NATIONAL GUIDELINE CLEARINGHOUSE™ (NGC) GUIDELINE SYNTHESIS

SCREENING FOR AND MANAGEMENT OF CHLAMYDIAL INFECTION

Guidelines

1. American College of Preventive Medicine (ACPM). American College of Preventive Medicine practice policy statement. Screening for Chlamydia trachomatis. Am J Prev Med 2003 Apr;24(3):287-92. [82 references}
2. British Association of Sexual Health and HIV (BASHH). 2006 UK national guideline for the management of genital tract infection with *Chlamydia trachomatis*. London (UK): British Association of Sexual Health and HIV (BASHH); 2006. 24 p. [76 references]
3. Centers for Disease Control and Prevention (CDC). (1) Diseases characterized by urethritis and cervicitis. Sexually transmitted diseases treatment guidelines 2006. (2) Update to CDC's sexually transmitted diseases treatment guidelines, 2006: fluoroquinolones no longer recommended for treatment of gonococcal infections. Sexually transmitted diseases treatment guidelines 2006 [published errata appear in MMWR Morb Mortal Wkly Rep 2006 Sep 15;55(36):997]. MMWR Morb Mortal Wkly Rep 2006 Aug 4;55(RR-11):35-49. [222 references].
4. Finnish Medical Society Duodecim (FMS). Chlamydial urethritis and cervicitis. Helsinki, Finland: Wiley Interscience John Wiley & Sons; 2006 Jun 13 [Various].

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INTRODUCTION

A direct comparison of the American College of Preventive Medicine (ACPM), the British Association of Sexual Health and HIV (BASHH; formerly the Association for Genitourinary Medicine/Medical Society for the Study of Venereal Diseases [AGUM/MSSVD]), the Centers for Disease Control and Prevention (CDC), and the Finnish Medical Society Duodecim (FMS) recommendations for chlamydial infection is provided in the tables below. The comparison focuses on screening for and management of chlamydial infection in adults. CDC also discusses diagnosis and management of chlamydial infections in infants and children as well as other sexually transmitted diseases characterized by urethritis and cervicitis, such as those caused by *Neisseria gonorrhoeae*. These latter topics, however, are not addressed in this synthesis.

Table 1 compares guideline scope. Table 2 compares recommendations for screening and management. The evidence supporting the major recommendations is also identified, with the definitions of the rating schemes used by BASHH and FMS included in the last row of Table 2. Literature references for certain recommendations provided by BASHH and FMS are also listed in this table.

Table 3 compares the potential benefits and harms of implementing the guidelines recommendations.

Following the content comparison table and discussion, the areas of agreement and differences among the guidelines are identified.

Abbreviations used in the text and tables follow:

- ACPM, American College of Preventive Medicine
- BASHH, British Association of Sexual Health and HIV (formerly the Association for Genitourinary Medicine/Medical Society for the Study of Venereal Diseases)
- CDC, Centers for Disease Control and Prevention
- *C. trachomatis*, *Chlamydia trachomatis*
- DFA, Direct fluorescent antibody
- EIA , Enzyme immunoassay
- FDA, U.S. Food and Drug Administration
- FMS, Finnish Medical Society Duodecim
- HIV, Human immunodeficiency virus
- LCR, Ligase chain reaction
- NAAT, Nucleic acid amplification techniques
- PCR, Polymerase chain reaction
- PID, Pelvic inflammatory disease
- STDs, Sexually transmitted diseases
- STI, Sexually transmitted infection

TABLE 1: SCOPE	
Objective	
ACPM (2003)	To present a practice policy statement on screening for *Chlamydia trachomatis*
BASHH (2006)	• To reduce the number of sexually transmitted infections and complications of *Chlamydia trachomatis* genital tract infection • To offer recommendations on the diagnostic tests, treatment regimens, and health promotion principles needed for the effective management of *Chlamydia trachomatis*
CDC (2006)	• To update the Sexually Transmitted Diseases Treatment Guidelines 2002 • To assist physicians and other health-care providers in preventing and treating sexually transmitted diseases
FMS (2006)	Evidence-Based Medicine Guidelines collects, summarizes, and updates the core clinical knowledge essential in general practice. The guidelines also describe the scientific evidence underlying the given recommendations.

Target Population	
ACPM (2003)	• United States • Women and men who are sexually active, particularly females between the ages of 15 and 24 and all pregnant women
BASHH (2006)	• United Kingdom • Men and women in the United Kingdom aged 16 year or older either presenting with signs and symptoms of a sexually transmitted infection or undergoing investigation for possible *Chlamydia trachomatis* genital tract infection
CDC (2006)	• United States • Adolescents and adults with chlamydial infection • Sex partners of individuals with any of the above infections • Mothers of infants who have any of the above infections • Infants of mothers who have any of the above infections **Note**: The guideline also targets men with urethritis; individuals with nongonococcal urethritis; women with cervicitis; infants with chlamydial infection; adolescents and adults with gonococcal infection; and newborns, infants, and children with gonococcal infection.
FMS (2006)	• Finland • Men and women with (or with symptoms suggestive of) chlamydial urethritis or cervicitis (*Diagnosis; Treatment; Management; Secondary Prevention*) • Family planning clinic customers and, in general, women who see their physician to renew their contraceptive pill prescription *(Screening)* • Partners of patients diagnosed with chlamydial infections (*Screening*)
Intended Users	
ACPM (2003)	Advanced Practice Nurses Allied Health Personnel Nurses Physician Assistants Physicians Public Health Departments

BASHH (2006)	Physicians
CDC (2006)	Advanced Practice Nurses Allied Health Personnel Health Care Providers Managed Care Organizations Nurses Physician Assistants Physicians Public Health Departments
FMS (2006)	Health Care Providers Physicians
Interventions and Practices Considered	
ACPM (2003)	**Screening** 1. Annual screening of high-risk women 2. Prenatal screening of all pregnant women 3. Testing of sexual partners of women who test positive for Chlamydia **Diagnostic Tests for Chlamydial Infection** 1. Culture 2. Immunoassay, such as enzyme immunoassay (EIA) with positive confirmation, rapid office-based immunoassay, or direct immunofluorescent antibody (DFA) 3. Deoxyribonucleic acid (DNA) probe 4. DNA amplification, such as PCR, LCR, or amplified DNA probe (strand displacement amplification) 5. Ribonucleic acid (RNA) amplification, such as transcription-mediated amplification (TMA) 6. Dipstick, such as leukocyte esterase with "trace cutoff"
BASHH (2006)	**Diagnostic Tests for Chlamydial Infection** 1. NAA

