

# Peripherally inserted central venous catheter (PICC)

## Recommandations to reduce complications

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Juin 2016

# Indications for PICC line

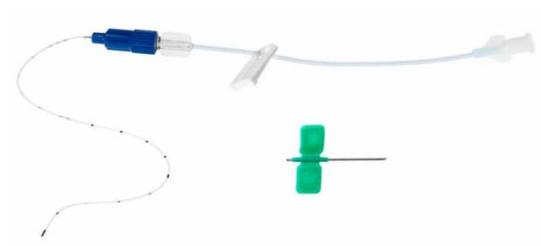
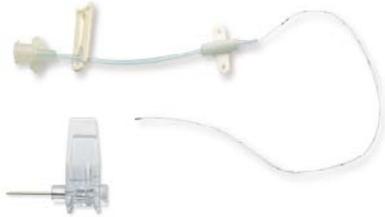
- Parenteral nutrition
  - . premature neonates < 1500 grams)
  - . gastrointestinal surgical disorders: necrotizing enterocolitis, gastroschisis, omphalocele
- Prolonged course of antibiotic treatment (meningitis)
- Inotropic support
- Ductus dependent congenital heart disease (PG E1)

# Insertion sites for PICC lines

- Antecubital veins: basilic or cephalic
- Saphenous veins
- Scalp veins: temporal and posterior auricular
- Axillary veins

# Equipment

- Different sizes (28–24 G)



- Single or double lumen



# Complications

- Tamponade and rupture
- Infection
- Thrombosis
- Line occlusion

# Prevention of tamponade

- Correct catheter tip location must be verified radiologically
  - . at the atrio-caval junction (polyurethane)
  - . or in the upper portion of the right atrium (silicone)
- Abduction of the arm moves the catheter tip toward the heart when it is inserted in the cephalic vein
- whereas adduction causes the same displacement when the basilic or axillary vein is used
- The catheter tip should be positioned outside the pericardal reflection line, while the arm is in the position that leads to maximum migration toward the heart

# Prevention of rupture

- Catheter rupture with migration into a pulmonary artery have been reported
- Use only 10 ml syringes for flushing
- Smaller syringes can generate very high pressures that may rupture the catheter even if not occluded

# Prevention of infection

- Appropriate choice of the insertion site
- A single-lumen catheter is to be preferred
- Use of maximal barrier precautions during insertion
- Proper education and specific training of the staff
- An adequate policy of hand washing
- Use of chlorhexidine as skin antiseptic
- Appropriate dressing of the exit site
- Disinfection of hubs, stopcocks and needle-free connectors
- Regular change of administration sets (every 96 hours)

# Prevention of thrombosis

Thrombosis is avoided by the use of insertion techniques designed to limit damage to the vein:

- Ultrasound guidance at insertion
- Choice of a catheter with the smallest caliber compatible with the infusion therapy needed
- Position of the tip of the catheter at or near to the atrio-caval junction

# Prevention of line occlusion

Intraluminal obstruction of the central venous access can be prevented by appropriate nursing protocols:

- Administer a continuous infusion of intravenous fluids of at least 1 ml/h to prevent line blockage
- Ensure that medications infused through the line are compatible with each other
- Use In-line filters to stop possibly occurring micro-aggregates
- A flush may be needed before and after medication administration

# Our administration set

