

Control of Infection Manual

Lead Author	Chris Sharp, Matron Infection, Prevention and Control, Cambridgeshire Community Services
Developed by	Chris Sharp (as above) Amanda Lilley, Service Manager Infection Control Committee
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AUTHOR

Chris Sharp

Matron Infection Prevention and Control,
Cambridgeshire Community Services

ACKNOWLEDGEMENTS

Dr Bernadette Nazareth

Consultant in Communicable Disease Control
Public Health Protection Unit, Health Protection Agency

Dr Nick Brown

Infection Control Doctor Consultant Microbiologist HPA

Dr Dennis Mlangeni

Consultant Microbiologist
Peterborough and Stamford Hospitals NHS Foundation Trust

Lynn Franklin

Infection Control Specialist Nurse
Peterborough and Stamford Hospitals NHS Foundation Trust

Clare Nathan

Infection Prevention and Control Nurse
Cambridgeshire Community Services

Lynn Rodrigues

Matron Infection Prevention and Control
NHS Cambridgeshire

RECORD OF AMENDMENTS

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CONTENTS

SECTION 1 - GENERAL INFORMATION	Page
1.1 <i>Introduction</i>	7
1.2 <i>Infection Control Structures in Cambridgeshire and Peterborough</i>	9
1.3 <i>Notifiable Diseases</i>	10
1.4 <i>Contact Information</i>	11
1.5 <i>Summary of precautions required for Infectious Disease</i>	13
 SECTION 2 – INFECTION CONTROL	
2.1 <i>Universal/Standard Precautions</i>	18
2.2 <i>Hand Decontamination</i>	19
2.3 <i>Personal Protective Equipment (PPE)</i>	21
2.4 <i>Aseptic Technique</i>	23
2.5 <i>Sharps Management</i>	26
2.6 <i>Needlestick Injuries and PEP</i>	28
2.7 <i>Waste Segregation</i>	30
2.8 <i>Management of Specimens</i>	35
2.9 <i>Storage, Distribution and Disposal of Vaccines</i>	39
2.10 <i>Dealing with Spillages</i>	40
2.11 <i>Decontamination (Cleaning, Disinfection and Sterilisation of Equipment)</i>	43
2.12 <i>Decontamination of Equipment Chart A-Z</i>	44

SECTION 3 – DISEASE RELATED INFORMATION	Page
3.1 <i>Blood-Borne Viruses</i>	50
3.2 <i>Meningococcal Meningitis/Septicaemia</i>	55
3.3 <i>Creutzfeld Jakob Disease and Variant Creutzfeldt – Jakob Disease (CJD & VCJD)</i>	59
3.4 <i>Tuberculosis</i>	61
3.5 <i>Gastro-Intestinal Diseases</i>	63
3.6 <i>Methicillin Resistant Staphylococcus Aureus (MRSA)</i>	67
3.7 <i>Scabies, Headlice and Worms</i>	70
3.8 <i>Management of Clostridium difficile</i>	77
 SECTION 4 – OUTBREAKS	
4.1 <i>Introduction and Purpose</i>	81
4.2 <i>Definitions</i>	81
4.3 <i>Duties – Roles and Responsibilities</i>	81
4.4 <i>Closure of Ward/Department</i>	83
4.5 <i>Reopening the Ward/Department</i>	84
 SECTION 5 – QUALITY ISSUES AND AUDIT TOOLS	
5.1 <i>Standard Setting, Audit and Clinical Governance</i>	85
5.2 <i>Standards and Audit Tools</i>	86
 SECTION 6 - FACT SHEETS	
6.1 <i>A guide to Clostridium difficile for staff</i>	87
6.2 <i>A guide for patients and carers on Clostridium difficile</i>	89
6.3 <i>Legionnaires disease</i>	90
6.4 <i>Measles</i>	91
6.5 <i>Meningitis</i>	92
6.6 <i>Ciprofloxacin for meningitis contacts</i>	93
6.7 <i>Rifampicin for meningitis contacts</i>	94

6.8	<i>Advice for Patients, Relatives and Friends on MRSA (Methicillin Resistant Staphylococcus Aureus)</i>	95
6.9	<i>Norovirus</i>	96
6.10	<i>Tuberculosis</i>	97
6.11	<i>Invasive Group A Streptococcal infections</i>	98

* This information has been read in the following languages produced by the Department of Health

English
Arabic
Bengali
French
Polish
Portuguese
Gujarati
Somali
Urdu
Punjabi
Turkish

Clostridium difficile information for staff

Clostridium difficile information for patients and carers

SECTION 7 - APPENDICES

7.1	<i>NPSA Hand Hygiene poster</i>	99
7.2	<i>NPSA 5 moments patient in bed poster</i>	100
7.3	<i>NPSA 5 moments patient in chair poster</i>	101
7.4	<i>List of Cytostatic and Cytotoxic medicines</i>	102
7.5	<i>Daily temperature form for specimen fridge</i>	103
7.6	<i>Safe immunisation – cold chain responsibility</i>	104
7.7	<i>Declaration of contamination status form.</i>	105

SECTION 1 - GENERAL INFORMATION

1.1 INTRODUCTION

Infection Prevention Control Assurance Framework

Infection control is the responsibility of all staff. At any one time approximately one in ten patients in acute hospitals has a Healthcare Acquired Infection (HCAI). Patients who have a HCAI are likely to stay in hospital 2.5 times as long as an uninfected patient, an average of 11 days. Patients with a HCAI incur increased healthcare costs for the healthcare provider.

The death rate is higher for patients who have a HCAI during the in-patient period.

Although not all HCAI are life threatening the symptoms may cause pain and discomfort and treatment may involve a long course of antibiotic treatment. Any of these can reduce quality of life.

This manual provides the basic information that staff need for effective infection control within the Peterborough area and serves as a basis for best practice.

At all times the guidelines in the manual represent the core approach to the control of infection for the organisation. Additional clinical information can be found in the Royal Marsden Hospital Manual of Clinical Nursing Procedures.

Monitoring of effectiveness

All elements of the above framework will be audited annually, to ensure compliance is coordinated by the Infection Prevention and Control Team. Results will be presented to the Infection Prevention and Control Committee and action plans monitored to demonstrate progress with exception reporting to Board.

The Peterborough Community Services (PCS) Infection Control Committee reports to the Commissioning PCT Infection Control Committee which is chaired by their Director of Infection Prevention & Control where monitoring of compliance to relevant action plans e.g. the Health and Social Care Act 2008 (Code of Practice 2009) and performance review of agreed targets.