	2. Cell culture 3. DFA (routine use not recommended) 4. EIA (not recommended) **Treatment/Management** 1. Antibiotics • Doxycycline • Azithromycin • Erythromycin • Deteclo • Ofloxacin • Oxytetracycline • Amoxicillin 2. Patient education 3. Partner notification 4. Follow-up and test of cure
CDC (2006)	**Screening** 1. Annual screening of all sexually active women aged ≤25 years 2. Annual screening of older women with risk factors 3. Prenatal screening of pregnant women <25 years of age 4. Consideration of screening of sexually active young men in clinical settings with a high prevalence of chlamydia 5. Sexual risk assessment for all persons which might indicate more frequent screening for some women or certain men **Diagnostic Tests for Chlamydial Infection** 1. Tissue culture 2. Nonculture tests (e.g., direct fluorescent antibody tests, EIA, nucleic acid hybridization tests, and NAATs) **Treatment/Management** 1. Antibiotics • Azithromycin • Doxycycline • Erythromycin base • Erythromycin ethylsuccinate • Ofloxacin • Levofloxacin • Amoxicillin 2. Sex partner notification and referral for examination and treatment 3. Patient-delivered partner therapy 4. Follow-up to ensure that treatment has been effective and to detect possible reinfection, with patient instruction to abstain from

	sexual intercourse until treatment is completed
FMS (2006)	**Screening** 1. Targeted and/or systematic screening 2. Tracing contacts and partner screening **Diagnostic Tests for Chlamydia Infection** 1. Assessment of clinical symptoms and signs 2. Laboratory diagnostics • Gene amplification methods, such as PCR and LCR • First-void urine samples • As an alternative for women to first-void urine, analyses of samples from the urethra, cervix, or cornea of the eye by gene amplification methods • Chlamydial serology for chronic infections **Treatment/Management** 1. Antibiotics • Azithromycin as the treatment of choice for chlamydial infection • Other alternatives: tetracycline or doxycycline • Combination of antibiotics in pelvic infections 2. Testing of the permanent sexual partner of the index patient before treating partner 3. Post-treatment follow-up 4. Tracing the contacts of the patient

TABLE 2: COMPARISON OF RECOMMENDATIONS FOR CHLAMYDIAL INFECTION	
SCREENING -- POPULATION GROUPS TO BE SCREENED	
Screening of Asymptomatic High-risk Groups	
ACPM (2003)	Sexually active women with risk factors should be screened annually. Risk factors include: • Age $\leq$25 years • A new male sex partner or two or more partners during the preceding year • Inconsistent use of barrier contraception

	• History of a prior STD • African-American race • Cervical ectopy
BASHH (2006)	No recommendations offered
CDC (2006)	**Chlamydial Infections** Chlamydial Infections in Adolescents and Adults Asymptomatic infection is common among both men and women, and to detect chlamydial infections health-care providers frequently rely on screening tests. Annual screening of all sexually active women aged ≤25 years is recommended, as is screening of older women with risk factors (e.g., those who have a new sex partner or multiple sex partners). The benefits of *C. trachomatis* screening in women have been demonstrated in areas where screening programs have reduced both the prevalence of infection and rates of PID. Evidence is insufficient to recommend routine screening for *C. trachomatis* in sexually active young men, based on feasibility, efficacy, and cost-effectiveness. However, screening of sexually active young men should be considered in clinical settings with a high prevalence of chlamydia (e.g., adolescent clinics, correctional facilities, and STD clinics). An appropriate sexual risk assessment should be conducted for all persons and might indicate more frequent screening for some women or certain men.
FMS (2006)	**Screening for asymptomatic infections** • It has been shown that targeted screening for chlamydial infections is effective in preventing PID and ectopic pregnancies (Scholes et al., 1996; Egger et al., 1998; Pimenta et al., 2000). • Screening for chlamydial infection is cost-effective if the prevalence of chlamydia infection exceeds 3% in the population (Paavonen, et al., 1998). Systematic screening for chlamydial infection has been considered relevant among family planning clinic customers and in general those young women who see their physician to renew their contraceptive pill prescription, especially if there is a history of temporary sexual partners. • Tracing the contacts of the patient is the most effective way of combating the disease. Partner screening normally yields 20 to 30% positive cases. The practice of taking first-void urine samples from the partner at home has increased the number of detected infections by 50% compared with the usual practice of partner notification (Östergaard et al., 1998). Many young people are unaware that chlamydial infection is often asymptomatic, which reduces and delays testing for chlamydia. • Recent seroepidemiological studies have indicated an association

	between a history of chlamydial infection and the development of cervical carcinoma (Koskela et al., 2000; Anttila et al., 2001). The exact causal relationship remains to be determined, however. Therefore, no seroepidemiological screening programmes have been undertaken as yet.
Screening of Asymptomatic Pregnant Women	
ACPM (2003)	Pregnant women should be screened during their first trimester or at their first prenatal visit. Those with risk factors should be re-screened during their third trimester.
BASHH (2006)	No recommendations offered
CDC (2006)	Prenatal screening of pregnant women can prevent chlamydial infection among neonates. Pregnant women aged <25 years are at high risk for infection. Local or regional prevalence surveys of chlamydial infection can be conducted to confirm the utility of using these recommendations in particular settings.
FMS (2006)	No recommendations offered
Screening of Patients with Signs/Symptoms of Chlamydial Infection	
ACPM (2003)	Women with mucopurulent discharge, suggestive of cervicitis, should be tested immediately.
BASHH (2006)	No recommendations offered
CDC (2006)	• All patients who have confirmed or suspected urethritis should be tested for gonorrhea and chlamydia. Testing for chlamydia is strongly recommended because of the increased utility and availability of highly sensitive and specific testing methods, and because a specific diagnosis might enhance partner notification and improve compliance with treatment, especially in the exposed partner. • Because cervicitis might be a sign of upper genital tract infection (endometritis), women who seek medical treatment for a new episode of cervicitis should be assessed for signs of PID and should be tested for *C. trachomatis* and for N. gonorrhoeae with the most sensitive and specific test available, NAAT.
FMS (2006)	Chlamydial infection can be suspected but never diagnosed on the basis of symptoms alone. A burning sensation and mucous discharge from the urethra are common symptoms in men after unprotected

