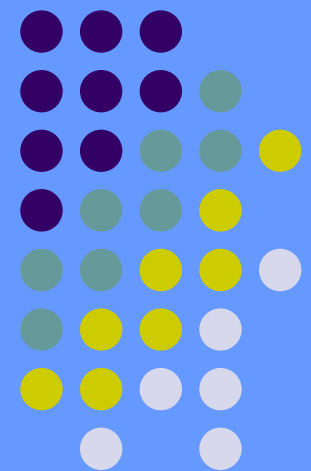
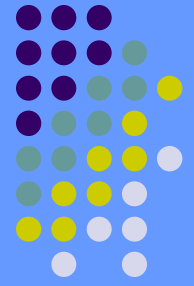


BASIC CONCEPTS OF INFECTION CONTROL

Prevention of IV device-associated infection

International Federation of
Infection Control

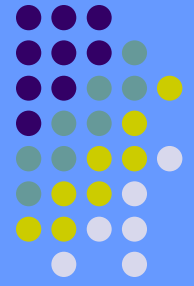




ABBREVIATIONS

- IC
 - Infection prevention and control
- IV
 - Intravenous
- PVC
 - Peripheral venous catheter
- CVC
 - Central venous catheter

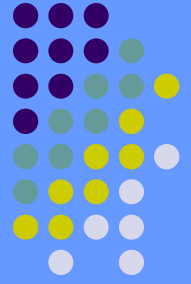




Introduction

- IV infusions among the most common invasive procedures in health care
- Infections common and IV catheters the main source of healthcare-associated bacteraemia
- Principles for prevention are similar for both PVC and CVC





Biofilm

- IV catheters are foreign bodies
 - Produce a host reaction resulting in a film of fibrinous material on its surfaces
- This biofilm may become colonized by microorganisms
 - They are protected from host defence mechanisms and antibiotics





Routes of Infection

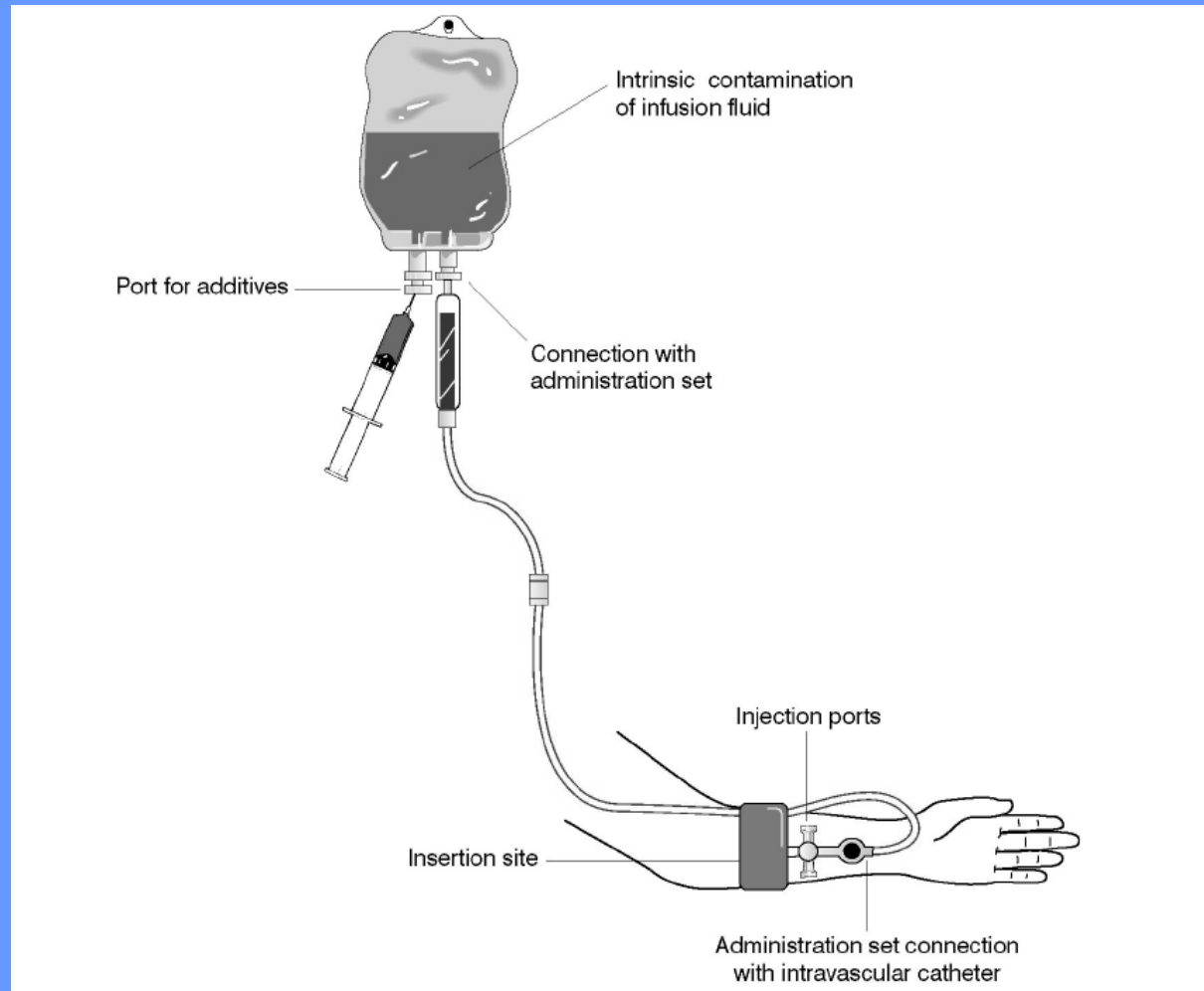
- Inserting IV devices breaches the skin - provides an entry route to the bloodstream
- IC measures designed to prevent microorganisms from entering equipment, catheter insertion site, or bloodstream