Notification of Outbreaks

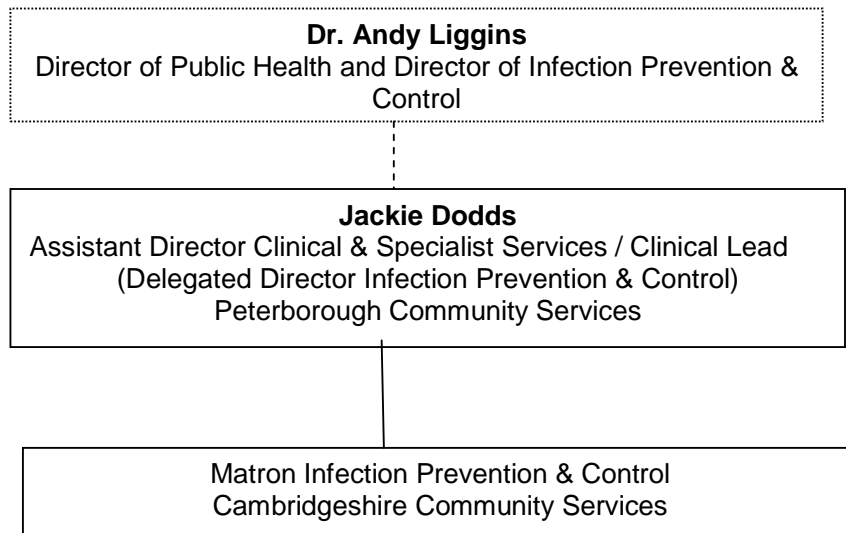
All outbreaks are reported to the Board upon declaration. They are also reported to the Health Protection Agency and the Commissioning PCT.

The Infection Prevention and Control Team (IPCT) are responsible for the practical aspects of infection control and comprise of an Infection Control Doctor (ICD) and Infection Prevention and Control Nurses (IPCN's).

The IPCN's can be contacted by telephone during normal working hours. The microbiology service includes 24 hour advice and this can be accessed via the acute hospital switchboard.

Each department should have an Infection Control Link staff member with whom the IPCT liaise. Link staff will provide advice on the infection control guidelines devised in specific areas and will assist the clinical team to use the procedures and protocols in this manual.

Though the Director in Infection Prevention & Control works within NHS Peterborough this responsibility has been delegated to the Assistant Director of Clinical & Specialist Services / Lead Nurse for Peterborough Community Services.



Training Requirements

All staff to receive their mandatory infection prevention and control training to meet the requirements of the Peterborough Community Services Mandatory Training matrix and the Health and Social Care Act 2008.

REFERENCE:

PLOWMAN ET AL (1999) SOCIO-ECONOMIC BURDEN OF HOSPITAL ACQUIRED INFECTION LONDON: PUBLIC HEALTH LABORATORY SERVICE

1.2 INFECTION CONTROL STRUCTURES WITHIN PETERBOROUGH COMMUNITY SERVICES

THE COMMUNITY INFECTION PREVENTION & CONTROL TEAM

The Community Infection Prevention & Control nurses work in conjunction with the local unit of the Health Protection Agency and are currently based at the Priory Annexe, St. Ives Cambridgeshire PE27 5BB.

Quarterly Infection Control Reports are prepared for the Infection Prevention and Control Committee which in turn exception report to the Integrated Governance sub Committee and Board

NORFOLK, SUFFOLK AND CAMBRIDGESHIRE HEALTH PROTECTION UNIT

The unit provides support to all the health Providers and Commissioning Trusts to ensure that they are able to cover their health protection responsibilities for communicable disease surveillance and control, chemical incidents and emergency planning. They also provide Infection Control advice to independent nursing and residential homes.

1.3 NOTIFIABLE DISEASES

STATUTORY NOTIFICATION

Infectious diseases, which are listed in tables A and B, whether confirmed or suspected, must be notified to the Consultant for Communicable Disease Control (CCDC) by the attending doctor.

Prompt notification and reporting of disease is essential.

The objectives of notification are:

1. To collect accurate and complete epidemiological information on the disease.
2. To ensure prompt and appropriate control measures to prevent the spread of infection.

Any doctor who considers that a patient is suffering from a notifiable disease (see Section 1.3) has a statutory duty to notify the Proper Officer (Consultant in Communicable Disease Control) of the local authority using the standard notification procedure.

Table A - Diseases Notifiable under the Public Health (Control of Disease) Act 1984:

Cholera	Relapsing Fever
Food Poisoning	Smallpox
Plague	Typhus

Table B - Diseases Notifiable under the Public Health (Infectious Diseases) Regulations 1988:

Acute Encephalitis	Ophthalmia Neonatorum
Acute Poliomyelitis	Paratyphoid Fever
Anthrax	Rabies
Diphtheria	Rubella
Dysentery (amoebic or bacillary)	Scarlet Fever
Leprosy	Tetanus
Leptospirosis	Tuberculosis
Malaria	Typhoid Fever
Measles	Viral Haemorrhagic Fever
Meningitis	Viral Hepatitis
Meningococcal Septicaemia (without meningitis)	Whooping Cough
Mumps	Yellow Fever

Table C - Non-Statutory Notifiable Diseases

It has been agreed that although the following diseases are not statutorily notifiable, the Consultant in Communicable Disease Control should be informed of their occurrence:

- AIDS
- Legionnaires' Disease
- Listeriosis
- Psittacosis
- CJD
- SARS

1.4 CONTACT INFORMATION

INFECTION PREVENTION AND CONTROL NURSES (Provider Organisations)

Christopher Sharp	01480 308206
For out of hours Infection Control advice - please contact the on-call microbiologist via the acute hospital switchboard.	

