequency, acute dysuria, 38°C, tender prostate at DRE

FQ treatment duration:

- 85 male patients with FEBRILE UTI (in a cohort of 200 male and female patients)
- Initial IV Rx, followed by CIP 500bid, randomized 7d (n=44) or 14d (n=41)
- similar patients
- clinical cure rate **7j = 86% < 14j : 98%** (-11.2%) $p < 0,01$



- FQ: 1 week enough for patients without severe urologic underlying disorder ? (Prostashort, Dr Lafaurie-Paris)

1/ 60 years old, frequency, acute dysuria, 38°C, tender prostate at DRE

-Treatment failure

- high rates!

bacteriologic relapse (20-30%)

symptoms of chronic prostatitis (10-15

- 437 patients with acute prostatitis
- followed 2y
- 52 (11.8%) developed chronic symptom

Table IV. *Cumulative bacteriological cure rate (%)*

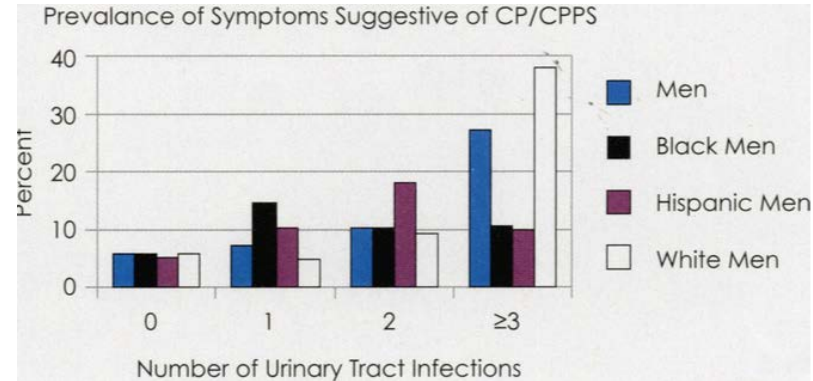
	Ciprofloxacin 500 mg b.i.d.	
	2 weeks (n = 38)	4 weeks (n = 34)
2 weeks post-treatment	n = 38	n = 34
Bacteriological cure	34 (89)	33 (97)
After 3 months	n = 36	n = 34
Bacteriological cure	27 (75)	29 (85)
After 12 months	n = 32	n = 33
Bacteriological cure	19 (59)	25 (76)

1/ 60 years old, frequency, acute dysuria, 38°C, tender prostate at DRE

-Treatment failure

- risk factors

Characteristic	Odds Ratio (95% CI)
Association With Risk of Early Recurrence (<30 Days) of Urinary Tract Infection^a	
β-Lactam treatment ^b	1.81 (1.52-2.17)
History of prior urinary tract infection	1.49 (1.32-1.68)
Incontinence	1.18 (1.00-1.36)
Prostate hypertrophy	1.22 (1.08-1.38)



Daniels NA, J Natl Med Assoc. 2007 May;99(5):509–16.

Drekonja DM, JAMA Intern Med. 2013 Jan 14;173(1):62–8.

- > 7d... not the treatment duration

1/ 60 years old, frequency, acute dysuria, 38°C, tender prostate at DRE

-Areas of uncertainty for acute bacterial prostatitis:

- alternatives to fluoroquinolones and “difficult-to-treat pathogens”
(ESBL, *Enterococcus spp*, *Pseudomonas spp*....)

no therapeutic study on acute bacterial prostatitis

studies mixing men and women

→ “according to spectrum and prostate diffusion”

- optimal treatment duration?

- underlying urological disorder (functionnal/anatomic)

→ **who to investigate? how?**

Antibiotic	Prostate/sérum (%)	Reference
amoxicillin	60-75	<i>Prostate, 1980</i>
amikacin	25	<i>Lorian, 2014</i>
temocillin	75	<i>Acta Clin Belg. 1989</i>
meropenem	15	<i>Int J Antimicrob Ag. 2013</i>
trimethoprim	117	<i>Lorian, 2014</i>
sulfamethoxa	10	<i>Lorian, 2014</i>
zofl ciprofloxacin	200	<i>Lorian, 2014</i>
fosfomicin	75	<i>Clin Inf Dis 2014</i>
nitrofurantoin	<10	<i>Lorian, 2014</i>

Ulleryd P. BJU Int. 2001 Jul;88(1):15–20

Breen DP. Family Physicians Inquiries Network; 2007 Au

Male UTI: prostatitis...

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Referring to the guidelines on UTI...

