

Pelvic Inflammatory Disease

Brian Weiss

Suzanne M. Shepherd

REFERENCES

- Ness RB, Smith KJ, Chang CC, et al: Prediction of pelvic inflammatory disease among young, single, sexually active women. *Sex Transm Dis* 33: 137, 2006. [PMID: 16505735]
- Brunham RC, Gottlieb SL, Paavonen J: Pelvic inflammatory disease. *N Engl J Med* 372: 2039, 2015. [PMID: 25992748]
- Kreisel K, Flagg EW, Torrone E: Trends in pelvic inflammatory disease emergency department visits, United States, 2006-2013. *Am J Obstet Gynecol* 218: 117.e1, 2018. [PMID: 29045851]
- Romero R, Espinoza J, Mazor M: Can endometrial infection/inflammation explain implantation failure, spontaneous abortion and preterm birth after in vitro fertilization? *Fertil Steril* 32: 799, 2004. [PMID: 15482749]
- Unemo M, Bradshaw CS, Hocking JS, et al: Sexually transmitted infections: challenges ahead. *Lancet* 17: e235, 2017. [PMID: 28701272]
- Witkin SS, Minis E, Athanasiou A, Leizer J, Linhares IM: Chlamydia trachomatis: the persistent pathogen. *Clin Vacc Immunol* 24: e00203-17, 2017. [PMID: 28835360]
- Zhong G, Brunham RC, de la Maza LM, Darville T, Deal C: National Institute of Allergy and Infectious Diseases workshop report: "Chlamydia vaccines: The way forward." 2017; 10.1016/j.vaccine.2017.10.075. [PMID: 29097007]
- Walker CK, Workowski KA, Washington AE, et al: Anaerobes in pelvic inflammatory disease: implications for the Centers for Disease Control and Prevention's guidelines for treatment of sexually transmitted diseases. *Clin Infect Dis* 28(Suppl 1): S29, 1999. [PMID: 10028108]
- Ness RB, Kip KE, Hillier SL, et al: A cluster analysis of bacterial vaginosis-associated micro-flora and pelvic inflammatory disease. *Am J Epidemiol* 162: 585, 2005. [PMID: 16093289]
- Taylor BD, Darville T, Haggerty C: Does bacterial vaginosis cause pelvic inflammatory disease? *Sex Transm Dis* 40: 117, 2013. [PMID: 23324974]
- Ross J, Guaschino S, Cusini M, Jensen J: 2017 European guidelines for the management of pelvic inflammatory disease. *Int J STD AIDS* 1: 956462417744099, 2017. [PMID: 29198181]
- Gaydos CA: *Mycoplasma genitalium*: accurate diagnosis is necessary for adequate treatment. *J Infect Dis* 21(suppl 2): S406, 2017. [PMID: 28838072]
- Golden MR, Workowski KA, Bolan G: Developing a public health response to *Mycoplasma genitalium*. *J Infect Dis* 216(suppl): S420, 2016. [PMID: 28838079]
- Wiesenfeld HC, Manhart LE: *Mycoplasma genitalium* in women: current knowledge and research priorities for this recently emerged pathogen. *J Infect Dis* 216(suppl 2): S389, 2017. [PMID: 28838078]
- Cherpes TL, Wiesenfeld HC, Melan MA, et al: The associations between pelvic inflammatory disease, *Trichomonas vaginalis* infection, and positive herpes simplex virus type 2 serology. *Sex Transm Dis* 33: 747, 2006. [PMID: 16691155]
- Brunham RC, Kimani J, Bwayo J, et al: The epidemiology of *Chlamydia trachomatis* within a sexually transmitted diseases core group. *J Infect Dis* 173: 950, 1996. [PMID: 8603976]
