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# Chlamydia screening

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Policy contains: Chlamydia, *C. trachomatis*, pelvic inflammatory disease, sexually transmitted diseases.

*This policy is a Sandhills Center Clinical Coverage Policy adopted from AmeriHealth Caritas of North Carolina. These clinical policies are used to assist with making coverage determinations. Sandhills Center's clinical policies are based on guidelines from established industry sources, such as the Centers for Medicare & Medicaid Services (CMS), state regulatory agencies, the American Medical Association (AMA), medical specialty professional societies, and peer-reviewed professional literature. These clinical policies along with other sources, such as plan benefits and state and federal laws and regulatory requirements, including any state- or plan-specific definition of "medically necessary," and the specific facts of the particular situation are considered by Sandhills Center when making coverage determinations. In the event of conflict between this clinical policy and plan benefits and/or state or federal laws and/or regulatory requirements, the plan benefits and/or state and federal laws and/or regulatory requirements shall control. Sandhills Center clinical policies are for informational purposes only and not intended as medical advice or to direct treatment. Physicians and other health care providers are solely responsible for the treatment decisions for their patients. Sandhills Center's clinical policies are reflective of evidence-based medicine at the time of review. As medical science evolves, Sandhills Center will update its clinical policies as necessary. Sandhills Center clinical policies are not guarantees of payment.*

## Coverage policy

Screening for *Chlamydia trachomatis* (*C. trachomatis*) is clinically proven and, therefore, medically necessary when any of the following criteria are met:

- Non-pregnant female members younger than age 25 who are sexually active or otherwise at increased risk (annually).
- Female members older than age 25 who are at increased risk (annually).

Increased risk is defined as a member who has a new sex partner, more than one sex partner, a sex partner with concurrent partners, or a sex partner who has a sexually transmitted infection (U.S. Preventive Services Task Force, 2014).

Screening for *C. trachomatis* is not recommended for any other segment of the population.

### Limitations

No limitations were identified during the writing of this policy.

### Alternative covered services

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No alternative covered services were identified during the writing of this policy.

## Background

Chlamydia, or *C. trachomatis*, is a bacterium that is transmitted through sexual contact with the penis, vagina, mouth, or anus of an infected partner. The condition can also be spread from an infected mother to the baby during birth, which can cause conjunctivitis or pneumonia in some infants. *C. trachomatis* can lead to cervicitis in women and urethritis and proctitis in men and women. Other consequences associated with *C. trachomatis* include pelvic inflammatory disease, tubal factor infertility, ectopic pregnancy, and chronic pelvic pain (U.S. Centers for Disease Control and Prevention, 2016).

Acute and subclinical pelvic inflammatory disease can permanently damage fallopian tubes, uterus, and surrounding tissues, and cause chronic pelvic pain, tubal factor infertility, and potentially fatal ectopic pregnancy (U.S. Centers for Disease Control and Prevention, 2018). An estimated 35% of pelvic inflammatory disease in United Kingdom females ages 16 – 44 years was caused by *C. trachomatis*; this figure rises to 53.5% for women ages 16 – 19 (Price, 2016a).

In 2019 the World Health Organization estimates the number of annual new cases of *C. trachomatis* to be 127 million (World Health Organization, 2019). Worldwide prevalence was estimated to be 2.9% based on a meta-analysis of 29 studies including 89,886 individuals in 24 nations (Huai, 2020).

In 2021 the World Health Organization reports 357 million new cases of four major STIs each year: chlamydia, gonorrhea, syphilis, and trichomoniasis. Among these, chlamydia makes a substantial contribution of about 131 million cases. According to reports by the Centers for Disease Control and Prevention, chlamydia infections are the most frequently notifiable diseases in the United States and constitute a major proportion of all STIs reported to CDC (Shetty et al, 2021).

In the United States the number of reported new cases was 1,758,668 in 2018. From 2000-2018, the number of reported cases more than doubled (increased 115%), from 251.4 to 539.9 cases per 100,000 persons, with increases reported in 16 of the 18 years. (U.S. Centers for Disease Control and Prevention, 2019a). The actual number of new cases is substantially greater if non-reported cases are included.

