

REFERENCE

1. Gerbase AC, Rowley JT, Heymann DH, Berkley SF, Piot P. Global prevalence and incidence estimates of selected curable STDs. *Sex Transm Infect* 1998; 74 (Suppl 1): S12–6.
2. Rosebury T. *Microbes and morals*. New York: Viking, 1971.
3. Hook EW III, Handsfield HH. Gonococcal infections in the adults. In: Holmes KK, Sparling PF, Mårdh PA, Lemon SM, Stamm WA, Piot P, Wasserheit JN, editors. *Sexually Transmitted Diseases*, 3rd ed. USA: McGraw-Hill companies, 1999: 451–66.
4. Stamm WE. *Chlamydia trachomatis* infections of the adult. In: Holmes KK, Sparling PF, Mårdh PA, Lemon SM, Stamm WA, Piot P, Wasserheit JN, editors. *Sexually Transmitted Diseases*, 3rd ed. USA: McGraw-Hill companies, 1999: 407–22.
5. Egger M, Low N, Smith GD, Lindblom B, Herrmann B. Screening for chlamydial infections and the risk of ectopic pregnancy in a county of Sweden: ecological analysis. *BMJ* 1998; 316: 1776–80.
6. Kamwendo F, Forslin L, Bodin L, Danielsson D. Programmes to reduce pelvic inflammatory disease—the Swedish experience. *Lancet* 1998; 351 (Suppl. III): 25–8.
7. Washington AE, Katz P. Cost of and payment source for pelvic inflammatory disease: trends and projections, 1983 through 2000. *JAMA* 1991; 266: 2565–9.
8. Eitrem R, Erenius M, Meeuwisse A. Contact tracing for genital *Chlamydia trachomatis* in a Swedish county. *Sex Transm Dis* 1998; 25: 433–6.
9. Washington AE, Cates W Jr, Wasserheit JN. Preventing pelvic inflammatory disease. *JAMA* 1991; 266: 2574–80.
10. Ripa KT, Mårdh PA. Cultivation of *Chlamydia trachomatis* in cycloheximide-treated McCoy cells. *J Clin Microbiol* 1977; 6: 328–31.

11. Cles LD, Bruch K, Stamm WE. Staining characteristics of six commercially available monoclonal immunofluorescence reagents for direct diagnosis of *Chlamydia trachomatis* infections. J Clin Microbiol 1988; 26: 1735–7.
12. Hatt C, Ward ME, Clarke IN. Analysis of the entire nucleotide sequence of the cryptic plasmid of *Chlamydia trachomatis* serovar L1. Evidence for involvement in DNA replication. Nucleic Acids Res 1988; 16: 4053–67.
13. Sriprakash KS, Macavoy, ES. Characterization and sequence of a plasmid from the trachoma biovar of *Chlamydia trachomatis*. Plasmid 1987; 18: 205–14.
14. Mahony JB, Luijstra KE, Sellors JW, Chernesky MA. Comparison of plasmid- and chromosomebased polymerase chain reaction assays for detecting *Chlamydia trachomatis* nucleic acids. J Clin Microbiol 1993; 31: 1753–8.
15. Van Dyck E, Ieven M, Pattyn S, Van Damme L, Laga M. Detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* by enzyme immunoassay, culture, and three nucleic acid amplification tests. J Clin Microbiol 2001; 39: 1751–6.
16. Goessens WH, Mouton JW, van der Meijden WI, Deelen S, van Rijsoort-Vos TH, Lemmens-den Toom N, et al. Comparison of three commercially available amplification assays, AMP CT, LCx, and COBAS AMPLICOR, for detection of *Chlamydia trachomatis* in first-void urine. J Clin Microbiol 1997; 35: 2628–33.
17. Black CM, Marrazzo J, Johnson RE, Hook EW 3rd, Jones RB, Green TA, et al. Head-to-head multicenter comparison of DNA probe and nucleic acid amplification tests for *Chlamydia trachomatis* infection in women performed with an improved reference standard. J Clin Microbiol 2002; 40: 3757–63.
18. Black CM. Current methods of laboratory diagnosis of *Chlamydia trachomatis* infections. Clin Microbiol Rev 1997; 10: 160–84.
19. Chernesky MA. Nucleic acid tests for the diagnosis of sexually transmitted diseases. FEMS Immunol Med Microbiol 1999; 24: 437–46.
20. Davies PO, Ridgway GL. The role of polymerase chain reaction and ligase chain reaction for the detection of *Chlamydia trachomatis*. Int J STD AIDS 1997; 8: 731–8.