- Avan BI, Fatmi Z, Rashid S: Comparison of the clinical and laparoscopic features of infertile women suffering from genital tuberculosis (TB) or pelvic inflammatory disease or endometriosis. *J Pakistan Med Assoc* 51: 393, 2001. [PMID: 11840606]
- Viberga I, Odilind V, Lazdane G, et al: Microbiology profile in women with pelvic inflammatory disease in relation to IUD use. *Infect Dis Obstet Gynecol* 13: 183, 2005. [PMID: 16338777]
- Wiesenfeld HC, Hillier SL, Meyn LA, et al: Subclinical pelvic inflammatory disease and fertility. *Obstet Gynecol* 120: 37, 2012. [PMID: 22678036]
- Brotman RM: Vaginal microbiome and sexually transmitted infections: an epidemiologic perspective. *J Clin Invest* 121: 4610, 2011. [PMID: 22133836]
- Draper DL, Landers DV, Krohn MA, et al: Levels of vaginal secretory leukocyte protease inhibitor are decreased in women with lower reproductive tract infections. *Am J Obstet Gynecol* 183: 1243, 2000. [PMID: 11084573]
- Ness RB, Hillier SL, Kip KE, et al: Bacterial vaginosis and risk of pelvic inflammatory disease. *Obstet Gynecol* 104: 761, 2004. [PMID: 15458899]
- Ness RB, Soper DE, Holley RL, et al: Douching and endometritis: results from the PID Evaluation and Clinical Health (PEACH) study. *Sex Transm Dis* 28: 240, 2001. [PMID: 11318257]
- Champion JD, Piper J, Shain R, et al: Minority women with sexually transmitted diseases, sexual abuse and risk for pelvic inflammatory disease. *Res Nurs Health* 24: 38, 2001. [PMID: 11260584]
- Shelton JD: Risk of clinical pelvic inflammatory disease attributable to an intrauterine device. *Lancet* 357: 443, 2001. [PMID: 11273068]
- Meirik O: Intrauterine device—upper and lower genital tract infections. *Contraception* 75: 541, 2007. [PMID: 17531615]
- Kelly EK, Rudinsky SW: Intrauterine contraception: current evidence-based recommendations. *J Midwifery Womens Health* 52: 505, 2007. [PMID: 17826715]
- Leichtner JS, Chandra A, Aral SO: Correlates of self-reported pelvic inflammatory disease treatment in sexually experienced reproductive-aged women in the United States, 1995 and 2006-2010. *Sex Transm Dis* 40: 413, 2013. [PMID: 23588132]
- Russo JA, Achilles S, DePineres T, Gil L: Controversies in family planning: postabortal pelvic inflammatory disease. *Contraception* 87: 497, 2013. [PMID: 22652188]
- Soper DE: The intrauterine device. A good thing revisited. *Obstet Gynecol* 121: 919, 2013. [PMID: 23635725]
- Hubacher D, Grimes DA, Gemzell-Danielsson K: Pitfalls of research linking the intra-uterine device to pelvic inflammatory disease. *Obstet Gynecol* 121: 1091, 2013. [PMID: 23635748]
- Sufrin CB, Postlethwaite D, Armstrong MA, et al: *Neisseria gonorrhoeae* and *Chlamydia trachomatis* screening at intrauterine device insertion and pelvic inflammatory disease. *Obstet Gynecol* 120: 1314, 2012. [PMID: 23168755]
- Drife J, Magowan B: Female genital infections, in *Clinical Obstetrics and Gynaecology*. Edinburgh, United Kingdom: Saunders; 2004:193.