About 90% of cases are diagnosed at ages 15 –34 (mostly ages 15 – 24), and two-thirds are females. Large disparities exist in incidence rates per 100,000 among major racial or ethnic groups, including blacks (1125.9), Hispanics (374.9), whites (199.8), and Asians (119.3) in 2016 (U.S. Centers for Disease Control and Prevention, 2018). More specifically, U.S. prevalence percentages in those targeted for screening are as high as 4.7% for sexually active females ages 14 – 24 (13.5% among non-Hispanic black females) from 2007 – 2012 (Torrone, 2014).

Most people infected with *C. trachomatis* are asymptomatic without physical findings for long time periods, making it difficult to treat promptly and emphasizing the need for a strong screening effort. Infections are commonly found in the cervix, urethra, and the upper respiratory tract in females, and the urethra and testicles in men. Anal/rectal and throat symptoms can occur in both genders, and can be also be found incidentally without symptoms (U.S. Centers for Disease Control and Prevention, 2018).

*C. trachomatis* can lead to peri-hepatitis, or “Fitz-Hugh-Curtis Syndrome,” in which the liver capsule is inflamed and pain is present in the right upper quadrant. Arthritis, along with urethritis and conjunctivitis, may also be a

result of the bacterium. The risk of acquiring the human immunodeficiency virus is raised by the presence of *C. trachomatis*. Newborns of infected mothers have greater risk of pre-term delivery, conjunctivitis, and

pneumonia. A review of 12 studies calculated elevated risk from presence of *C. trachomatis* of 35% for preterm labor, 52% for low birth weight, and 84% for perinatal mortality, all significant. *C. trachomatis* was not associated with elevated risk for premature membrane rupture, abortion, and postpartum endometritis (Silva, 2011). Furthermore, local bacterial colonies in the peritoneum may facilitate metastasis formation in ovarian cancer. Vaginal infections such as *Neisseria gonorrhoeae* or *Chlamydia trachomatis* have been shown to increase the risk of developing ovarian cancer (Sipos et al, 2021).

A variety of tests are used to diagnose chlamydia, including nucleic acid amplification tests and cell cultures. The most common methods of diagnosis are vaginal swabs for females and urine samples for males; urine samples can also be used for women. Rectal and pharyngeal swabs are also used.

A seven-day course of antibiotics is the preferred treatment for people with *C. trachomatis*, including infants. Abstinence is advised until the course is complete. Treatment removes the infection, but not permanent damage from the disease. Retesting is recommended in three months (U.S. Centers for Disease Control and Prevention, 2018).

Screening for *C. trachomatis* is important, since many cases have no obvious symptoms. Young people should be a focus; a national survey revealed 91.5% of female Medicaid recipients women ages 18 – 25 self-reported to be sexually active (Tao, 2015). The Affordable Care Act required private insurers issuing or renewing plans starting September 23, 2010, to provide certain preventive services recommended by the U.S. Preventive Services Task Force, including chlamydia for sexually active women under 25 years and older at-risk women (Loosier, 2014).

## Findings

The U.S. Preventive Services Task Force recommended screening for *C. trachomatis* for all sexually active and other at-risk women under age 25 who are not pregnant, along with older, non-pregnant women at risk. No recommendation could be made for women age 25 and older not at high risk, regardless of whether they are pregnant. Sufficient evidence was not found to recommend when males should be screened for *C. trachomatis* (LeFevre, 2014; U.S. Preventive Services Task Force, 2014). The National Institute for Health and Care Excellence has also issued a guideline that only covered populations under 18 (National Institute for Health and Care Excellence, 2007).

In 2019, a total of 1,808,703 cases of *Chlamydia trachomatis* infection were reported to the CDC, making it the most common notifiable condition in the United States for that year. This case count corresponds to a rate of 552.8 cases per 100,000 population, an increase of 2.8% compared with the rate in 2018 (U.S. Center for disease control and prevention, 2019).

The U.S. Centers for Disease Control and Prevention concurred with the Task Force, stating sexually active women younger than 25 and older women with risk factors should be screened annually. The Centers also specified that pregnant women should be screened at the first prenatal visit and in the third trimester. It indicated screening should be considered (but not recommended) for sexually active men having sex with men, human immunodeficiency virus-positive men, men with persistent high-risk behavior, or men with partners who have multiple partners ( U.S. Center for disease control and prevention, 2019, 2020).