NORFOLK, SUFFOLK AND CAMBRIDGESHIRE HEALTH PROTECTION UNIT (CAMBRIDGESHIRE UNIT)

Cambridgeshire and Peterborough Health Protection Unit – Administration	01480 398500
Dr Bernadette Nazareth Consultant in Communicable Disease Control	
Dr Kate King Health Protection Medical Specialist	
Audrey Pepperman Health Protection Nurse Specialist	
Emergency contact out of hours via Medicom 01603 481221	

LABORATORIES (MICROBIOLOGY)

Addenbrookes Hospital	01223 257035 / 257057
Hinchingbrooke Hospital	01480 416416
Papworth Hospital	01480 364321
Peterborough and Stamford Hospital	01733 874657
Queen Elizabeth Hospital, Kings Lynn	01553 613772

ENVIRONMENTAL HEALTH DEPARTMENTS

Cambridge City Environmental Health Department	01223 457000
South Cambridgeshire Environmental Health Department	08450 450500
East Cambridgeshire Environmental Health Department	01353 665555
Fenland Environmental Health Department	01354 654321
Peterborough Unitary Authority Environmental Health Department	01733 747474

DEPARTMENTS OF GENITO-URINARY MEDICINE

Addenbrooke's Hospital	01223 217239/ 01223 217774
Peterborough Hospital	01733 314666/ 01733 874949
Hinchingbrooke Hospital	01480 416461
Out of hours service not available	

ACUTE INFECTION CONTROL TEAMS

Addenbrooke's Hospital, Cambridge	01223 217497
Peterborough District Hospital	01733 874164
Hinchingbrooke Hospital, Huntingdon	01480 416160
Queen Elizabeth Hospital, Kings Lynn	01553 613613

OCCUPATIONAL HEALTH DEPARTMENT

Anglia Support Partnership, Swan House, Gloucester Centre, Peterborough	01733 316519
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1.5 SUMMARY OF PRECAUTIONS REQUIRED FOR INFECTIOUS DISEASES

This Section is to enable you to manage patients with an infectious disease. This is a guideline only and if you have any queries please contact the Infection Prevention and Control Team.

These precautions are in addition to Standard Infection Control Precautions Section 2.1.

DISEASE	CATEGORY OF ISOLATION	STATUTORY NOTIFICATION	COMMENTS
Agranulocytosis	Protective	No	
Anthrax (Pulmonary)	High Security Isolation Hospital	Yes	DO NOT ADMIT to District General Hospital
Anthrax (Cutaneous)	Source	Yes	
Aspergillosis	None	No	
Beta-haemolytic streptococcus: Group A (not throat) Group B (only SCBU and neonates)	Source	No	Until testing negative or 24 hours of appropriate antibiotic treatment.
Bronchiolitis in infants	Source	No	Until clinically well
Brucellosis	None	No	
Burns-extensive non-infected	Protective	No	
Campylobacter enteritis	Enteric	Yes	Until symptom free. Staff sufferers should contact Occupational Health.
Chickenpox (Varicella Zoster Virus)	Source	Yes	Until lesions are dry (normally 7 days from start of eruptions). Exclude staff and others who are not immune.
Cholera	Enteric	Yes	

<i>Clostridium difficile</i>	Enteric	No	Please refer to policy
Cryptosporidiosis	Enteric	No	Until symptom free.
Cytomegalovirus	None	No	Risk to immuno-compromised and pregnant contacts.
Diarrhoea of unknown origin	Enteric	No	Until symptom free and/or cause identified.
Diphtheria	Source with negative pressure ventilation	Yes	Until tested negative.
Dysentery: Bacillary Amoebic	Enteric Enteric	Yes Yes	
Erysipelas	Source	No	24 hours from start of therapy.
Erythema infectiosum (Slapped Face Syndrome)	Source	No	
E coli (Escherchi Coli)	Enteric	Yes	
Gastroenteritis, viral (Norwalk,SRSV)	Enteric / respiratory	Yes	Contact Infection Control Team.
German Measles (rubella)	Source	Yes	Exclude non-immune pregnant staff.
Giardiasis	Source/Enteric	No	
Glandular fever (Epstein Barr varius)	None	No	
Gonorrhoea	None	No	Please contact GUM
Hepatitis: HAV	Enteric	Yes	

Hepatitis: HBV HCV	None	No	
Herpes simplex (Cold sores)	Source (for infants)	No	Staff affected to contact Occupational Health. Lesions to be covered.
Herpes zoster (Shingles)	Source	No	Until lesions dry. Exclude staff who are not immune
HIV (AIDS)	None	Yes	
Impetigo	Source	No	Until negative cultures Usually 24 hours
Influenza	Respiratory	No	
Influenza other e.g. SARS, Avian flu	Respiratory	No	Contact ICT
Legionnaires disease	Nil	No	Contact Microbiologist
Leptospirosis	None	Yes	
Listeriosis	Enteric	Yes	
Malaria	None	No	
Measles	Source	Yes	Normally 7 days from onset of rash. Contact ICT.
Meningococcal Meningitis	Source	Yes	Contact the ICT and HPA. Isolate for 24 hours. Close contacts may require antibiotic prophylaxis 48 hours after onset usually through GP.
Meningo-encephalitis (Acute)	Source	No	

MRSA	Source	No	Please refer to policy
Mumps (Infectious Parotitis)	Source	Yes	For 9 days after onset of parotid swelling. Notify ICT.
Ophthalmia Neonatorum	Source	No	24 hours treatment
Parasalmonellatyphoid Fever and carriers (typhoid fever)	Source/Enteric	No	3 negative stool cultures.
Plague	High Security Isolation Hospital	Yes	DO NOT ADMIT to District General Hospital
Pneumonia: Pneumococcal (lobar) Staphylococcal Broncho-atypical Pneumocystis	None None None None	No	
Poliomyelitis (Acute)	Source/Enteric	Yes	
Psittacosis	Source/Respiratory	No	Until symptom free.
Puerperal Sepsis	Source	No	
Pyrexia (of unknown origin)	Source	No	Until symptom free and or cause known.
Rabies	Source	No	Contact Consultant Microbiologist
Respiratory Syncytial Virus	Source/ Respiratory	No	Until clinically well
Rotavirus	Enteric	No	
Salmonella	Enteric	No	
Scabies	Source	No	Please refer to policy

Scarlet Fever	Source	No	24 hours treatment
Shigella	Enteric	No	
Tuberculosis: Suspected or Smear positive (<i>Acid fast bacilli</i> seen in sputum) Smear negative Multi Drug Resistant (known or suspected)	Source/Respiratory None Source/Respiratory	Yes	Contact TB Nurse Specialist.
Variant Creutzfeldt-Jakob Disease (vCJD)	None	Yes	Consult ICT. Please refer to Policy
Viral Haemorrhagic Fever e.g. Marburg Disease	High Security Isolation Hospital	Yes	DO NOT ADMIT to District General Hospital
Whooping Cough	Respiratory	Yes	

SECTION 2 – INFECTION CONTROL

2.1 STANDARD INFECTION CONTROL PRECAUTIONS

Since it is impossible to identify some infectious patients (especially those infected with HIV, Hepatitis B or C) a system of standard precautions (DoH 1990) has been adopted in all health care work.

Standard precautions form the basis of much of this guidance, therefore, the following principles are dealt with in more detail within this section.