	sexual intercourse with a temporary partner. Although Gram or methylene blue stains of plain smear specimens are usually rich in white blood cells, chlamydia is found to be the cause of the infection in only half the patients. A reliable diagnosis of chlamydial infection in both men and women can therefore be reached only by appropriate microbiological sampling.
SCREENING TESTS	
Types of Screening Tests	
ACPM (2003)	Any well-validated, laboratory-based amplification or antigen method may be used. (The guideline notes, however, that the decision as to which screening test to utilize must be based both on the estimated prevalence in the screened population and available funding. When economically feasible, the use of amplification tests is preferable.)
BASHH (2006)	**<u>Diagnosis</u>** **Nucleic Acid Amplification Technique** • Although the technology for diagnosing *C. trachomatis* continues to be a rapidly developing field, the standard of care for all cases, including medico legal cases, is an NAAT. • NAATs are more sensitive and specific than EIAs and the Department of Health has recently advised that the use of sub-optimal EIAs is no longer appropriate and has provided funding to support laboratories moving from EIAs to NAATs (Department of Health, 2003). However no test is 100% sensitive or specific (Skidmore, Horner, & Mallinson, 2006). • Reactive tests should be confirmed in the laboratory either using the same NAAT platform but if possible a second platform is to be preferred (Skidmore, Horner, & Mallinson, 2006; Health Protection Agency, 2004). This improves specificity by countering processing errors but at the expense, which is usually judged acceptable, of a small reduction in sensitivity caused by specimens with a low organism load being missed at re-test (Skidmore, Horner, & Mallinson, 2006). Thus therapy should be offered to all patients with unconfirmed reactive NAAT results but the significance of this result must be discussed with them (Johnson et al., 2002). The laboratory report should request an additional specimen for further testing when reporting an unconfirmed reactive test, but this may be not be possible (Skidmore, Horner, & Mallinson, 2006; Health Protection Agency, 2004). • An inhibitory control should be used for each specimen (Skidmore, Horner, & Mallinson, 2006; Health Protection Agency, 2004) as substances may be present in biological fluids which can inhibit NAATs. Failure to use an inhibitory control with each specimen will lead to false negative results (Horner et al., 2005; Mahony et al., 1998; Chong et al., 2003). The Gen-Probe

APTIMA system includes a nucleic acid extraction stage which removes the majority of inhibitors and thus the manufacturers state that no inhibitory control is needed (Chong et al., 2003).
- In general NAATs are 90 to 95% sensitive with the majority of studies indicating that as either the number of sites sampled increases, or the number of different NAAT used increases, the greater the detection of *C. trachomatis* in any given population.

Medico Legal Cases

For medico legal cases a NAAT should be taken from all the sites where penetration has occurred. This guideline recommends NAAT rather than culture due to the low sensitivity (60 to 80%) of culture and its lack of availability in many centres (**Grade of Recommendation D**).

- A reactive NAAT result must be confirmed using a different NAAT (Johnson et al., 2002). Ideally, two swabs should be taken from each site, one for testing and one for confirmation if the initial test is positive. This avoids potential compatibility problems when retesting specimens using a different platform (Skidmore, Horner, & Mallinson, 2006). There is evidence that the Becton Dickinson ProbeTec ET strand displacement amplification (SDA) assay has a lower analytical sensitivity than Roche Cobas Amplicor PCR (Chalker et al., 2005) for some serotypes, which means that SDA may not be suitable for the confirmation of PCR results. There are also data to suggest that Gen-Probe APTIMA system has a higher sensitivity than the other two assays discussed (Schacter et al., 2005). Although, this system does have its own confirmatory assay with matching sensitivity it uses the same methodology, on the same specimen, thus theoretically some causes of false positives may not be eliminated (Johnson et al., 2002).

Cell Culture

- Sensitivity 60 to 80%
- 100% specificity
- Expertise essential
- Expensive—and only limited availability nationally
- Can be used on all specimen types
- Routine use is not recommended due to high cost and low sensitivity.

Enzyme Immunoassays (EIAs)

- The sensitivity of the majority of EIAs is probably only 40 to 70% and their use is not recommended. This guideline recommends laboratories to move to the use of NAATs utilizing Department of Health dedicated funding (Westrom, 1994).

	• Should be not used on non-invasive specimens in women, nor on rectal or throat specimens in women or men. **Direct Fluorescent Antibody (DFA)** • Routine use is not recommended. • Labour intensive, and although a >80% sensitivity is achievable, this requires skilled personnel using a cut off of 2 elementary bodies. • Unsuitable for large numbers of specimens (>30/day). • Will accommodate all specimen types including rectal and pharyngeal **Further Investigation** All patients diagnosed with *C. trachomatis* should be encouraged to have screening for other STIs, including an HIV test and, where indicated, hepatitis B screening and vaccination (**Grade of Recommendation C**). If the patient is within the window period for HIV and syphilis, these should be repeated at an appropriate time interval. All contacts of *C. trachomatis* should be offered the same screening tests.
CDC (2006)	**<u>Chlamydial Infections in Adolescents and Adults</u>** **Diagnostic Considerations** Culture, direct immunofluorescence, EIA, nucleic acid hybridization tests, and NAATs are available for the detection of *C. trachomatis* on endocervical and male urethral swab specimens. NAATs are the most sensitive tests for these specimens and are FDA-cleared for use with urine, and some tests are cleared for use with vaginal swab specimens. The majority of tests, including NAAT and nucleic acid hybridization tests, are not FDA-cleared for use with rectal swab specimens, and chlamydia culture is not widely available for this purpose. Some non-commercial laboratories have initiated NAAT of rectal swab specimens after establishing the performance of the test to meet Clinical Laboratory Improvement Amendments (CLIA) requirements. Patients whose condition has been diagnosed as chlamydia also should be tested for other STDs. **Note**: Refer to the original guideline document for diagnostic considerations for chlamydial infections among infants.
FMS (2006)	• Gene amplification methods have replaced previous techniques, and first-void urine samples have acquired an established position in chlamydial diagnostics in both men and women. • Gene amplification methods, such as PCR and LCR, are based on multiplication of chlamydial nucleic acids with specific probes. The main assets of the methods are their high sensitivity and

	the fact that they, unlike culture methods, yield a positive result also when there are no living chlamydia in the sample. Compared with traditional culture methods, gene amplification methods reveal 5 to 7% more cases of chlamydial infection, and false positives are practically nonexistent. (Pasternack, Vuorinen, & Miettinen, 1997; Puolakkainen et al., 1998). The price of these tests has come down to an acceptable level. Today chlamydia and gonorrhoea can be analysed on the same sample if required. • Gene amplification is a rapid method, with results being available within as little as 24 hours. In practice, large laboratories analyse samples two or three times a week. • Chlamydial serology may be useful in chronic infections. High immunoglobulin G (IgG) antibody titres are often present in pelvic infections and also in other complications. An isolated positive test indicates that the patient has a history of chlamydial infection.
Specimen of Choice	
ACPM (2003)	The guideline notes that tests vary in the type of specimens on which they may be used, the level of skill required to collect and transport specimens, the level of skill required by the testing laboratory, and the accuracy and rapidity of results. *Women* Specimens may be obtained from (1) the endocervix, using a swab; (2) urethra and vagina using a swab; and (3) first-catch urine. *Men* Specimens can be obtained by swabbing the anterior urethra as well as through first-catch urine.
BASHH (2006)	**<u>Sites to Be Sampled</u>** **Women** • A cervical swab (**Grade of Recommendation B**) or vulvo-vaginal swab (**Grade of Recommendation C**) are specimens of choice. To collect cervical specimens, a speculum examination is performed and as the sample must contain cervical columnar cells (Loeffelholz et al., 2001; Welsh, Quinn, & Gaydos, 1997), swabs should be inserted inside the cervical os and firmly rotated against the endocervix. Inadequate specimens reduce the sensitivity of NAATs. • The vulvo-vaginal swab has a sensitivity of 90 to 95% (Carder et al., 1999; Macmillan et al., 2000; Wiesenfeld et al., 1996;

