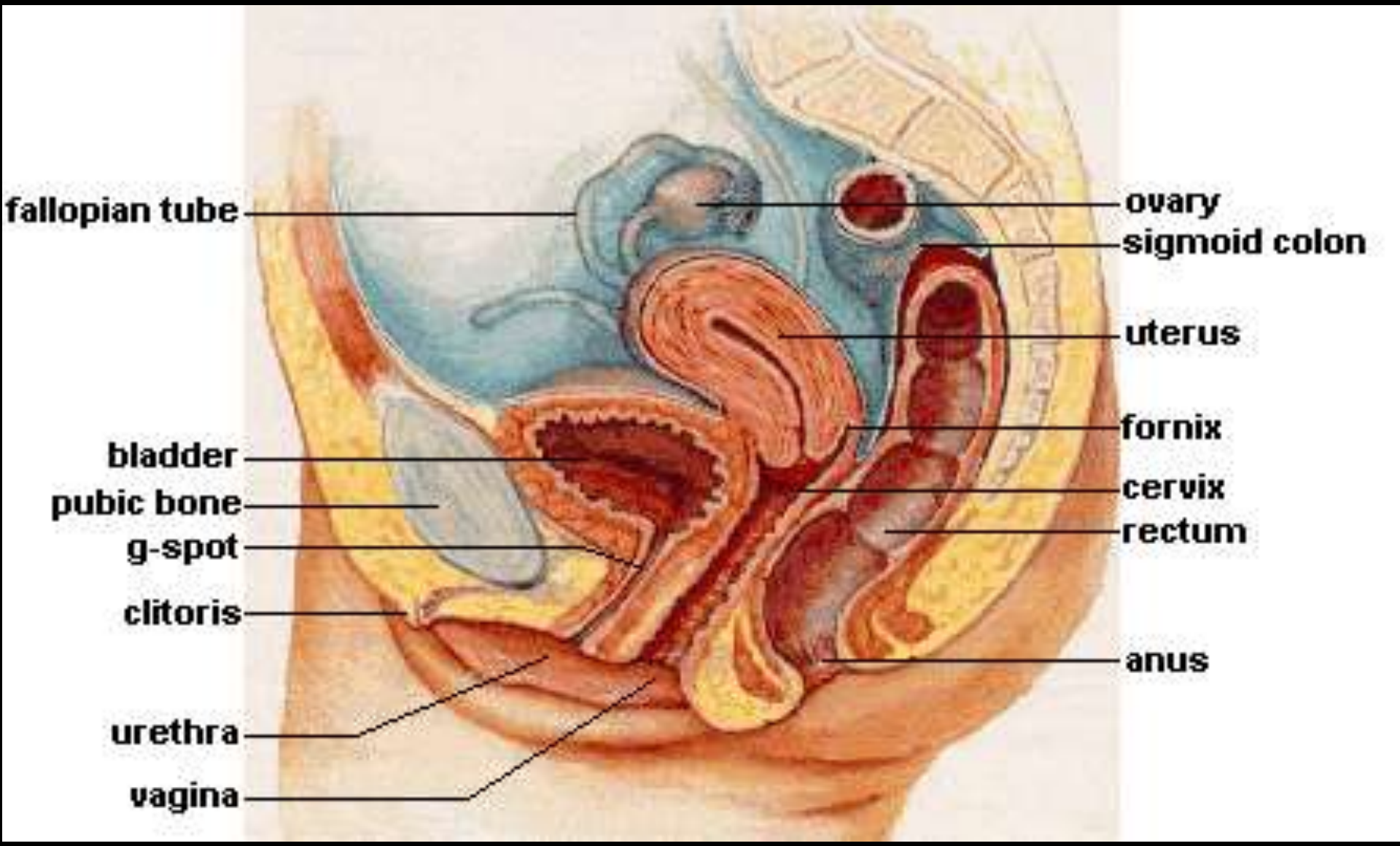
PID

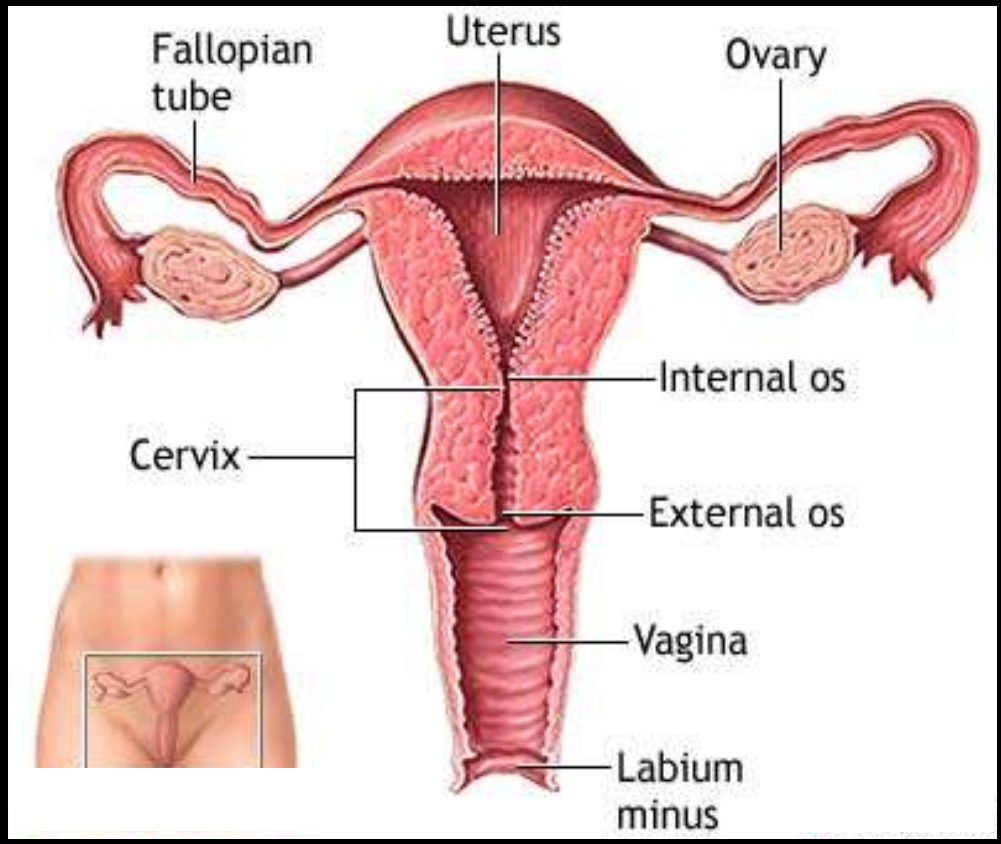
(Pelvic Inflammatory Disease)

Female reproductive organ



What is PID ?

- An infection of
  - vagina (Colpitis)
  - Cevix (Endocervicitis)
  - Uterus (Endometritis)
  - Fallopian tubes (Salpingitis)
  - Ovaries (oophoritis),
  - Pelvic peritonitis
  - Tubo-ovarian abscess