IV infusions

Sites of possible contamination



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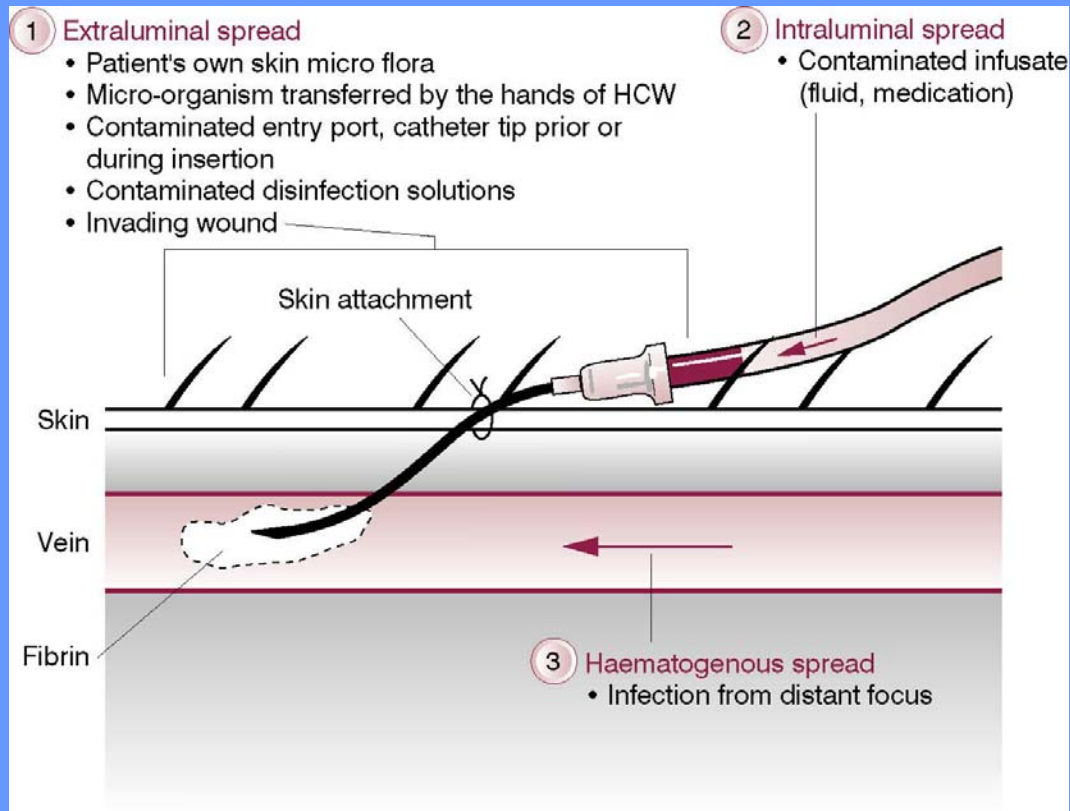
Sources of Contamination