- Hand decontamination.
- Protective clothing / PPE
- Collection, labelling and handling of specimens.
- Management of sharps.
- Needlestick Injury.
- Immunisation of staff.
- Management of spillage.
- Safe disposal of contaminated waste.
- Sterilisation and disinfection of reusable instruments and equipment.

All bodily fluids must be treated as potentially infectious, therefore, safe working practices must be followed at all times.

It is necessary to make an assessment of the likely degree of contact with blood, body fluids and mucous membranes in order to decide the correct level of precautions to be taken

Every patient should be regarded as a potential risk.

The following bodily fluids have the capacity to carry a blood borne infection:

Blood
Cerebrospinal fluid
Peritoneal fluid
Pleura; fluid
Pericardial fluid
Synovial fluid
Amniotic fluid
Semen
Vaginal secretions
Breast milk

In addition, any other bodily fluid which may contain blood including:

Urine
Faeces
Vomit
Saliva

Also unfixed tissues and organs.

REFERENCES

Health and Safety at Work Act (1974) London: HMSO 1974.

Management of Health and Safety at Work Regulations 1992.

Good Practice in Infection Control, Royal College of Nursing, March 2000.

2.2 HAND DECONTAMINATION

2.2.1 The Importance of Good Hand Cleaning Technique

Hand washing is **the single** most important measure in reducing the spread of infection. Hands are the principle route of cross infection. The level of hand hygiene will be determined by the activity or area of practice.

Social handwash	Using liquid soap.
Aseptic/hygiene handwash	Using an antiseptic solution.
Surgical handwash	Using an antiseptic solution. More prolonged and thorough hand wash prior to gowning and gloving in ultra clean environments.

2.2.2 When to clean hands

This is determined by actions - those completed and those about to be performed. A non exhaustive list is given below. Hands should be cleaned at the point of care as highlighted within the Cleanyourhands campaign (Appendix 7.1, 7.2 and 7.3)

2.2.3 Routine washing of hands

- Before preparing, eating, drinking or handling food.
- Before and after smoking.
- Before and after visiting the toilet or assisting patients with this activity.
- Before starting work (remove jewellery, e.g. rings) and after leaving an occupational area.
- After handling contaminated items such as dressings, bedpans, urinals, urine drainage bags and nappies.
- Before putting on gloves and after removing them.
- Before and after removing any protective clothing.
- After blowing your nose, covering a sneeze.
- Whenever hands become visibly soiled.

2.2.4 Hand Care

- Keep nails clean and short.
- Do not wear artificial or gel nails or nail polish.
- When washing hands, wrist watches should be removed.
- Sleeves should be rolled up to the elbow.
- Nail brushes should not be used for routine hand washing as they damage the skin and encourage shedding of cells.
- Nail brushes, in specialist units, must be single use disposable or single use autoclaveable after each use.

2.2.5 Sequence of Events Appendix 3

- Only use designated hand washing basin.
- Wet hands under running water.
- Dispense one dose of soap into cupped hand.
- Hand wash for 10-15 seconds vigorously and thoroughly, without adding more water, covering mid way up the arm.
- Rinse hands thoroughly under running water.
- Dry hands with a disposable paper towel or under hot air dryer.
- Dispose of the paper towels in a foot operated bin. The lid should not be opened by hands.

2.2.6 Hand Sanitisers/Alcohol Rubs and Gels (HS)

These solutions are an effective decontamination agent, but should only be used on visibly clean hands. Build up may occur after consecutive uses in which case hands must be washed with soap and water.

- Dispense the required amount of solution onto the hands.
- Rub vigorously, using handwashing technique, ensure solution covers all hand surfaces until hands are dry.

When visiting patients in their home, it is important to do a risk assessment of hand washing facilities. If these are not adequate then HS may be used on visibly clean hands. Disposable wipes could be used on soiled hands followed by HS.

It is recommended (NICE 2003) that everyone involved in providing healthcare in the community must be trained in hand decontamination, the use of protective clothing and safe disposal of sharps. This includes patients, carers and health and social care personnel.

Apply an emollient hand cream regularly to protect the skin from the drying effects of regular hand decontamination. If a particular soap, antimicrobial hand wash or HS causes skin irritation seek occupational health advice.

2.2.7 Hand wipes – Use of

These are appropriate for use in a number of situations, e.g. for community staff, when hand washing is compromised by inadequate facilities available to them. This should be followed up by the use of HS

Inpatients should be routinely offered hand wipes when unable to use the hand wash basin facilities. This is particularly important after using a commode, bedpan or urinal and before eating a meal or snack. Patients and their relatives should be encouraged to provide hand wipes whenever possible to ensure that this is carried out.

All hand hygiene products must be approved for use in the organisation by the IPCT.

REFERENCES

Coello R, Glenister H, Fereres J, (1993) *The Cost of Infection in Surgical Patients : A case Control Study. Journal Hospital Infection 93, pp239-250.*

Hand Decontamination Guidelines published by the Infection Control Nurses Association (ICNA) 2002.

McGinley K, Larson E, Leyden J. (1988) 'Composition and density of microflora in the subungual space of the hand.' *Journal of Clinical Microbiology 26, pp 950 –3.*

Teare L (1999), *Handwashing, BMJ, 318, p686.*

NICE Guidelines, Prevention and Control of Healthcare Associated Infection in Primary and Community Care. June 2003.

(NPSA) EOESHA Principles for inclusion in HHPS.

2.3 PERSONAL PROTECTIVE EQUIPMENT (PPE)

2.3.1 Gloves

Disposable gloves must be worn for direct contact with blood, body fluids and non-intact skin or mucous membranes. Gloves must be discarded after each procedure and always between patients. The use of gloves is not an alternative to thorough hand-washing.

2.3.2 Risk Assessment

The risk assessment should take account of various factors that include:

- Nature of the task to be undertaken.
- Risk of contamination to either patient, service user or worker
- Barrier efficacy of gloves, both surgical and examination gloves can fail.
- Is there a need to double glove?
- Sterile or non-sterile gloves required.
- Patient/user sensitisation.
- Handling chemicals or disinfectants, which could cause skin irritation or are under COSHH regulations.

As a general rule, if the risk is to the patient or service user then '**Sterile**' gloves are required. If the risk is to the worker then '**Non-sterile**' gloves will probably be sufficient. When handling chemical disinfectants you may need to wear industrial or household gloves.

