

Prostatitis

January 2008

Definition	1
Etiology	5
Epidemiology	6
Manifestations	7
Diagnosis	8
Management and Treatment	9
Consideration for Other STIs	10
Reporting and Partner Notification	10
Follow-up	10

PROSTATITIS

Prostatitis is generally not considered a sexually transmitted infection (STI). It is included here to assist health care providers in the management of men who present with urogenital symptoms.

Definition

- Providing a global definition of prostatitis is difficult because each prostatitis syndrome has its own features. One definition, provided by J.N. Krieger, is as follows: “‘Prostatitis’ is the diagnosis given to a large group of men who present with a variety of complaints referable to the lower urogenital tract and perineum.”¹
- In 1995, a classification for prostatitis syndromes was first proposed by the U.S. National Institute of Health, National Institute of Diabetes and Digestive and Kidney Diseases (NIH-NIDDK); it was subsequently published in 1998. A consensus meeting of the National Institutes of Health Chronic Prostatitis Collaborative Research Network held in March 2002 reconfirmed the urology research community’s approval of this classification system.² Table 1 compares the NIH-NIDDK classification system with the traditional classification system.

Table 1. NIH-NIDDK classification of prostatitis syndromes

NIH-NIDDK classification	Traditional classification	Features
Category I: acute bacterial prostatitis	Acute bacterial prostatitis	Acute bacterial infection of the prostate gland
Category II: chronic bacterial prostatitis	Chronic bacterial prostatitis	Chronic infection of the prostate characterized by recurrent urinary tract infections
Category III: chronic prostatitis / chronic pelvic pain syndrome (CP/CPSS)		Symptoms of discomfort or pain in the pelvic region for at least 3 months in the absence of uropathogenic bacteria cultured by standard techniques
Category IIIA: inflammatory chronic pelvic pain syndrome	Chronic non-bacterial prostatitis	Significant number of leukocytes in EPS, VB3 or semen

EPS = expressed prostatic secretions (see *Diagnosis* section, below)

VB3 = voided bladder 3 specimen (see *Diagnosis* section, below)

Table 1. NIH-NIDDK classification of prostatitis syndromes (continued)

NIH-NIDDK classification	Traditional classification	Features
Category IIIB: non-inflammatory chronic pelvic pain syndrome	Prostatodynia	No evidence of significant leukocytes found in EPS, VB3 or semen
Category IV: asymptomatic inflammatory prostatitis	None	Leukocytes in EPS, VB3, semen or prostate tissue during evaluation for other disorders in men without symptoms of prostatitis

EPS = expressed prostatic secretions (see *Diagnosis* section, below)

VB3 = voided bladder 3 specimen (see *Diagnosis* section, below)

There are three major differences between the traditional and the NIH-NIDDK approaches to classification of prostatitis syndrome³:

- The new clinical classification includes a systematic evaluation of specific symptoms characteristic of prostatitis, usually done using the NIH-Chronic Prostatitis Symptom Index (see *Table 2*). This symptom index is meant to be evaluative rather than discriminative in focus; it is not meant to be used as a screening or diagnostic tool. Rather, it is meant to provide a valid index of symptom severity and impact on quality of life for men with chronic prostatitis.
- The difference between inflammatory and non-inflammatory CP/CPSS is substantially different from the distinction between the traditional approach of nonbacterial prostatitis and prostatodynia.
- The new concepts have provided a critical framework for the development of research into the causes, evaluation and treatment of prostatitis syndromes.

Table 2. NIH-Chronic Prostatitis Symptom Index (NIH-CPSI)⁴

PAIN OR DISCOMFORT			
1. In the last week, have you experienced any pain or discomfort in the following areas?	a. Area between rectum and testicles (perineum)	<input type="checkbox"/> (1) Yes	<input type="checkbox"/> (0) No
	b. Testicles	<input type="checkbox"/> (1)	<input type="checkbox"/> (0)
	c. Tip of the penis (not related to urination)	<input type="checkbox"/> (1)	<input type="checkbox"/> (0)
	d. Below your waist, in your pubic or bladder area	<input type="checkbox"/> (1)	<input type="checkbox"/> (0)
2. In the last week, have you experienced:	a. Pain or burning during urination?	<input type="checkbox"/> (1)	<input type="checkbox"/> (0)
	b. Pain or discomfort during or after sexual climax (ejaculation)?	<input type="checkbox"/> (1)	<input type="checkbox"/> (0)
3. How often have you had pain or discomfort in any of these areas over the last week?	<input type="checkbox"/> (0) Never <input type="checkbox"/> (1) Rarely <input type="checkbox"/> (2) Sometimes	<input type="checkbox"/> (3) Often <input type="checkbox"/> (4) Usually <input type="checkbox"/> (5) Always	
4. Which number best describes your average pain or discomfort on the days that you had it, over the last week?	<input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 No Pain Pain as bad as you can imagine		
URINATION			
5. How often have you had a sensation of not emptying your bladder completely after you finished urinating over the last week?	<input type="checkbox"/> (0) Not at all <input type="checkbox"/> (1) Less than 1 time in 5 <input type="checkbox"/> (2) Less than half the time	<input type="checkbox"/> (3) About half the time <input type="checkbox"/> (4) More than half the time <input type="checkbox"/> (5) Almost always	
6. How often have you had to urinate again less than 2 hours after you finished urinating, over the last week?	<input type="checkbox"/> (0) Not at all <input type="checkbox"/> (1) Less than 1 time in 5 <input type="checkbox"/> (2) Less than half the time	<input type="checkbox"/> (3) About half the time <input type="checkbox"/> (4) More than half the time <input type="checkbox"/> (5) Almost always	

