tests that amplify the nucleic acids in clinical specimens. NAATS are currently recommended by the CDC as the diagnostic assays of choice; four or five NAAT assays approved by the U.S. Food and Drug Administration (FDA) are commercially available, some as high-throughput robotic platforms. Point-of-care diagnostic assays (including NAATs), by which patients can be treated before leaving the clinic, are of increasing interest and are becoming available.

CHOICE OF SPECIMEN Cervical and urethral swabs have traditionally been used for the diagnosis of STDs in female and male patients, respectively. However, given the greatly increased sensitivity and specificity of NAATs, less invasive samples (e.g., urine for both sexes and vaginal swabs for women) can be used. For screening of asymptomatic women, the CDC now recommends that self-collected or clinician-collected vaginal swabs, which are slightly more sensitive than urine, be used. Urine screening tests are often used in outreach screening programs, however. For symptomatic women undergoing a pelvic examination, cervical swab samples are desirable because they have slightly higher chlamydial counts. For male patients, a urine specimen is the sample of choice, but self-collected penile-meatal swabs have been explored.

ALTERNATIVE SPECIMEN TYPES Ocular samples from babies and adults can be assessed by NAATs. However, since commercial NAATs for this purpose have not yet been approved by the FDA, laboratories must perform their own verification studies. Samples from rectal and pharyngeal sites have been used successfully to detect chlamydiae, but laboratories must verify test performance.

OTHER DIAGNOSTIC ISSUES Because NAATs detect nucleic acids instead of live organisms, they should be used with caution as test-of-cure assays. Residual nucleic acid from cells rendered noninfective by antibiotics may continue to yield a positive result in NAATs until as long as 3 weeks after therapy, when viable organisms have actually been eradicated. Therefore, clinicians should not use NAATs for test of cure until after 3 weeks. The CDC currently does not recommend a test of cure after treatment for infection with *C. trachomatis*. However, because incidence studies have demonstrated that previous chlamydial infection increases the probability of becoming reinfected, the CDC does recommend that previously infected individuals be rescreened 3 months after treatment.

SEROLOGY Serologic testing may be helpful in the diagnosis of LGV and neonatal pneumonia caused by *C. trachomatis*. The serologic test of choice is the microimmunofluorescence (MIF) test, in which high-titer purified EBs mixed with embryonated chicken yolk-sac material are affixed to a glass microscope slide to which dilutions of serum are applied. After incubation and washing, fluorescein-conjugated IgG or IgM antibody is applied. The test is read with an epifluorescence microscope, with the highest dilution of serum producing visible fluorescence designated as the titer. The MIF test is not widely available and is highly labor intensive. Although the complement fixation (CF) test also can be used, it employs only lipopolysaccharide (LPS) as the antigen and therefore identifies the pathogen only to the genus level. Single-point titers of >1:64 support a diagnosis of LGV, in which it is difficult to demonstrate rising antibody titers; i.e., paired serum samples are difficult to obtain since, by its very nature, the disease results in the patient's being seen by the physician after the acute stage. Any antibody titer of >1:16 is considered significant evidence of exposure to chlamydiae. However, serologic testing is never recommended for diagnosis of uncomplicated genital infections of the cervix, urethra, and lower genital tract or for *C. trachomatis* screening of asymptomatic individuals.

TREATMENT *C. TRACHOMATIS* GENITAL INFECTIONS

A 7-day course of tetracycline (500 mg four times daily), doxycycline (100 mg twice daily), erythromycin (500 mg four times daily), or a fluoroquinolone (ofloxacin, 300 mg twice daily; or levofloxacin, 500 mg/d) can be used for treatment of uncomplicated chlamydial infections. A single 1-g oral dose of azithromycin is as effective as a 7-day course of doxycycline for the treatment of uncomplicated genital *C. trachomatis* infections in adults. Azithromycin causes fewer adverse gastrointestinal reactions than do older macrolides such as erythromycin. The single-dose regimen of azithromycin has great appeal for the treatment of patients with uncomplicated chlamydial infection (especially those without symptoms and those with a likelihood of poor compliance) and of the sexual partners of infected patients. These advantages must be weighed against the considerably greater cost of azithromycin. Whenever possible, the single 1-g dose should be given as directly observed therapy. Although not approved by the FDA for use in pregnancy, this regimen appears to be safe and effective for this purpose. However, amoxicillin (500 mg three times daily for 7 days) also can be given to pregnant women. The fluoroquinolones are contraindicated in pregnancy. A 2-week course of treatment is recommended for complicated chlamydial infections (e.g., PID, epididymitis) and at least a 3-week course of doxycycline (100 mg orally twice daily) or erythromycin base (500 mg orally four times daily) for LGV. Failure of treatment with a tetracycline in genital infections usually indicates poor compliance or reinfection rather than involvement of a drug-resistant strain. To date, clinically significant drug resistance has not been observed in *C. trachomatis*.

Treatment or testing for chlamydiae should be considered among *N. gonorrhoeae*–infected patients because of the frequency of co-infection. Systemic treatment with erythromycin has been recommended for ophthalmia neonatorum and for *C. trachomatis* pneumonia in infants. For the treatment of adult inclusion conjunctivitis, a single 1-g dose of azithromycin is as effective as standard 10-day treatment with doxycycline. Recommended treatment regimens for both bubonic and anogenital LGV include tetracycline, doxycycline, or erythromycin for 21 days.

SEX PARTNERS

The continued high prevalence of chlamydial infections in most parts of the United States is due primarily to the failure to diagnose—and therefore treat—patients with symptomatic or asymptomatic infection and their sex partners. Urethral or cervical infection with *C. trachomatis* has been well documented in a high proportion of the sex partners of patients with NGU, epididymitis, reactive arthritis, salpingitis, and endocervicitis. If possible, confirmatory laboratory tests for chlamydiae should be undertaken in these individuals, but even those without positive tests or evidence of clinical disease who have recently been exposed to proven or possible chlamydial infection (e.g., NGU) should be offered therapy. A novel approach is partner-delivered therapy, in which infected patients receive treatment and are also provided with single-dose azithromycin to give to their sex partner(s).

NEONATES AND INFANTS

In neonates with conjunctivitis or infants with pneumonia, erythromycin ethylsuccinate or estolate can be given orally at a dosage of 50 mg/kg per day, preferably in four divided doses, for 2 weeks. Careful attention must be given to compliance with therapy—a frequent problem. Relapses of eye infection are common after topical treatment with erythromycin or tetracycline ophthalmic ointment and may also follow oral erythromycin therapy. Thus follow-up cultures should be performed after treatment. Both parents should be examined for *C. trachomatis* infection and, if diagnostic testing is not readily available, should be treated with doxycycline or azithromycin.

Prevention Since many chlamydial infections are asymptomatic, effective control and prevention must involve periodic screening of individuals at risk. Selective cost-effective screening criteria have been developed. Among women, young age (generally <25 years) is a critical risk factor for chlamydial infections in nearly all studies. Other risk factors include mucopurulent cervicitis; multiple, new, or symptomatic male sex partners; and lack of barrier contraceptive use. In some settings, screening based on young age may be as sensitive