Mission: Infection Prevention™ (M:IP)

Overview and guidance for peripheral venous catheterization

HARTMANN
Helps. Cares. Protects.

Background of the procedure

Guidance

Prevention bundle measures	Use of checklists	Training & Education staff, patients & carers
Recommendations*		
Clearly-written PVC procedures available to all skilled staff. Management staff should apply them consistently and ensure all staff implement them. Quality improvement: a bundle of hospital-specific and collaborative performance improvement initiatives to improve compliance with recommended, evidence-based practices. Ex: protocols, reminders, audit and feedback, and continuing professional education.	Checklists bring the treatment strategy „to the point" at certain critical control points and ensure its practical implementation. They represent procedures in their entirety in a reproducible way and are part of the safety culture of a hospital. They eliminate the lack of clarity in distribution of knowledge and decision-making authority.	Sensibilize staff (including new staff) to PVC-related risks and train them on infection control measures, implementation and maintainance of PVC, and protective equipment. Continuous assessment to ensure staff always complies with infection prevention protocols, and are trained according to the standard. Patients must also be taught techniques to prevent infections before their discharge.
HARTMANN advice		
Use of digital tools (e.g. SOP tools, digital checklists, training material, etc).	Use of digital tools.	Include Feedback elements.

Indications

Guidance

Indications	Professional profiles	PVC site selection
Recommendations*		
PVC is preferred when patients do not need intensive care and when clinical conditions allow it. If the duration of the stay is going to be more than 7 days, the use of midlines with integrated extender or peripherally inserted central catheters (PICC) is preferred.	There should be a sufficient nursing staff in ICUs. Staff allowed to manage PVC are all those that are well trained, and motivated, in particular those supervising others.	In adults, place PVC on upper extremities, preferably on the back of the hand or on the forearm. In infants, set site on upper or lower extremities (hand, forearm, crook of the arm or foot) or the scalp.
HARTMANN advice		
Check prescription before starting the procedure.		

Preparation steps

Guidance

Personal Protective Equipment	Material preparation	Prophylactic antibiotics
Recommendations*		
Selection of protective equipment must be based on a risk assessment of transmission of microorganisms to the patient, and the risk of contamination of the healthcare worker's clothing and skin by patient's blood, body fluids, secretions or excretions. Safe material is recommended. Wear clean, disposable gloves. Sterile gowns and caps are not necessary.	Catheter is selected based on intended use and duration of use. Compatibility with the manufacturer recommendations should carefully be checked. Avoid steel needles for the administration of fluids and medication that might cause tissue necrosis if extravasation occurs.Use the simplest infusion set configuration for the intended use of the catheter (min. number of connections). Configure it to limit movement at the catheter hub by using a short extension tube, which can be integrated into the catheter. The length of the midline (if used) should remain within the peripheral venous network. Do not use in-line filters routinely for infection prevention.	Do not administer systemic antimicrobial prophylaxis routinely before insertion or during use of an intravascular catheter to prevent catheter colonization or CLABSI.
HARTMANN advice		
Prioritize use of sterile pre-packed sets to minimize risk of asepsis breach in components handling, and surface disinfection products		

Puncture, catheterization

Guidance

Hand hygiene	Skin disinfection & preparation	Placing PVC / dressing
Recommendations*		
Perform hand hygiene before and after palpating catheter insertion sites and before and after inserting, replacing, accessing, repairing, or dressing an intravascular catheter. Do not peform the palpation of the insertion site after the application of antiseptic, unless aseptic technique is maintained. Disinfectant dispensers should be filled with non-refillable containers (disposable bottles) because of the risk of contamination.	Before insertion, disinfect the clean skin with appropriate antiseptics (70% alcohol, with 2%/0,5% chlorhexidine if needed, or iodised polyvidone). Follow manufacturer recommendations for the use of antiseptics, and wait for complete drying before starting the procedure. Do not depilate the insertion area (if depilation is necessary, prefer shearing). If patient hygiene is correct and arm visibly clean, do not clean the skin before disinfection. If the skin looks soiled, clean with water and soap (with washing gloves or non sterile swabs + non sterile water).	Wear sterile gloves if the insertion site is to be palpated after skin antisepsis. Maintain aseptic technique for the insertion of intravascular catheters. Fixation before dressing application is recommended by using adhesive sterile strips placed at distance from the insertion site. The dressing to cover the catheter site must be sterile, either gauze or transparent, semipermeable dressing. The transparent dressing allows monitoring of the insertion site. In diaphoretic patients or if the site is bleeding/oozing, use a gauze dressing covered with a transparent semipermeable membrane until it is resolved.
HARTMANN advice		
Perform hand disinfection according to WHO 5 Moments. Use alcohol-based hand disinfectants with appropriate spectrum of activity and skin compatibility. Ensure localization of disinfectants at Point-of-Care (e.g. PoC dispenser). Consider hand disinfection also in preparation steps (ex: after opening sets or components). Give preference to disinfectants with skin friendliness/skin protective features.	Sterile pre-packed sets provide necessary sterile components: alveolas for liquids, swabs/sponges, etc.	If the patient's condition allows (ex: no bleeding), use preferably a transparent semi-permeable dressing. It allows visual monitoring of the insertion site.