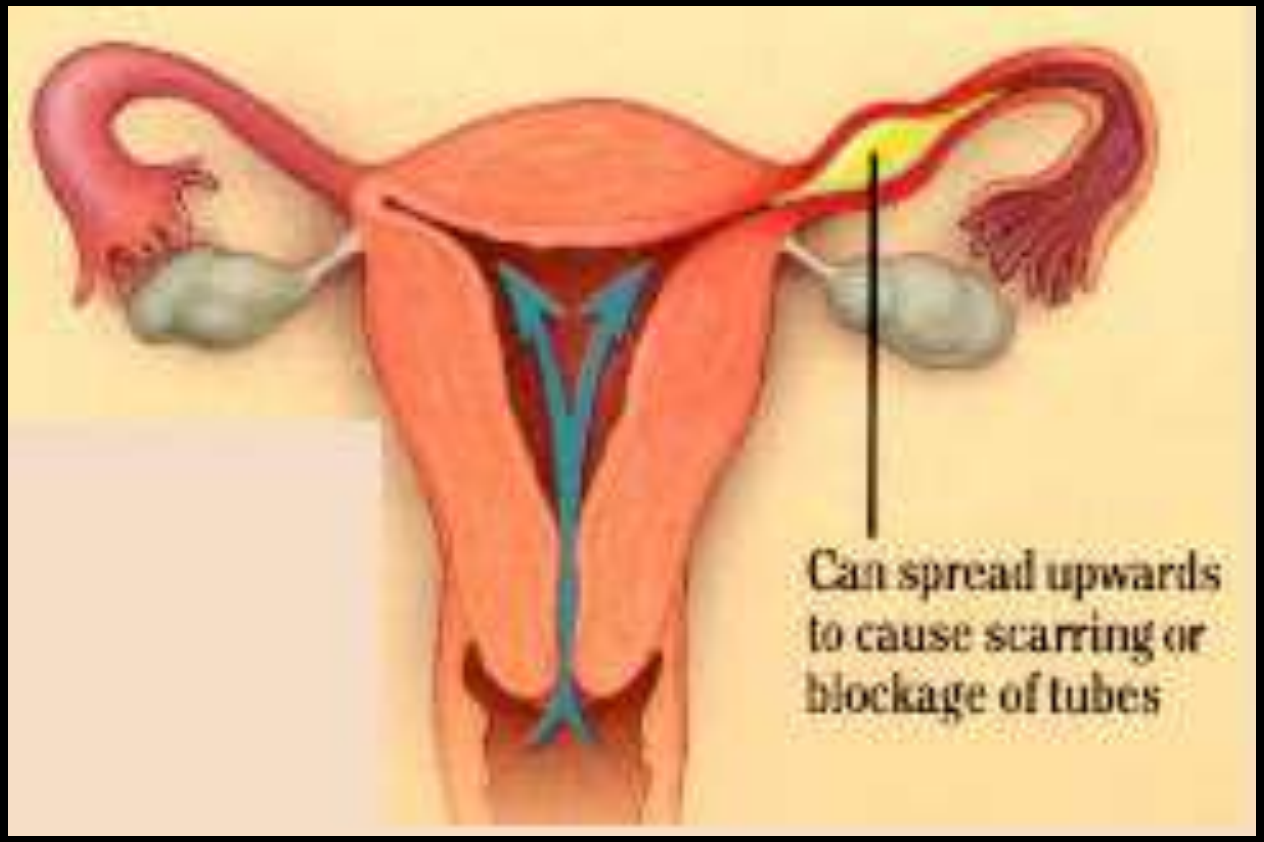


PID

- Clinical syndrome associated with ascending spread of microorganisms from the vagina or cervix to the endometrium, fallopian tubes, ovaries, and contiguous structures

- A common and serious complication of STDs (Sexual Transmitted Diseases)

How do women get PID?



Bacteria move upward from vagina or cervix into reproductive organs.

Pathway of Ascendant Infection

Cervicitis

Endometritis

