

Pelvic Inflammatory Disease (PID, Pelvic Infection) in Adolescents — Diagnosis and Treatment

[See online here](#)

Pelvic inflammatory disease is a common disorder among young women, especially adolescents. The most important risk factor for the pelvic inflammatory disease is the previous history of a sexually transmitted infection. Sexually transmitted infections are more commonly identified in adolescents due to physiologic, anatomic and behavioral differences from adult females. Antibiotic therapy that covers chlamydia and gonorrhea is the mainstay of treatment for pelvic inflammatory disease in adolescents.



Overview

Pelvic inflammatory disease is a disorder that is characterized by the **inflammation of the upper genital tract due to infectious etiologies**. This definition includes endometritis, salpingitis, pyosalpinx, tubo-ovarian abscess, and pelvic peritonitis. This condition is quite common in adolescents and is a preventable disease. Because of this, studying pelvic inflammatory disease in this age group is important.

Epidemiology of Pelvic Inflammatory Disease in Adolescents

Approximately **1 million** new cases of pelvic inflammatory disease are diagnosed per year in the United States. Even though most cases of the pelvic inflammatory disease can be managed medically or surgically, **up to 150 women die every year because of the condition**. The exact incidence of pelvic inflammatory disease in adolescents is unknown, but it has been suggested that one of eight adolescent girls will develop the condition. In another study, it was found that one-fifth of the cases of pelvic inflammatory disease are adolescents.

The risk of pelvic inflammatory disease in adolescents is higher compared to women who are older than **24 years of age**. In older women, only 1 per 80 women is expected to develop the condition. The most likely explanation for this finding is the observation of a much higher incidence of sexually transmitted diseases in adolescents compared to older female adults.

Risk factors for Teens:

- Young age at first sexual encounter
- Multiple sexual partners
- Unprotected sex
- Previous history of PID
- Bacterial vaginosis associated with PID

Therefore, it is understandable that the most important risk factor for pelvic inflammatory disease in this age group is a **sexually transmitted infection**. Additionally, African American adolescents are more likely to develop pelvic inflammatory disease compared to women from other ethnicities. The **use of condoms is known to lower the risk of acquiring sexually transmitted infections** and hence pelvic inflammatory disease. The number of sexual partners is positively correlated with the risk of pelvic inflammatory disease.

Additionally, the immaturity of the cervix epithelium is another risk factor for pelvic inflammatory disease in adolescents. **Anovulatory cycles**, which are also more common in adolescents, have been also linked to an increased risk of pelvic inflammatory disease.

Long-term morbidity is significant with pelvic inflammatory disease. Infertility, chronic pelvic pain, painful intercourse, and dysmenorrhea are the main complications of the disease. Additionally, an increased risk of ectopic pregnancy has been observed in women with a previous or recurrent history of pelvic inflammatory disease.

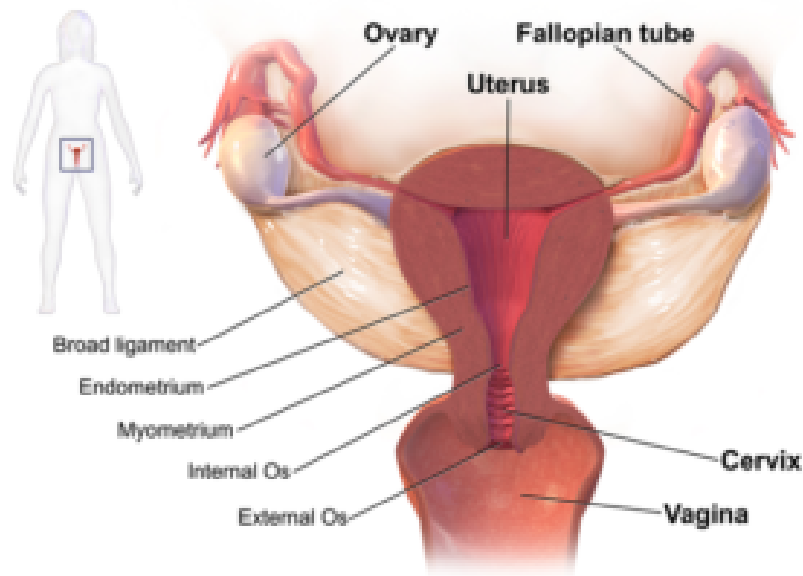


Image: "Typical Sites for Pelvic Inflammatory Disease." By BruceBlaus. License: [CC BY 3.0](https://creativecommons.org/licenses/by/3.0/)

Etiology of Pelvic Inflammatory Disease in Adolescents

Pelvic inflammatory disease usually happens because of the **ascension of a sexually transmitted infection from the lower genital tract to the upper genital tract and organs**. In most cases, the infection is usually **polymicrobial**.

The most commonly identified organisms in pelvic inflammatory disease in adolescents are **chlamydia trachomatis, Neisseria gonorrhoeae, mycoplasma, and mycobacterium tuberculosis**. Trichomoniasis has been described before in pelvic inflammatory disease in adults but not in adolescents.

