NICE National Institute for Health and Care Excellence

NICE Pathways

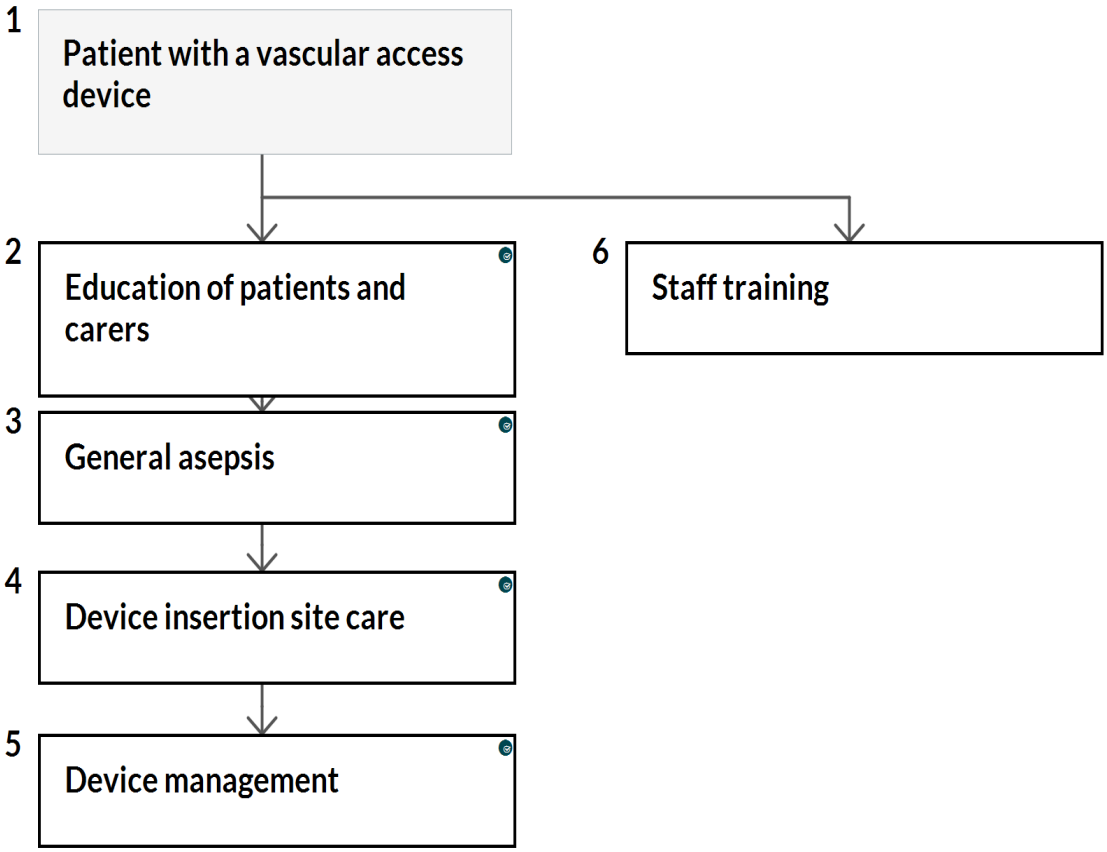
Preventing infection related to vascular access devices

NICE Pathways bring together everything NICE says on a topic in an interactive flowchart. NICE Pathways are interactive and designed to be used online.

They are updated regularly as new NICE guidance is published. To view the latest version of this NICE Pathway see:

http://pathways.nice.org.uk/pathways/prevention-and-control-of-healthcare-associated-infections
NICE Pathway last updated: 03 February 2021

This document contains a single flowchart and uses numbering to link the boxes to the associated recommendations.



1 Patient with a vascular access device

No additional information

2 Education of patients and carers

Before discharge from hospital, patients and their carers should be taught any techniques they may need to use to prevent infection and safely manage a vascular access device

Follow-up training and support should be available to patients with a vascular access device and their carers.

Quality standards

The following quality statement is relevant to this part of the interactive flowchart.

Infection prevention and control

6. Educating people about infection prevention and control

3 General asepsis

Hands must be decontaminated (see hand decontamination) before accessing or dressing a vascular access device.

An aseptic technique must be used for vascular access device catheter site care and when accessing the system. Aseptic Non Touch Technique (ANTT™) is an example of an aseptic technique for vascular access device maintenance, which is widely used in acute and community settings and represents a possible framework for establishing standardised guidance on aseptic technique.

Quality standards

The following quality statement is relevant to this part of the interactive flowchart.

Infection prevention and control

5. Vascular access devices

4 Device insertion site care

Decontaminate the skin at the insertion site with chlorhexidine gluconate[1] in 70% alcohol before inserting a peripheral vascular access device or a peripherally inserted central catheter.

Use a sterile transparent semipermeable membrane dressing to cover the vascular access device insertion site.

Consider a sterile gauze dressing covered with a sterile transparent semipermeable membrane dressing only if the patient has profuse perspiration, or if the vascular access device insertion site is bleeding or oozing. If a gauze dressing is used:

- change it every 24 hours, or sooner if it is soiled **and**
- replace it with a sterile transparent semipermeable membrane dressing as soon as possible.

Change the transparent semipermeable membrane dressing covering a central venous access device insertion site every 7 days, or sooner if the dressing is no longer intact or moisture collects under it.

Leave the transparent semipermeable membrane dressing applied to a peripheral cannula insertion site in situ for the life of the cannula, provided that the integrity of the dressing is retained.

Dressings used on tunnelled or implanted central venous catheter sites should be replaced every 7 days until the insertion site has healed, unless there is an indication to change them sooner.