- Trent M, Bass D, Ness RB, Haggerty C: Recurrent PID, subsequent STI, and reproductive health outcomes: findings from the PID Evaluation and Clinical Health (PEACH) study. *Sex Transm Dis* 38: 879, 2011. [PMID: 21844746]
- Rasmussen CB, Faber MT, Jensen A, et al: Pelvic inflammatory disease and risk of invasive ovarian cancer and ovarian borderline tumors. *Cancer Causes Control* 24: 1459, 2013. [PMID: 23615817]
- Toth M, Patoro DL, Esquenazi B, et al: Association between *Chlamydia trachomatis* and abnormal uterine bleeding. *Am J Reprod Immunol* 57: 361, 2007. [PMID: 17430500]
- Peipert JF, Ness RB, Blume J, et al: Clinical predictors of endometritis in women with symptoms and signs of pelvic inflammatory disease. *Am J Obstet Gynecol* 184: 856, 2001. [PMID: 11303192]
- Molander P, Finne P, Sjöberg J, et al: Observer agreement with laparoscopic diagnosis of pelvic inflammatory disease using photographs. *Obstet Gynecol* 101: 875, 2003. [PMID: 12738143]
- Risser WL, Risser JM, Benjamins LH, et al: Incidence of Fitz-Hugh Curtis syndrome in adolescents who have pelvic inflammatory disease. *J Pediatr Adolesc Gynecol* 20: 179, 2007. [PMID: 17561186]
- Centers for Disease Control and Prevention, Workowski KA, Bolan GA: Sexually transmitted diseases treatment guidelines, 2015. *MMWR Recomm Rep* 64: 1, 2015. [PMID: 26042815]
- Schwebke JR, Hobbs MM, Taylor SN, et al: Molecular testing for *Trichomonas vaginalis* in women: results from a prospective U.S. clinical trial. *J Clin Microbiol* 49: 4106, 2011. [PMID: 21940475]
- Coleman JS, Gaydos CA, Witter F: *Trichomonas vaginalis* vaginitis in obstetrics and gynecology practice: new concepts and controversies. *Obstet Gynecol Surv* 68: 43, 2013. [PMID: 23322080]
- Sakhel K, Benson CB, Platt LD, et al: Begin with the basics: role of 3-dimensional sonography as a first-line imaging technique in the cost-effective evaluation of gynecologic pelvic disease. *J Ultrasound Med* 32: 381, 2013. [PMID: 23443177]
- Hentour EL, Millet K, Pages-Bouic E, et al: How to differentiate acute pelvic inflammatory disease from acute appendicitis? A decision tree based on CT findings. *Eur Radiol* 28: 673, 2018. [PMID: 28894927]
- Tukeva TA, Aronen HJ, Kaarjalainen PT, et al: MR imaging in pelvic inflammatory disease: comparison with laparoscopy and US. *Radiology* 210: 209, 1999. [PMID: 9885610]
- Li W, Zhang Y, Cui Y, et al: Pelvic inflammatory disease: evaluation of diagnostic accuracy with conventional MR with added diffusion-weighted imaging. *Abdom Imaging* 38: 193, 2013. [PMID: 22527159]
- Vicetti Miguel RD, Chivukula M, Krishnamurti U, et al: Limitations of the criteria used to diagnose histologic endometritis in epidemiologic pelvic inflammatory disease research. *Pathol Res Pract* 207: 680, 2011. [PMID: 21996319]
- Bartlett EC, Levison WB, Munday PE: Pelvic inflammatory disease. *BMJ* 346: 3189, 2013. [PMID: 23704128]
- Haggerty CL, Ness RB: Newest approaches to treatment of pelvic inflammatory disease. A review of recent randomized clinical trials. *Clin Infect Dis* 44: 961, 2007. [PMID: 17342648]
- Ness RB, Soper DE, Holley RL, et al: Effectiveness of inpatient and outpatient treatment strategies for women with pelvic inflammatory disease: results from the Pelvic Inflammatory Disease Evaluation and Clinical Health (PEACH) randomized trial. *Am J Obstet Gynecol* 186: 929, 2001. [PMID: 12015517]
- Da Costa-Lourenço APR, Barros dos Santos KTB, Moreira BM, Fracalanza SEK, Bonelli RR: Antimicrobial resistance in *Neisseria gonorrhoeae*: history, molecular mechanisms and epidemiological aspects of an emerging global threat. *Braz J Microbiol* 48: 617, 2017. [PMID: 28754299]