The Centers for Medicare & Medicaid Services National Coverage Determination concurs with the U.S. Preventive Services Task Force criteria for chlamydia screening. The Centers also recommend screening for pregnant women — age 24 or younger and at any age at increased risk for sexually transmitted infections —

when pregnancy is diagnosed, and repeated in the third trimester if high-risk sexual behavior has occurred since the initial screening (Centers for Medicare and Medicaid Services, 2011).

The Health Plan Employer Data and Information Set administered by the National Committee for Quality Assurance measures the percentage of female members in a plan who are ages 16 – 24, identified as sexually active who had at least one *C. trachomatis* test during the past year (National Committee for Quality Assurance, 2016). Committee data show that 2018 Medicaid Health Maintenance Organization plans had the highest screening rates, versus commercial Health Maintenance Organizations (50.6%) and commercial Preferred Provider Organizations (47.6%) (National Committee for Quality Assurance, 2020):

A Cochrane review of six trials (n = 359,078) addressed the effectiveness of *C. trachomatis* screening. After three yearly screening invitations (n = 317,304), no change was observed in chlamydia test positivity between intervention and control groups (4.1% versus 4.3%). After four years of screening, chlamydia prevalence (n = 4,465) was significantly (28%) lower. Screening was linked with a reduction in pelvic inflammatory disease 12 months later (n = 21,686). Epididymitis risk in 14,980 invited men was 20% lower (not significant) than those not invited after 12 months (Low, 2016).

The Group Health Cooperative of Seattle increased female testing rates by 23% from 1997 – 2007. While the *C. trachomatis* rate rose 79% (449 to 806 cases per 100,000 person-years), pelvic inflammatory disease rate declined 43% (823 to 473 cases per 100,000 person-years,  $P < .01$ ). Male chlamydia rates more than doubled, from 91 to 218 cases per 100,000 person-years (Scholes, 2012). In ten states, of 261,000 Medicaid-insured women ages 15-25 classified as sexually active, the *C. trachomatis* testing rate was 45.6% and 57.5% for white and black women, and 63.5% and 46.8% for women diagnosed and not diagnosed with a sexually transmitted disease the prior year (Patel, 2016).

The risks of not screening at-risk population segments has also been addressed by the U.K. National Chlamydia Screening Programme, begun in 2003. An untreated *C. trachomatis* infection results in pelvic inflammatory disease in 17.1% of cases, and salpingitis in 7.3% of cases (Price, 2016b).

Acceptability is a factor in screening for *C. trachomatis*. A systematic review of 24 studies in European primary care settings showed acceptability ranged from 55% to 81.4% in women and from 9.5% to 70.6% when both genders were reported together (Quezada-Yamamoto, 2019).

A lengthy debate has been in progress on whether men having sex with men constitute an at-risk population for chlamydia. A systematic review of 12 studies failed to demonstrate that screening of this group resulted in lower prevalence of the disease (i.e., some showed a higher prevalence, others a lower prevalence) (Tsoumanis, 2018).

A systematic review of 25 programs, eight each in the U.S. and Australia, found screening targeted mostly at people ages 15 – 29, men who have sex with men, and sex workers, produced a *C. trachomatis* rate of 7.7%. Participation rates in community centers, sporting venues, and bars were high, while streets, public community areas, and sex on premises venues had low rates (Hengel, 2013).

A systematic review/meta-analysis of 19 studies determined infertility was significantly more prevalent (odds ratio = 2.2) in people with *C. trachomatis*. In 15 studies, significance (odds ratio = 4.9 and 3.3 for males and

females) was documented for asymptomatic patients with *C. trachomatis* than those without. The study called for screening and treatment focused on asymptomatic patients (Ahmadi, 2016).

A worldwide review of 27 studies of over 47,000 students found a median positivity of 4.7% for *C. trachomatis*, and a 100% median treatment rate. Two studies reported repeat positivity rates — 21.1% and 26.3% — and thus more outcomes need to be reported in school screening (Jamil, 2014). A study of 4,093 male students at the University of Pennsylvania revealed *C. trachomatis* positivity of 3.1% and 3.7% for those screened using urogenital and extragenital methods; 26.4% of cases would have been missed if screening had only used urogenital methods (Drinkard, 2017).

