



CLINICAL PRACTICE GUIDELINE

Postpartum infections: treatment and management

This document should be read in conjunction with the [Disclaimer](#)

For severe life-threatening sepsis postpartum see MR283 Maternal Sepsis Pathway.

Aim

The detection and prompt management of postpartum infections to prevent the development of sepsis. For severe life threatening sepsis post-partum see MR 283 Maternal Sepsis Pathway.

Background

Postpartum Infections comprise a wide range of entities that can occur after vaginal and caesarean birth or during breastfeeding. In addition to trauma sustained during the birth process or caesarean, physiologic changes during pregnancy contribute to the development of postpartum infections.¹ The typical pains that many women feel following birth also make it difficult to discern postpartum infection from postpartum pain.

Local spread of colonised bacteria is the most common aetiology for postpartum infection following vaginal delivery. Endometritis is the most common infection but others include post-surgical wound infections, perineal cellulitis, mastitis, respiratory complications, retained products of conception, UTIs and septic pelvic phlebitis.

Endometritis

The route of birth is the single most important factor in the development of endometritis and the risk increases dramatically following caesarean birth.^{2,3} Other risk factors include prolonged rupture of membranes, prolonged use of internal fetal monitoring, anaemia and lower socio economic status.² Perioperative antibiotics have greatly decreased the incidence of endometritis.

Wound Infections

Usually the organisms associated with perineal and episiotomy site infections are *Staphylococcus* or *Streptococcus* species and gram negative organisms. Those undergoing caesarean birth have a higher readmission rate for wound infection and complications than those who deliver vaginally.⁴

Genital Tract Infections

Increased risk of genital tract infections is related to the duration of labour, use of internal monitoring devices and the number of vaginal examinations⁵ Genital tract infections are usually polymicrobial. Gram positive cocci and *Bacteroides* and *Clostridium* species are the predominant anaerobic organisms involved with *E.coli* and gram positive cocci being the commonly involved aerobes.

Mastitis

The most common organism reported in mastitis is *Staphylococcus aureus*. The organism usually comes from the breastfeeding infant's mouth or throat.

Urinary Tract Infection (UTI)

Bacteria most frequently found in UTIs are normal bowel flora, including *E coli* and *Klebsiella*, *Proteus*, and *Enterobacter* species.

Any form of invasive manipulation of the urethra (e.g. Foley catheterization) increases the likelihood of a UTI.

General Risk Factors

The following increase the risk for postpartum infections:

- History of caesarean delivery
- Premature rupture of membranes
- Frequent cervical examinations. Other than a history of caesarean birth, this risk factor is most important in postpartum infection.
- Internal fetal monitoring
- Pre-existing pelvic infection including bacterial vaginosis
- Diabetes
- Nutritional status
- Obesity

Clinical Presentation

Features of postpartum infection vary depending on the source and may include the following:

- Flank pain, dysuria and frequency – UTI
- Erythema and drainage from the surgical incision or episiotomy site.
- Respiratory symptoms e.g. cough, pleuritic chest pain or dyspnoea – respiratory infection or septic pulmonary embolus
- Abdominal pain
- Offensive lochia
- Breast engorgement / redness – mastitis

Physical Assessment

Endometritis

Endometritis may be characterized by lower abdominal tenderness on one or both sides of the abdomen, adnexal and parametrial tenderness elicited with bimanual examination, and temperature elevation (most commonly $>38.^{\circ}\text{C}$).

Some women have foul-smelling lochia without other evidence of infection. Some infections, most notably caused by group A beta-hemolytic streptococci, are frequently associated with scanty, odorless lochia.

Wound Infections

Patients with wound infections, or episiotomy infections, have erythema, oedema, tenderness out of proportion to expected postpartum pain, and discharge from the wound or episiotomy site. See Infection Control [Prevention of Surgical Site Infections \(SSI\)](#) (intranet access required).

Drainage from wound site should be differentiated from normal postpartum lochia and foul-smelling lochia, which may be suggestive of endometritis.

Mastitis

Patients with mastitis have very tender, engorged, erythematous breasts. Infection frequently is unilateral.

UTI

Patients with pyelonephritis or UTIs may have costovertebral angle tenderness, suprapubic tenderness, and an elevated temperature.

Respiratory Tract Infections

Evaluate for tachypnoea, rales, crackles, rhonchi, and consolidation.

Other considerations

Other conditions to consider in the differential diagnosis of patients with suspected postpartum infections include the following:

- Retained products of conception
- Deep vein thrombosis
- Pulmonary embolism
- Septic pelvic phlebitis
- Appendicitis
- Breast abscess
- Cellulitis
- Cystitis
- PID
- Pyelonephritis
- Tubo-ovarian abscess
- Vaginitis

Investigations to be considered

- Full Blood Picture
- U & Es
- Blood cultures if sepsis is suspected
- Urinalysis
- Cervical or uterine swabs
- Wound swabs if appropriate.
- Lactate if sepsis is suspected
- Coagulation studies.
- Pelvic ultrasound may assist in detecting retained products, pelvic abscess or infected haematoma.
- Contrast CT or MRI

Management

All women with suspected / confirmed endometritis, post-surgical wound infection/ cellulitis, retained products of conception and septic pelvic phlebitis must be referred and reviewed by an obstetrician.

Endometritis

For more severe cases requiring empiric IV antibiotics

Amoxicillin 2g IV 6 hourly

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Gentamicin as per the KEMH [Gentamicin Guideline](#)

±

Metronidazole 500mg IV 12 hourly

For patients with non-type 1 hypersensitivity penicillin reactions or where gentamicin is contra-indicated

Ceftriaxone 2g IV daily

±

Metronidazole 500mg IV 12 hourly

For patients with type 1 hypersensitivity reactions to penicillin use

Clindamycin 600mg IV 8 hourly

+ Gentamicin as per the [KEMH Clinical Guideline](#)

The above regimens are derived from the Australian Therapeutic Guidelines for post partum infections, or for regimens recommended for pelvic inflammatory disease with the oral agents for chlamydia and gonorrhoea removed.

Where the empirical therapy guidelines are not suitable due to patient characteristics, such as antimicrobial allergy, renal dysfunction or an identified

pathogen resistant to the empiric regimens is isolated, seek Microbiology advice for alternative regimens.

For less unwell patients where oral antibiotics are deemed sufficient, or for empiric step down therapy

First Line

Amoxicillin plus clavulanic acid 875mg/125mg orally 12 hourly.

Penicillin Allergic Patients

There is a poor evidence base on which to base recommendations for alternative oral therapy to amoxicillin-clavulanic acid for postpartum endometritis. Seek advice from the KEMH Microbiology department.

Wound / Episiotomy Infections

Drainage, debridement, and irrigation may be required. For empiric antibiotics regimens refer to the [Perineal Repair: Management of Third and Fourth Degree Perineal Trauma](#) clinical guideline.

Mastitis

Frequent and effective milk removal should be advised. The mother should be told to continue to feed the baby.⁹ Supportive measures include rest, adequate fluids, nutrition, ice packs, analgesics and breast support.⁹ If a breast abscess is present or breastfeeding is not possible, a breast pump should be used in lactating women.

Refer to the KEMH [Breastfeeding Challenges: Mastitis: Management of](#)




UTI

Administer fluids if there is evidence of dehydration. Fever and flank pain should raise suspicion for pyelonephritis. Consult the Therapeutic Guidelines for antibiotic treatment options.

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