Salpingitis/ oophoritis/ tubo-ovarian abscess

Peritonitis

Microbial Etiology

- Most cases of PID are polymicrobial

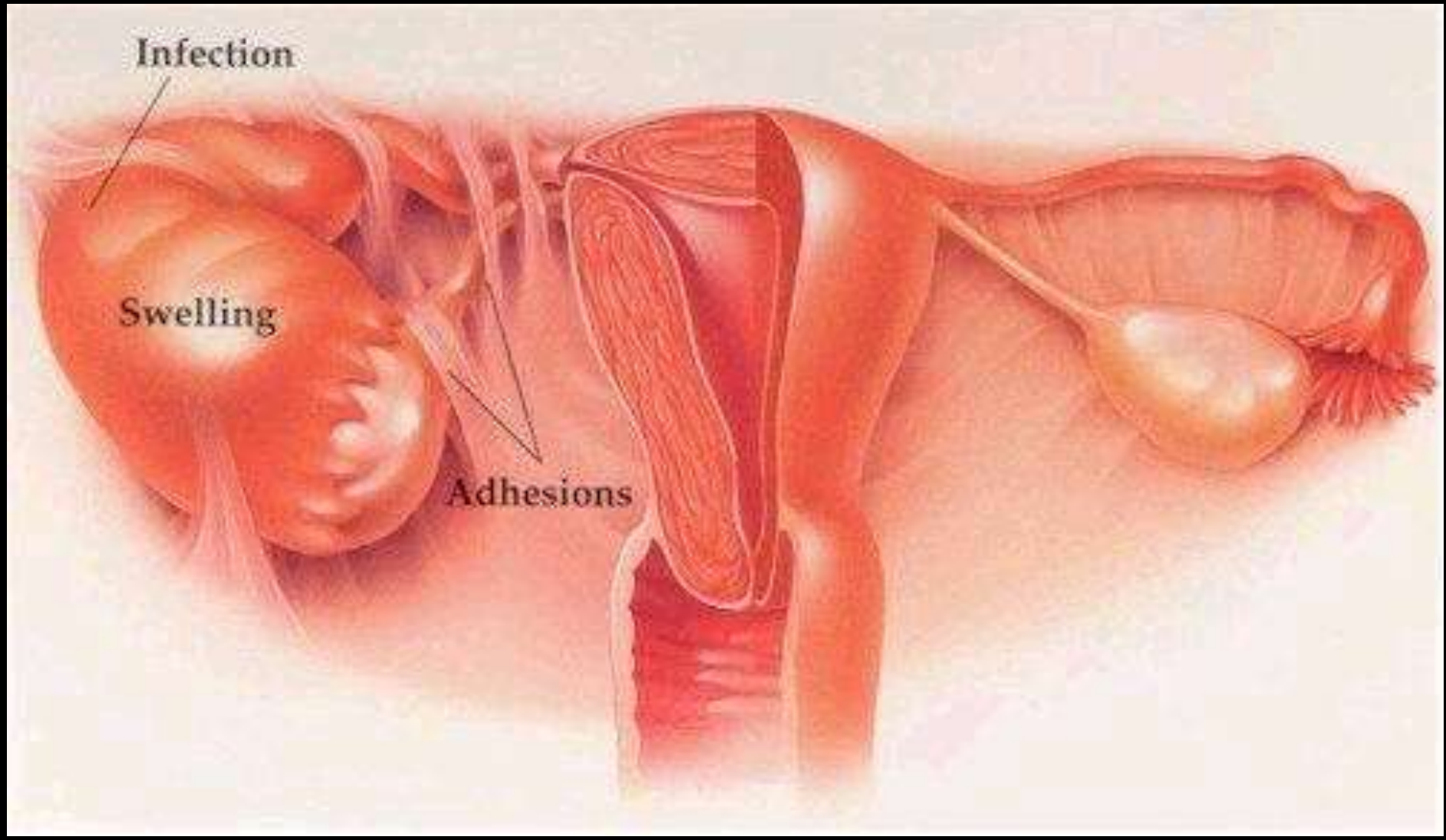
- Most common pathogens:
  - *N. gonorrhoeae*: recovered from cervix in 30%-80% of women with PID
  - *C. trachomatis*: recovered from cervix in 20%-40% of women with PID
  - *N. gonorrhoeae* and *C. trachomatis* are present in combination in approximately 25%-75% of patients

