

# Intravenous Device Management

**THE FUNDAMENTALS**

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# Conflicts and funding

I have no conflicts to declare and no funding was received in connection to the work being presented.

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# Overview

- References
- Acronyms
- Risk factors for IV device infection
- Potential sources of IV device contamination
- Key interventions
  - Evidence based guidelines

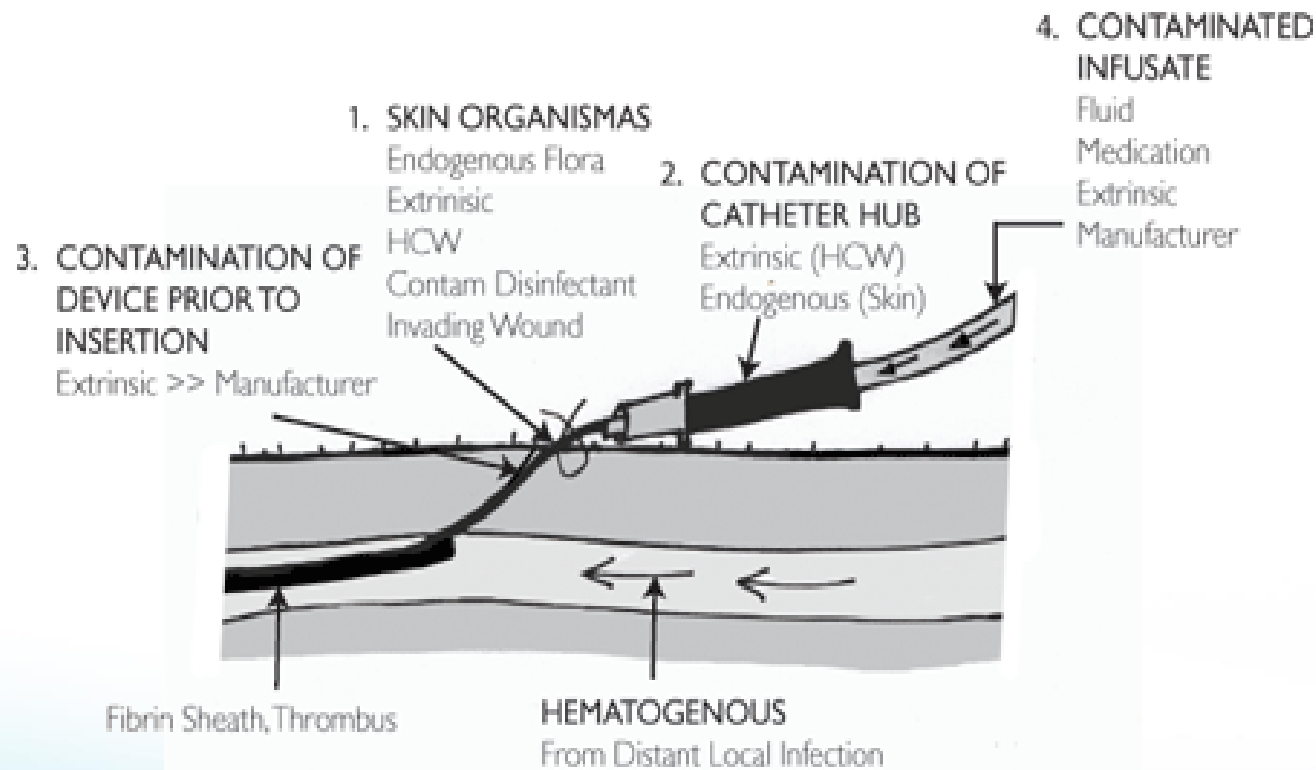
# References

- epic3: National Evidence-Based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England (2014)
- CDC Guidelines for the Prevention of Intravascular Catheter-Related Infections (2011)
- Australian Guidelines for the Prevention and Control of Infection in Healthcare (2010)

# Acronyms

Intra-venous (IV)	Chlorhexidine gluconate (CHG)
Healthcare workers (HCW)	Central venous access device (CVAD)
Aseptic technique (AT)	Peripheral venous access device (PVAD)
Central venous catheter (CVC)	Catheter related – blood stream infection (CR-BSI)
Peripherally inserted central catheter (PICC)	Catheter related (CR)
Quality improvement (QI)	New Recommendation (N)

# Potential sources of IV device contamination



# Risk factors for IV device contamination

- Prolonged hospitalisation
- Prolonged device placement
- Contamination via HCWs hands
- Antibiotic use