Following the risk assessment, the next issue is what type of glove should be used:

Glove Usage

PROCEDURE TO BE PERFORMED	TYPE OF GLOVE
<ul style="list-style-type: none">• All Surgery	Sterile, non-powdered, surgeons gloves: <i>latex or synthetic alternative (nitrile or polychloroprene).</i>
<ul style="list-style-type: none">• All aseptic procedures	Sterile, non-powdered, examination gloves: <i>latex or synthetic alternative (nitrile or vinyl pigmentised powder free).</i>
<ul style="list-style-type: none">• Sterile pharmaceutical preparations	Non-sterile, non powdered gloves: <i>latex or synthetic alternative (nitrile or polychloroprene).</i>
<ul style="list-style-type: none">• Handling aldehydes	Use nitrile or polychloroprene for handling aldehydes.
<ul style="list-style-type: none">• Cleaning with detergent.	Vinyl gloves – non powdered.
<ul style="list-style-type: none">• Food handling, preparation and serving.	Vinyl gloves – non powdered.
If staff have an allergy with a particular type of glove they should be referred to their occupational health department	

Reference: Adapted from ICNA, 1999

2.3.4 Gowns and aprons

Disposable plastic aprons must be worn whenever contamination of clothing is possible.

As with handwashing, selection and use is determined by risk assessment of tasks to be undertaken.

Aprons are single use items.

Gowns are required to be worn for sterile surgical procedures (

2.3.5 Face Protection

Protective face wear should be worn where there is a risk of blood or other bodily fluids splashing onto the face. Face protection may also be required during the preparation of some cytotoxic chemotherapy and during the manual decontamination or cleaning of instruments. The wearing of full face visors is recommended.

REFERENCES

Beck W, Belkim N, Meyer K, (1995) 'Divide and conquer – protection, comfort and cost of the surgeons gown'. *American Journal of Surgery* Vol. 169, pp 286-287, March.

Callaghan I, (1998) 'Bacterial contamination of nursing uniforms' *Nursing Standard*, Vol. 13, No 1, pp 37-42; September 23rd

Eason S (1995) 'Are cover gowns necessary in the NICU for parents and visitors?' *Neonatal Network*, Vol. 14, No 8, p50 December.

Granzow J, Smith J, Nicholas R, Waterman R, Muzik A, (1998) 'Evaluation of the protective value of hospital gowns against blood strike-through and Methicillin resistant staphylococcus aureus penetration'. *American Journal of Infection Control* Vol. 26, No 2, pp 85 -93 April 1998.

Infection Control Nurses Association (1999) 'Glove Usage Guidelines', September 1999.

Medical Devices Agency, June 1998 *Latex Medical. Powdered. Latex Medical Gloves. MDA SN9825.*

Health Service Circular. *Latex Medical Gloves and Powdered Latex Medical Gloves. HSC 1999/186.*

NICE Guidance, June 2003. *Prevention and Control of Healthcare Associated Infections in Primary and Community Care.*

2.4 ASEPTIC TECHNIQUE

2.4.1 Rationale

Aseptic technique refers to practice used to prevent the risk of infection. Some of these practices will also reduce the healthcare worker's risk of exposure to potentially infectious blood and tissue during clinical procedures.

Aseptic technique is vital in reducing the risk of healthcare associated infection, and associated morbidity and mortality, caused by invasive procedures. An aseptic technique should be used during any invasive procedure which breaches the body's natural defences, i.e. the skin or mucous membrane, or when handling equipment which will enter a normally sterile body cavity, such as urinary catheters.

2.4.2 General recommendations

The principles of asepsis must be observed when undertaking any invasive clinical procedure.

Key principles of asepsis:-

- Keep the exposure of the susceptible site to a minimum
- Appropriate personal protective equipment to be worn
- Sterile packs should be checked for evidence of damage or moisture penetration and for expiry date
- Contaminated or non-sterile items must not be placed on the sterile field
- All disposable items must be disposed of in accordance with the waste policy
- Single use items must not be re-used
- Activity should be reduced in the immediate vicinity of the area in which the procedure is to be performed.

Procedure for surgical hand decontamination using antiseptic solution

- Wet the hands under tepid running water
- Wash all surfaces with an aqueous antiseptic solution for 3 minutes
- Rinse hands well and dry thoroughly

Preparing the patient for a clinical procedure

Good skin preparation helps to reduce the risk of infection by lowering the chances of bacteria from the patient's skin will enter the wound.

Skin preparation for surgical procedure

The site should be washed with soap and water (this can be done by the patient or by staff).

NOTE: Shaving is not recommended because it causes small nicks and abrasions in the skin where bacteria grow and multiply. Hair around the site may be clipped short if it might interfere with the procedure.

The site should then be decontaminated with a single use application of alcoholic chlorhexidine gluconate solution e.g. ChlorPrep (2% Chlorhexidine gluconate in 70% Isopropyl alcohol). Povidine iodine 10% alcoholic solution can be used for patients with chlorhexidine sensitivity. Allow antiseptic to dry before continuing with the procedure.

Alcohol-based antiseptics should not be used on the vagina, cervix or other mucous membranes because they will irritate these tissues. Use 2% aqueous chlorhexidine gluconate or 10% aqueous Povidine iodine if disinfection is required for mucous membranes.

Before giving an injection

If the site appears clean no further cleaning is necessary. If there is visible dirt, wash the injection site with soap and water (DH 2006). Then use 2% Chlorhexidine gluconate in 70% Isopropyl alcohol e.g. ChloraPrep and allow to dry before proceeding to insert the needle). Povidine iodine 10% alcoholic solution can be used for patients with chlorhexidine sensitivity

Unexpected patient movement at the time of an injection can lead to accidents. Therefore, always warn patients when you are about to give them an injection.

Before phlebotomy

The site should be visibly clean and then disinfected and allowed to dry thoroughly. For disinfection ideally use 2% Chlorhexidine gluconate in 70% Isopropyl alcohol

Before taking blood cultures

Blood cultures should not normally be carried out in the community setting. If in exceptional circumstances this is undertaken, strict aseptic technique must be followed according to the DH 2007 Saving Livings guidance on Taking Blood Cultures at:-

2.4.3 Creating and maintaining a sterile field

A sterile field is an area created by placing sterile towels or sterile surgical drapes around the procedure site and on the surface where sterile instruments and other items needed during the procedure are placed.

Only sterile items are free of potentially harmful micro organisms. Once a sterile object comes into contact with a non-sterile object or person, or with dust or other airborne particles, the object is no longer sterile.