21. Guaschino S, De Seta F. Update on *Chlamydia trachomatis*. Ann N Y Acad Sci 2000; 900: 293–300.
22. Schachter J. DFA, EIA, PCR, LCR and other technologies: what tests should be used for diagnosis of chlamydia infections. Immunol Invest 1997; 26: 157–61.
23. Watson EJ, Templeton A, Russell I, Paavonen J, Mårdh PA, Stary A, et al. The accuracy and efficacy of screening tests for *Chlamydia trachomatis*: a systematic review. J Med Microbiol 2002; 51: 1021–31.
24. Østergaard L. Microbiological aspects of the diagnosis of *Chlamydia trachomatis*. Best Pract Res Clin Obstet Gynaecol 2002; 16: 789–99.
25. Tapsall J. Antimicrobial resistance in *Neisseria gonorrhoeae*. World Health Organization (WHO) report 2001. WHO/ CDS/ CSR/ DSR/ 2001.3.
26. Chernesky MA. Laboratory services for sexually transmitted diseases: overview and recent developments. In: Holmes KK, Sparling PF, Mårdh PA, Lemon SM, Stamm WA, Piot P, Wasserheit JN, editors. Sexually Transmitted Diseases, 3th ed. USA: McGraw-Hill companies 1999: 1281–94.
27. Knapp JS, Koumans EH. Neisseria and Branhamella. In: Murray PR, Baron EJ, Pfaffer MA, Tenover FC, Yolken RH, editors. Manual of Clinical Microbiology, 7th ed. American Society for Microbiology, Washington, DC, USA 1999: 586–603.
28. Martin JE, Armstrong JH, Smith PB. New system for cultivation of *Neisseria gonorrhoeae*. Appl Microbiol 1974; 27: 802–5.
29. Jephcott AE. Microbiological diagnosis of gonorrhoea. Genitourin Med 1997; 73: 245–52.
30. Johnson RE, Newhall WJ, Papp JR, Knapp JS, Black CM, Gift TL, et al. Screening tests to detect *Chlamydia trachomatis* and *Neisseria gonorrhoeae* infections—2002. MMWR Recomm Rep 2002; 51: 1–38.
31. Knapp JS. Historical perspectives and identification of Neisseria and related species. Clin Microbiol Rev 1988; 4: 415–31.
32. Roongpisuthipong A, Lewis JS, Kraus SJ, Morse SA. Gonococcal urethritis diagnosed from enzyme immunoassay of urine sediment. Sex Transm Dis 1988; 15: 192–5.

33. Donders G. Microbiological diagnosis of gonorrhoea. *Sex Transm Infect* 1998; 74: 78.
34. Schachter J, McCormack WM, Smith RF, Parks RM, Bailey R, Ohlin AC. Enzyme immunoassay for diagnosis of gonorrhea. *J Clin Microbiol* 1984; 19: 57–9.
35. Panke ES, Yang LI, Leist PA, Magevney P, Fry RJ, Lee RF. Comparison of Gen-Probe DNA probe test and culture for the detection of *Neisseria gonorrhoeae* in endocervical specimens. *J Clin Microbiol* 1991; 29: 883–8.
36. Modarress KJ, Cullen AP, Jaffurs WJ Sr, Troutman GL, Mousavi N, Hubbard RA, et al. Detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in swab specimens by the Hybrid Capture II and PACE 2 nucleic acid probe tests. *Sex Transm Dis* 1999; 26: 303–8.
37. Liebling MR, Arkfeld DG, Michelini GA, Ni-shio MJ, Eng BJ, Jin T, et al. Identification of *Neisseria gonorrhoeae* in synovial fluid using the polymerase chain reaction. *Arthritis Rheum* 1994; 37: 702–9.
38. Farrell DJ. Evaluation of AMPLICOR *Neisseria gonorrhoeae* PCR using *cppB* nested PCR and 16S rRNA PCR. *J Clin Microbiol* 1999; 37: 386–90.
39. Miyada CG, Born TL. A DNA sequence for the discrimination of *Neisseria gonorrhoeae* from other *Neisseria* species. *Mol Cell Probes* 1991; 5: 327–35.
40. Ho BS, Feng WG, Wong BK, Egglestone SI. Polymerase chain reaction for the detection of *Neisseria gonorrhoeae* in clinical samples. *J Clin Pathol* 1992; 45: 439–42.
41. Birkenmeyer L, Armstrong AS. Preliminary evaluation of the ligase chain reaction for specific detection of *Neisseria gonorrhoeae*. *J Clin Microbiol* 1992; 30: 3089–94.
42. Carroll KC, Aldeen WE, Morrison M, Anderson R, Lee D, Mottice S. Evaluation of the Abbott LCx ligase chain reaction assay for detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in urine and genital swab specimens from a sexually transmitted disease clinic population. *J Clin Microbiol* 1998; 36: 1630–3.
43. Knox J, Tabrizi SN, Miller P, Petoumenos K, Law M, Chen S, et al. Evaluation of self-collected samples in contrast to practitioner-collected samples for