Approximately, two-thirds of the cases of pelvic inflammatory disease are **due to chlamydia or gonorrhea infections**. It is estimated that 10% of adolescents who have a lower genital tract chlamydial infection are going to develop the pelvic inflammatory disease. The estimated incidence of lower genital tract chlamydial infections in adolescents is 2762 per 100,000.

Gonorrheal lower genital tract infections are also commonly associated with pelvic inflammatory disease if left untreated. The estimated incidence of gonorrheal lower genital tract infections in adolescents is 611 per 100,000. A recent study suggested that the true incidence of gonorrheal lower genital tract infections is twice that number.

Clinical Presentation of Pelvic Inflammatory Disease in Adolescents

The clinical presentation of pelvic inflammatory disease can be vague in adults and adolescents, therefore, an objective diagnostic criterion has been put by the CDC. The **presence of cervical motion tenderness, uterine tenderness or adnexal mass tenderness** is quite specific for pelvic inflammatory disease in this age group and should warrant further diagnostic workup.

Supporting criteria for the diagnosis of pelvic inflammatory disease in adolescents include the presence of fever, the presence of a cervical or vaginal mucopurulent discharge and previous laboratory documentation of a gonorrheal or chlamydial infection.

Diagnostic Workup for Pelvic Inflammatory Disease in Adolescents

The main difference between the diagnostic workup for pelvic inflammatory disease in adolescents and adults is the **avoiding of invasive procedures whenever possible in adolescents**. Unfortunately, in many cases, laparoscopy is still warranted for diagnostic and therapeutic indications.

A recent study has found that **micro-laparoscopy** is as effective as laparoscopy in establishing the diagnosis of pelvic inflammatory disease in adolescents but is significantly less invasive. Unfortunately, micro-laparoscopy is still not widely available in most hospitals.

The main criteria for the diagnosis is:

- Oral temperature more than 101 F (38.3 C)
- Abnormal discharge from the cervix or the vagina
- Elevated ESR
- Elevated CRP level
- Vaginal secretions have an abundance of white blood cells
- Culture or DNA probe of the cervix shows evidence of *C. trachomatis* or *N. gonorrhoeae*

In addition to the clinical supporting criteria we mentioned, the CDC has also put some laboratory supporting criteria for increasing the specificity for the diagnosis of pelvic inflammatory disease. The possible laboratory findings include **increased white blood cells count in the vaginal secretions**, elevated erythrocyte sedimentation rate, and an elevated C-reactive protein.

Magnetic resonance imaging of the uterus and the ovaries or the fallopian tubes can also provide more evidence for the diagnosis of pelvic inflammatory disease. **Thickened fallopian tubes' walls** is a finding that is suggestive of infection, for instance. The advantage of magnetic resonance imaging over laparoscopy is the non-invasiveness of the former procedure. The main drawback of magnetic resonance imaging in pelvic inflammatory disease is the inability to provide any therapeutic intervention compared to laparoscopy. Therefore, if the likelihood of pelvic inflammatory disease is high, it might be reasonable to go for micro-laparoscopy or laparoscopy from the beginning.

Women with acute abdominal pain might have other etiology of the pain rather than pelvic inflammatory diseases such as [appendicitis](#), cholecystic, [ectopic pregnancy](#) or a ruptured ovarian cyst. Adequate history taking combined with ultrasonography is usually sufficient in excluding these differential diagnoses.

Empirical antibiotic treatment of pelvic inflammatory disease in adolescents should not be delayed until the diagnosis is confirmed.

Treatment of Pelvic Inflammatory Disease in Adolescents

The empirical antibiotic treatment of a pelvic inflammatory disease includes **parenteral levofloxacin, ofloxacin plus metronidazole, or ampicillin plus doxycycline**.

Intravenous infusion of doxycycline is painful and perhaps should be avoided.

After 24 hours of empirical intravenous antibiotic therapy, the patient should be re-evaluated. If significant clinical improvement is observed, the patient should be switched to oral antibiotic therapy.

The oral antibiotic regimens include **ofloxacin 400 mg** twice a day for two weeks or **levofloxacin 500 mg** once a day for two weeks with or without metronidazole 500 mg twice a day for two weeks. Asymptomatic partners should also receive oral antibiotics.

Patients who do not show any response to oral or intravenous antibiotic therapy should be re-evaluated. The most common causes of failure to respond to antibiotic treatment include lack of compliance, tubo-ovarian abscess or an incorrect diagnosis. Patients who do not improve on antibiotic regimens that do not include metronidazole should be given more time and re-evaluated after the addition of metronidazole.

Patients should be re-screened for gonorrhoea and chlamydia four to six weeks after therapy is completed to confirm the success of the treatment and to exclude possible recurrence disease.

Pregnant patients, those who do not respond to oral antibiotic therapy, or those who are septic should be admitted for in-patient care.

References

Diagnosis and management of pelvic inflammatory disease in adolescents. Eissa, Mona A.H. et al. Journal of Pediatric Health Care, Volume 17, Issue 3, 145 - 147

Legal Note: Unless otherwise stated, all rights reserved by Lecturio GmbH. For further legal regulations see our [legal information page](#).

Notes