Table 2. NIH-Chronic Prostatitis Symptom Index (NIH-CPSI)⁴ (continued)

IMPACT OF SYMPTOMS			
7. How much have your symptoms kept you from doing the kind of things you would usually do over the last week?	<input type="checkbox"/> (0) None <input type="checkbox"/> (1) Only a little	<input type="checkbox"/> (2) Some <input type="checkbox"/> (3) A lot	
8. How much did you think about your symptoms, over the last week?	<input type="checkbox"/> (0) None	<input type="checkbox"/> (1) Only a little	<input type="checkbox"/> (2) Some
QUALITY OF LIFE			
9. If you were to spend the rest of your life with your symptoms just the way they have been during the last week, how would you feel about that?	<input type="checkbox"/> (0) Delighted <input type="checkbox"/> (1) Pleased <input type="checkbox"/> (2) Mostly satisfied <input type="checkbox"/> (3) Mixed (equally satisfied and dissatisfied)	<input type="checkbox"/> (4) Mostly dissatisfied <input type="checkbox"/> (5) Unhappy <input type="checkbox"/> (6) Terrible	
SCORING THE NIH-CHRONIC PROSTATITIS SYMPTOM INDEX DOMAINS			
Pain:	total of items 1a, 1b, 1c, 1d, 2a, 2b, 3 and 4	= _____ (0–21)	
Urinary symptoms:	total of items 5 and 6	= _____ (0–10)	
Quality of life impact:	total of items 7, 8 and 9	= _____ (0–12)	

Etiology

Table 3 presents recent understanding of the etiologic agents involved in the different prostatitis syndromes.⁵

Table 3. Etiologic agents of the different prostatitis syndromes

Prostatitis syndrome	Etiologic agents
Category I: acute bacterial prostatitis	<ul style="list-style-type: none"> • Most frequent: <i>Escherichia coli</i>, followed by species of <i>Proteus</i>, <i>Providentia</i> • Less common: <i>Klebsiella</i>, <i>Pseudomonas</i>, <i>Serratia</i> and <i>Enterobacter</i> • Minor importance: <i>Enterococci</i> • Role of Gram-positive bacteria is debated but believed to rarely cause bacterial prostatitis
Category II: chronic bacterial prostatitis	<ul style="list-style-type: none"> • Predominant agents are the same as for Category I
Category IIIA: inflammatory chronic pelvic pain syndrome	<ul style="list-style-type: none"> • Cause not known • Infection with <i>Chlamydia trachomatis</i>, <i>Mycoplasma hominis</i>, <i>Ureaplasma urealyticum</i>, <i>Trichomonas vaginalis</i> or a viral agent may cause this type of prostatitis syndrome, but most studies do not support this view
Category IIIB: non-inflammatory chronic pelvic pain syndrome	<ul style="list-style-type: none"> • Cause not known • Suggested explanations for this syndrome include a dyssynergia between bladder detrusor and internal sphincter muscles (stress prostatitis) or “pelvic floor tension myalgia”
Category IV: asymptomatic inflammatory prostatitis	<ul style="list-style-type: none"> • Cause not known

Epidemiology

- By some estimates, up to 50% of men experience symptoms of prostatitis at some time in their lives. Many men remain symptomatic for prolonged periods.¹

Table 4 summarizes some epidemiological characteristics, as well as relative frequency of prostatitis syndromes.

