

Clinical Evidence Handbook

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Gonorrhea

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Gonorrhea is caused by infection with *Neisseria gonorrhoeae*. In men, uncomplicated urethritis is the most common manifestation, whereas in women, less than one-half of cases produce symptoms (such as vaginal discharge and dyspareunia).

- Rates of diagnosed gonorrhea infection in the United Kingdom fell by more than 30 percent between 2002 and 2009.

- In the United Kingdom in 2008, diagnosis rates for gonorrhea were 152 per 100,000 for men 20 to 24 years of age, and 135 per 100,000 for women 16 to 19 years of age.

- Rates are highest in men 20 to 24 years of age and in women 16 to 19 years of age.

- In the United Kingdom, some studies have shown that 28 percent of isolates are resistant to ciprofloxacin and 8 percent are resistant to penicillin. There is evidence of reduced susceptibility to cephalosporins.

- Coinfection with *Chlamydia trachomatis* is reported in 10 to 40 percent of persons with gonorrhea in the United States and the United Kingdom.

- Single-dose antibiotic regimens have achieved cure rates of 95 percent and higher in men and nonpregnant women with urogenital or rectal gonorrhea, although we do not know how different single-dose antibiotic regimens compare with each other.

- Single-dose antibiotics are also effective for curing gonorrhea in pregnant women.

In persons with disseminated gonococcal infection, there is consensus that multiple-dose regimens using cephalosporins or fluoroquinolones (when the infecting organism is known to be susceptible) are the most effective treatments, although evidence supporting this is somewhat sparse.

We found insufficient evidence to judge the best treatment for persons with both gonorrhea and chlamydia, although theory, expert opinion, and clinical experience

suggest that a combination of antimicrobials active against both *N. gonorrhoeae* and *C. trachomatis* is effective.

Definition

Gonorrhea is caused by infection with *N. gonorrhoeae*. In men, uncomplicated urethritis is the most common manifestation, with dysuria and urethral discharge. Less typically, signs and symptoms are mild and indistinguishable from those of chlamydial urethritis. In women, the most common site of infection is the uterine cervix, where infection results in symptoms (such as vaginal discharge, lower abdominal discomfort, and dyspareunia) in less than one-half of cases.

Advances in the nucleic acid amplification technique (NAAT) allow testing on noninvasively collected specimens (urine and self-taken vaginal swabs). NAAT may have a sensitivity of greater than 90 percent, compared with the 75 percent sensitivity of culture. However, NAAT cannot provide data on antimicrobial sensitivity, so culture and sensitivity testing are required before commencement of antimicrobial therapy. In addition, the specificity of NAAT ranges from 98.1 to 99.7 percent, and caution is required when interpreting positive results.

Resistance to single-dose antimicrobials often develops, and antimicrobial sensitivity of gonococcal isolates is monitored nationally. Clinicians need to be aware of their local resistance profile and the resistance profiles of individual isolates to make appropriate treatment choices.

Studies in the United States and the United Kingdom have found concurrent *C. trachomatis* in 7 to 14 percent of homosexual men with gonorrhea, in 20 to 30 percent of heterosexual men, and in 40 to 50 percent of women. Overall, coinfection with *C. trachomatis* is reported in 10 to 40 percent of persons with gonorrhea.

Treatment for potential coexistent chlamydia is advised whenever treating gonorrhea.

Incidence and Prevalence

Between 1975 and 2008, the reported incidence of gonorrhea in the United States fell by 74 percent, from 464 per 100,000 persons to 112 per 100,000 persons. In United Kingdom genitourinary medicine clinics, diagnoses for 2002 were 269 per 100,000 men 20 to 24 years of age, and 195 per 100,000 women 16 to 19 years of age. By 2008, diagnoses of gonorrhea had fallen to 152 per 100,000 men 20 to 24 years of age, and 135 per 100,000 women 16 to 19 years of age. Studies in the United States and the United Kingdom have found concurrent *C. trachomatis* in 7 to 14 percent of homosexual men with gonorrhea, in 20 to 30 percent of heterosexual men, and in 40 to 50 percent of women. In the United Kingdom, infection is overrepresented in specific populations (men who have sex with men and black Caribbean persons), mainly in urban areas. Rates are highest in men 20 to 24 years of age and in women 16 to 19 years of age.

Etiology and Risk Factors

Most gonococcal infections result from penile-vaginal, penile-rectal, or penile-pharyngeal contact. An important minority of infections are transmitted from mother to child during birth, which can cause a sight-threatening purulent conjunctivitis (ophthalmia neonatorum).

Prognosis

The natural history of untreated gonococcal infection is spontaneous resolution and microbiological clearance after weeks or months of unpleasant symptoms. During this time, there is a substantial likelihood of transmission to others and of complications developing in the infected individual. In many women, the lack of readily discernible signs or symptoms of cervicitis means that infections go unrecognized and untreated. An unknown proportion of untreated infections causes local complications, including lymphangitis, periurethral abscess, Bartholinitis, and urethral stricture; epididymitis in men; and involvement of the uterus, fallopian tubes, or ovaries in women, causing pelvic inflammatory disease.

Clinical Questions

What are the effects of treatments for uncomplicated infections in men and nonpregnant women?

Beneficial Single-dose antibiotic regimens*

What are the effects of treatments for uncomplicated infections in pregnant women?

Beneficial Single-dose antibiotic regimens*

What are the effects of treatments for disseminated gonococcal infection?

Likely to be beneficial Multiple-dose antibiotic regimens†

What are the effects of dual treatment for gonorrhea and chlamydia infections?

Unknown effectiveness Dual antibiotic treatment

RCT = randomized controlled trial.

*—Based on results in individual arms of RCTs and observational studies.

†—Based on non-RCT evidence and consensus.

One review found that *N. gonorrhoeae* was cultured from 8 to 32 percent of women with acute pelvic inflammatory disease in 11 European studies, and from 27 to 80 percent of women in eight U.S. studies. The proportion of *N. gonorrhoeae* infections in women that lead to pelvic inflammatory disease has not been well studied. However, one study of 26 women exposed to men with gonorrhea found that 19 women were culture positive; of these, five women had pelvic inflammatory disease and another four had uterine adnexal tenderness. Pelvic inflammatory disease may lead to infertility.

In some persons, localized gonococcal infection may disseminate. A U.S. study estimated the risk of dissemination to be 0.6 to 1.1 percent among women, whereas a European study estimated it to be 2.3 to 3.0 percent. The same European study found a lower risk in men, estimated to be between 0.4 and 0.7 percent. When gonococci disseminate, they cause petechial or pustular skin lesions; asymmetrical arthropathies, tenosynovitis, or septic arthritis; and, rarely, meningitis or endocarditis.

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