To maintain the sterile field

- Do not place sterile items near open windows or doors
- Place only sterile items within the sterile field
- Do not contaminate sterile items when opening, dispensing or transferring them
- Do not touch non-sterile items with sterile gloves
- Do not touch sterile items with non-sterile gloves

Be conscious of where your body is at all times and move within or around the sterile field in a way that maintains sterility

Creating a safe environment

Specific rooms should be designated for performing surgical procedures and for processing instruments and other items. Limiting the traffic and activities in these areas will lower the risk of infection.

- To maintain a safe environment:
- Limit the number of people who enter these areas
- Close doors and windows during procedures to minimise dust and eliminate insects
- Before a new patient is brought into the room, clean and disinfect all surfaces that may have been contaminated during the last procedure – including examination couches, dressing trolleys and examination/operating lamps

Prophylactic antibiotics are often inappropriately used, can contribute to the development of resistant micro-organisms and are no substitute for good infection control practice.

REFERENCES

Dougherty L & Lister S, (2008) 'The Royal Marsden Hospital Manual of Clinical Nursing procedures'

Saving Lives : a delivery programme to reduce Healthcare associated infection including MRSA 2007

2.5 SHARPS MANAGEMENT

The following guidance is to be read in conjunction with the organisation's Sharps Policy.

2.5.1 Important Points

Safe handling and disposal of sharps is a vital component of the Standard Precautions approach to reducing the risk of transmission of blood borne viruses.

Good practice involves:

- Correct assembly of the sharps bin with the lid.
- Completion of the details on the bin label upon assembly, locking and disposal.
- Filling the bin to no more than the marked fill line.
- Being aware of the first aid treatment and action to be taken following a needle-stick injury.
- Being aware of the follow up treatment available following a dirty needle-stick injury.

Provision of training, sufficient numbers of sharps boxes and safe systems of work are a health and safety responsibility of the management of the Organisation .

2.5.2 Disposal of Sharps

Sharps containers must:

- conform to BS 7320 and UN 3291.
- when in use be sited so that they cannot be tampered with.
- be sealed and replaced when contents reach the fill line.
- be taken to the point of use for the subsequent disposal of each sharp item.
- be marked with the ward/department/unit name or number, the name of the person who assembles it, the name of the person who locks it and finally the name of the person who disposes of it.
- be stored securely and be accessible only to authorised handlers.
- ensure the sharps container is placed on a hard surface when being used e.g. worktop and should never be held close to the body or placed on lap

It is the **personal** responsibility of any person using a sharp item, to dispose of it correctly.

All used sharp items must be discarded into an approved sharps bin, immediately after use.

Syringes and needles should be discarded intact as one unit.

An adequate number and size of sharps bins, should be located and conveniently placed in clinical areas.

Needles must not be re-sheathed, bent or broken.

No attempt is to be made to retrieve items from sharps containers.

Large pieces of broken glass and china should be placed into an approved container for disposal (other than sharps bin).

REFERENCES

AYLIFFE GAJ, FRAISE AP, GEDDES AM, MITCHELL K (2000) *Control of Hospital Infection A Practical Handbook* London: Arnold

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British Standards Institute (1990) BS7320. 'Specification for Sharps Containers'. London BSI 1990.

Health Service Advisory Committee (1992). 'Safe Disposal of Clinical Waste'. London.

Perry C, (1999) 'Using the Audit Cycle to Monitor Sharps Disposal Practice'. British Journal of Infection Control, May 1999. pp 6-8.

The Environmental Protection Act (Duty of Care) Regulations 1991. London, HMSO.

United Nations - Standard 3291.

NICE Guidance June 2003. Prevention and Control of Healthcare Associated Infections in Primary and Community Care.

2.6 NEEDLESTICK INJURIES

This is to be read in conjunction with the Organisation's Sharps Policy

2.6.1 Main Risks from Inoculation Injury and Blood Contamination

The main concern is the transmission of blood-borne viruses, i.e.:

- HEPATITIS B (HBV)
- HEPATITIS C (HCV)
- HUMAN IMMUNODEFICIENCY VIRUS (HIV)

2.6.1b Risk From Injuries

The risk of transmission is higher (particularly for HIV) when there is:

- A deep injury, i.e. when the injury is deeper than a superficial scratch drawing blood.
- Visible blood on the device that caused the injury (including teeth).
- Injury with a needle that had entered from the source patient's blood stream.

2.6.2 Following an inoculation Injury, from a needle contaminated with blood or Highly Suspected Person to another Recipient the Risks are:

- | | | |
|--------------------------------|-------|-----|
| • Hepatitis B | 1:3 | HBV |
| • Hepatitis C | 1:30 | HCV |
| • Human Immunodeficiency Virus | 1:300 | HIV |

It has been estimated that the risk of acquiring HIV through mucous membrane exposure (e.g. splashed with contaminated body fluids) is much less, probably 1 per 1000 injuries (0.1%).

Remember if post exposure prophylaxis for HIV is to be given this should happen as soon as possible after exposure and preferably within an hour of injury.

2.6.3 Action in the event of any inoculation injury, bite or contamination with blood

- Encourage bleeding, squeeze the injury, do not suck.
- Wash the skin thoroughly with soap and water, do not scrub.
- Irrigate contaminated mucous membranes, e.g. mouth and eyes with large quantities of water or splash kits where provided.
- Cover the injury with a waterproof dressing and Inform the nurse in charge or the line manager.
- Report to Occupational / Staff Health or, out of hours contact the Walk in Centre at The City Care Centre **01733 293800** who will discuss appropriate procedure and Post Exposure Prophylaxis.
- Complete an online Datix incident report form.

REFERENCES

Guidance for Clinical Health Care Workers: Protection against Infection with Blood Borne Viruses, UK Health Departments (1999).

Exposure To Hepatitis B Virus: Guidance On Post Exposure Prophylaxis Communicable Disease Report. Vol. 2, Review No 9, August 1992.

Guidance on the Investigation of Management of Occupation Exposure to Hepatitis C -Communicable Disease Public Health (1999), pp 2258-2262, Ramsey.

HSC 2002/011 Hepatitis C Infection. HCW 2002.

Post Exposure Prophylaxis: Eye of the Needle. Guidance from the UK Chief Medical Officer, DoH. February 2004.

2.7 WASTE SEGREGATION

The following guidance is to be read in conjunction with the Organisation's Waste Management Policy.

Waste generated is segregated into four principal streams for disposal.

Black bags



Use for all domestic-type wastes e.g. paper, food, dead flowers.
The wastes must not provide an infection risk and will not derive from patient treatment.
Many of these wastes may be recycled, and should be wherever possible.

Yellow bags



Use for all non-sharp wastes arising from patient care. This will include dressings; gloves and other protective equipment; and used, single use equipment.
The wastes will be treated as having an infection risk and will be classified as "hazardous" for disposal.
None of these materials should be contaminated with any cytotoxic or cytostatic medicines.

