

# Chancroid

Chancroid is a sexually transmitted infection (STI) caused by the bacterium *Haemophilus ducreyi*, a fastidious, Gram-negative organism. It is characterized by the presence of painful genital ulcers and is highly infectious, primarily transmitted through sexual contact. Although it remains rare in developed countries like the United States, it is a significant cause of genital ulcers in regions with high HIV prevalence, particularly sub-Saharan Africa, Southeast Asia, and the Caribbean.

## Etiology and Pathophysiology

Chancroid is caused by *Haemophilus ducreyi*, which enters the body through broken skin or mucosal surfaces during sexual activity. Upon infection, the bacterium triggers a localized inflammatory response, leading to the formation of one or more painful genital ulcers. These ulcers typically have a soft, irregular appearance and may be surrounded by an erythematous border. In some cases, the infection also causes regional lymphadenopathy, with the inguinal lymph nodes swelling and possibly developing into painful, pus-draining buboes. The infection is self-limited in nature but will resolve much more slowly in the absence of treatment, often lingering for weeks.

Importantly, chancroid significantly increases the risk of HIV transmission. The presence of open genital ulcers facilitates the entry of the virus, making individuals infected with chancroid more susceptible to acquiring and transmitting HIV. This association highlights the importance of prompt diagnosis and treatment, particularly in areas where both infections are endemic.

## Clinical Presentation

The clinical manifestation of chancroid is characterized by the appearance of painful genital ulcers. Initially, a small papule or bump appears at the site of infection 3-5 days after exposure. The lesion then ulcerates, forming a soft, painful, and irregularly shaped ulcer with a yellowish exudate. Multiple ulcers may be present, but this is not a diagnostic requirement. Swelling and tenderness of the inguinal lymph nodes is common, and in severe cases, these nodes may become fluctuant and drain pus, which is a strong indicator of chancroid. While systemic symptoms like fever and malaise may occur, they are less common.

In women, the presentation is often more subtle, and many are asymptomatic, which can result in the infection being undiagnosed. Asymptomatic women are frequently unaware they carry the infection, underscoring the importance of routine screening in high-risk populations. In men, especially those who are uncircumcised, chancroid is more commonly diagnosed, with the peak incidence occurring in individuals around 22 years old.

## **Epidemiology and Risk Factors**

Chancroid is rare in the United States but remains prevalent in low-resource settings, particularly in sub-Saharan Africa, Southeast Asia, and the Caribbean. High-risk populations for chancroid include individuals engaged in commercial sex work, those with a history of drug use, and those in poverty-stricken areas. Men, particularly non-circumcised individuals, are at higher risk of infection, though women can also contract chancroid. However, women tend to be asymptomatic or have mild symptoms, which complicates diagnosis and increases the risk of transmission.

The co-occurrence of HIV and chancroid is well-documented. The presence of genital ulcers facilitates HIV transmission by providing a direct entry point for the virus. Individuals with chancroid are significantly more likely to acquire HIV compared to those without the infection, making the management of chancroid essential in controlling the spread of HIV in endemic areas.

## **Diagnosis**

The diagnosis of chancroid can be challenging, as its clinical presentation overlaps with other ulcerative STIs, such as syphilis and herpes simplex virus (HSV) infections. Definitive diagnosis requires microbiological confirmation of *H. ducreyi*.

Clinically, the presence of painful genital ulcers and swollen inguinal lymph nodes strongly suggests chancroid, particularly in endemic areas. Diagnostic methods include Gram staining, where the bacterium may be seen as Gram-negative coccobacilli arranged in a characteristic "school of fish" pattern. However, the gold standard for diagnosis remains culture, though *H. ducreyi* is difficult to grow and requires specialized laboratory conditions. Alternatively, molecular methods such as polymerase chain reaction (PCR) testing can offer more sensitive and rapid detection of the pathogen in ulcer exudate. Since co-infection with syphilis is common, testing for *Treponema pallidum* should also be conducted.

## **Treatment**

Chancroid is treatable with antibiotics, and timely treatment typically leads to rapid resolution of symptoms. First-line treatment includes a single dose of azithromycin (1 g orally) or ceftriaxone (250 mg intramuscularly). These antibiotics are effective and have the advantage of being easy to administer. Alternative treatments include ciprofloxacin (500 mg orally twice daily for 3 days) or erythromycin (500 mg four times daily for 7 days).

Given the high co-infection rate between chancroid and syphilis, many individuals diagnosed with chancroid are also treated empirically for syphilis. Antibiotic therapy should be provided to sexual partners of the infected individual, even if they are asymptomatic, to prevent reinfection and further spread of the disease.

## Prevention

The best method for preventing chancroid is through safe sexual practices, including the consistent use of condoms during sexual intercourse. Public health education about the risks of chancroid, HIV, and other STIs is crucial, especially in high-risk populations. Screening for STIs in individuals with genital ulcers is important for early detection and treatment of chancroid.

As the infection facilitates the transmission of HIV, integrated sexual health strategies, including HIV prevention efforts such as pre-exposure prophylaxis (PrEP), are essential in reducing the spread of both chancroid and HIV in at-risk populations. Partner notification and treatment are also critical for preventing recurrent infections.

## Impact on HIV Transmission

Chancroid significantly increases the susceptibility to HIV. The ulcerative lesions created by *H. ducreyi* provide a direct route for the entry of the HIV virus, enhancing the likelihood of co-infection. This risk is particularly concerning in regions where both infections are highly endemic. Thus, managing chancroid is an important aspect of HIV prevention in these communities.

## Conclusion

Although chancroid is rare in the United States, it remains a significant STI in developing countries, where it is closely linked with HIV transmission. Effective diagnosis, treatment with appropriate antibiotics, and preventive measures such as safe sexual practices and screening are essential to control the spread of this disease. As the association between chancroid and HIV highlights the importance of addressing both infections simultaneously, comprehensive sexual health strategies are critical to reducing the global burden of these diseases.

## References

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