A recent Cochrane review of 15 studies (n = 1,754) assessed efficacy of antibiotics to treat *C. trachomatis*. All drugs had significantly greater cure rates than placebo. The drugs amoxicillin, erythromycin, clindamycin, and azithromycin had similar outcomes to each other in cure, repeat infection, and pregnancy complications (preterm birth, preterm rupture of membranes, low birthweight). Erythromycin was observed to have more side effects than azithromycin and clindamycin (Cluver, 2017). Another study found a modest improved efficacy for doxycycline versus azithromycin (Kong, 2014). A systematic review of 14 studies showed that azithromycin was less effective than doxycycline in men with *C. trachomatis*, but no conclusions could be drawn in women (Paez-Canro, 2019).

New information about the hazards of *C. trachomatis* is still emerging. A meta-analysis of 22 studies with 4,291 cervical cancer cases and 7,628 controls included five studies that concluded *C. trachomatis* was significantly linked to elevated risk of cervical cancer risk in prospective and retrospective studies ( $P < .001$ ), which had been a controversial research topic (Zhu, 2016).

A systematic review of 33 articles on *C. trachomatis* and other sexually transmitted diseases found many commercially used tests had specificities over 90%, but sensitivities under 50%. In 2010, the Chlamydia Rapid Test, a new point-of-service test, showed limited sensitivity (52% – 64%) but high specificity (97%) in detecting the disease (Hislop, 2010). A systematic review of nine studies (n = 10,280) found sensitivity of antigen detection rapid point-of-care tests were 53%, 37%, and 63% for cervical, vaginal, and male urine swabs. Sensitivity and specificity of near-patient nucleic acid amplification test for all specimen types were greater than 98% and 99.4%. While point-of-care tests return results quickly, they have low sensitivity; a Cochrane study (n = 13,676) estimated sensitivity to be 52% (Grillo-Adriola, 2020). Nucleic acid amplification, while having higher sensitivity, requires electricity, takes an average of 90 minutes to perform, and is costlier than point-of-care tests (Kelly, 2017).

A systematic review of four articles (n = 591) showed that women with threatened spontaneous preterm labor had a significantly higher rate of *C. trachomatis* than did controls, namely 9% versus 1%, leading authors to suggest that women in this group be screened for the disease (Kanninen, 2019).

*C. trachomatis* can be tested at home. A Cochrane review of 10 studies (n = 10,479) found specimens collected at home had a statistically lower percentage with a positive test than those at a clinic, or 11.6% versus 18.5%; authors called for comparisons of outcomes between the two groups (Fajardo-Bernal, 2015). A systematic review of seven trials showed home based screening improved uptake, and was preferred by subjects (Odesanmi, 2013), which matched the finding of an earlier study of 19,773 screening invitations in the U.K. (Low, 2007). A review of 21 studies (n = 6,100) compared sensitivity and specificity of self-collected vaginal swabs versus clinically collected cervical swabs for females (92% and 98%), and urine self-samples versus urethra clinician collected samples (88% and 99%). Authors state that data support vaginal swab as the recommended specimen in home-based screening (Lunny, 2015).

People being treated for chlamydia should refrain from sexual contact for seven days, and their sexual partners from the past 60 days should be treated. Treatment of sexual partners prevents reinfection and limits further transmission. Sexual partners may be referred for free treatment to local public health authorities.

When a heterosexual partner is unlikely to seek timely evaluation and treatment, the U.S. Centers for Disease Control and Prevention and the American College of Obstetricians and Gynecologists consider expedited partner therapy as a useful option, especially for male partners of females treated for gonorrhea or chlamydia. This approach involves the treatment of sex partners of patients diagnosed with chlamydia or gonorrhea by providing prescriptions or medications to the patient to take to his or her partner without prior examination of the partner (American College of Obstetricians and Gynecologists, 2018; U.S. Centers for Disease Control and Prevention, 2019b).

The U.S. Centers for Disease Control and Prevention does not recommend expedited partner therapy for men who have sex with men. While ongoing evaluation of expedited partner therapy is needed, it should be available as an option for managing the treatment of partners. It is not intended to replace “other strategies such as provider-assisted referral, when available” (U.S. Centers for Disease Control and Prevention, 2020). Expedited partner therapy is not allowed in every state. The current legal status of expedited partner therapy may be found at [www.cdc.gov/std/ept/legal/default.htm](http://www.cdc.gov/std/ept/legal/default.htm). The American Academy of Family Physicians supports expedited partner therapy and recommends that clinicians should determine state legal requirements (American Academy of Family Physicians, 2017).

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## Policy updates

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