- Sources of contamination are either:
 - Intrinsic (contamination before use) or
 - Extrinsic (contamination introduced during therapy)
- Most infections are acquired from the patient's own skin flora





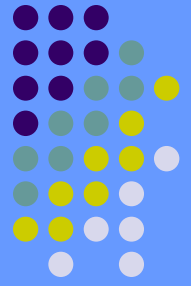
Sources of Microbial Contamination



- Skin microorganisms - enter the insertion site on the outside of the catheter
- Microorganisms from staff hands or patient's skin - enter through the hub during disconnection or through injection ports
- Microbes grow in the biofilm and may be released into the bloodstream

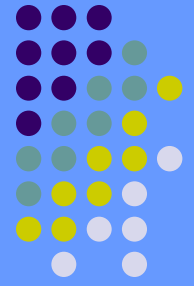


Sources of Infection and Prevention



- Insertion of catheter
- Infusion fluid
- Addition of medications
- Container and water used
- Catheter site
- Injection ports
- Changing of infusion set





Insertion of Catheter

- Do not insert unnecessarily
 - Use strict indications for insertion
 - severe dehydration, blood transfusion, parenteral feeding and others
 - Use alternative routes for hydration, parenteral feeding
- Remove catheter as soon as possible
- Use good aseptic technique





Insertion of catheter

- Thorough hand disinfection and use of sterile gloves by operator
- Thoroughly disinfect the skin at insertion site
- Remove catheter if signs of infection occur
- Assess the need for continuing catheter use every 24 hours
- Secure catheter to prevent movement and irritation





Insertion of PVC

- Use of non-sterile gloves and apron/gown protect the operator if profuse bleeding likely
- Use alcohol rub/antiseptic disinfectant to disinfect hands
 - If antiseptic not available, wash hands for 20 seconds

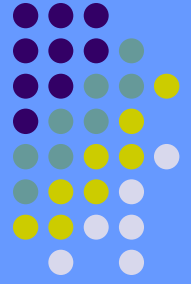




Insertion of PVC

- Dry hands thoroughly on paper or clean linen towel, unless alcohol used
- Avoid shaving skin site; clip hair if necessary





Insertion of PVC

- Disinfect skin site
 - Alcoholic chlorhexidine, tincture of iodine, alcoholic povidone-iodine, or 70% alcohol
 - Apply for 30 seconds and allow drying before insertion
- Insert cannula into vein
 - In an upper limb
 - Use no touch technique

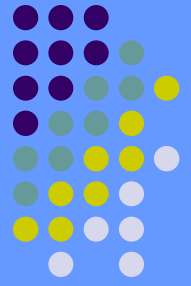




Insertion of PVC

- Apply sterile dressing and secure
 - Semi-permeable adhesive dressings are more expensive, but allow inspection of the site without removal
- Secure cannula to avoid movement and label with insertion date

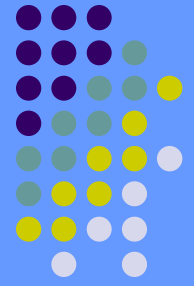




Insertion of CVC

- Use alcohol rub/antiseptic disinfectant to disinfect hands
 - If antiseptic not available, wash hands for 20 seconds
- Disinfect skin site
 - 2% alcoholic chlorhexidine

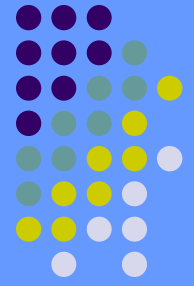




Insertion of CVC

- Use maximum barrier precautions
 - Sterile gloves, gowns, cap and mask for operator
 - A large sterile drape to cover the patient
- Tunneled catheters are less susceptible to infection