Table 4. Epidemiological characteristics of prostatitis syndromes⁶

Prostatitis syndrome	Typical presentation	Approximate percent of all prostatitis syndromes
Category I: acute bacterial prostatitis	<ul style="list-style-type: none">• Acute illness	1–5%
Category II: chronic bacterial prostatitis	<ul style="list-style-type: none">• Recurrent urinary tract infection	5–10%
Category IIIA: inflammatory chronic pelvic pain syndrome	<ul style="list-style-type: none">• Discomfort or pain in the pelvic region for at least 3 months	40–65%
Category IIIB: non-inflammatory chronic pelvic pain syndrome	<ul style="list-style-type: none">• Discomfort or pain in the pelvic region for at least 3 months	20–40%
Category IV: asymptomatic inflammatory prostatitis	<ul style="list-style-type: none">• Asymptomatic. Discovered during evaluation for other disorders in men without symptoms of prostatitis	Unknown

Manifestations⁵

Table 5. Main clinical features of the different prostatitis syndromes

Prostatitis syndrome	Clinical presentation
Category I: acute bacterial prostatitis	<ul style="list-style-type: none"> • Typically presents with fever, chills and pain in the low back, rectum or perineum, accompanied in most cases by irritative or obstructive genitourinary symptoms • On digital rectal examination, the prostate is warm, firm, swollen and exquisitely tender • Prostatic massage should be avoided, because it is painful and may cause bacteremia
Category II: chronic bacterial prostatitis	<ul style="list-style-type: none"> • Often presents as relapsing urinary tract infections, even after appropriate antibiotic treatment • Symptoms vary, from dysuria or other voiding complaints to ejaculatory pain, hemospermia or pelvic or genital pain • Some patients may be asymptomatic • Urogenital physical examination is generally unremarkable
Category IIIA: inflammatory chronic pelvic pain syndrome	<ul style="list-style-type: none"> • Symptoms similar to those of Category II • Typically does not cause cystitis-like dysuria • Chronic pelvic pains (perineal, testicular, penile, lower abdominal and ejaculatory) are most prominent symptoms • Urogenital physical examination is generally unremarkable
Category IIIB: non-inflammatory chronic pelvic pain syndrome	<ul style="list-style-type: none"> • Symptoms similar to those of Category II • Typically does not cause cystitis-like dysuria • Chronic pelvic pains (perineal, testicular, penile, lower abdominal and ejaculatory) are most prominent symptoms • Common complaints include dysuria, hesitancy, interrupted or pulsed flow, diminution in stream size or force, and dribbling • Symptoms may be exacerbated by sexual activity • Urogenital physical examination is generally unremarkable
Category IV: asymptomatic inflammatory prostatitis	<ul style="list-style-type: none"> • Asymptomatic

Diagnosis⁴

- The gold-standard test for a diagnosis of bacterial prostatitis would be a prostatic biopsy, but this is rarely indicated.
- Examination of expressed prostatic secretions has been the definite test for differentiating the prostatitis syndromes. The procedure is referred as the “four-glass” localization test (see *Table 6*).
- Unfortunately, the prostatic localization test has not been properly validated, and its limitations are significant. Very few urologists routinely use this test, and some suggest it should be confined to research trials.⁵
- A simpler, “two-glass” pre- and post-massage screening test, consisting of a urine specimen taken before and after a prostatic massage could be as sensitive and specific as the “four-glass” test⁶⁻¹⁰ (same interpretation as *Table 6*, below, for the “four-glass” test: pre-massage specimen is the same as voided bladder 2 specimen [VB2] and the post-massage specimen is the same as voided bladder 3 specimen [VB3]).
- Avoid voided bladder 1 specimens (VB1) in patients with no clinical urethritis and expressed prostatic secretions specimen (EPS), which is difficult to obtain and deal with.

Table 6. Localization cultures (“four-glass” test) for diagnosis of prostatitis syndromes

Technique
<ul style="list-style-type: none">• Ensure that the patient has a full bladder at the start of the procedure• Retract the foreskin of uncircumcised men throughout the procedure• Cleanse the glans penis with soap and water or povidone-iodine• Collect first 10 mL of voided urine (VB1)• Discard next 100 mL urine voided, then collect a 10 mL midstream urine specimen (VB2)• Massage prostate and collect any expressed prostatic secretions (EPS)• Collect first 10 mL urine voided after prostatic massage (VB3)• Make sure all specimens are taken immediately to the laboratory for quantitative culture.
Interpretation
<ul style="list-style-type: none">• All specimens yield less than 10^3 colony-forming units/mL: negative test for bacterial prostatitis• VB3 or EPS yields a colony count of one or more log(s) greater than the VB1 specimen: chronic bacterial prostatitis• VB1 yields a colony count greater than other specimens: urethritis or specimen contamination• All specimens yield at least 10^3 colony-forming units/mL: not interpretable. In this case, treat the patient for 2 to 3 days with an antibiotic that does not penetrate the prostate but will sterilize bladder urine (such as ampicillin or nitrofurantoin), then repeat procedure.

