

Saving Lives: reducing infection, delivering clean and safe care

High Impact Intervention No 2

Peripheral intravenous cannula care bundle



Aim

To reduce the incidence of peripheral intravenous cannula infections

Context

The Health Act 2006 Code of Practice¹ states that NHS organisations must audit key policies and procedures for infection prevention. This high impact intervention helps trusts achieve this aim by providing a focus on elements of the care process and a method for measuring the implementation of policies and procedures.

Peripheral intravenous cannula insertion is a commonly performed procedure and has an associated risk of infection because of the potential for direct microbial entry to the bloodstream. Intravenous cannulae may be contaminated by the patient's skin flora at the insertion site or by the introduction of other organisms via the cannula hub or injection port.

An Australian study² showed a bacteraemia rate of 1 per 3,000 cannulae, and more recently an infection rate of 0.2 per 1,000 intravenous cannula days has been demonstrated.³

The most commonly isolated organisms from all types of intravenous cannulae are coagulase-negative staphylococci (35%), with *Staphylococcus aureus* the second most common (25%).⁴ MRSA accounted for 40–45% of *Staphylococcus aureus* infections in a 2006 prevalence survey.⁵

The American Centers for Disease Control have produced extensive evidence-based guidelines for the prevention of infection associated with peripheral intravenous cannulae and central venous catheters.⁶ Other countries have developed similar national guidelines.^{7,8}

The Department of Health document *Winning ways*⁹ makes recommendations for the care of peripheral intravenous cannulae and the Infection Control Nurses Association (ICNA) audit tool¹⁰ also has a relevant section which covers similar points.

A National Audit Office report in 2004¹¹ noted that, following its previous audit in 2000, some trusts had raised their awareness of infection control issues by reviewing procedures involving intravenous cannula insertion and management.

Why use the care bundle?

This care bundle is based on EPIC guidelines, expert advice and other national infection prevention and control guidance. It should support implementation of local and national policy. The purpose is to act as a way of improving and measuring the implementation of key elements of care.

The risk of infection reduces when all elements within the clinical process are performed every time and for every patient. The risk of infection increases when one or more elements of a procedure are excluded or not performed.

Elements of the care process

There are two sets of actions outlined below as good practice; these are concerned with:

- a insertion
- b ongoing care.

Insertion actions

Hand hygiene

Decontaminate hands before and after each patient contact and before applying examination gloves.
Use correct hand hygiene procedure.

Personal protective equipment

Wear examination gloves if risk of exposure to body fluids.
Gloves are single-use items and should be removed and discarded immediately after the care activity.
Gowns, aprons, eye/face protection are indicated if there is a risk of splashing with blood or body fluids.

Skin preparation

Use 70% isopropyl alcohol, or 2% chlorhexidine gluconate in 70% isopropyl alcohol, and allow to dry.
If patient has a sensitivity use a single patient use povidone-iodine application.

Dressing

Use a sterile, semi-permeable, transparent dressing to allow observation of insertion site.

Documentation

Date of insertion should be recorded in notes.

Ongoing care actions

Hand hygiene

Decontaminate hands before and after each patient contact.
Use correct hand hygiene procedure.

Continuing clinical indication

All intravenous cannulae and associated devices are still indicated.
If there is no indication then the intravenous cannula should be removed.

Site inspection

Regular observation for signs of infection, at least daily.

Dressing

An intact, dry, adherent transparent dressing should be present.

Cannula access

Use 70% isopropyl alcohol, or 2% chlorhexidine gluconate in 70% isopropyl alcohol, and allow to dry prior to accessing the cannula for administering fluid or injections.

Administration set replacement

Immediately after administration of blood, blood products.
All other fluid sets after 72 hours.

Routine cannula replacement

Replace in a new site after 72–96 hours or earlier if indicated clinically.
If venous access limited, the cannula can remain in situ if there are no signs of infection.

Using the bundle to ensure all elements of care are performed

Checking compliance with the elements in the care process will show the elements which were or were not performed. The tools on the CD will help you to:

- 1 identify when all elements have been performed
- 2 see where individual elements of care have not been performed
- 3 enable you to focus your improvement effort on those elements which are not being consistently performed

Using the compliance tool

- 1 Each time a care element is performed, insert a tick in the relevant column. If the action is not performed leave it blank.
- 2 Do this for each action, ensuring you tick it only when an element of care is performed correctly.
- 3 Calculate the totals and compliance levels by totalling the columns and using the tools provided (on the CD or at www.clean-safe-care.nhs.uk).
- 4 Your goal is to perform every element of care every time it is needed. The "All elements performed" column should be ticked when every care element is given correctly. This should total to 100% compliance when all care elements have been given correctly on every occasion.
- 5 Where elements have not been performed overall compliance will be less than 100%. This provides immediate feedback for users of the tool on those elements missed, and actions can then be taken to improve on compliance levels.
- 6 The percentage compliance figures for individual care elements show you where you need to focus effort to improve overall compliance.
- 7 The number of times when all elements are performed should be the same as the number of observations you perform. For example if you monitor the care process 10 times, then there should be 10 occasions when all elements were performed.

