**Postpartum Endometritis**

**Definition**

*Endometritis* refers to infection or inflammation of the endometrium, the inner lining of the uterus. It can be divided into pregnancy-related (obstetric) or non-obstetric. Pathologically, it can be described as acute and chronic:

- **Acute endometritis** is characterised by the presence of more than five neutrophils in a 400 power field in the endometrial glands.
- **Chronic endometritis** is characterised by the presence of more than one plasma cell, (and lymphocytes) in a 120 power field in the endometrial stroma.

It is assumed that infection, usually having travelled from the lower genital tract, attacks the endometrium. Spread occurs from there to the tubes and ovaries, causing salpingo-oophoritis. It is debatable whether non-obstetric endometritis is a discrete condition or part of a spectrum which may also involve pelvic inflammatory disease (PID).

The rest of this article refers only to postpartum (obstetric) endometritis. For further information about non-obstetric endometritis, see the separate *Pelvic Inflammatory Disease* article.

**Epidemiology**

- Postpartum endometritis occurs following 1-3% of vaginal births and up to 27% of caesarean sections.\(^1\)
- It is 5-20 times more common after caesarean section.\(^2\) There is evidence that prophylactic antibiotics reduce the risk of endometritis by 60-70%. Vaginal cleansing with povidone-iodine also reduces risk.\(^3\)
- The Confidential Enquiry into Maternal Deaths in the UK 2016 report showed there were 7 deaths from genital and urinary tract sepsis, out of 200 pregnancy-related deaths in 2012-2014. This equates to a rate of 0.29 deaths per 100,000 pregnancies.\(^4\)
- Globally, bacterial infections during labour and the puerperium account for around one tenth of maternal deaths, most of which are in lower-income countries.\(^5\)

**Aetiology**\(^1\)

There is usually a mix of 2-3 organisms involved; some will be found in normal vaginal flora. It is often a mixed aerobic and anaerobic infection. There is rarely microbiological confirmation of the cause, as an uncontaminated endometrial sample or positive blood culture would be required. Causative organisms include:

- Gram-positive cocci - *Staphylococcus* spp., Group A and B *Streptococcus* spp.
- Anaerobes - *Bacteroides* spp., *Peptostreptococcus* spp.

**Risk factors**\(^5,6\)

- Caesarean section is the single biggest risk factor.\(^2\) This is further increased if the woman is HIV-positive.\(^7\)
- Prolonged rupture of membranes.
- Severe meconium staining in liquor (but no evidence that antibiotics given for meconium reduce the risk of endometritis).\(^8\)
- Long labour with multiple examinations.
- Manual removal of placenta.\(^9\)
- Retained products of conception.
- Mother’s age at extremes of reproductive span.
- Low socio-economic status - eg, home delivery in a poor hygiene environment.\(^10\)
- Maternal anaemia.
- Obesity.
- Diabetes or impaired glucose tolerance.
- Prolonged surgery.
- Internal fetal monitoring.\(^11\)
- Pre-existing infection: history of pelvic infection, presence of bacterial vaginosis or Group B streptococcal infection.

**Presentation**

**Symptoms**

Number and severity of symptoms can vary markedly from patient to patient but usually include:
Fever.
Abdominal pain.
Offensive-smelling lochia.
Abnormal vaginal bleeding - postpartum haemorrhage.
Abnormal vaginal discharge.
Dyspareunia.
Dysuria.
General malaise.

Signs
- Raised temperature.
- Pain and uterine tenderness, which may radiate to the adnexae.
- Tachycardia.

Investigations
- Blood cultures should be performed.
- FBC may reveal a raised white cell count.
- Check midstream urine.
- High vaginal swab, including swab for gonorrhoea/chlamydia.
- Endometrial biopsy is diagnostic, although rarely appropriate.

Ultrasound is unhelpful in this situation[12].

Management
Antibiotics are always indicated for endometritis. Antibiotic choice should be guided by type and likely source of infection, as well as by local prescribing guidelines. Cochrane reviews and recommendations from the World Health Organization (WHO) support a combination of clindamycin and gentamicin as the optimal first-line antibiotic treatment[1, 5]. Treatment in a hospital environment is usually required. Abdominal pain, fever (>38°C) and tachycardia (>90 bpm) are indications for admission for intravenous antibiotics[6]. Options for community treatment of early endometritis in systemically well women have been suggested but there are no current guidelines[13].

If sepsis is suspected in the community, urgent referral to hospital is indicated where 'red flag' signs and symptoms are present:
- If the woman appears seriously unwell, transfer by emergency ambulance[6]:
  - Pyrexia >38°C.
  - Sustained tachycardia (more than 90 bpm).
  - Breathlessness (respiratory rate >20 breaths per minute - a serious symptom).
  - Abdominal or chest pain.
  - Diarrhoea and/or vomiting.
  - Uterine or renal angle pain and tenderness.
  - The woman is generally unwell or seems unduly anxious/distressed.

- Intravenous (IV) antibiotics if there are signs of severe sepsis. If less systemically unwell, oral treatment may be sufficient. Most women are best managed in a hospital environment.
- The Royal College of Obstetricians and Gynaecologists (RCOG) guideline for sepsis following pregnancy recommends IV piperacillin/tazobactam or a carbapenem plus clindamycin for severe sepsis. Other options for less severe infections include co-amoxiclav, metronidazole and gentamicin. However, it stresses guidelines based on local resistance should be followed.

Differential diagnosis
- Appendicitis.
- PID.
- Pyelonephritis.
- Urinary tract infection.
- Other postpartum causes of fever (eg, mastitis, pneumonia, episiotomy or caesarean section scar infection).
- Pelvic thrombophlebitis.

Complications[1]
- Sepsis.
- Peritonitis.
- Pelvic abscess.
- Wound infection.
- Pelvic haematoma.
- Septic pelvic thrombophlebitis/septic pulmonary emboli.

Prognosis[1]
The vast majority of cases of endometritis following delivery treated appropriately with antibiotics improve within 48-72 hours. If this is not the case, the patient should be re-evaluated.

**Prevention** [2, 3, 5]

Evidence suggests that all women having an elective or emergency caesarean section should have prophylactic antibiotics prior to skin incision to prevent postpartum endometritis. Women having caesarean section should also have vaginal cleansing with povidone-iodine immediately before the operation.

Intrapartum antibiotics are indicated where there is colonisation with Group B streptococcus (although this is primarily for the protection of the neonate).

The available evidence does not support measures such as:

- Prophylactic antibiotics for vaginal deliveries, even where there has been vaginal tear, episiotomy, meconium-stained amniotic fluid or manual removal of the placenta.
- Routine vaginal cleansing with chlorhexidine during vaginal delivery.

**Further reading & references**

4. Confidential Enquiry into Maternal Death 2016; MBRRACE-UK
5. WHO recommendations for prevention and treatment of maternal peripartum infections; World Health Organization, 2015
6. Bacterial Sepsis following Pregnancy; Royal College of Obstetricians and Gynaecologists (April 2012)

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**Author:** Dr Mary Harding
**Peer Reviewer:** Dr Jacqueline Payne
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