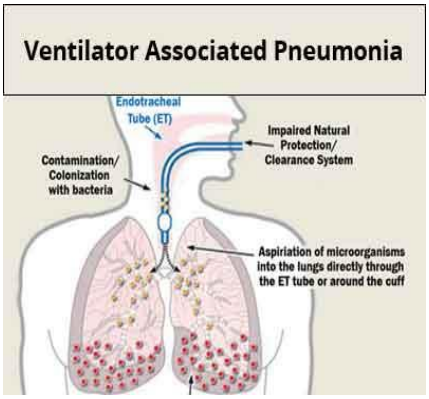
Infection Prevention in Critical Care: The nursing role

Critical care has a long established pro-active commitment to infection prevention. Within critical care we use **Care Bundles** to improving the processes of care therefore improving patient outcomes.

A care bundle is a set of evidence-based practices that, when performed collectively and reliably, have been proven to improve patient outcomes. We audit all bundles within the unit monthly.

VAP Bundle (**V**entilator **a**ssociated **p**neumonia**)**

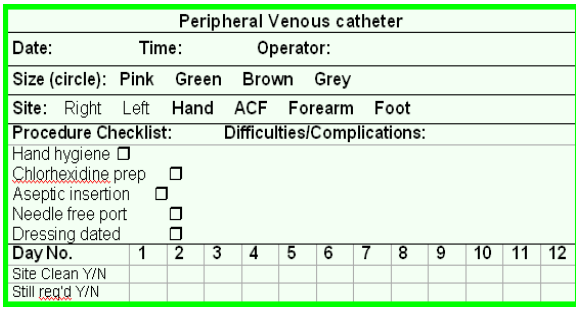
- **Wake and wean**
  - Daily sedation hold when appropriate (note exclusions)
  - Weaning assessed - plan documented on the 24 chart
  - Optimal sedation
- **Min 30 degree angle (HEAD UP)** unless clinically contraindicated
- **Sub glottic drainage tubes** as soon as clinically possible
- **Effective oral hygiene**



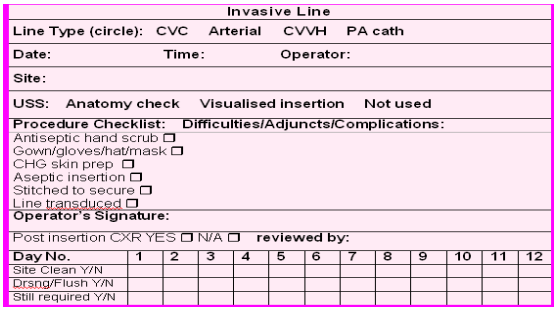
Further reading

Scottish Intensive Care Society Audit Group VAP Bundle

Insertion and maintenance of Central Venous Catheter (CVC) and Peripheral Vascular Catheter (PVC)



Peripheral Venous catheter												
Date: Time: Operator:												
Size (circle): Pink Green Brown Grey												
Site: Right Left Hand ACF Forearm Foot												
Procedure Checklist: Difficulties/Complications:												
Hand hygiene ☐												
Chlorhexidine prep ☐												
Aseptic insertion ☐												
Needle free port ☐												
Dressing dated ☐												
Day No.	1	2	3	4	5	6	7	8	9	10	11	12
Site Clean Y/N												
Still req'd Y/N												



Invasive Line												
Line Type (circle): CVC Arterial CVVH PA cath												
Date: Time: Operator:												
Site:												
USS: Anatomy check Visualised insertion Not used												
Procedure Checklist: Difficulties/Adjuncts/Complications:												
Antiseptic hand scrub ☐												
Gown/gloves/hat/mask ☐												
CHG skin prep ☐												
Aseptic insertion ☐												
Stitched to secure ☐												
Line transduced ☐												
Operator's Signature:												
Post insertion CXR YES ☐ N/A ☐ reviewed by:												
Day No.	1	2	3	4	5	6	7	8	9	10	11	12
Site Clean Y/N												
Drsng/Flush Y/N												
Still required Y/N												

Insertion: Top part of stickers. Complete the Invasive line insertion box or the PVC insertion box on the devices chart, for every new line inserted. (Usually done by the person inserting the line) However, you must ensure this is completed.

Maintenance/Daily assessment: Bottom part of sticker with enhanced documentation in the care plan.

Every shift and regularly throughout, you need to carry out an assessment on your patient's lines.

The device chart is based on Care bundles and helps you remember what to assess. But you should also document in your notes the relevant information and care given round these questions e.g. dressing changes.