Gaydos et al., 2003) and can be either taken by the patient or health care worker (Schachter et al., 2003). Studies indicate that sensitivities similar to a cervical swab are obtainable. Currently, only the APTIMA system (Gen-Probe Inc., San Diego, CA) has FDA approval for this specimen type.

- If a speculum examination is not possible then urine (**Grade of Recommendation B**) samples can be utilized.
- Variable sensitivities (65 to 100%) have been reported using the first catch urine (FCU) specimen (McCartney, Walker, & Scoular, 2001; Schachter et al., 2003; Van Der Pol et al., 2001; Jensen, Thorsen, & Moller, 1997; Moncada et al., 2004). When processed by inexperienced staff it may perform with sensitivity <90% (Schachter et al., 2003). Patients should hold their urine for at least 1 hour (Johnson et al., 2002) (maybe 2 hours with some kits, check manufacturer's instructions) before providing a FCU specimen.

Men

- First voided urine sample is reported to be as good as a urethral swab. (Van Der Pol et al., 2001; Chernesky et al., 2005; Crotchfelt et al, 1997; Young et al, 1998; Sugunendran et al., 2001) Urine samples are easy to collect, do not cause discomfort and thus are preferable to urethral swabs. Urethral swabs should be inserted 2 to 4 cm inside the urethra and rotated once before removal (**Grade of Recommendation C**).
- Patients should hold their urine at least 1 hour before being tested (Johnson et al., 2002), (maybe 2 hours with some kits, check manufacturer's instructions).

Rectal, Pharyngeal and Conjunctival Specimens, Men and Women

- Currently none of the NAATs have FDA approval for these sites. Only culture or DFA are recommended (**Grade of Recommendation A**). However, in the absence of culture or DFA tests, NAATs may be used (**Grade of Recommendation C**).
- Rectal swabs should be obtained via proctoscopy in symptomatic patients, but can be taken blind from the rectal mucosa in asymptomatics.
- Due to the emergence of rectal Lymphogranuloma venereum (LGV) infection in men who have sex with men (French, Ison, & Macdonald, 2005), the current (2006) recommended method of detecting rectal LGV infection is to perform a rectal NAAT which, if positive, is sent to the Health Protection Authority for confirmation.

Medico Legal Cases

For medico legal cases a NAAT should be taken from all the sites

	where penetration has occurred. This guideline recommends NAAT rather than culture due to the low sensitivity (60 to 80%) of culture and its lack of availability in many centres (**Grade of Recommendation D**). • A reactive NAAT result must be confirmed using a different NAAT (Johnson et al., 2002). Ideally, two swabs should be taken from each site, one for testing and one for confirmation if the initial test is positive. This avoids potential compatibility problems when retesting specimens using a different platform (Skidmore, Horner, & Mallinson, 2006). There is evidence that the Becton Dickinson ProbeTec ET strand displacement amplification (SDA) assay has a lower analytical sensitivity than Roche Cobas Amplicor PCR (Chalker et al., 2005) for some serotypes, which means that SDA may not be suitable for the confirmation of PCR results. There are also data to suggest that Gen-Probe APTIMA system has a higher sensitivity than the other two assays discussed (Schacter et al., 2005). Although, this system does have its own confirmatory assay with matching sensitivity it uses the same methodology, on the same specimen, thus theoretically some causes of false positives may not be eliminated (Johnson et al., 2002).
CDC (2006)	**<u>Chlamydial Infections in Adolescents and Adults</u>** **Diagnostic Considerations** *C. trachomatis* urogenital infection in women can be diagnosed by testing urine or swab specimens collected from the endocervix or vagina. Diagnosis of *C. trachomatis* urethral infection in men can be made by testing a urethral swab or urine specimen. Rectal *C. trachomatis* infections in persons that engage in receptive anal intercourse can be diagnosed by testing a rectal swab specimen. **Note**: Refer to the original guideline document for specimen collection considerations for chlamydial infections among infants.
FMS (2006)	• First-void urine samples are used for chlamydial diagnostics in both men and women. Samples are taken when at least five to seven days have passed since the potential time of acquirement of infection. The patient has to refrain from voiding for 2 hours before urine sampling. The sample (10 mL) is sent to a laboratory in the normal way. If needed, the sample may be kept refrigerated for one or two days. • As an alternative to first-void urine, women may give urethral and cervical swab samples which are then analysed by the same gene amplification methods. Even samples from the cornea of the eye can be examined by gene amplification techniques. • First-void urine samples are well suited for home screening of

	risk groups or sexual partners (Östergaard et al., 1998).
MANAGEMENT RECOMMENDATIONS	
Antibiotic Regimens in Nonpregnant Women and Men	
ACPM (2003)	No recommendations offered
BASHH (2006)	Ideally, treatment should be effective (microbiological cure rate >95%), easy to take (not more than twice daily), with a low side effect profile, and cause minimal interference with daily lifestyle (**Grade of recommendation C**). **Treatment of Genital, Rectal and Pharyngeal Uncomplicated Infection (see appropriate guidelines for treatment of complications) and Epidemiological Treatment** ***Recommended regimens:*** **(Grade of recommendation A)** • Doxycycline 100 mg twice a day (bd) for 7 days (contraindicated in pregnancy) or • Azithromycin 1 g orally in a single dose ***Alternative regimens*****: (Grade of recommendation A)** For use if either of the above treatments are contraindicated. • Erythromycin 500 mg bd for 10 to 14 days or • Ofloxacin 200 mg bd or 400 mg once a day for 7 days
CDC (2006)	***Recommended Regimens*** • Azithromycin 1 g orally in a single dose OR • Doxycycline 100 mg orally twice a day for 7 days ***Alternative Regimens*** • Erythromycin base 500 mg orally four times a day for 7 days OR • Erythromycin ethylsuccinate 800 mg orally four times a day for 7 days OR • Ofloxacin 300 mg orally twice a day for 7 days