Risk factors

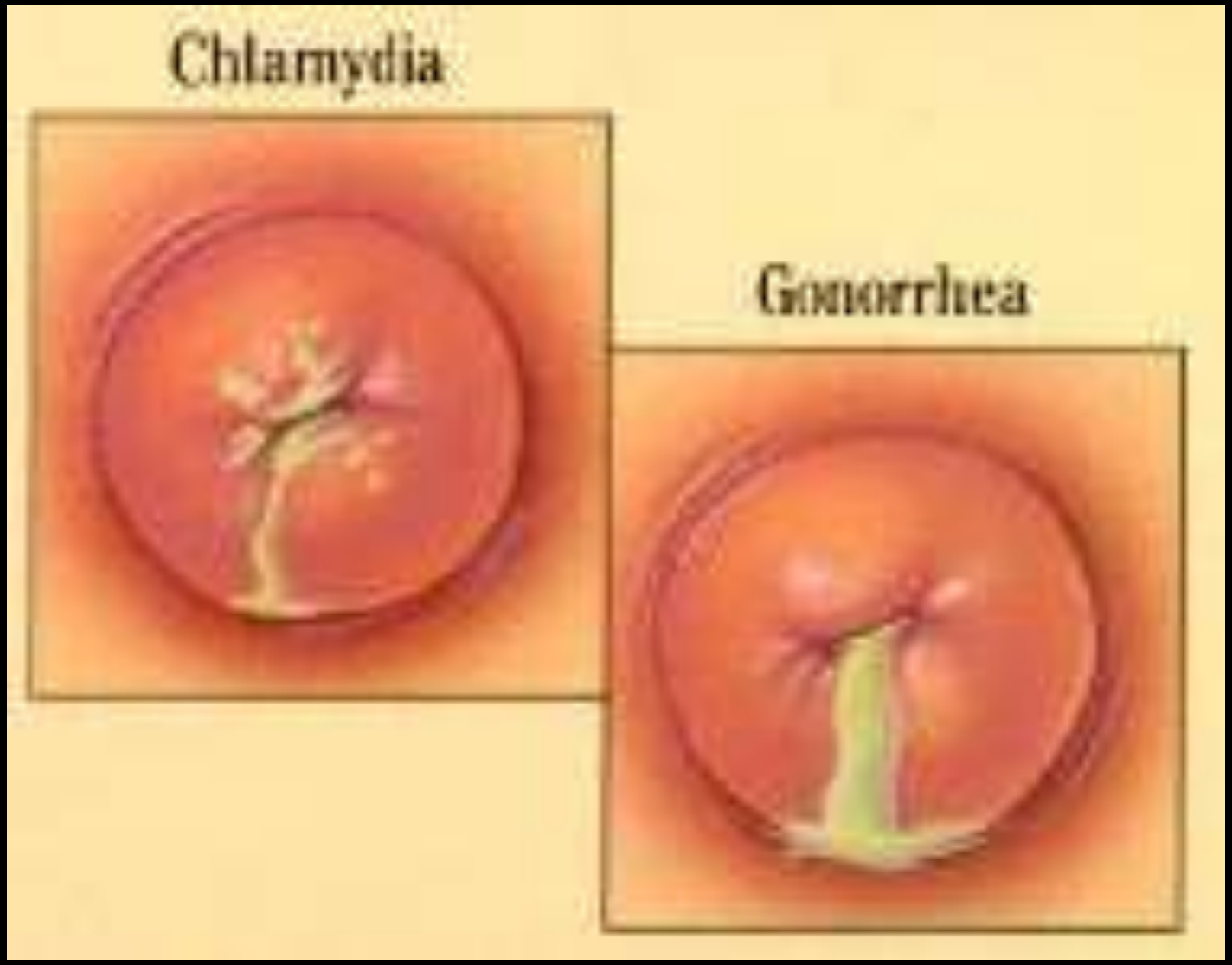
- Adolescence
- History of PID
- Gonorrhea or chlamydia, or a history of gonorrhea or chlamydia
- Male partners with gonorrhea or chlamydia
- Multiple partners
- Current douching
- Insertion of IUD
- Bacterial vaginosis
- Oral contraceptive use (in some cases)
- Demographics (socioeconomic status)