# Key interventions

## Preparation

Education of HCWs and patients  
General asepsis  
Catheter type  
Insertion site

## Insertion

Maximal sterile barrier precautions  
Cutaneous antisepsis

## Maintenance

Catheter and catheter site care  
Catheter replacement strategies

## General management principles

Various issues addressed



# Preparation

## Education of HCWs and patients

### **HCWs caring for patients with IV devices**

- trained and assessed as competent
- aware of manufacturers instructions (N)

### **Patients or carers prior to discharge**

- taught infection prevention and management techniques

# Preparation

## General asepsis

- Decontaminate hands before and after contact with an IV catheter or insertion site
- Use aseptic technique for insertion and care and when administering IV medication

# Preparation

## Catheter type

- Minimum number of ports or lumens
- Single lumen catheter for lipid-based solutions
- Tunnelled or implanted CVC with subcutaneous port for long-term access
- PICC for medium term intermittent access (N)
- Limit use of antibiotic impregnated CVC

# Preparation

## Insertion site

- Assess the risks for infection against the risks of mechanical complication and patient comfort
- Use the upper extremity for non-tunnelled catheter placement unless contraindicated

# Insertion

## Maximal sterile barrier precautions

- Use maximal sterile barrier precautions for CVC insertion.
  - Sterile gloves and gown
  - Cap
  - Mask
  - Full body sterile patient drape

# Insertion

## Cutaneous antisepsis

- Decontaminate the insertion site with 2%CHG in 70% isopropyl alcohol prior to insertion of **CVAD** and **PVAD** (N for PVAD)
- Do not apply antimicrobial ointment to prevent CR-BSI

# Maintenance

## Catheter and catheter site care

### Dressing

- Use a sterile, transparent, semi-permeable polyurethane dressing
- Change every 7 days, sooner if not intact or moisture present
- Use a sterile gauze dressing if a patient has profuse perspiration, bleeding or leaking.

# Maintenance

## Catheter and catheter site care

### Dressings

- In adult patients with a CVAD consider the use of
  - chlorhexidine impregnated sponge dressings (N)
  - daily cleansing with chlorhexidine (N)
- Replace dressing used on tunnelled or implanted catheter sites every 7 days until the site has healed.



# Maintenance

## Catheter and catheter site care

### Site care

- Use 2% CHG in 70% isopropyl alcohol to clean the **central** and **peripheral venous (N)** catheter insertion sites.
- Do not apply antimicrobial ointment to insertion sites as part of routine site care.

# Maintenance

## Catheter replacement strategies

- Do not routinely replace CVA devices to prevent CR infection
- Do not use guidewire-assisted catheter exchange for patients with CR-BSI

# Maintenance

## Catheter replacement strategies

- Inspect peripheral vascular catheter insertion sites at a minimum each shift. (N)
- Resite peripheral vascular catheters when clinically indicated. (N)

# General principles for catheter management

- Decontaminate the access port or catheter hub with 2% CHG in 70% isopropyl alcohol.
- Antimicrobial lock solutions should not be used routinely to prevent CR- BSI

# General principles for catheter management

- Do not routinely administer intranasal or systemic antimicrobials to prevent catheter colonisation or BSI.
- Do not use systematic anticoagulants to prevent CR-BSI
- Use sterile normal saline for injection to flush and lock catheter lumens that are accessed frequently

# General principles for catheter management

- New IV devices or components should be monitored for an increase in the occurrence of device-associated infection
- When safer sharp devices are used ensure all components are compatible

# General principles for catheter management

- Do not replace administrative sets more frequently than 96 hours unless;
  - recommended by the manufacturer
  - they become disconnected
  - the IV device is replaced
- Replace administration sets used for;
  - blood and blood components when the transfusion is complete or every 12 hours whichever is sooner.
  - Lipid-containing parenteral nutrition every 24 hours

# General principles for catheter management

- Use QI interventions to support appropriate use and management of IV devices and ensure their timely removal. (N)
  - Protocols for insertion and maintenance
  - Reminders to review the continuing use or prompt removal
  - Audit and feedback of compliance with practice guidelines
  - Continuing professional education



# Summary

- CR- BSI are potentially the most dangerous complication associated with healthcare.
- Established preparation, insertion and maintenance strategies are supported by evidence.
- Practical issues and challenges addressed in free paper session after lunch today.