	OR • Levofloxacin 500 mg orally once daily for 7 days In populations that have erratic health-care-seeking behavior, poor treatment compliance or unpredictable follow-up, azithromycin might be more cost-effective because it enables the provision of single-dose directly observed therapy. However, doxycycline costs less than azithromycin, and has no higher risk for adverse events. Erythromycin might be less efficacious than either azithromycin or doxycycline, mainly because of the frequent occurrence of gastrointestinal side effects that discourage compliance. Ofloxacin and levofloxacin are effective treatment alternatives but are more expensive and offer no advantage in the dosage regimen. Other quinolones either are not reliably effective against chlamydial infection or have not been evaluated adequately. To maximize compliance with recommended therapies, medications for chlamydial infections should be dispensed on site, and the first dose should be directly observed. To minimize transmission, persons treated for chlamydia should be instructed to abstain from sexual intercourse for 7 days after single-dose therapy or until completion of a 7-day regimen. To minimize the risk for reinfection, patients also should be instructed to abstain from sexual intercourse until all of their sex partners are treated. ***Special Considerations*** **HIV Infection**. Patients who have chlamydial infection and are also infected with HIV should receive the same treatment regimen as those who are HIV negative. **Note**: Refer to the original guideline document for treatment regimens for chlamydial infections among infants.
FMS (2006)	• **Azithromycin 1 g as a single dose** is the treatment of choice for chlamydial infection. It is suitable also during pregnancy (Brocklehurst & Rooney, 1998). Alternatives include tetracycline 500 mg x 3/day or doxycycline 100 mg x 2/day for 7 to 10 days. Some 10% of patients get mild gastric side effects from azithromycin and tetracyclines. Azithromycin therapy has the benefit of 100% compliance; it is more expensive than the common tetracyclines, however. Controlled studies have shown similar therapeutic outcomes for these drugs, with 95 to 97% of patients being cured. • Chlamydial infections of the throat, anus or eyes are treated with azithromycin for three to five days. For mild complications, patients are given tetracycline or doxycycline for two to three weeks, for reactive arthritis triggered by chlamydial infection even longer. In pelvic infections, combinations of antibiotics are used, as other bacteria, such as anaerobes, may be involved. • The permanent sexual partner of the index patient should be

	tested before any treatment since the partner is not necessarily infected. The suitability of the antibiotic for the partner should also be ascertained, as well as ensuring that the female partner to be treated is not pregnant. Furthermore, the partner may have transmitted the infection to other persons, an issue that can only be clarified by having the partner visit the physician or clinic.
Antibiotic Regimens During Pregnancy and Breast Feeding	
ACPM (2003)	No recommendations offered
BASHH (2006)	**<u>Pregnancy and breast feeding</u>** **Recommended regimens: (Grade of recommendation A)** • Erythromycin 500 mg four times a day for 7 days or • Erythromycin 500 mg twice a day for 14 days or • Amoxicillin 500 mg three times a day for 7 days or • Azithromycin 1 g stat (see caution below from the British National Formulary [BNF]) Due to higher positive Chlamydia tests after treatment in pregnancy, attributed to either less efficacious treatment regime, non compliance, or re-infection, it is recommended that pregnant women must have a test of cure 5 weeks after completing therapy, 6 weeks later if given azithromycin. • Doxycycline and ofloxacin are contraindicated in pregnancy • Azithromycin is probably less than 95% effective (Jacobson et al., 2001; Kacmar et al., 2001; Brocklehurst & Rooney, 2000). The safety of azithromycin in pregnancy and lactating mothers has not yet been fully assessed, although available data indicate that it is safe (Brocklehurst & Rooney, 2000). World Health Organization (WHO) Guidelines recommend 1 g stat to treat *C. trachomatis* in pregnancy; the BNF recommends its use in pregnancy and lactation only if no alternative is available. • Erythromycin has a significant side effect profile and is less than 95% effective. There are no trials of erythromycin 500 mg twice a day for 14 days, which would be better tolerated than four times a day although the follow-up data from the Portsmouth pilot study suggests it is efficacious (Tobin, Harindra, & Mani, 2004). • Amoxycillin had a similar cure rate to erythromycin in a meta-analysis and had a much better side effect profile (Brocklehurst

	& Rooney, 2000). However, penicillin in vitro has been shown to induce latency and re-emergence of infection at a later date is a theoretical concern of some experts.
CDC (2006)	**Pregnancy**. Doxycycline, ofloxacin, and levofloxacin are contraindicated in pregnant women. However, clinical experience and studies suggest that azithromycin is safe and effective. Repeat testing (preferably by NAAT) 3 weeks after completion of therapy with the following regimens is recommended for all pregnant women to ensure therapeutic cure, considering the sequelae that might occur in the mother and neonate if the infection persists. ***Recommended Regimens*** • Azithromycin 1 g orally in a single dose OR • Amoxicillin 500 mg orally three times a day for 7 days ***Alternative Regimens*** • Erythromycin base 500 mg orally four times a day for 7 days OR • Erythromycin base 250 mg orally four times a day for 14 days OR • Erythromycin ethylsuccinate 800 mg orally four times a day for 7 days OR • Erythromycin ethylsuccinate 400 mg orally four times a day for 14 days Erythromycin estolate is contraindicated during pregnancy because of drug-related hepatotoxicity. The lower dose 14-day erythromycin regimens may be considered if gastrointestinal tolerance is a concern. **HIV Infection**. Patients who have chlamydial infection and are also infected with HIV should receive the same treatment regimen as those who are HIV negative. **Note**: Refer to the original guideline document for treatment regimens for chlamydial infections among infants.
FMS (2006)	• **Azithromycin 1 g as a single dose** is the treatment of choice for chlamydial infection. It is also suitable during pregnancy (Brocklehurst & Rooney, 1998) [**B**]. Other alternatives are tetracycline 500 mg x 3/day or doxycycline 100 mg x 2/day for 7 to 10 days. Some 10% of patients get mild gastric side effects from azithromycin and tetracyclines. Azithromycin therapy has the benefit of 100% compliance; it is more expensive than the

	common tetracyclines, however. Controlled studies have shown similar therapeutic outcomes for these drugs, with 95 to 97% of patients being cured. • Amoxicillin and erythromycin are equally effective for antenatal chlamydial cervicitis (Turrentine & Newton, 1995) [**B**].
Patient Education and Preventive Counseling	
ACPM (2003)	No recommendations offered

BASHH (2006)	**Management**
	
	General Advice
	
	Patients should be advised to avoid sexual intercourse (including oral sex) until they and their partner(s) have completed treatment (or wait 7 days if treated with azithromycin). Advice regarding appropriate action if using hormonal contraceptives is also required.
	