Healthcare workers should ensure that catheter-site care is compatible with catheter materials (tubing, hubs, injection ports, luer connectors and extensions) and carefully check compatibility with the manufacturer's recommendations.

Decontaminate the central venous catheter insertion site and surrounding skin during dressing changes using chlorhexidine gluconate in 70% alcohol, and allow to air dry. Consider using an aqueous solution of chlorhexidine gluconate if the manufacturer's recommendations prohibit the use of alcohol with their catheter.

Individual sachets of antiseptic solution or individual packages of antiseptic-impregnated swabs or wipes should be used to disinfect the dressing site.

[1] In 2012 a safety alert for chlorhexidine was issued related to the risk of adverse events.

NICE has published medtech innovation briefings on:

- Tegaderm CHG securement dressing for vascular access sites
- Biopatch for venous or arterial catheter sites.

Quality standards

The following quality statement is relevant to this part of the interactive flowchart.

Infection prevention and control

5. Vascular access devices

5 Device management

Decontaminate the injection port or vascular access device catheter hub before and after accessing the system using chlorhexidine gluconate[1] in 70% alcohol. Consider using an aqueous solution of chlorhexidine gluconate if the manufacturer's recommendations prohibit the use of alcohol with their catheter.

In-line filters should not be used routinely for infection prevention.

Antibiotic lock solutions should not be used routinely to prevent CRBSI.

Systemic antimicrobial prophylaxis should not be used routinely to prevent catheter colonisation or CRBSI, either before insertion or during the use of a central venous catheter.

Preferably, a single lumen catheter should be used to administer parenteral nutrition. If a multilumen catheter is used, one port must be exclusively dedicated for total parenteral nutrition, and all lumens must be handled with the same meticulous attention to aseptic technique.

Preferably, a sterile 0.9 percent sodium chloride injection should be used to flush and lock catheter lumens.

When recommended by the manufacturer, implanted ports or opened-ended catheter lumens should be flushed and locked with heparin sodium flush solutions.

Systemic anticoagulants should not be used routinely to prevent CRBSI.

If needleless devices are used, the manufacturer's recommendations for changing the

[1] In 2012 a safety alert for chlorhexidine was issued related to the risk of adverse events.

needleless components should be followed.

When needleless devices are used, healthcare workers should ensure that all components of the system are compatible and secured, to minimise leaks and breaks in the system.

When needleless devices are used, the risk of contamination should be minimised by decontaminating the access port with either alcohol or an alcoholic solution of chlorhexidine gluconate before and after using it to access the system.

In general, administration sets in continuous use need not be replaced more frequently than at 72-hour intervals unless they become disconnected or a catheter-related infection is suspected or documented.

Administration sets for blood and blood components should be changed every 12 hours, or according to the manufacturer's recommendations.

Administration sets used for total parenteral nutrition infusions should generally be changed every 24 hours. If the solution contains only glucose and amino acids, administration sets in continuous use do not need to be replaced more frequently than every 72 hours.

Avoid the use of multidose vials, in order to prevent the contamination of infusates.

Curos for preventing infections when using needleless connectors

The following recommendations are from NICE medical technologies guidance on Curos for preventing infections when using needleless connectors.

Curos disinfecting cap shows promise for preventing infections when using needleless connectors, but there is currently insufficient evidence to support the case for routine adoption in the NHS.

Research is therefore recommended to address uncertainties about the clinical benefits of using Curos. This research should:

- determine if Curos adds value to the standard bundle of care for preventing infections when using needleless connectors
- explore the use of Curos in people at high risk of infection, including those whose condition is managed in the community
- clearly define the patient groups included and use consistent outcomes.

See why we made the recommendations on Curos.

ClearGuard HD Antimicrobial Barrier Cap for preventing haemodialysis catheter-related bloodstream infections

NICE has published a medtech innovation briefing on ClearGuard HD Antimicrobial Barrier Cap for preventing haemodialysis catheter-related bloodstream infections.

Quality standards

The following quality statement is relevant to this part of the interactive flowchart.

Infection prevention and control

5. Vascular access devices

6 Staff training

Healthcare workers caring for a patient with a vascular access device should be trained, and assessed as competent, in using and consistently adhering to the infection prevention practices described in these recommendations.

Glossary

Aseptic technique

(an aseptic technique ensures that only uncontaminated equipment and fluids come into contact with susceptible body sites, which should be used during any clinical procedure that bypasses the body's natural defences; using the principles of asepsis minimises the spread of organisms from one person to another)

CRBSI

catheter-related bloodstream infection

Healthcare workers

(people employed by the health service, social services, a local authority or an agency to provide care for a sick, disabled or elderly person)

Sources

Healthcare-associated infections: prevention and control in primary and community care (2012 updated 2017) NICE guideline CG139

Curos for preventing infections when using needleless connectors (2019) NICE medical technologies guidance 44

Your responsibility

Guidelines

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them

and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Technology appraisals

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, health professionals are expected to take these recommendations fully into account, alongside the individual needs, preferences and values of their patients. The application of the recommendations in this interactive flowchart is at the discretion of health professionals and their individual patients and do not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Commissioners and/or providers have a responsibility to provide the funding required to enable the recommendations to be applied when individual health professionals and their patients wish to use it, in accordance with the NHS Constitution. They should do so in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Medical technologies guidance, diagnostics guidance and interventional procedures guidance

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take these recommendations fully into account. However, the interactive flowchart does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the recommendations, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this interactive flowchart should be interpreted in a way that would be inconsistent with compliance with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.