Symptoms

- lower abdomen pain, may worse when move
- pain during or after sex
- bleeding between periods or after sex
- lower back pain
- sense of pressure or swelling in the lower abdomen
- fever (often with chills)
- feeling tired or unwell
- abnormal vaginal discharge
- nausea, vomiting and dizziness
- leg pain
- increased period pain
- increased pain at ovulation
- dysuria, frequently urination


Infection
Swelling
Adhesions

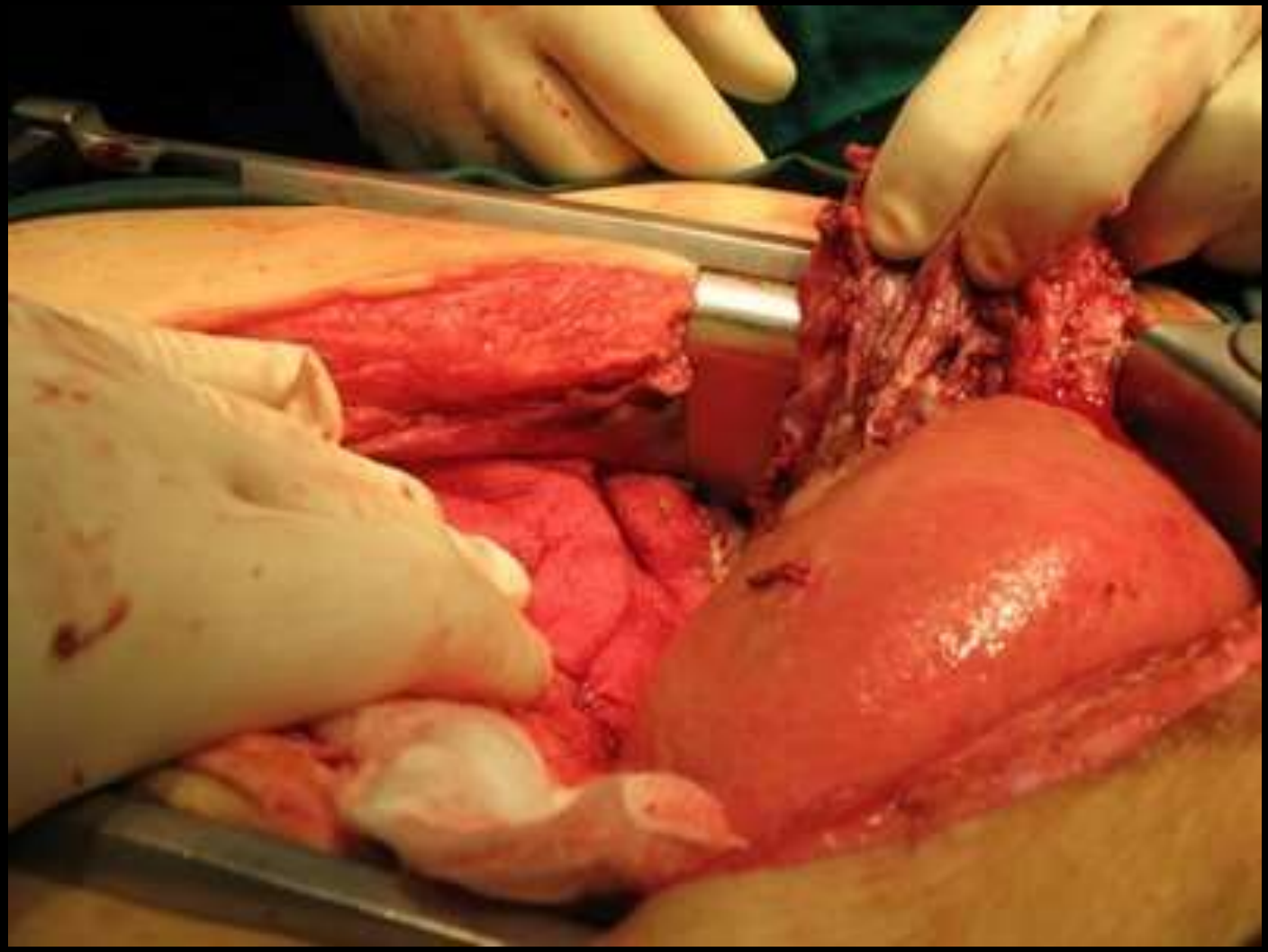
Abnormal discharge

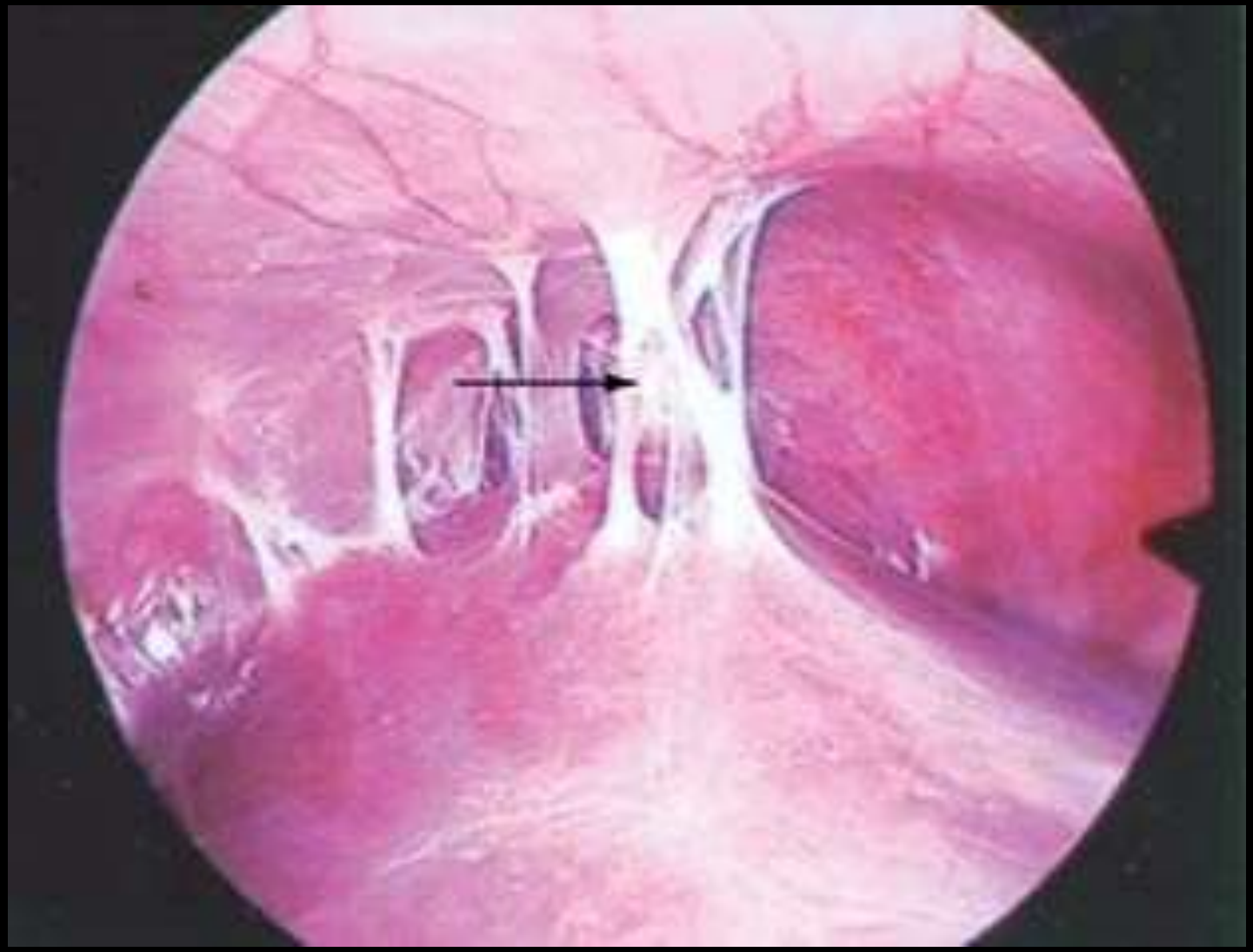


Complications and long-term problems

- **Recurrent PID**
- **Ruptured abscess**
- **Chronic pain**
- **Ectopic pregnancy**
- **Infertility**
- Perihepatic adhesions
  (Fitz-Hugh-Curtis syndrome)