- detection of *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and *Trichomonas vaginalis* by polymerase chain reaction among women living in remote areas. *Sex Transm Dis* 2002; 29: 647–54.
44. Stamm WE. Diagnosis of *Chlamydia trachomatis* genitourinary infections. *Ann Intern Med* 1988; 108: 710–7.
 45. Schachter J. Chlamydial infections. *West J Med* 1990; 153: 523–34.
 46. Hook EW III, Handsfield HH. Gonococcal infections in the adult. In: Holmes KK et al. (ed.), *Sexually transmitted diseases*. USA: McGraw-Hill companies, 1990: 149–65
 47. Centers for Disease Control. Policy guidelines for the prevention and management of pelvic inflammatory disease (PID). *Morbid. Mortal. Weekly Rep.* 1991; 40: 1–25.
 48. Martin DH, Mroczkowski TF, Dalu ZA, McCarty J, Jones RB, Hopkins SJ, et al. A controlled trial of single dose of azithromycin for the treatment of chlamydial urethritis and cervicitis. *N Engl J Med* 1992; 327: 921–5.
 49. Stamm WE, Holmes KK. *Chlamydia trachomatis* infections of the adult. In: Holmes KK, editors. *Sexually transmitted diseases*. USA: McGraw-Hill companies, 1984: 258–69.
 50. Bianchi A, Scieux C, Brunat N, Vexiau D, Kermanach M, Pezin P, et al. An evaluation of the polymerase chain reaction Amplicor *Chlamydia trachomatis* in male urine and female urogenital specimens. *Sex Transm Dis* 1994; 21: 196–200.
 51. Chernesky M, Jang D, Lee H, Burczak JD, Sellors J, Tomazic-Allen SJ, et al. Diagnosis of *Chlamydia trachomatis* infection in men and women by testing FVU by LCR. *J Clin Microbiol* 1994; 32: 2682–5.
 52. Lee H, Chernesky M, Schachter J, Burczak J, Andrews W, Muldoon S, et al. Diagnosis of Chlamydia trachomatis genitourinary infection in women by ligase chain reaction assay of urine. *Lancet* 1995; 345: 213–16.
 53. Quinn TC. Recent advances in the diagnosis of sexually transmitted diseases. *Sex Transm Dis* 1994; 21: 19–27.
 54. Smith KR, Ching S, Lee H, Ohhashi Y, Hu HY, Fisher HC III and et al. Evaluation of ligase chain reaction for use with urine for identification of