- Mugo NR, Kiehlbauch JA, Nguti R, et al: Effect of human immunodeficiency virus-1 infection on treatment outcome of acute salpingitis. *Obstet Gynecol* 107: 807, 2006. [PMID: 16582116]
- Cohen CR: Effect of human immunodeficiency virus type 1 infection upon acute salpingitis: a laparoscopic study. *J Infect Dis* 178: 1352, 1998. [PMID: 9780255]
- Irwin KL, Moorman AC, O'Sullivan MJ, et al: Influence of human immunodeficiency virus infection on pelvic inflammatory disease. *Obstet Gynecol* 95: 525, 2000. [PMID: 10725484]
- Bukusi EA, Cohen CR, Stevens CE, et al: Effects of human immunodeficiency virus 1 infection on microbial origins of pelvic inflammatory disease and on efficacy of ambulatory oral therapy. *Am J Obstet Gynecol* 181: 1374, 1999. [PMID: 10601915]
- Centers for Disease Control and Prevention, Workowski KA, Berman SM: Sexually transmitted diseases treatment guidelines, 2010. *MMWR Recomm Rep* 59(RR-12): 12, 2010. [PMID: 21160459]
- Trent M, Judy SL, Ellen JM, Walker A: Use of an institutional intervention to improve quality of care for adolescents treated in pediatric ambulatory settings for pelvic inflammatory disease. *J Adolesc Health* 39: 50, 2006. [PMID: 16781961]
- Trent M, Haggerty CM, Jennings JJ, et al: Adverse adolescent reproductive health outcomes after pelvic inflammatory disease. *Arch Pediatr Adolesc Med* 165: 49, 2011. [PMID: 21199980]

59. Savaris RF, Texeira LM, Torres TG, et al: Comparing ceftriaxone plus azithromycin or doxycycline for pelvic inflammatory disease. A randomized controlled trial. *Obstet Gynecol* 110: 53, 2007. [PMID: 17601896]
60. Brookoff D: Compliance with doxycycline therapy for outpatient treatment of pelvic inflammatory disease. *South Med J* 87: 1088; 1994. [PMID: 7973890]
61. Dunbar-Jacob J, Sereika SM, Foley SM, et al: Adherence to oral therapies in pelvic inflammatory disease. *J Womens Health (Larchmt)* 13: 285, 2004. [PMID: 15130257]
62. Bevan CD, Ridgway GL, Rothermel CD: Efficacy and safety of azithromycin as monotherapy or combined with metronidazole compared with two standard multidrug regimens for the treatment of acute pelvic inflammatory disease. *J Int Med Res* 31: 45, 2003. [PMID: 12635534]
63. Pitsouni E, Lavazzo C, Athanasiou S, Falagas ME: Single-dose azithromycin versus erythromycin or amoxicillin for *Chlamydia trachomatis* infection during pregnancy: a meta-analysis of randomized controlled trials. *Int J Antimicrob Agents* 30: 213, 2007. [PMID: 17596917]
64. Lau C-Y, Qureshi AK: Azithromycin versus doxycycline for genital chlamydial infections: a meta-analysis of randomized clinical trials. *Sex Transm Dis* 29: 497, 2002. [PMID: 12218839]
65. McLean CA, Wang SA, Hoff GL, et al: The emergence of *Neisseria gonorrhoeae* with decreased susceptibility to azithromycin in Kansas City, Missouri, 1999 to 2000. *Sex Transm Dis* 31: 73, 2004. [PMID: 14743069]
66. Dewitt J, Reining A, Allsworth JE, Peipert JF: Tuboovarian abscesses: is size associated with duration of hospitalization and complications? *Obstet Gynecol Int* 84: 847, 2010. [PMID: 20508737]
67. Wiesenfeld HC, Sweet RL: Progress in the management of tuboovarian abscesses. *Clin Obstet Gynecol* 36: 433, 1993. [PMID: 8513637]
68. Lareau SM, Beigi RH: Pelvic inflammatory disease and tubo-ovarian abscess. *Infect Dis North Am* 22: 693, 2008. [PMID: 18954759]
69. Trent M, Chung SE, Burke M, et al: Results of a randomized controlled trial of a brief behavioral intervention for pelvic inflammatory disease in adolescents. *J Pediatr Adolesc Gynecol* 23: 96, 2010. [PMID: 19733100]