	Patients should be given detailed explanation of their condition with particular emphasis on the long-term implications for them and their partner(s). This should be reinforced by giving them clear, accurate written information.
	
	Compliance with Therapy
	
	In general, compliance with therapy is improved if there is a positive therapeutic relationship between the patient and the doctor (Sanson-Fisher, Bowman & Armstrong, 1992) and/or nurse. This can probably be improved if the following are applied (**Grade of recommendation C**):
	
	Discuss with patient and provide clear written information on:
	
	• What *C. trachomatis* is and how it is transmitted:
	  • It is primarily sexually transmitted.
	  • If asymptomatic there is evidence that it could have persisted for months or years.
	• The diagnosis of *C. trachomatis*, particularly:
	  • It is often asymptomatic in both men and women.
	  • Whilst tests are accurate, no test is absolutely so.
	• The complications of untreated *C. trachomatis*
	• Side effects and importance of complying fully with treatment and what to do if a dose is missed
	• Advice regarding antibiotics and hormonal contraception
	• The importance of their sexual partner(s) being evaluated and treated
	• Advised to abstain from sexual intercourse until they and their

	partner(s) have completed therapy (and waited 7 days if treated with azithromycin) • Advice on safer sexual practices, including advice on correct, consistent condom use
CDC (2006)	**Note**: For preventive education information see the NGC summary of the CDC guideline Clinical Prevention Guidance. Patients should be instructed to refer their sex partners for evaluation, testing and treatment. Patients should be instructed to abstain from sexual intercourse until they and their sex partners have completed treatment. Abstinence should be continued until 7 days after a single-dose regimen or after completion of a 7-day regimen. Timely treatment of sex partners is essential for decreasing the risk for reinfecting the index patient.
FMS (2006)	No recommendations offered.
Partner Notification and Treatment	
ACPM (2003)	All partners of women with positive tests should be tested for *Chlamydia trachomatis*.
BASHH (2006)	**Management of Sexual Partners** • All patients identified with *C. trachomatis* infection should have partner notification discussed at time of treatment by a trained health care professional. • The method of partner notification agreed for each partner/contact identified should be documented, as should partner notification outcomes. • All sexual partners should be offered, and encouraged to take up a full STI screen, including HIV test and if indicated hepatitis B screening +/- vaccination. • Epidemiological treatment for *C. trachomatis* should be offered. If declined, patients must be advised to abstain from sex until they have received a negative result. If found to be positive, any other potentially exposed partner(s) needs screening and the offer of epidemiological treatment. Look Back Period Only limited evaluation has taken place of the incubation period following exposure to the development of symptoms. In the United Kingdom a cut-off of 4 weeks is used to identify those sexual partner(s) potentially at risk if the index patient is symptomatic. If the index case is asymptomatic, an arbitrary cut off of 6 months, or

	until the last previous sexual partner (whichever is the longer time period), is used. Common sense needs to be used in assessing which sex partner(s) may have been at risk in these situations. Those at risk should be informed and invited to attend for evaluation and epidemiological treatment even if tests are negative. This may be patient-led or provider-led.
CDC (2006)	Patients should be instructed to refer their sex partners for evaluation, testing, and treatment. The following recommendations on exposure intervals are based on limited evaluation. Sex partners should be evaluated, tested, and treated if they had sexual contact with the patient during the 60 days preceding onset of symptoms in the patient or diagnosis of chlamydia. The most recent sex partner should be evaluated and treated even if the time of the last sexual contact was >60 days before symptom onset or diagnosis. If concerns exist that sex partners will not seek evaluation and treatment, or if other management strategies are impractical or unsuccessful, then delivery of antibiotic therapy (either a prescription or medication) by heterosexual male or female patients to their partners might be an option (see the NGC summary of the CDC guideline Clinical Prevention Guidance under the section Partner Management). Limited studies to date have demonstrated a trend toward a decrease in rates of persistent or recurrent chlamydia with this approach compared with standard partner referral. Male patients must inform female partners of their infection and be given accompanying written materials about the importance of seeking evaluation for PID (especially if symptomatic). Patient-delivered partner therapy is not routinely recommended for men who have sex with men (MSM) because of a high risk for coexisting infections, especially undiagnosed HIV infection, in their partners. Patients should be instructed to abstain from sexual intercourse until they and their sex partners have completed treatment. Abstinence should be continued until 7 days after a single-dose regimen or after completion of a 7-day regimen. Timely treatment of sex partners is essential for decreasing the risk for reinfecting the index patient.
FMS (2006)	• Every physician treating patients with chlamydial infections is required to trace the sexual contacts of their patients (Mathews et al., 2001) [**B**]. The physician should enquire the index patient whether the person who is the source of the infection and any persons potentially infected have been tested for chlamydia and received treatment as needed. If desired, the attending physician may delegate the screening of sexual partners to a physician responsible for communicable diseases. **Related Evidence**

	• Patient assistance at facilitating patient referral and provider referral may increase partner notification for sexually transmitted diseases (Oxman et al., 1994) [**C**]. • Provider referral and contract referral are more effective than patient referral among patients in increasing the rate of partners presenting for medical evaluation (Mathews et al., 2001) [**B**]. • Tracing the contacts of the patient is the most effective way of combating the disease. Partner screening normally yields 20 to 30% positive cases. The practice of taking first-void urine samples from the partner at home has increased the number of detected infections by 50% compared with the usual practice of partner notification (Östergaard et al., 1998). Many young people are unaware that chlamydial infection is often asymptomatic, which reduces and delays testing for chlamydia.
Follow-up	
ACPM (2003)	No recommendations offered.
BASHH (2006)	Follow-up by phone may be both more efficacious and cost effective than by re-attendance. This is an important part of the management of chlamydial infection and it has a number of objectives including: • Following up partner notification • Reinforcing health education • Ensuring compliance with treatment and abstinence from sexual intercourse until partner(s) have completed antibiotics (if treated with azithromycin waiting seven days). • There is evidence to suggest that follow-up by phone may be more efficacious than asking the patient to re-attend. It is therefore likely that the former method is more cost effective (Apoola, Boothby, & Radcliffe, 2004). • Re-treat non-compliant and/or re-exposed individuals <u>Test of Cure</u> A test of cure is not routinely recommended but should be performed in pregnancy or if non-compliance or re-exposure is suspected. It should be deferred for 5 weeks (6 weeks if azithromycin given) after treatment is completed.
CDC (2006)	**Follow-Up** Except in pregnant women, test-of-cure (repeat testing 3 to 4 weeks after completing therapy) is not recommended for persons treated with the recommended or alternative regimens, unless therapeutic