- Neisseria gonorrhoeae* in females attending a sexually transmitted disease clinic. J Clin Microbiol 1995; 33: 455–457.
55. Stamm WE, Tam M, Koester M, Cles L. Detection of *Chlamydia trachomatis* inclusions in McCoy cell cultures with fluorescein-conjugated monoclonal antibodies. J Clin Microbiol 1983; 17: 666–668.
 56. Schachter J, Stamm WE. Chlamydia. In: Murray PR, Baron EJ, Pfaller MA, Tenover FC, Yolken RH, editors. Manual of Clinical Microbiology. 7th ed. American Society for Microbiology. Washington, DC, USA 1999: 795-806.
 57. Rocky DD, Lenart J, Stephens RS. Genome sequencing and our understanding of Chlamydiae. Infect Immun 2000: 5473-9.
 58. Stephens RS, Kalman S, Lammel C, Fan J, Marathe R, Aravind L, et al. Genome sequence of an obligate intracellular pathogen of humans: *Chlamydia trachomatis*. Science 1998; 282: 754-9.
 59. Stephens RS, Sanchez-Pescador R, Wagar EA, Inouye C, Urdea MS. Diversity of *Chlamydia trachomatis* major outer membrane protein genes. J Bacteriol 1987; 169: 3879-85.
 60. Yuan Y, Zing YX, Watkins NG, Caldwell HD. Nucleotide and deduced amino acid sequences for the four variable domains of the major outer membrane proteins of the 15 *Chlamydia trachomatis* serovars. Infect Immun 1989: 1040-9.
 61. Golden MR, Schillinger JA, Markowitz L, St Louis ME. Duration of untreated genital infections with *Chlamydia trachomatis*. Sex Transm Dis 2000; 27: 329-37.
 62. Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance, 2000. Atlanta, GA: U.S.A. 2001.
 63. Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance, 1999 Supplement, Chlamydia Prevalence Monitoring Project. Atlanta, GA: U.S.A. 2000.
 64. Marrazzo JM, White CL, Krekeler B. Community-based urine screening for *Chlamydia trachomatis* with ligase chain reaction assay. Ann Inter Med 1997; 127: 796-803.

65. Burstein GR, Gaydos CA, Diener-West M, Howell MR, Zenilman JM, Quinn TC. Incident *Chlamydia trachomatis* infection among inner-city adolescent females. JAMM 1998; 280: 521-6.
66. Cohen DA, Nsuami M, Martin DH, Farley TA. Repeated school-based screening for sexually transmitted diseases: A feasible strategy for reaching adolescent. Pediatrics 1999; 104: 1281-5.
67. Brodine SK, Shafer M-A, Shaffer RA. Asymptomatic sexually transmitted disease prevalence in four military populations: Application of DNA amplification assays for chlamydia and gonorrhea screening. J Inf Dis 1998; 178: 1202- 4.
68. Park BJ, Stergachis A, Scholes D, Heidrich FE, Holmes KK, Stamm WE. Contraceptive methods and the risk of *Chlamydia trachomatis* infection in young women. Am J Epidemiol 1995; 142: 771- 8.
69. Scholes D, Stergachis A, Ichikawa LE, Heidrich FE, Holmes KK. Vaginal douching as a risk factor for cervical *Chlamydia trachomatis* infection. Obstet Gynecol 1998; 91: 993-7.
70. Mertz KJ, McQuillan GM, Levine WC. A pilot study of the prevalence of chlamydia infection in a national household survey. Sex Transm Dis 1998; 25: 225-8
71. Quinn TC, Gaydos C, Shepherd M. Epidemiologic and microbiologic correlates of *Chlamydia trachomatis* infection in sexual partnerships. JAMA 1996; 276: 1737- 42.
72. Cates W, Wasserheit JN. Genital chlamydial infections: Epidemiology and reproductive sequelae. Am J Obstet Gynecol 1991; 164: 1771- 81.
73. Cates W, Wasserheit JN, Marchbanks PA. Pelvic inflammatory disease and tubal infertility: The preventable conditions. Ann NY Acad Sci 1994; 709: 179- 95.
74. Westrom L, Wolner-Hanssen P. Pathogenesis of pelvic inflammatory disease. Genitourin Med 1993; 69: 9-17.
75. Centers for Disease Control and Prevention. Sexually Transmitted Diseases Treatment Guidelines 2002. MMWR 2002; 51(RR-6): 1-80.

