York Teaching Hospital NHS
NHS Foundation Trust

Asepsis

Guidelines

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Summary

These guidelines relate to the aseptic principles and practice that must be carried out when performing clinical procedures.

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1 Introduction & Scope

The Health & Social Care Act (2012) incorporates a number of Clinical Care Protocols to which NHS bodies must adhere, in relation to preventing and controlling the development of Health Care Associated Infections (HCAI) and states the following:

- Clinical procedures must be carried out in a manner that maintains and promotes the principles of asepsis.
- Education, training and assessment in Aseptic Technique must be provided to all persons undertaking such procedures.
- The technique must be standardised across the organisation.
- Audit must be undertaken to monitor compliance with Aseptic Technique

These guidelines apply to all healthcare workers working within the organisation, including medical staff, nurses, allied health professionals and students, who carry out aseptic procedures. This policy is primarily for ward and clinic based procedures and does not cover those which are carried out in operating theatres, or pharmacy departments.

2 Definitions

Asepsis - is the absence of infectious organisms such as bacteria, fungi, viruses, or other microorganisms which may cause disease

Aseptic techniques – are those aimed at minimising infection, ensuring that only uncontaminated objects/fluids make contact with sterile/susceptible sites.

Antisepsis – is the removal of transient microorganisms from the skin by the use of chemical solutions, for disinfection

Aseptic non-touch technique (ANTT) – a method for ensuring that key parts are not touched or contaminated during an aseptic procedure.

Key Part – A key part is the sterile part of equipment that comes into direct contact with other key/sterile parts i.e. exposed lumens of catheters, intravenous (I.V.) line connections, needles, syringe tips etc.

Risk Assessment – the method used to quantify the risk to health and safety

3 Overview

An aseptic technique should be implemented during any invasive procedure that bypasses the body's natural defences, e.g. the skin and mucous membranes, or when handling equipment such as intravascular devices.

Lapses in aseptic techniques have been implicated in outbreaks of infection. It is essential when aseptic techniques are used as a method of preventing infection that these procedures are **evidence based** and are **carried out correctly**.

3.1 Aims of aseptic technique

- To prevent the introduction of potentially pathogenic organisms into susceptible sites such as, sterile body cavities (bladder) or wounds
- To prevent cross transmission of potentially pathogenic microorganisms between the member of staff and the patient

4 Trust Associated Documentation

Decontamination of Reusable Medical Devices

Decontamination of Reusable Communal Equipment and the Environment

Effective Hand Hygiene

Isolation Procedures

Needlestick, Sharps and Splash Injuries

Policy for the Management of Potential Exposure to Blood Borne Viruses

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Sharps (Safe Use, Handling and Disposal of Policy)

Standard Precautions Policy

Surveillance and Data Collection

(including reporting Healthcare Associated Infections [HCAI] to the Health Protection Agency)

Vascular Lines Policy

5 External References

Health & Social Care Act www.legislation.gov.uk

The Stationary Office, London. www.dh.gov.uk/greenbook

National Institute for Clinical Excellence (NICE) (2013) *Infection Control www.nice.org.uk*

Epic 3: Journal of Hospital Infection 86S1 (2014) S1–S70 *www.his.org.uk/files/3113/8693/4808/epic3_National_Evidence-Based_Guidelines_for_Preventing_HCAI_in_NHSE.pdf Hospitals*

Saving Lives – Delivering Clean Safe Care (2007) www.dh.gov.uk

6 Appendices

Appendix i) Indications for the use of aseptic techniques
Appendix ii) Essential Factors Involved in Aseptic Techniques
Appendix iii) What makes skin preparation effective?

Appendix i)

Indications for the use of aseptic techniques

- Suturing and care of surgical wounds
- Insertion of invasive devices, such as peripheral and central venous catheters (CVC)
- Insertion of urethral catheters
- Redressing and accessing of CVC lines
- Accessing peripheral venous catheters
- Preparation of intravenous therapy
- Insertion of percutaneous enteral gastrostomy (PEG) tubes
- Insertion of tracheostomy tubes
- Biopsies

(The above list is not exhaustive, and should only be used as examples)

Appendix ii)

Essential Factors Involved in Aseptic Techniques

Aseptic non-touch technique (ANTT) is the method employed to prevent contamination of wounds and other susceptible sites by organisms which could cause infection, by ensuring that only uncontaminated equipment and fluids come into contact with sterile/susceptible sites during clinical procedures. **These techniques should be employed during any procedure that bypasses the body's natural defences.** (Epic 3- 2014)

Skin preparation

Skin preparation is an essential part of aseptic procedures; skin cannot be 'sterilized' but certain chemical preparations reduce microbial levels. 70% Isopropyl Alcohol acts by denaturing proteins and is bactericidal but short acting. Chlorhexidine 2% acts by disrupting the cell wall of organisms, is bactericidal and has a long duration of action (up to 6 hours). Thus, a combination of the two is recommended for adequate skin decontamination prior to insertion of invasive devices. Apply the solution for 30 seconds using a cross hatch brushing motion; allow to dry thoroughly usually again for 30 seconds (for urinary catheter insertions see local guidelines).