	compliance is in question, symptoms persist, or reinfection is suspected. Moreover, the validity of chlamydial diagnostic testing at <3 weeks after completion of therapy (to identify patients who did not respond to therapy) has not been established. False-negative results might occur because of persistent infections involving limited numbers of chlamydial organisms. In addition, NAAT conducted at <3 weeks after completion of therapy in persons who were treated successfully could yield false-positive results because of the continued presence of dead organisms. A high prevalence of *C. trachomatis* infection is observed in women who were treated for chlamydial infection in the preceding several months. The majority of post-treatment infections result from reinfection, frequently occurring because the patient's sex partners were not treated or because the patient resumed sex with a new partner infected with C. trachomatis. Repeat infection confers an elevated risk of PID and other complications when compared with initial infection. Therefore, recently infected women are a major priority for repeat testing for C. trachomatis. Clinicians and health-care agencies should consider advising all women with chlamydial infection to be retested approximately 3 months after treatment. Providers also are strongly encouraged to retest all women treated for chlamydial infection whenever they seek medical care within the following 3 to 12 months, regardless of whether the patient believes that her sex partners were treated. Recognizing that retesting is distinct from a test-of-cure, as discussed in this report, is vital. Limited evidence is available on the benefit of retesting for chlamydia in men previously infected; however, some specialists suggest retesting men approximately 3 months after treatment.
FMS (2006)	A follow-up visit should only take place after three to four weeks because the presence of gene traces may produce a false positive result in an earlier re-test.
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EVIDENCE RATING SCHEMES	
ACPM (2003)	Evidence was not graded.
BASHH (2006)	**Levels of Evidence** **Ia** - Evidence obtained from meta-analysis of randomised controlled trials **Ib** - Evidence obtained from at least one randomised controlled trial **IIa** - Evidence obtained from at least one well designed controlled study without randomisation **IIb** - Evidence obtained from at least one other type of well designed quasi-experimental study **III** - Evidence obtained from well-designed non-experimental descriptive studies such as comparative studies, correlation studies, and case control studies **IV** - Evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities

	Grading or Recommendations **A. (Evidence levels Ia, Ib):** Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation. **B. (Evidence levels IIa, IIb, III):** Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation. **C. (Evidence level IV):** Requires evidence from expert committee reports or opinions and/or clinical experience of respected authorities. Indicates absence of directly applicable studies of good quality.
CDC (2006)	The type of supporting evidence is not specifically stated for each recommendation.
FMS (2006)	**Levels of Evidence** **A.** Strong research-based evidence. Multiple relevant, high-quality scientific studies with homogenic results. **B.** Moderate research-based evidence. At least one relevant, high-quality study or multiple adequate studies. **C.** Limited research-based evidence. At least one adequate scientific study. **D.** No research-based evidence. Expert panel evaluation of other information

TABLE 3: BENEFITS AND HARMS	
Benefits	
ACPM (2003)	*Chlamydia trachomatis* urogenital infections are highly prevalent among adolescents and young adults. Sequelae of undetected, untreated infections account for substantial healthcare costs. Treatment is effective, simple, and well tolerated. The majority of infected women and many men are asymptomatic; thus, screening is necessary for detection. Recently screening for *Chlamydia trachomatis* was simplified

	through the development of noninvasive, highly sensitive, amplification screening tests. *Chlamydia trachomatis* screening programs can be effective, both in lowering disease prevalence and decreasing the incidence of sequelae.
BASHH (2006)	Appropriate diagnosis, treatment, and management of patients with *Chlamydia trachomatis* genital tract infection and prevention of *C. trachomatis* infection in sexual partners
CDC (2006)	• Appropriate screening and management of chlamydial infection • Prevention of transmission of chlamydial infection to sex partners and infants of infected mothers
FMS (2006)	Appropriate identification, diagnosis and treatment of the patient with chlamydial urethritis and cervicitis may help avoid the serious complications of prolonged or recurrent infection (e.g., pelvic inflammatory disease, infertility, ectopic pregnancy) as well as prevent the spread of infection.
Harms	
ACPM (2003)	• Invasiveness of some screening procedures • Potential for patient anxiety, embarrassment, and the risk of unnecessary treatment of patients with false-positive results, including potential side effects of drugs
BASHH (2006)	• Erythromycin is less efficacious than either azithromycin or doxycycline. When taken four times a day, 20 to 25% may experience side-effects sufficient to cause the patient to discontinue treatment. • Amoxycillin had a similar cure rate to erythromycin in a meta-analysis and had a much better side effect profile. However, penicillin in vitro has been shown to induce latency, and re-emergence of infection at a later date is a theoretical concern of some experts.
CDC (2006)	• The frequent side effects of erythromycin might discourage patient compliance with this regimen. • An association between oral erythromycin and infantile hypertrophic pyloric stenosis (IHPS) has been reported in infants aged <6 weeks who were treated with this drug. • The safety and efficacy of azithromycin use in pregnant and lactating women have not been established. • Pregnant women should not be treated with quinolones or tetracyclines. • Ceftriaxone should be administered cautiously to hyperbilirubinemic

	infants, especially those born prematurely.
FMS (2006)	• *Adverse effects of medications.* Some 10% of patients get mild gastric side effects from azithromycin and tetracyclines.

GUIDELINE CONTENT COMPARISON

The American College of Preventive Medicine (ACPM), the British Association of Sexual Health and HIV (BASHH; formerly the Association for Genitourinary Medicine/Medical Society for the Study of Venereal Diseases [AGUM/MSSVD]), the Centers for Disease Control and Prevention (CDC), and the Finnish Medical Society Duodecim (FMS) present recommendations for screening and management of chlamydial infection. BASHH and FMS provide explicit reasoning behind their judgments by ranking the level of evidence for each major recommendation. ACPM reviews the evidence for effectiveness of screening and treatment programs, as well as their cost-effectiveness. CDC briefly discusses the evidence used as the basis for specific recommendations throughout its guideline.

ACPM focuses on screening for chlamydial infection and is concerned mainly with the identification of the populations that are at highest risk for chlamydial infection and its complications. BASHH, CDC, and FMS address most aspects of chlamydial infection, including diagnosis, treatment, patient education, and follow-up. Unlike the other organizations, however, BASHH does not offer screening recommendations. The scope of the CDC guideline is broader than that of the others in that it includes diagnosis and management of chlamydial infections among infants and children. The CDC also addresses other sexually transmitted diseases characterized by urethritis and cervicitis, such as those caused by *Neisseria gonorrhoeae* and other forms of nongonococcal urethritis. These topics, however, are beyond the scope of this synthesis.