76. Schachter J, Dawson C. Human Chlamydial Infections. Littleton, MA: PSG Publishing; 1978: 97-109.
77. Perine PL, Stamm WE. Lymphogranuloma venereum. In: Holmes KK, Sparling PF, Mardh P-A, editors. Sexually Transmitted Diseases. 3rd edition. New York, NY: McGraw-Hill; 1999: 423-32.
78. Rice PA, Handsfield HH. Arthritis associated with sexually transmitted diseases. In: Holmes KK, Sparling PF, Mardh P-A, editors. Sexually Transmitted Diseases, 3rd edition. New York: McGrawHill; 1999: 921-35.
79. Association of Public Health Laboratories. Negative grey zone supplemental testing to enhance sensitivity of chlamydia enzyme immunoassays and nucleic acid probe assays. National Chlamydia Laboratory Committee of the Association of Public Health Laboratories; 1998.
80. Shafer M-A, Pantell RH, Schachter J. Is the routine pelvic examination needed with the advent of urinebased screening for sexually transmitted diseases? Arch Pediatr Adolesc Med 1999; 153: 119-25.
81. Hillis SD, Coles FB, Litchfield B. Doxycycline and azithromycin for prevention of chlamydial persistence or recurrence one month after treatment in women. Sex Transm Dis. 1998; 25: 5-11.
82. Magid D, Douglas JM, Schwartz JS. Doxycycline compared with azithromycin for treating women with genital *Chlamydia trachomatis* infections: An incremental cost-effectiveness analysis. Ann Intern Med 1996; 124: 389- 99.
83. Hammerschlag MR. Chlamydial infections in infants and children. In: Holmes KK, Sparling PF, Mardh P-A, editors. Sexually Transmitted Diseases, 3rd edition. New York, NY: McGraw Hill; 1999: 1155- 64.
84. Augenbraun M, Bachmann L, Wallace T, Bubouchet L, McCormack W, Hook EW. Compliance with doxycycline therapy in sexually transmitted diseases clinics. Sex Transm Dis 1998; 25: 1-4.
85. Feavers IM, Maiden MC. A gonococcal *porA* pseudogene: implications for understanding the evolution and pathogenicity of *Neisseria gonorrhoeae*. Mol Microbiol 1998; 30: 647-56.

86. Tinsley CR, Nassif X. Analysis of the genetic differences between *Neisseria meningitidis* and *Neisseria gonorrhoeae*: two closely related bacteria expressing two different pathogenicities. Proc Natl Acad Sci USA 1996; 93: 11109–14.
87. Maynard Smith J, Smith NH, O'Rourke M, Spratt BG. How clonal are bacteria?. Proc Natl Acad Sci USA 1993; 90: 4384–8.
88. O'Rourke M, Ison CA, Renton AM, Spratt BG. Opa-typing: a high-resolution tool for studying the epidemiology of gonorrhoea. Mol Microbiol 1995; 17: 865–75.
89. Spratt BG, Bowler LD, Zhang QY, Zhou J, Smith JM. Role of interspecies transfer of chromosomal genes in the evolution of penicillin resistance in pathogenic and commensal *Neisseria* species. J Mol Evol 1992; 34: 115–25.
90. Vazquez JA, Berron S, O'Rourke M, Carpenter G, Feil E, Smith NH, et al. Interspecies recombination in nature: a meningococcus that has acquired a gonococcal PIB porin. Mol Microbiol 1995; 15: 1001–7.
91. © 2004 Kenneth Todar University of Wisconsin-Madison Department of Bacteriology the Pathogenic Neisseriae. Available at <http://www.Textbookofbacteriology.net/>
92. Sexually Transmitted Diseases in America: How many case and at What Cost?. In: Alexander LL, Cates JR, Herndon N, Ratcliffe JF, editors. American Social Health Association. USA: 1998
93. Centers for Disease Control and Prevention. Screening test To Detect *Chlamydia trachomatis* and *Neisseria gonorrhoea* Infection---2002. MMWR Recommendations and Reports 2002; 51(RR15): 1-27.
94. Tang Y, Persing DS. Molecular detection and identification of microorganisms. In: Murray PR, Baron EJ, Pfaffer MA, Tenover FC, Yolken RH, editors. Manual of Clinical Microbiology, 7th ed. ASM Press, Washington, D.C., 1999: 215-44.
95. Mullis KB, Falloona FA. Specific synthesis of DNA in vitro via a polymerase-catalyzed chain reaction. Methods Enzymol 1987; 155: 335-50.
96. Saiki RK, Gelfand DH, Stoffel S, Scharf SJ, Higuchi R, Horn GT, et al. Primers-directed enzymatic amplification of DNA with a thermostable DNA polymerase. Science 1988; 239: 487-91.