Is the insertion site clean? – You should be looking for any redness, erythema, pus, discharge or pain at point of insertion.

Still required? Ask yourself… Is the line needed? Question the need for CVCs and PVCs daily. Can you down grade to just a PVC? Is there PVC that was inserted prior to the CVC that is now not being used? Are you unclear as to when line was inserted and therefore cannot evidence that an insertion bundle was followed.

Dressing or Flush changed? The dressing should not be changed unnecessarily. Aim to leave dressings in situ for 7 days. The transducer set should remain a closed system, with no unnecessary disconnections. You should witch to a complete a new set if the flush bag empties. These changes are added risk to infection transmission so need documented if carried out.

Example of good documentation of care given:

- Site bleeding, requiring several dressing changes. Alginate patch/gauze swab now in situ at site beneath CVC dressing. No signs of infection.
- A line not stitched in. When carrying out a necessary dressing change noticed the insertion site has enlarged due to movement. Cleaned with ChloraPrep 30/30 technique and secured with butterfly stitches under dressing. No signs of infection. Medical staff informed and the line will be changed as soon as clinically possible as still required.
- New transducer line today as flush bag emptied. Labelled.

Further reading

Scottish Intensive Care Society Audit Group Central Line Bundle

Screening in Critical Care

Clinical Risk Assessment (CRA)

Every patient should be clinically risk assessed on TRAK for MRSA (Metcillin resistant *Staphylococcus aureus*) and CPE (Carbapenemase Producing Enterobacteriaceae) within 24 hours of admission.

Enterobacteriaceae are a group of Gram negative bacteria that normally live in the human gut.

Remember to check any TRAK alerts  for previous history of infection and isolate appropriately.

Then, every admission is swabbed for MRSA and depending on CRA you may also swab for CPE

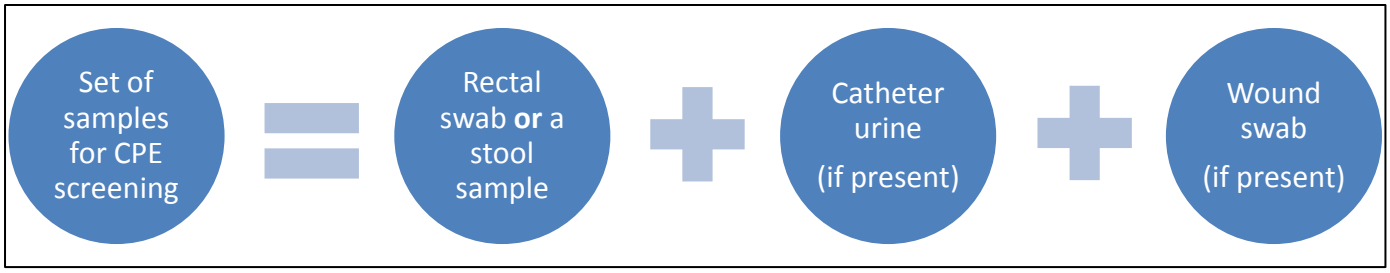
MRSA Screening - National screening for MRSA includes: A swab from the Nose and Perineum, plus another from any wounds or long term lines if the patients has them. MRSA suppression therapy is considered in critical care for all MRSA positive patients**.**

See MRSA guidelines on the Intranet for full details;

CPE Screening - If you have a patient who meets the criteria for full screening for CPE. That is; a patient whom you answered YES to the following questions on the clinical risk assessment:

- A patient who is a hospital transfer from outside Scotland
- A patient who has a history of hospital admission abroad (outside Scotland) in the past 12 months - including holiday dialysis.
- Or a patient known to be previously CPE positive or in contact with a person who has been colonised or infected with CPE

The patient needs to be **isolated in a cubicle and a set of samples x 3** sent at least 48 hours apart - Day1, Day3 and Day5



CPE is highly prevalent in some countries which may mean despite not meeting the CRA criteria they may need to be screened.

Contact infection prevention and control for advice if concerned about travel history and please refer to guidelines for full details.

ANTT - Antiseptic Non Touch Technique

Ineffective aseptic technique is widely considered to be one of the biggest causes of preventable healthcare-associated infection (HCAI).

The organisation has chosen Aseptic Non Touch Technique (ANTT®) to standardise practice across all NHS Lothian sites

The ANTT model places successful identification and protection of Key-Parts and Key-Sites at the absolute core of any clinical procedure, it uses more accurate and original practice terminology and most importantly, doesn't just instruct healthcare workers to perform aseptic technique; it explains how to perform it.