Areas of Agreement

Screening of Asymptomatic High-Risk Groups

ACPM, CDC, and FMS agree that routine screening should be considered in sexually active women (ACPM and CDC specify women aged 25 years or younger). In addition, these three guideline developers consider women of any age who change sexual partners at high risk for infection. They also agree that sexual partners of infected patients should be screened. Although BASHH does not make specific recommendations about screening, it does acknowledge risk factors for infection.

Screening of Patients with Signs/Symptoms of Chlamydial Infection

ACPM, CDC, and FMS recommend that men and women with signs or symptoms of *C. trachomatis* infection (e.g., urethritis or urethral discharge in men and cervical discharge or friability in women) be tested for chlamydial infection.

Types of Screening Tests

All four guideline groups agree that nucleic acid amplification tests (NAATs) are the most sensitive and specific diagnostic tests for chlamydial infection. NAATs include polymerase chain reaction and ligase chain reaction assays. NAATs have the additional advantage over other testing methods (cell culture, antigen detection) in that they can be performed on urine samples, thus eliminating the need for invasive testing. Although cell cultures have traditionally been held as the "gold standard," especially for medico-legal cases, NAATs have been shown to be more sensitive and easier to use than culture.

Specimen of Choice

BASHH states that cervical or vulvo-vaginal swabs are specimens of choice in women undergoing examinations for chlamydial infection, and recognizes first-void urine as an alternative for women unwilling or unable to undergo speculum examinations. FMS recommends first-void urine for both men and women, and urethral and cervical swabs as an alternative specimen when gene amplification methods are used. FMS adds that first-void urine samples are well suited for home screening. ACPM and CDC do not make specific recommendations on types of screening specimens for adults, but state that women can be diagnosed by testing urine or swab specimens collected from the endocervix or vagina and men by testing a urethral swab or urine specimen. BASHH states that in men urine samples are easy to collect, do not cause discomfort, and thus are preferable to urethral swabs.

Antibiotic Regimens in Nonpregnant Women and Men

BASHH and CDC agree that the recommended antibiotic treatment regimen for uncomplicated genital chlamydial infection is azithromycin (1 g orally as a single dose) or doxycycline (100 mg twice daily for 7 days). FMS also recommends 1 g of azithromycin orally as the treatment of choice, and cites tetracycline and doxycycline as alternatives. Alternative antibiotics recommended by BASHH and CDC include erythromycin, ofloxacin, and levofloxacin, and other tetracyclines Single-dose azithromycin is acknowledged by all groups as the regimen of choice in patients who may be noncompliant with multi-dose regimens. Erythromycin is indicated only when other antibiotics are contraindicated (such as during pregnancy) or not tolerated by the patient. ACP does not address antibiotic therapy.

Partner Notification and Treatment

All four organizations recommend referral of sexual partners for screening and possible treatment. BASHH states that in patients with symptomatic chlamydial infection, all sexual partners over the four weeks prior to onset of symptoms are at risk for infection and should be referred, and in the case of asymptomatic index patients, all partners over the last 6 months should be referred. CDC states that sex partners should be evaluated, tested, and treated if they had sexual contact

with an infected patient during the 60 days before onset of symptoms or diagnosis; however, they also recommend evaluation and treatment of the last sexual contact, even if that contact was more than 60 days before symptom onset. Neither ACPM nor FMS make specific recommendations regarding time of last sexual contact for partner notification.

Follow-up

BASHH, CDC, and FMS offer recommendations on follow-up of patients after treatment. BASHH and CDC agree that retesting for *C. trachomatis* is not routinely necessary after completing treatment unless patient is pregnant, noncompliance with therapy is suspected, or patient is still symptomatic. The waiting period for retesting varies slightly between the groups, with CDC and FMS emphasizing that any retesting should be done a minimum of 3 weeks after initiation of therapy to avoid false-positive results, while BASHH recommends that retesting should be deferred for 5 weeks (6 weeks if azithromycin given) after treatment is completed.

Although CDC does not recommend retesting after treatment (i.e., test-of-cure), the guideline does recommend that physicians advise women with chlamydial infection to be rescreened approximately three months after infection because of the high probability of reinfection. CDC also strongly recommends that health care providers rescreen all women treated for chlamydial infection whenever they present for care within 3 to 12 months of infection, regardless of whether the patient believes that her sex partners were treated. CDC adds that recognizing that retesting is distinct from a test-of-cure is vital.

Patient Education and Preventive Counseling

BASHH states that patients with chlamydial infections should be provided with information (including written material) on the nature of the chlamydial infection, and also recommends counseling on safe sex practices, including condom use. BASHH and CDC state that patients should receive instruction on partner referral and avoiding sexual intercourse until completion of therapy and they and their sex partners are no longer symptomatic.

ACPM and FMS do not provide recommendations for patient education or preventive counseling.

Areas of Differences

There are some differences among guidelines in recommendations offered for pregnant and breast feeding patient groups.

Screening of Asymptomatic Pregnant Women

ACPM and CDC are the only groups that offer specific recommendations on routine screening of asymptomatic pregnant women. Specifically, ACPM recommends screening of all pregnant women during the first trimester or at their first antenatal visit, with rescreening during the third trimester for high-risk women. Their rationale is that screening and treatment for chlamydia in pregnancy is

associated with a reduction in premature rupture of membranes and small-for-gestational-age infants. Furthermore, they state, the prevalence of chlamydial infection is at least as great in pregnant women as in non-pregnant women. CDC maintains that prenatal screening of pregnant women, especially those under 25 years of age, can prevent chlamydial infection among neonates. Adoption of this recommendation could depend on local or regional surveys of the prevalence of infection in this population group.

Antibiotic Regimens during Pregnancy and Breast Feeding

CDC recommends single-dose azithromycin or amoxicillin in pregnant or lactating women, citing erythromycin base or ethylsuccinate as alternatives. BASHH, however, cites erythromycin, amoxicillin, and azithromycin as recommended regimens, but reserves azithromycin as a last alternative among the three. BASHH explains that while the World Health Organization (WHO) Guidelines recommend single-dose azithromycin to treat *C. trachomatis* in pregnancy, that the British National Formulary (BNF), however, recommends its use in this population only if no alternative is available. While FMS agrees that amoxicillin and erythromycin are equally effective for antenatal chlamydial cervicitis, they recommend azithromycin as the treatment of choice for pregnant patients.

This Synthesis was first prepared by NGC on May 29, 2001. It has been updated a number of times since then and reviewed by the respective guideline developers whose guidelines are included. It was updated on December 20, 2006 following the archiving of USPSTF's screening guideline. It was revised most recently in October 2007 to update BASHH, CDC, and FMS recommendations.

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