97. Saiki RK, Scharf S, Faloona F, Mullis KB, Horn GT, Erlish HA et al. Enzymatic amplification of beta-globin genomic sequences and restriction site analysis for diagnosis of sickle cell anemia. *Science* 1985; 230: 1350-4.
98. Fredricks DN, Relman DA. Amplification of polymerase chain reaction to the diagnosis of infectious diseases. *Clin Infect Dis* 1999; 29: 475-86.
99. Chamberlain JS, Gibbs RA, Raneir JE, Nguyen PN, Caskey CT. Deletion screening of the Duchenne muscular dystrophy locus via multiplex DNA amplification. *Nucleic Acids Res* 1988; 16: 11141-56.
100. Bej AK, Mahbubani MH, Miller R, Dicesare JL, Haff L, Atlas RM. Multiplex PCR amplification and immobilized capture probes for detection of bacterial pathogens and indicators in water. *Mol Cell Probes* 1990; 4: 353-65.
101. Geha DJ, Uhl jr, Gustaferro CA, Persing DH. Multiplex PCR for identification of methicillin-resistant Staphylococci in the clinical laboratory. *J Clin Microbiol* 1994; 32: 1768-72.
102. Robert TC, Storch GA. Multiplex PCR for diagnosis of AIDS-related central nervous system lymphoma and toxoplasmosis. *J Clin Microbiol* 1997; 35: 268-9.
103. Piatak M, Jr, Luk KC, Williams B, Lifson JD. Quantitative competitive polymerase chain reaction for accurate HIV DNA and RNA species. *Bio Techniques* 1993; 14: 70-81.
104. Yang L, Weis JH, Eichwald E, Kolbert CP, Persing DH, Weis JJ. Heritable susceptibility to severe *Borrelia burgdorferi*-induced arthritis is dominant and is associated with persistence of large numbers of spirochetes in tissues. *Infect Immun* 1994; 62: 492-500.
105. Haqqi TM, Sarkar G, David CS, Sommer SS. Specific amplification with PCR of a refractory segment of genomic DNA. *Nucleic Acids Res* 1988; 16: 11844.
106. Schmidt B, Muellegger RR, Stockenhuber C, Soyer HP, Hoedl S, Luger A et al. Detection of *Borrelia burgdorferi*- specific DNA in urine specimens from patients with erythema migrans before and after antibiotic therapy. *J Clin Microbiol* 1996; 34: 1359-1363.
107. Whelen AC, Felmlee TA, Hunt JM, Williams DL, Roberts GD, Stockman L et al. Direct genotypic detection of *Mycobacterium tuberculosis* rifampkn

- resistance in clinical specimens by using single-tube hemi-nested PCR. *J Clin Microbiol* 1995; 33: 556-61.
108. Bladi SP, Ghorashi SA, Morshed D. Using Nested-PCR for Detection of Avian Influenza Virus. *ACTA VET.BRBO* 2005; 74: 581-4.
 109. Bauwens JE, Clark AM, Loeffelholz MJ, Herman SA, Stamm WE. Diagnosis of *Chlamydia trachomatis* urethritis in men by polymerase chain reaction assay of first-catch urine. *J Clin Microbiol* 1993; 3: 3013-6.
 110. Bobo L, Munoz B, Viscidi R, Quinn T, Mkocha H, West S. Diagnosis of *Chlamydia trachomatis* eye infection in Tanzania by polymerase chain reaction/enzyme immunoassay. *Lancet* 1991; 338: 847-50.
 111. Cano RJ, Palomares JC, Torres MJ, Klem RE. 1992. Evaluation of a fluorescent DNA hybridization assay for the detection of *N. gonorrhoeae*. *Eur J Clin Microbiol Infect Dis* 1992; 11: 602-9.
 112. Chernesky MA, Castricano S, Sellors J, Stewart I, Cunningham I, Landis S, et al. Detection of *Chlamydia trachomatis* antigens in urine as an alternative to swabs and cultures. *J Infect Dis* 1990; 161: 124-6.
 113. Dille BJ, Butzen CC, Birkenmeyer LG. 1993. Amplification of *Chlamydia trachomatis* DNA by ligase chain reaction. *J Clin Microbiol* 1993; 31: 729-31.
 114. Hay PE, Thomas BJ, Gilchrist C, Palmer HM, Gilroy CB, Taylor-Robinson D. The value of urine sampling from men with nongonococcal urethritis for the detection of *Chlamydia trachomatis*. *Genitourin. Med* 1991; 67: 124-8.
 115. Ho BSW, Feng WG, Wong BKC, Egglestone SI. Polymerase chain reaction for the detection of *Neisseria gonorrhoeae* in clinical specimens. *J Clin Pathol* 1992; 45: 439-42.
 116. Jaschek G, Gaydos CA, Welsh LE, Quinn TC. Direct detection of *Chlamydia trachomatis* in urine specimens from symptomatic and asymptomatic men by using a rapid polymerase chain reaction assay. *J Clin Microbiol* 1993; 31: 1209-12.
 117. Loeffelholz MJ, Lewinski CA, Silver SR, Purohit AP, Herman SA, Buonagurio DA et al. Detection of *Chlamydia trachomatis* in endocervical specimens by polymerase chain reaction. *J Clin Microbiol* 1992; 30: 2847-51.