- IDSA: UTI in women, catheterized patients
- EAU: prostatitis, epididymitis, “7d FQ treatment for young male with uncomplicated cystitis”
- NICE: no guideline
- French: “male UTIs are not limited to prostatitis but all should be treated like prostatitis”

...even some confusing literature



Urol Clin N Am 29 (2002) 613–616

UROLOGIC
CLINICS OF
NORTH AMERICA

Female prostatitis

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University of California Medical School, San Diego, CA 92037, USA

Regarding UTI... MAN=PROSTATE?

→Should pyelonephritis and cystitis be considered in male UTI?

Gupta K, Clin Infect Dis. 2011. pp. e103–20.

Hooton TM. Clin Infect Dis. 2010 Mar 1;50(5):625–63.

Grabe M. 2015 Guidelines on Urological Infections. www.uroweb.org

SPILF. 2015 Guidelines on diagnostic and management of UTI

2/ 60 years old, frequency, acute dysuria, 38°C, lumbar pain, normal prostate at DRE

- **Diagnosis: acute pyelonephritis**

- **Uncertainty regarding ATB Rx:**

- treat like a pyelonephritis in women?
- consider prostatic involvement and treat longer? with FC

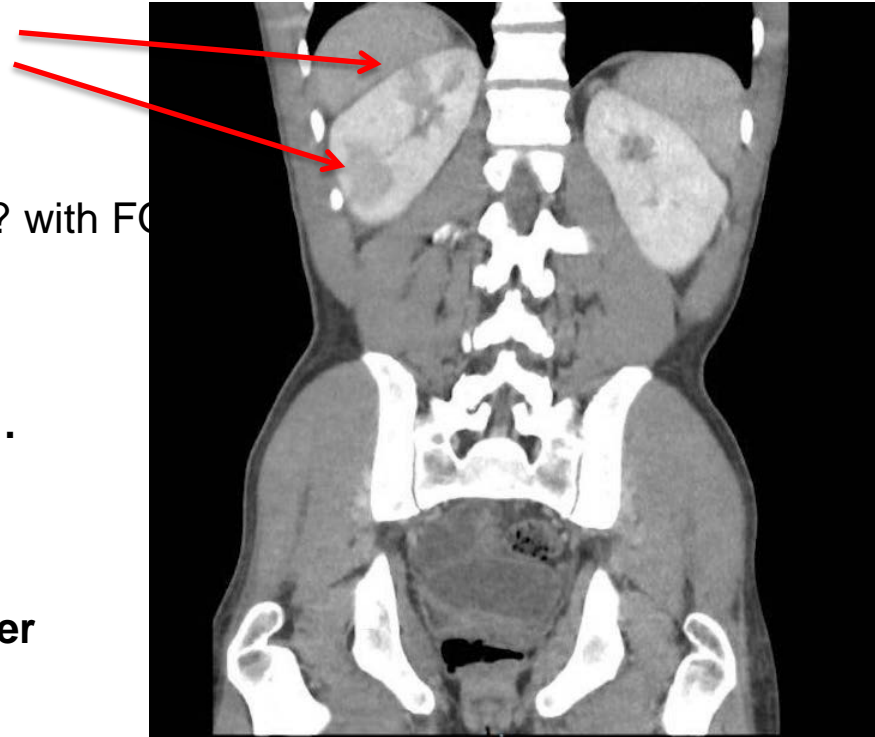
→ **Remind to search for:**

- **pyelonephritis**
- **complications such as abscess, stones...**

→ **specific studies on PN in male**

OR

→ **studies on PN stratified according to gender**



Male UTI: prostatitis...and beyond

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Male UTI: prostatitis...and beyond

3/ 60 years old, 37°C, frequency, no lumbar pain, no prostatic pain at DRE

Raises additional questions:

- how common is that clinical picture?
- is the prostate necessarily involved?
- what is your diagnosis?
- would you treat like a cystitis or like a prostatitis?

3/ 60 years old, 37°C, frequency, no lumbar pain, no prostatic pain at DRE

-How common is that clinical picture?

French record of reason for consulting a GP: 1.4/1000

Kinouani S. Médecine et Maladies Infectieuses. 2017
Jun 9.