Sharps bins (yellow lid)



Use for infectious and non-infectious sharps (needles, blades etc.), syringe bodies (including those containing partially discharged medicines); used ampoules and vials; dropped and refused medicines; and associated equipment.
None of these materials should be contaminated with any cytotoxic or cytostatic medicines.
Add an absorbent pad to each new bin to soak up any excess liquid

Sharps bins (purple lid)



Use for similar materials as described above (yellow-lidded sharps bin) but contaminated with cytotoxic or cytostatic materials.
This bin should also be used for any surplus or expired cytotoxic or cytostatic medicines (rather than return to pharmacy).
Add an absorbent pad to each new bin to soak up any excess liquid

Do not discharge part-filled syringes into the sharps box.

If any dressings etc normally placed in the yellow bag are contaminated with Cytotoxic or cytostatic materials, they must either be placed in a yellow bag with a purple stripe or the yellow bags must be clearly labelled to indicate cytotoxic contents

Cytotoxic and cytostatic wastes must be segregated, as they require destruction by incineration under different conditions to those of other infectious wastes.

The adoption of a simplified segregation system means that hazardous and non-hazardous materials are mixed in the same container. This is permitted only where no adverse reaction will occur or where the future treatment of the waste will not be compromised.

Other specialised containers may be in use for certain dedicated activities. For example, amalgams from dental units will be kept in white plastic pots.

2.7.1 Assessment of “Infectious”

Infectious waste is essentially a waste that poses a known or potential risk of infection, regardless of the level of infection posed. Even minor infections are included within the definition of infectious.

General assumptions

Healthcare waste generated from Healthcare practices, or produced by healthcare workers in the community, is considered to be infectious waste unless assessment to the contrary has taken place. A healthcare practitioner bases this assessment on item and patient-specific clinical assessment.

Municipal waste from domestic minor first aid and self-care that does not require staff involvement is assumed to be non-infectious unless indicated otherwise. Therefore, soiled waste such as nappies, sanitary products and plasters are not considered to be infectious unless a healthcare practitioner or the producer gives advice to the contrary.

Municipal-type waste from industrial and commercial premises is assumed to be non-infectious providing that a risk assessment has been conducted. Therefore, soiled waste such as plasters and sanitary products are not considered to be infectious unless a healthcare practitioner, as the producer, gives advice to the contrary.

2.7.2 Offensive / Hygiene Waste

The term “offensive” has been introduced to describe waste which is non-infectious and which does not require specialist treatment or disposal, but which may cause offence to those coming into contact with it.

Examples of offensive waste include:

- incontinence and other waste produced from human hygiene;
- sanitary waste;
- nappies.

Although non-infectious offensive wastes may be sent for disposal in landfill sites and suitably licensed facilities, this waste (at least that produced in quantity) should not be placed in the domestic refuse but should be collected separately.

The offensive waste stream should not include any of the following:

- sharps;
- body parts, organs or blood products;
- waste chemicals;
- medicinal waste that consists of pharmaceutically active substances;
- dental amalgam;
- wastes containing residual medicines excreted, secreted or otherwise present
- in any bodily fluid.

Although the waste stream must be assessed to determine whether the waste is likely to be infectious, the general assumption made is that such waste presents no risk of infection unless indicated by a healthcare practitioner e.g. If a person is undergoing treatment for a known or suspected Urinary Tract Infection, the waste is likely to be considered infectious and disposal via incineration or treatment arranged accordingly.

If it is decided that such wastes may be confidently isolated from infectious waste streams, they may be packaged in yellow bags with a black stripe (“tiger bags”) and sent for landfill at an appropriate facility.

2.7.3 Spillage Procedures

Individual units/services should produce clear written procedures, specific to local situations and wastes for dealing with spillages which:

- specify the reporting and investigation procedures;
- specify the use of a safe system of work for clearing up the waste;
- set out appropriate requirements for decontamination;
- specify the protective clothing to be worn.

The ready availability of appropriate spillage kits helps to ensure that the correct action is taken in the event of a spillage. Such kits are particularly useful at storage, waste treatment and waste disposal sites, and should be carried on all vehicles carrying healthcare waste.

Spillage kits may contain, for example:

- disposable gloves;
- a disposable apron;
- an infectious waste sack/sharps bin;
- paper towels;
- disposable cloths;
- disinfectant recommended;
- a means of collecting sharps.

Appropriate equipment for collecting spilled waste and placing it in new containers should be provided. Sharps must not be picked up by hand.

Spilled waste and any absorbent materials need to be placed in an infectious waste container for disposal.

2.7.4 Container closure and labelling

Black bags	The bags should be sealed when $\frac{3}{4}$ full by either tying a knot in the neck or by securing with a tag or tape. Staples must not be used, as the bag will tear.
Yellow bags	The bags should be sealed when $\frac{3}{4}$ full by securing with a tag bearing a unique number. The tags are issued to each producer from a central source. The unique numbers are recorded and provide an audit trail back to the producer. Staples must not be used, as the bag will tear. The bags will most likely be printed with the words "For Incineration Only".
Sharps bins	The bins should be sealed either when $\frac{3}{4}$ full or after 3 months (whichever is sooner). The label on the box must be completed with the name of the person sealing the bin and the date on which it was sealed.

Do not place sharps bins inside any bag for disposal.

2.7.5 Other wastes

There are a limited number of options available to community healthcare workers for the handling and disposal of the non-sharps waste that is generated during the treatment of patients in their home.

Disposal via domestic waste bin

If patients are treated in their home by a community nurse or a member of the NHS profession, any waste produced as a result is considered to be the healthcare professional's waste.

National guidance states that wastes generated by a healthcare worker within a patient's home **must not** be disposed of within the domestic waste bin. This is because under the Environmental Protection Act 1990 it is unlawful to deposit, recover or dispose of controlled waste without a waste management licence, contrary to the conditions of a licence or the terms of an exemption, or in a way which causes pollution of the environment or harm to human health. Infectious healthcare waste is prohibited from landfill.

The Duty of Care placed upon the healthcare worker requires that the waste is managed properly, recovered or disposed of safely and is only transferred to someone who is authorised to keep it. Householders are exempt for their own household waste.

There are two options available for the removal (in yellow bags) of wastes generated by a healthcare worker at a patient's home:

- **Removal by the healthcare worker to their work base; or**
- **Collection by a third-party contractor e.g. local authority.**

Mixed domestic waste does contain small amounts of plasters, small dressings and incontinence products. Where the healthcare worker produces the same or similar items, these – with the following considerations – can be placed in the domestic refuse (with the householder's permission).