118. Mahony JB, Luinstra KE, Jang D, Sellors J, Chernesky MA. *Chlamydia trachomatis* confirmatory testing of PCR-positive genitourinary specimens using a second set of plasmid primers. *Mol Cell Probes* 1992; 6: 381–8.
119. Mahony JB, Luinstra KE, Sellors JW, Jang D, Chernesky MA. Confirmatory polymerase chain reaction testing for *Chlamydia trachomatis* in first void urine from asymptomatic and symptomatic men. *J Clin Microbiol* 1992; 30: 2241–5.
120. Mahony JB, Luinstra KE, Sellors JW, Pickard L, Chong S, Jang D et al. Role of confirmatory PCRs in determining performance of Chlamydia Amplicor PCR with endocervical specimens from women with a low prevalence of infection. *J Clin Microbiol* 1994; 32: 2490–3.
121. Ossewarde JM, Rieffe M, Rozenberg-Arska M, Ossenkoppele PM, Nawrocki RP, van Loon AM. Development and clinical evaluation of a polymerase chain reaction test for detection of *Chlamydia trachomatis*. *J Clin Microbiol* 1992; 30: 2122–8.
122. Palmer HM, Gilroy CB, Thomas BJ, Hay PE, Gilchrist C, Taylor-Robinson D. Detection of *Chlamydia trachomatis* by the polymerase chain reaction in swabs and urine from men with non-gonococcal urethritis. *J Clin Pathol* 1991; 44: 321–5.
123. Schachter J, Pang F, Parks RM, Smith RF, Armstrong AS. Use of Gonozyme on urine sediment for diagnosis of gonorrhea in males. *J Clin Microbiol* 1986; 23: 124–5.
124. Sellors J, Mahony J, Jang D, Pickard L, Castriciano S, Landis S, et al. Rapid on-site diagnosis of chlamydial urethritis in men by detection of antigens in urethral swabs and urine. *J Clin Microbiol* 1991; 29: 407–9.
125. Anceschi MM, Falcinelli C, Pieretti M, Cosmi EV. Multiple primer pairs polymerase chain reaction for the detection of human papillomavirus types. *J Virol Methods* 1990; 28: 59–66.
126. Nedjar S, Biswas RM, Hewlett IK. Co-amplification of specific sequences of HCV and HIV-1 genomes by using the polymerase chain reaction assay: a potential tool for the simultaneous detection of HCV and HIV-1. *J Virol Methods* 1991; 35: 297–304.