Rupture tubo-ovarian abscess





- Perihepatic adhesions (arrow) usually associated with pelvic gonorrhoeal or chlamydial infection (Fitz-Hugh-Curtis syndrome).

Differential diagnosis

- Appendicitis
- Gastroenteritis
- Cholecystitis
- Irritable bowel syndrome
- Ectopic pregnancy
- Hemorrhagic ovarian cyst
- Ovarian torsion
- Endometriosis
- Nephrolithiasis
- Somatization

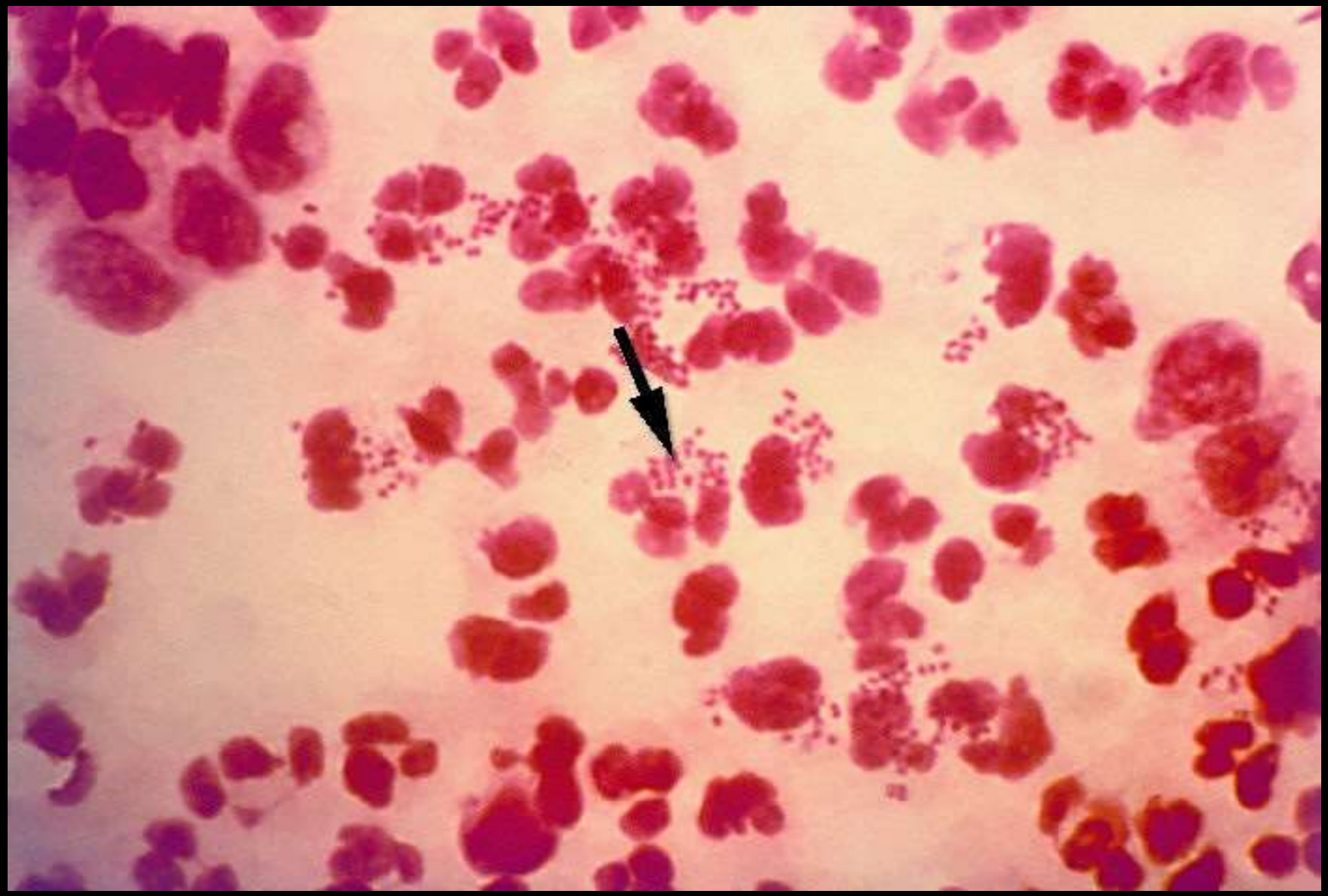
Diagnosis

Symptoms alone are not a good predictor , and clinical diagnosis alone is difficult