Infusion Fluid

- Ensure fluid pyrogen free*
- Monitor sterilization process*
- Avoid damage to container during storage
- Inspect container for cracks, leaks, cloudiness, and particulate matter

* If infusion fluid is prepared in own pharmacy, i.e., not purchased from pharmaceutical manufacturer





Addition of Medications

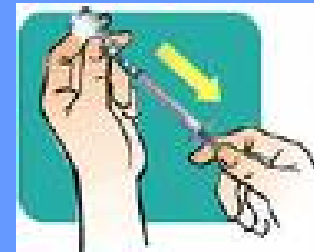
- Use aseptic precautions
 - Hand disinfection
 - No touch technique
- Add only sterile medications
- Carry out procedure in the pharmacy or at a protected workplace (ideally clean bench)
- Use a sterile device for access



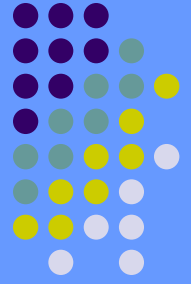
Addition of Medications



- Use single-dose vials; if multidose vials have to be used:
 - Refrigerate after opening (if not otherwise recommended by manufacturer)
 - Wipe diaphragm with 70% alcohol before inserting cannula



Container and Water Used



- Ensure no contamination from warming fluid
- Dry warming systems preferred

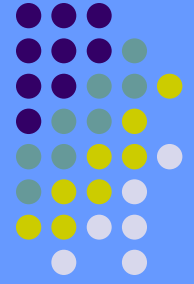


Catheter Site



- Cover with sterile dressing as soon as possible
- Inspect site every 24 hours





Catheter Site

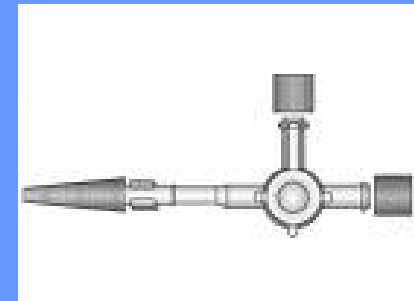
- Change dressing only when soiled, loosened or wet/damp, using good aseptic technique
 - Change CVC dressings at least weekly
- Do not use antimicrobial ointments



Injection Ports



- Clean with 70% alcohol and allow to dry before use
- Close ports which are not needed with sterile stopcocks



Changing Infusion Set



- Replace no more frequently than 72 hours
 - Blood and lipids at least every 24 hours (depends on local rules)
- Thorough hand disinfection by operator
- Use good aseptic technique





Insertion Time

- Risk of infection in PVC sites increases with length of catheterization
- Catheters should be removed as soon as possible





Insertion Time

- Unless signs of infection or irritation occur, PVC may be used as long as needed
 - Some guidelines recommend changing PVCs every 72-96 hours in adults
- CVCs should not be replaced routinely

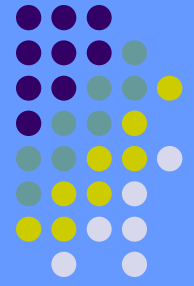




Key Points

- Thorough hand disinfection by operator before insertion of catheter and during maintenance procedures
- Thorough disinfection of skin at insertion site
- No touch technique or gloved hands during insertion, maintenance and removal of catheter
- Secure the IV line to prevent movement of the catheter



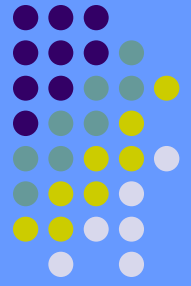


Key points

- Maintain a closed system
- Protect the insertion site with a sterile dressing
- Inspect insertion site daily
- Remove catheter as early as possible and immediately if signs of infection present



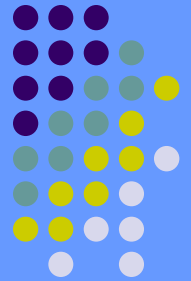
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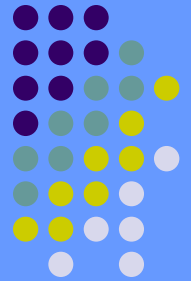
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