Reusable Equipment

Reusable equipment employed during an aseptic procedure should be cleaned with detergent wipes and must be fit for purpose, e.g. steel dressing trolley for dressing changes. All packs/single use equipment e.g. dressing packs, cannula packs, syringe packs etc. must be intact, in date and with no visible signs of contamination.

Effective hand hygiene

Effective hand hygiene is the most important component of good infection prevention and control as hands are a common route of transmission of infection. Transient bacteria can be removed by effective hand hygiene techniques. This

can be achieved by washing hands with an antimicrobial liquid soap and water, or by using an alcohol–based hand rub. When hands are visibly dirty or contaminated by organic material, such as blood or excretions, they must first be washed in soap and water if alcohol-based hand rubs are going to be used to achieve hand antisepsis. (Epic 3 - 2014)

Click here for the Guidelines for Effective Hand Hygiene

Personal Protective Equipment (PPE)

PPE should be employed following a risk assessment regarding its use before each procedure. For example, non-sterile gloves may be worn if the operator can guarantee that the key parts will not be contaminated. If this is in doubt, or for complex high-risk actions e.g. CVC line insertion, then sterile gloves must be worn. Gowns or aprons should be used dependant on risk of contamination to the operator's clothing, or unless stated as a requirement during high risk procedures Masks and goggles are required if there is an anticipation of splashes of either blood or body fluids posing a risk to the operator. (Refer to Transmission Based Precautions Guidelines)

Gloves must be single use items. They are put on immediately before an episode of patient contact or treatment, and removed as soon as the activity is completed. Gloves must be changed between different care activities for the same patient.

Creating and maintaining a sterile field

A sterile field is an area that is created by placing a sterile towel/s around the procedure site and on the surface that will hold sterile instruments and/or dressings. Sterile items are defined as those which are free of potentially harmful micro-organisms. If a key part comes into contact with a non-sterile item, object, person or environmental contaminant, the object is no longer sterile therefore the procedure must be abandoned and restarted.

Use of safe invasive procedure

Safe and effective techniques used during an aseptic procedure can minimise the risk of infection and cross contamination. Post-procedure infections are more likely to occur if excessive bleeding occurs as this can increase susceptibility to invasive organisms; and if tissue is damaged due to rough or excessive manipulation during the procedure.

Creating a safe environment

- Clinical rooms should be designated for the performance of invasive procedures wherever possible. If this is not possible the patient's bed space should be prepared for this activity at a time whenever possible of low activity on the ward to minimise risk of dust movement.
- General activity and number of people in these areas should be kept to a minimum where possible.
- Surfaces within the procedure room must be free of unnecessary clutter.
- Doors and windows must be closed during procedures, and fans must be switched off.
- The parts of the room and surfaces that may have been contaminated during a procedure must be cleaned and disinfected between patients. This includes examination trolleys, dressing trolleys and examination lamps.

Appendix iii)

What makes skin preparation effective?

- 70% Isopropyl alcohol
    - Acts by denaturing proteins
    - Is bactericidal but short acting
    - Effective against gram-positive and gram-negative organisms
    - Also fungicidal and virucidal
- 2% Chlorhexidine
    - Quaternary ammonium compound (positively charged polyatomic ions). Also known as QAC or QUAT, poor efficacy as skin prep ***unless*** used in high enough concentrations to provide residual activity i.e. 2%; or used in conjunction with alcohol (Other QAC include Tisept, Savlodil and Dettol).
    - Acts by disrupting the bacterial cell wall
    - Bactericidal but does not kill spore forming organisms
    - It is persistent and has a long duration of action, with some residual efficacy up to 24hrs
    - More effective against gram-positive organisms
- 70% Povidone - iodine
    - Acts by oxidation / substitution of free iodine
    - Bactericidal and active against spore forming organisms
    - Effective against both gram-positive and gram-negative organisms
    - Rapidly inactivated by organic material such as blood
    - Patient skin sensitivity is occasionally a problem
    - Chlorhexidine more effective

Edwards, P. S., Lipp, A., Holmes, A. Preoperative skin antiseptics for preventing surgical wound infections after clean surgery. *Cochrane Database Systematic Review*. 2004 (3):CD003949.

Noorani, A., Rabey, N., Walsh, S. R. *et al.* Systematic review and meta - analysis of preoperative antisepsis with chlorhexidine versus povidone–iodine in clean - contaminated surgery. *British Journal of Surgery,* 2010; 97: 1614-1620.