All staff must complete the ANTT Theory and Practice Framework. Once you have completed the theory part of the frame work. You must be signed off on a practical assessment by any colleague who has already been signed off.

This is a two yearly competency.

Blood culture contamination (BC)

When bacteria commonly found on the skin are isolated from blood cultures and they are not a pathogen that is making the patient unwell, we consider these contaminants.

Contaminated blood cultures can have negative implications on patients and NHS Lothian as a whole, for example; un-necessary treatments and investigations, increased length of stay. Reducing BC contaminants also improves reliability of all blood culture results.

Good Aseptic Non Touch Technique along with use of a blood culture adaptor during the procedure prevents blood culture contamination.

If you take blood cultures we encourage you to audit your own practice.

Antimicrobial Stewardship and Microbiology ward round

If your patient begins to show signs of infection you will be required to send appropriate samples to the microbiology labs. A helpful resource for you can be found here

If antibiotics are started the Kardex prescription for each antibiotic should include;

- An indication for the antibiotic
- Review/stop date or duration
- These are both mandatory

NHS Lothian and Critical Care antimicrobial guidelines are available via the intranet or download Antibiotic companion APP

- Refer to Critical Care antimicrobial guidelines via the intranet
- Or download the Antimicrobial companion app

The Microbiology team work closely with Intensive care staff. They attend the ward daily (MON – FRI) and by phone at the weekend. They consult on patients, review specimens sent and updated lab results, discuss patient management, and educate. Escalation/de-escalation plans suggested by Microbiologist will be documented in Trak Clinical Notes.

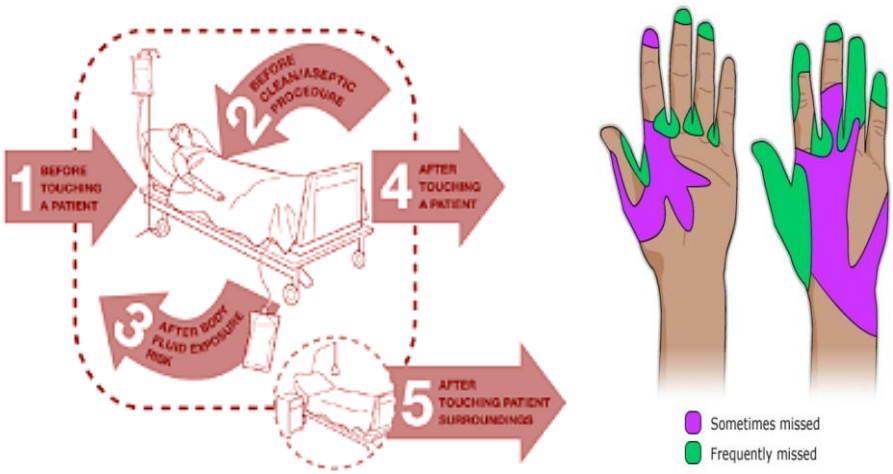
When possible you should participate in this review of your patient.

Hand Hygiene: Clean Hands are Safe Hands

Regular and effective hand hygiene is the single-most important thing you can do to protect yourself and others from infection. Up to 80% of infectious diseases are transmitted through touch.

We ask you to remain 'Bare below the Elbows' while in the clinical area and carry out good effective hand hygiene at the appropriate times.

Hand washing can be done with soap and water or alcohol gel. Do you know which is appropriate in what scenarios? For example; alcohol hand gel is **not effective** against *Clostridiidioides difficile* spores or Norvirus so the use of soap and water in these scenarios is essential. Do you know the WHO 5?



Other Important moments to remember;

- Before manipulating or touching any lines, CVC, PVC, PICC etc, administration lines, flush system including transducers.

- Before preparing and administer bolus injections and infusions and remember to decontaminate the smart site with a Chlorhexidine wipe. 'scrub the hub' (min 15 seconds)

Advice on Patient management/ placement/ transmission based precautions etc:

There is detailed advice available on the Infection control pages of the intranet. Please familiarise yourself with this site. You will also get any leaflets or forms (for example a stool chart or checklist) you may need there.

You will find helpful information the Infection Prevention and Control intranet site

Or you can email, any non urgent enquiries and the team will aim to reply to all e-mails within 48 hours InfectionControl@nhslothian.scot.nhs.uk

For any urgent enquiries please telephone the Infection Prevention and Control Duty Nurse who is available to provide advice on all infection prevention and control related topics. Monday to Friday from 0830 until 1600

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For urgent enquiries outside of these times, contact the Microbiologist or Virologist using the on-call services.