21 GP in Netherlands, included during 2y adult patients:

- w symptoms of lower UTI
- w/o fever, systemic complaints, catheter, history of urological complaints, or suspicion of sexually transmitted disease.
- confirmed by urine analysis in 236, aged <50 (28%), 51-70 (38%), >70 (33%)

➔ 1 patient/2 months for a GP

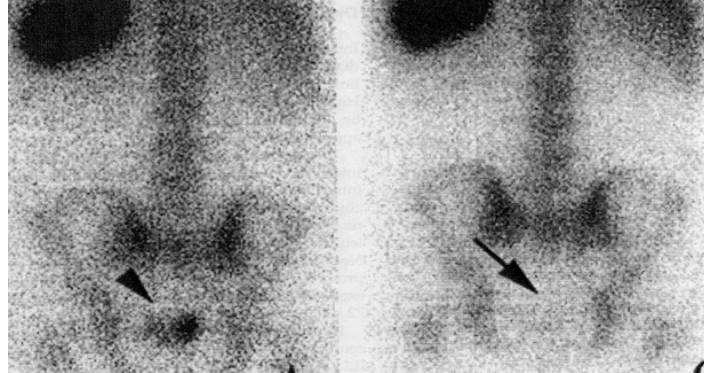
Koeijers J.Urology. 2010 Aug;76(2):336–40.

3/ 60 years old, 37°C, frequency, no lumbar pain, no prostatic pain at DRE

-Is the prostate necessarily involved in any male UTI?

- to date, no routine investigation could rule out a prostatic involvement (digital rectal examination, PSA...)

- scintigraphic studies demonstrate that the prostate is inconstantly involved



Prostate involved in 9/20 patients

3/ 60 years old, 37°C, frequency, no lumbar pain, no prostatic pain at DRE

-Is the prostate necessarily involved?

- what anatomic/imaging studies teach us:

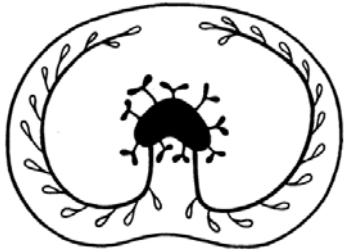
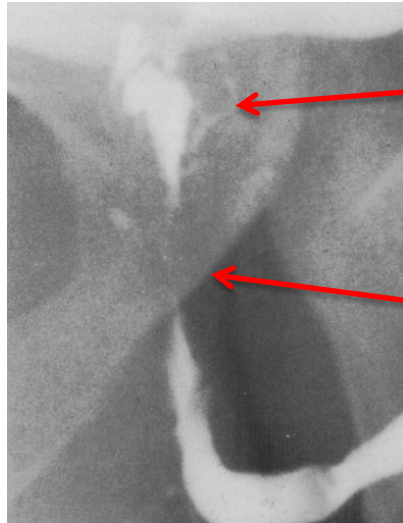


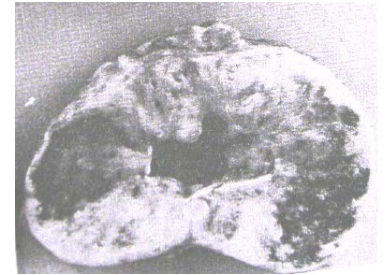
Figure 3: Diagram of course of peripheral zone ducts to the prostate.

Peripheral ducts
perpendicular to the urethra



Urine prostatic reflux

Urethral stricture



Carbon particles
resulting from urine reflux

Blacklock NJ. Infection. 1991;19 Suppl 3:S111-4.

Kirby, British J Urol, 1982, 54(6), 729-3

- ➔ prostatic infection depends on urine flow
- ➔ what if the urine flow is laminar?

3/ 60 years old, 37°C, frequency, no lumbar pain, no prostatic pain at DRE

-What is your diagnosis? How would you treat?

- clinically rule out any anatomic/functional disorder (score CPSI?)
if yes, consider the diagnosis and treatment of cystitis?
- unable to rule out functional bladder disorder?
treat like prostatitis... ?



Words of Wisdom

To be investigated !

it would be reasonable to reflect on useful definitions, terminology, and clinical reality in recommending antimicrobial treatment for different UTI presentations.

Take home

- **Still a lot to do on acute prostatitis**

 - (“routine” treatment, “difficult-to-treat” pathogens, urological investigations...)

- **Male UTI: diverse / not limited to prostatitis, clinical pictures to be clarified**

- **Cystitis exist in male but**

 - such diagnosis should be retained only after strict exclusion of any underlying urethral disorder

 - no therapeutic study has yet been conducted

- **Screen for underlying urological disorder**

 - not to miss a prostatic involvement in any male UTI

 - because it might be the most important risk factor for treatment failure more than antibiotic Rx

- **Specific research should be conducted on male UTI**

 - in all domains (epidemiology, therapeutic...)

 - in general practice to better describe all clinical pictures