When the calculation is completed, the calculator tools on the CD (or at www.clean-safe-care.nhs.uk) will automatically show compliance graphs and run-charts for each element of care and for overall compliance with each high impact intervention. This will show you visually where to focus your improvement efforts to achieve full compliance.

Example

Care elements Observation	Care element 1	Care element 2	Care element 3	Care element 4	All elements performed
1	✓		✓	✓	
2	✓	✓		✓	
3	✓	✓	✓	✓	
4	✓	✓	✓	✓	
5	✓	✓	✓	✓	✓
Total number of times an individual element was performed	5	4	4	4	1
% when element of care was given	100%	80%	80%	80%	20%

This example shows that while most care elements were performed on only one occasion were ALL elements performed correctly. Overall compliance with all elements was only 20% and as a result the risk of infection was significantly increased.

Best practice guides

The American Centers for Disease Control guidelines⁶

The ICNA audit tool¹⁰ section on managing peripheral lines, page 41

Singapore Nursing Clinical Practice Guidelines⁷

Canadian Intravascular Access Devices Infection Control Guidelines⁸

Recommended resources

Many guidelines and papers are available in the National Resource for Infection Control at www.nric.org.uk

The NHS infection control e-learning package available from www.infectioncontrol.nhs.uk

References

1. Department of Health. The Health Act 2006 – Code of practice for the prevention and control of healthcare associated infections. London: Department of Health. 2006. Available at www.dh.gov.uk/assetRoot/04/13/93/37/04139337.pdf (accessed 28 February 2007)
2. Collignon P. Intravascular catheter associated sepsis: a common problem. The Australian study on intravascular catheter associated sepsis. Medical Journal of Australia 1994, 161:374–378
3. McLaws M L, Taylor PC. The Hospital Infection Standardised Surveillance (HISS) programme: analysis of a two-year pilot. Journal of Hospital Infection 2003, 53:259–267
4. Managing bloodstream infection associated with intravascular catheters. Drug Therapy Bulletin 2001, 39:75–80
5. Smyth ETM. Healthcare acquired infection prevalence survey 2006. Presented at 6th international conference of the Hospital Infection Society, Amsterdam 2006, Preliminary data available in Hospital Infection Society: The third prevalence survey of healthcare associated infections in acute hospitals, 2006, available at www.his.org.uk (accessed 18 April 2007)
6. O’Grady NP, Alexander M, Dellinger EP, Gerberding JL et al. Guidelines for the prevention of intravascular catheter-related infections. Morbidity and Mortality Weekly Report 2002, 51 (RR10):1–26. Available at www.cdc.gov/mmwr/preview/mmwrhtml/rr5110a1.htm (accessed 28 February 2007)
7. Ministry of Health, Singapore. Prevention of infections related to peripheral intravenous devices. Ministry of Health Nursing Clinical Practice Guidelines. Singapore. 2002. Available at www.guideline.gov/summary/summary.aspx?ss=15&doc_id=3438&nbr=2664 (accessed 28 February 2007)
8. Public Health Agency of Canada. Preventing infections associated with indwelling intravascular access devices. Canada Communicable Disease Report Supplement, 1997; 23:58. Available at www.phac-aspc.gc.ca/publicat/ccdr-rmtc/97vol23/23s8/iadinde_e.html (accessed 28 February 2007)
9. Department of Health. Winning ways: working together to reduce associated healthcare infection in England. London: Department of Health. 2003. Available at www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/Browsable/DH_4095070 (accessed 28 February 2007)
10. Infection Control Nurses Association. Audit tools for monitoring infection control standards. London: Infection Control Nurses Association. 2004. Available at www.icna.co.uk/public/downloads/documents/audit_tools_acute.pdf (accessed 28 February 2007)
11. National Audit Office. Improving patient care by reducing the risk of hospital acquired infection: A progress report. London: The Stationery Office. 2004. Available at www.nao.org.uk/publications/nao_reports/03-04/0304876es.pdf (accessed 28 February 2007)

To download further copies of all high impact interventions and calculator tools or to print/order extra hard copies, go to www.clean-safe-care.nhs.uk