Post puncture care

Guidance

Personal hygiene / care	Disinfection of access ports	Surveillance	Administration of fluids
Recommendations*			
Do not submerge the catheter or catheter site in water. Only do showering if precautions can be taken to reduce the risk of introducing organisms into the catheter. To reduce CLABSI, use a 2% chlorhexidine wash for daily skin cleansing.	**No consensus:** **RKI:** Before every manipulation, disinfection of access ports with a compatible disinfection device. **CDC:** Maintain aseptic technique for the care of intravascular catheters. **SFHH:** It is recommended not to disinfect access ports. Antiseptics do not have time to operate and there is a risk to apply antiseptics is the tube's lumen and therefore to administrate it with the therapy. Remove the stopper with a swab impregnated with antiseptics (alcoholic chlorhexidine or alcoholic polyvidone-iodine iodine or 70% alcohol). Keep the swab under the valve during injection to prevent touching the lumen with fingers. Place a new sterile stopper each time the access or tap is opened. Superiority of alcohol chlorhexidine or alcohol iodised polyvidone on 70% alcohol is not proved for inert surfaces disinfection, nor for disinfection of infusion ports. **NICE:** Decontaminate the injection port or vascular access device catheter hub before and after accessing the system using chlorhexidine gluconate in 70% alcohol, or aqueous solution of chlorhexidine gluconate if the manufacturer's recommendations prohibit the use of alcohol with their catheter.	Inspect insertion site daily (or during each shift), after careful hand disinfection, by palpation through the dressing to discern tenderness (opaque dressing) or by visual inspection (transparent dressing). If the patient has local tenderness or other signs of CLABSI, remove the opaque dressing and inspect the site visually. PVC placement should be traceable in the patient record (type of catheter, date of placement/ablation, size and site of placement, operator name). Notes on complications should be electronically retrievable to allow systematic evaluation of those complications (level IV, RKI).	Do not exceed 1000 ml to 1500 ml/day/injection site, without exceeding 3000 ml/24h on 2 different sites. A maximum flow rate of 1 to 3 ml/min is recommended.

Dressing change

Guidance

Dressing change – indications	Dressing change – skin disinfection	Dressing change – technique
Recommendations*		
Foil dressings should be changed according to manufacturer recommendations (usually 7 days). If a gauze dressing is used, no consensus: **RKI:** should not be changed more frequently than 72h when no suspicion of local complications. **NICE:** change it every 24h (or sooner if soiled) and replace it with a sterile semipermeable membrane transparent dressing as soon as possible. If the dressing becomes damp, loosened, or visibly soiled, replace it under the same conditions as when it was applied.	Each time a dressing is changed, treat entry site with an antiseptic with remanence effect Use for example isopropanol + octenidine or CHX; 2%CHG/ 70% IPA; PVP in Alc. If there is a contraindication to chlorhexidine, tincture of iodine, an iodophor, or 70% alcohol can be used instead.	Wear clean or sterile gloves when changing the dressing on intravascular catheters. An aseptic technique must be used for site care and when accessing the system (e.g., Aseptic Non Touch Technique, or ANTT™).

Catheter change

Guidance

Catheter change routine & management	Needless intravascular catheter systems	Removing PVC
Recommendations*		
Routine changing is not recommended. PVC line should stay in place for minimum 3/4 days and maximum 7 days. After 7 days, the main line should be changed. Any manipulation of the catheter increases the risk of infection and veinitis. For PVCs placed in an emergency situation, removal should occur within 24h.	Change the needleless components at least as frequently as the administration set. Do not change them more frequently than every 72 hours or change them according to manufacturer recommendations. Ensure that all components of the system are compatible to minimize leaks and breaks in the system. A split septum valve may be preferred over some mechanical valves (infection risk). Minimize contamination risk by scrubbing the access port with an appropriate antiseptic before and after using it to access the system (chlorhexidine, povidone iodine, an iodophor, or 70% alcohol) and accessing the port only with sterile devices.	The indication for the continued use of a PVC must be checked daily. PVCs that are no longer needed are to be removed as soon as possible. Immediately remove the PVC if the patient is diagnosed with a local infection at the entry site, a PVC-associated bacteraemia or phlebitis (warmth, tenderness, erythema or palpable venous cord). Remove PVC when the catheter is malfunctioning. For PVCs placed in an emergency situation, removal should occur within 24h.

Infection management

Guidance

Reporting of actual incidences
Recommendations*
Any catheter-related bloodstream infection should be arefully documented (level IV, RKI). If infection is suspected, the distal end of the peripheral catheter should be sent to the laboratory to document the infection (after aseptic removal).

Strengh of evidence

- Strong
- Strong / moderate
- Moderate
- Moderate / low
- Low
- Unspecified

Strengh of evidence ranking

	RKI	NHS/NICE	CDC	SFHH
Strong	IA, IB	A, B	IA, IB	I
Moderate	II	C, D	IC	II
Low	III	GPP, IP	II, unsolved	III

*** Synthesis of recommendations** (Sources RKI 2017, CDC 2011, SFHH 2019, NICE 2012) CLABSI equals CRBSI

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