127. Snijders PJF, van den Brule AJC, Schrijnemakers HFJ, Snow G, Meijer CJLM, Walboomers JMM. The use of general primers in the polymerase chain reaction permits the detection of a broad spectrum of human papillomavirus genotypes. *J Gen Virol* 1990; 71: 173–81.
128. Vandenvelde C, Verstraete M, Van Beers D. Fast multiplex polymerase chain reaction on boiled clinical samples for rapid viral diagnosis. *J Virol Methods* 1990; 30: 215–28.
129. Iwen PC, Walker RA, Warren KL, Kelly DM, Hinrichs SH, Linder J. Evaluation of a nucleic acid based test for simultaneously detecting *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in endocervical specimens. *J Clin Microbiol* 1995; 33: 2587-91.
130. George JA, Panchatcharam TS, Paramasivam R, Balasubramanian S, Chakrapani V, Murugan G. Evaluation of diagnostic efficacy of PCR methods for *Chlamydia trachomatis* infection in genital and urine specimens of symptomatic men and women in India. *Jpn J Infect Dis* 2003; 56: 88-92
131. Mahony JB, Luinstra KE, Tyndall M, Sellors JW, Krepel J, Chernesky M. Multiplex PCR for detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in Genitourinary specimens. *J Clin Microbiol* 1995; 33: 3049-53.
132. Gray RH, Wawer MJ, Girdner J, Sewankambo N, Serwadda D, Meehan M. Use of self-collected vaginal swabs for detection of *Chlamydia trachomatis* infection. *Sex Transm Dis* 1998; 25: 450.
133. Hook EW, Smith III K, Mullen C, Stephens J, Rinehart L, Pate MS. Diagnosis of genitourinary *Chalmydia trachomatis* infections by using the ligase chain reaction on patient-obtained vaginal swabs. *J Clin Microbiol* 1997; 35: 2133-35.
134. Hook EW, Ching III SF, Stephens J, Hardy KF, Smith KR, Lee HH. Diagnosis of *Neisseria gonorrhoeae* infections in women by using the ligase chain reaction on patient-obtained vaginal swabs. *J Clin Microbiol* 1997; 35: 2129–32.
135. Polaneczky M, Quigley C, Pollock L, Dulko D, Whitkin SS. Use of self-collected vaginal specimens for detection of *Chlamydia trachomatis* infection. *Obstet Gynecol* 1998; 9: 375–8.

136. Gaydos CA, Crotchfelt KA, Shah N, Tennant M, Quinn TC, Gaydos JC. Evaluation of Dry and Wet Transported Intravaginal Swabs in Detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae* Infections in Female Soldiers by PCR. *J Clin Microbiol* 2002; 40: 758-61.
137. Anttila A, Saikku P, Koskela P, Bloigu A, Dillner J, Ikaheimo I. Serotypes of *Chlamydia trachomatis* and risk for development of cervical squamous cell carcinoma. *JAMA* 2001; 285: 47-51.
138. Eng TR, Butler WT. The neglected health and economic impact of STD. In: Eng TR and Butler WT editors. *The hidden epidemic; confronting sexually transmitted diseases*. National Academy Press, Washington, D.C. 1997: 28-68.
139. Laga M, Manoka A, Kivuvu M, Malele B, Tuliza M, Nzilambi N. Non-ulcerative sexually transmitted diseases as risk factors for HIV-1 transmission in women: results from a cohort study. *AIDS* 1993; 7: 95-102.
140. Crotchfelt KA, Welsh LE, Debonville D, Rosenstraus M, Quinn TC. Detection of *Neisseria gonorrhoeae* and *Chlamydia trachomatis* in Genitourinary Specimens from Men and Women by a Coamplification PCR Assay. *J Clin Microbiol* 1997; 35: 1536-40.
141. Young H, Moyes A, Horn K. PCR Testing of genital and urine specimens compared with culture for the diagnosis of chlamydial infection in men and women. *Int J STD AIDS* 1998; 9: 661-5.
142. Toye B, Peeling P, Jessamine P. Diagnosis of *Chlamydia trachomatis* infections in asymptomatic men and women by PCR assay. *J Clin Microbiol* 1996; 34: 1396-400.
143. Crotchfelt KA, Welsh LE, Debonville D. Detection of *Neisseria gonorrhoeae* and *Chlamydia trachomatis* in Genitourinary Specimens from Men and Women by a Coamplification PCR Assay. *J Clin Microbiol* 1997; 35: 1536-40.
144. Wiesenfeld HC, Uhrin M, Dixon BW. Diagnosis of male *Chlamydia trachomatis* urethritis by polymerase chain reaction. *Sex Transm Dis* 1994; 21: 268-71.