Preventing Infections Associated With Intravascular Therapy

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Extent of Problem

- > 60% of pts. admitted to hospital receive IV therapy
- All pts. in ITU/CCU at least 1 device inserted in central vein or artery
- Most imp. are blood stream infections which affect 1% of pts. admitted to hospital
- Blood stream infections fatality rate at least 20% (critically ill up to 35%)
- Bloodstream infections may lodge in other body tissues e.g. endocarditis
Infections Associated with Peripheral IV Devices

- Phlebitis
  - Inflammation of the vein where device is sited
  - Develops approx. 1/3 of pts. who have peripheral catheter

Cause:
- Mechanical: irritation of tissue by device
- Chemical:
  i) irritation by device e.g. material
  ii) Infusate: hypertonic solution, incomplete reconstituted drugs, fragments of rubber / glass
Phlebitis cont.

- Risk of Phlebitis influenced by:
  - catheter material
  - catheter size
  - quality of insertion of catheter
  - duration of catheter in place
  - management / care of catheter
Phlebitis cont.

- Signs and Symptoms:
  - tenderness on site
  - superficial redness of skin
  - swelling / palpable cord
* Infection: temperature, presence of pus

**Bacteraemia**: bacteria colonizing surface of catheter are released into blood, may be transient or leading to

**Septicaemia**: multiplication of bacteria in blood producing S&S of infection: fever, rigor
Diagnosis of CAI:

- Difficult to diagnose
- Link between presence of bacteria at insertion site & subsequent bloodstream infection (skin culture)
- Typical indications:
  - pyrexia for no other apparent cause
  - unresponsive to antibiotics
- Confirmation:
  - tip of catheter for culture
  - blood culture (peripheral vein & catheter)
CAI: Portals of entry:

- Intrinsic (present prior to use)
  - Cracks (glass bottles)
  - Punctures (plastic containers)
  - Infusion fluid or additives
  - Closure system (bottle)

- Extrinsic (introduced during use)
  - Additives
  - Container changes
  - Attachment of administration apparatus
  - Contaminated air
  - Injections, irrigations, etc.
  - All components of administration apparatus
  - CVP measurements
  - Membrane filter
  - Antiseptics, ointments, etc.
  - Insertion and manipulations of cannula

Cannula
CAI: Portals of entry:
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