

Dialysis related infections are complications in peritoneal dialysis patients that require immediate attention. Infections may be catheter related (CRIs) and/or peritoneal dialysis related peritonitis (PD peritonitis).

Catheter related infections:

- **Exit site infection** - infection around the area where the catheter exits the skin
- **Tunnel infection** - infection along the catheter tract that runs subcutaneously from the surface of the skin to the peritoneal membrane. It can lead to development of biofilm which can be difficult to treat.

Exit site and tunnel infections can occur simultaneously. Organisms that cause these infections are typically commensal skin organisms. CRIs can lead to PD related peritonitis.

Patients are taught to recognise the signs and symptoms of infection and are often the local experts! With patient consent it is often useful to take photographs to send to the primary PD unit. Patients clean their exit site daily and apply antimicrobial ointment, typically mupirocin or gentamicin as part of the exit site cleaning procedure.

Exit Site Infection - the presence of purulent discharge, with or without erythema of the skin at the catheter-epidermal interface. NOTE: erythema without other signs of infection may represent early infection or an allergic response. A positive culture without pus may represent colonisation - the local PD unit will help coordinate ongoing care.

Assessment:

- The area should be examined prior to cleaning. It should be assessed for: swelling, crusting, redness, pain, and drainage.

- Purulent discharge should be swabbed for **microscopy** (gram stain), **culture** (speciation) and (antimicrobial) **sensitivity**.
- Empiric oral antibiotics to cover staphylococcus aureus should be started in the presence of purulent drainage and particularly if there may be a delay in the gram stain result. This would typically be a penicillinase-resistance penicillin or first-generation cephalosporin.

Tunnel Infections - clinical inflammation or ultrasonographic evidence of abscess/collection along the catheter tunnel. Infection may start at the exit site and track up toward the peritoneum. This infection causes increased risk of developing PD associated peritonitis. Severe tunnel infections, especially with concurrent peritonitis can result in the need to remove/resite catheter. Primary PD units should be involved early if there is concern for a tunnel infection.

Assessment:

The patient may complain of pain, swelling or redness of tunnel over catheter with or without obvious discharge or exit site involvement. Initial assessment should focus on careful inspection and palpation of tunnel, including an attempt to “milk the catheter” to express purulent drainage from the exit site. Drainage should be swabbed and sent to microbiology for culture and sensitivity.

- Initial management and choice of empiric antibiotics is as per exit site infection.

If possible, the tunnel should be imaged by ultrasound or dedicated CT. If the patient consents, photographs can be helpful to monitor progress.

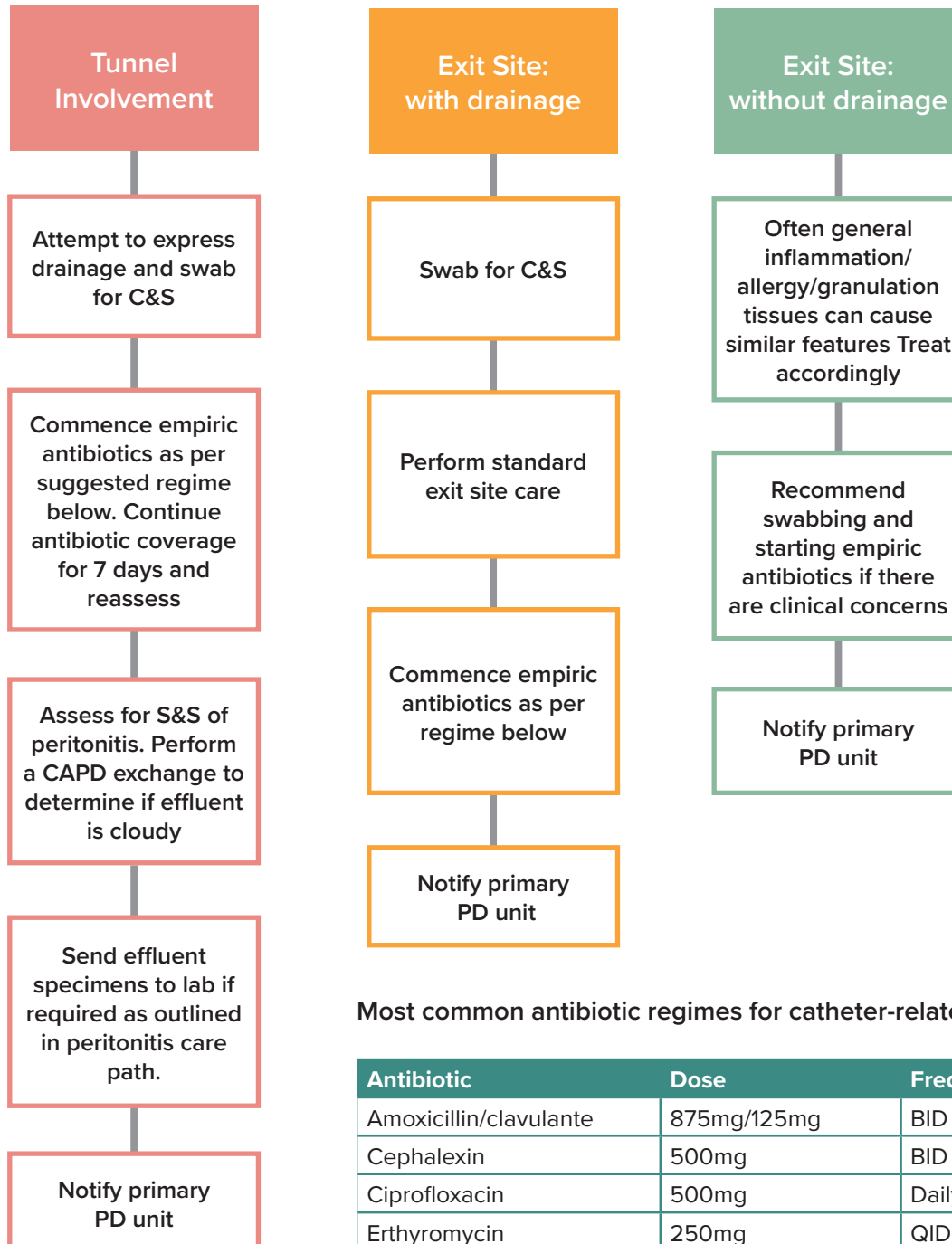
Related links:

- [Collecting a Dialysate Effluent Specimen video & procedure \(under development\)](#)
- [Exit Site Care video & procedure](#)
- [Adding Medications video & procedure](#)

Clinical Care Path: Catheter-related Infection Management

Patient presents with exit site or tunnel related concerns.

- Exit site is assessed to have erythema, tenderness, bleeding/crusting or purulent drainage.
- Tunnel has overlying edema, erythema or tenderness with evidence of drainage.



Most common antibiotic regimes for catheter-related infections:

Antibiotic	Dose	Frequency
Amoxicillin/clavulante	875mg/125mg	BID
Cephalexin	500mg	BID
Ciprofloxacin	500mg	Daily
Erythromycin	250mg	QID