Major criteria	Minor criteria
•cervical motion tenderness and •uterine motion tenderness and •adnexal tenderness	•Temperature >38◦3 C •Abnormal cervical discharge •Pelvic abscess or inflammatory complex on bimanual examination •Gram stain of the endocervix showing gram negative intracellular diplococci •Positive chlamydia test •Leucocytosis >10x 10^9 WBC/L •Elevated ESR •Elevated C-reactive protein

The definitive criteria

- histopathologic evidence of endometritis on endometrial biopsy
- transvaginal sonography or other imaging techniques showing thickened fluid-filled tubes with or without free pelvic fluid or tubo-ovarian complex
- laparoscopic abnormalities consistent with PID



- **Gram stain of *Neisseria gonorrhoeae,* The bacteria are diplococci association with host pmn's (polymorphonuclear leukocytes).**

Investigation

- Laboratory may be entirely normal
- An elevated leukocyte count does not distinguish PID from other diagnoses
- Cervical cultures for gonorrhea or Chlamydia require 3-7 days for results
- HIV and syphilis testing should be recommended
- Pelvic ultrasonography can detect pelvic abscesses
- Laparoscopy when the diagnosis is unclear or when the patient fails to improve.

Criteria for hospitalization

- surgical emergencies (e.g., appendicitis) cannot be excluded
- is pregnant
- does not respond to oral antimicrobial therapy
- unable to tolerate an outpatient oral regimen
- has severe illness, nausea and vomiting, or high fever
- has a tubo-ovarian abscess.
- HIV infection with low CD4 count

Parenteral Treatment

- ***Regimen A***

Cefoxitin 2 g IV every 6 hours	**+**	**Doxycycline** 100 mg orally or IV every 12 hours

14 days

- ***Regimen B***

Clindamycin 900 mg IV every 8 hours	+	**Gentamicin** loading dose (2 mg/kg) IV or IM followed by a maintenance dose (1.5 mg/kg) every 8 hours

Oral Treatment

- ***Regimen A***

Levofloxacin 500 mg once daily for 14 days **OR**	+	**Metronidazole** 500 mg twice a day for 14 days
Ofloxacin 400 mg twice daily for 14 days		

•*Regimen B*

1. **Ceftriaxone** 250 mg IM in a single dose + **Doxycycline** 100 mg orally twice a day for 14 days **WITH OR WITHOUT** **Metronidazole** 500 mg orally twice a day for 14 days
2. **Cefoxitin** 2 g IM single dose and **Probenecid**, 1 g orally administered concurrently single dose + **Doxycycline** 100 mg orally twice a day for 14 days **WITH OR WITHOUT** **Metronidazole** 500 mg orally twice a day for 14 days
3. Third-generation **cephalosporin** + **Doxycycline** 100 mg orally twice a day for 14 day **WITH OR WITHOUT** **Metronidazole** 500 mg orally twice a day for 14 days

Surgery

- Rupture abscess invade to peritonium
- Failure medical treatment 48-72 hr
- Abscess does not go away after 2-3 week with persistent abdominal pain

Prevention

Screening

- To reduce the incidence of PID, screen and treat for chlamydia.
- Annual chlamydia screening is recommended for:
  - Sexually active women 25 and under
  - Sexually active women >25 at high risk
- Screen pregnant women in the 1st trimester.

Management of Sex Partners

- Male sex partners of women with PID should be examined and treated

- Male partners of women who have PID caused by *C. trachomatis* and/or *N. gonorrhoeae* frequently are asymptomatic.

Partner Management (continued)

- Sex partners should be treated empirically with regimens effective against both *C. trachomatis* and *N. gonorrhoeae*, regardless of the apparent etiology of PID or pathogens isolated from the infected woman.

Reporting

- Report cases of PID to the local STD program in states where reporting is mandated.
- Gonorrhea and chlamydia are reportable in all states.

Patient Counseling and Education

- Nature of the infection
- Transmission
- Risk reduction
  - Assess patient's behavior-change potential
  - Discuss prevention strategies
  - Develop individualized risk-reduction plans

Thank you