EPS = expressed prostatic secretions specimen

VB1= voided bladder 1 specimen

VB2 = voided bladder 2 specimen

VB3 = voided bladder 3 specimen

Management and Treatment⁵

Table 7 summarizes the suggested antibiotic regimens for treating acute bacterial prostatitis (Category I) and chronic bacterial prostatitis (Category II).

- Acute bacterial prostatitis responds promptly to most antibiotics.
- Treatment of acute bacterial prostatitis should be for at least 3–4 weeks with an appropriate antimicrobial with excellent tissue penetration in order to avoid complications such as prostatic abscess or chronic bacterial prostatitis.
- Available data do not allow for the recommendation of a specific fluoroquinolone, but only norfloxacin, ciprofloxacin, or ofloxacin are at present approved for the treatment of bacterial prostatitis.
- Most patients with acute prostatitis can be managed with oral antibiotics, although some patients may require IV treatment. If IV treatment is needed, ampicillin/gentamicin is recommended, although both trimethoprim-sulfa and ciprofloxacin may also be given IV (see Table 7). There are other beta-lactam antibiotic regimens that can be used, but listing them is beyond the scope of these guidelines. When IV antibiotic treatment is needed, switch promptly to oral antibiotics when the patient has clinically improved.
- Chronic bacterial prostatitis requires at least 4–6 weeks of appropriate antibiotic therapy.
- For relapse of chronic bacterial prostatitis, a treatment of 3 months may be advisable.
- **If there is no response to antibiotic treatment, consider referral for evaluation.**

Table 7. Potential regimens for empiric therapy of bacterial prostatitis

Prostatitis syndrome	Antibiotic regimen	Duration
Category I: acute bacterial prostatitis	In some cases, treatment may be given intravenously for the first few days. • Trimethoprim-sulfamethoxazole 160/800 mg PO bid* [C-II]	4 weeks
	OR • Ofloxacin 400 mg PO bid [A-I]	4 weeks
	OR • Ciprofloxacin 500 mg PO bid [A-I]	4 weeks
	OR • Ampicillin 1 g IV every 6 hours PLUS gentamicin 5 mg/kg lean body weight IV/day† [A-I]	4 weeks
Category II: chronic bacterial prostatitis	• Trimethoprim-sulfamethoxazole 160/800 mg PO bid* [C-II]	6-12 weeks
	OR • Ofloxacin 400 mg PO bid [A-I]	6-12 weeks
	OR • Ciprofloxacin 500 mg PO bid [A-I]	6-12 weeks
	OR • Doxycycline 100 mg PO bid* [I-III]	6-12 weeks

*Not an approved indication by the U.S. Food and Drug Administration.

†This is the recommended gentamicin dose for patients with normal renal function; should be adjusted in cases of renal impairment. Renal function and gentamicin levels should be monitored during therapy. Antibiotics should be stepped down promptly to oral therapy when the patient is clinically improved.

Table 8. Treatment regimens for non-bacterial prostatitis and chronic pelvic pain syndrome (Category IIIA and Category IIIB)

Treatment for Category IIIA (inflammatory non-bacterial prostatitis) is not well defined
<ul style="list-style-type: none">• Occasional successes have been reported with antibiotic therapy.• A single 4-week course of antibiotic therapy with an appropriate agent may be defensible.• Repeated or prolonged antibiotic courses should be avoided.• Other measures have been suggested, but few are evidence-based (NSAIDs, alpha-blockers, finasteride [Proscar], allopurinol, nutritional supplements, lifestyle changes and prostatic massage).• Persistent or severe voiding symptoms, especially in older patients, should be evaluated for interstitial cystitis or carcinoma of the bladder.¹¹
Treatment for Category IIIB (non-inflammatory chronic pelvic pain syndrome) is even more empirical than for Category IIIA
<ul style="list-style-type: none">• In addition to those listed for Category IIIA, suggested approaches include muscle relaxants, analgesics, alpha-blockers, physiotherapy, neuromodulators, biofeedback, sitz baths, relaxation exercises and psychotherapy.

Consideration for Other STIs

- Evaluation for possible STIs should be made when appropriate, especially in younger sexually active patients, and patients with primarily urethral symptomatology or urethral discharge.
- When investigation reveals a **VB1** specimen colony count greater than all other specimens (see Diagnosis section, above), consider urethritis as a possible diagnosis and investigate appropriately.

Reporting and Partner Notification

- Because prostatitis syndromes are not typically caused by a sexually transmitted pathogen, sexual partners of patients with prostatitis do not usually require evaluation or treatment.
- When investigation reveals a condition that is notifiable according to provincial and territorial laws and regulations, patients should be reported to the local public health authority.

Follow-up

- Appropriate follow-up should be arranged depending on the proven or presumed diagnosis, or on the need to further investigate certain patients according to clinical presentation.