The following should be considered:

the size of the dressing – small dressings no larger than a dressing pad (that is, 130 mm x 220 mm) can be disposed of as domestic refuse;

the type of dressing – specialised antimicrobial types of dressing should be disposed of as offensive/hygiene or medicinal waste as appropriate;

the quantity produced – where a number of small dressings are produced regularly over a period of time, it may be appropriate to dispose of these as offensive/hygiene waste. If, however, the amount produced is relatively small and consistent with that likely to be found in the household waste stream, it may be discarded in the domestic refuse;

Where such waste is placed in the domestic refuse, the waste should be wrapped in a plastic sack. The wrapping should not be yellow but ideally white or opaque e.g. sandwich bags and bin liners.

If a patient treats themselves in their own home, any waste generated as a result is considered to be their own, it is not subject to the same restrictions, and may be placed in a domestic waste stream. Only where a particular risk has been identified (based on medical diagnosis) does such waste need to be treated as hazardous clinical waste. In these cases, local authorities are obliged to collect the waste separately when asked to do so by the waste holder, but may make a charge to cover the cost of collection.

2.7.6 Removal via community healthcare practitioner

Yellow bags



Use for all non-sharp wastes arising from patient care. This will include dressings; gloves and other protective equipment; and used equipment.

The wastes will be treated as having an infection risk and will be classified as “hazardous” for disposal.

None of these materials should be contaminated with any cytotoxic or cytostatic medicines.

Note: If any dressings etc normally placed in the yellow bag are contaminated with cytotoxic or cytostatic materials, they must either be placed in a yellow bag with a purple stripe or the yellow bags must be clearly labelled to indicate cytotoxic contents.

2.7.7 Pharmacy Waste

No cytotoxic or cytostatic medicines should be returned to the supplying pharmacy. All such materials should be disposed off in a purple lidded sharps' container

The following range of medicines – all non-cytotoxic or non-cytostatic – may be returned to the supplying pharmacy (under agreement) for subsequent disposal:

- Expired or surplus medicines;
- Patients' own medicines;
- Inhalers and aerosols (full and part-used) – empty units into yellow bags;
- Potassium permanganate tablets (in container);
- Caustic sticks.

The medicines will normally be moved in a secure pharmacy box or bag.

The medicines must be kept secure pending collection from the nominated point by the waste carrier.

A list of cytotoxic and cytostatic medicines can be found in [appendix 7.4](#).

REFERENCES

HTM 07-01: Safe management of healthcare waste (2006)

2.8 MANAGEMENT OF SPECIMENS

A specimen is defined as any bodily substance taken from a person for the purpose of analysis, such as blood or urine. All specimens should be regarded as potentially infectious, and all members of staff involved in collecting, handling and transporting specimens must follow infection control precautions to prevent transmission of infection.

To reduce risks, the number of persons handling specimens should be kept to a minimum. Everyone handling specimens should be trained and should be aware of related infection control protocols and procedures.

2.8.1 General recommendations

Everyone involved in collecting, handling and transporting specimens should be educated about standard infection control precautions and trained in:-

- Hand hygiene
- The use of personal protective clothing
- The safe use and disposal of sharps

Patients and their carers should be given advice on the collection, storage and transportation of specimens, where appropriate.

2.8.2 Principles of specimen collection

The clinician or person taking any specimens must ensure that the following principles are followed:

- Effective hand washing is performed before and after collection of the specimen
- Appropriate protective clothing is worn when collecting the specimen e.g. non-sterile gloves, aprons and, where splashing is possible or expected, goggles or visor
- Measures are taken to prevent contamination of the sample
- The specimen is taken at the correct time
- The correct specimen container is used
- The specimen container is tightly sealed to prevent leakage
- The outside of the container is free from contamination with body fluid
- The sample is appropriately labelled with patients name, date of birth, hospital number (if applicable) as well as the date and time that the specimen was obtained
- The appropriate request form is completed with details of the patient's relevant medical history, investigation required and dates of any antibiotic treatment received. Please ensure that the correct name is on the specimen container and the request slip
- The specimen container must be placed in an approved specimen bag and sealed, with the request form in the separate pouch which is attached
- The specimen is stored correctly and transported to the laboratory promptly
- The patient's confidentiality is maintained at all times
- All specimen containers should be checked for exterior contamination and disinfected where contamination is identified.

High risk specimens

All clinical specimens should be regarded as potentially infectious. Specimens known or suspected to contain high-risk pathogens such as blood-borne viruses should be marked using a biohazard sticker on both the specimen container and the request form.

Microbiological specimens

Microbiology results are crucial for identification of appropriate antibiotic therapy and application of infection control measures.

To ensure that accurate microscopy, culture and sensitivity results are obtained, steps must be taken to avoid contamination of the specimen with the patient's or clinician's own normal flora.

Antibiotic therapy may affect the specimen and inhibit bacterial growth in the laboratory cultures, and may produce misleading results. If possible the sample for microbiological investigation needs to be collected prior to the patient commencing antibiotic therapy. However, if collected during antibiotic therapy, the specimen should ideally be collected immediately before a dose is administered.

Faeces

Stool specimens should ideally be collected during the first 48 hours of illness. The chance of identifying pathogens diminishes with time after acute illness passes. A spatula must be used to collect a walnut-sized sample of solid stool or appropriate 15mls of liquid stool into a specimen bottle. This should be sufficient for microbiological investigation. If viral infection is suspected the specimen bottle should be $\frac{3}{4}$ full.

In an outbreak, stool specimens should be collected from all the affected persons for bacteriology and virology. The sample for bacteriology should be sent for culture and the sample for virology should be sent for electron microscopy. They should ideally reach the laboratory on the day of collection. If necessary, stool specimens can be stored in a designated specimen refrigerator for no longer than 24 hours. Do not freeze faeces.

Urine

A mid-stream specimen of urine is the best sample for culture and sensitivity. Bladder urine is sterile but it can easily be contaminated during collection by bacteria, which colonise the perineum. The perineum must therefore be cleaned with soap and water prior to specimen collection to help reduce bacterial contamination. Discarding the first several millilitres of urine and collecting 5-10 mls of midstream urine in a sterile container will reduce contamination. The infecting organism is more likely to be detected in concentrated or early morning urine.

A specimen of urine from a catheterised patient should be obtained by aspiration with a sterile 5ml syringe and a fine bore sterile needle from the self-sealing sampling port.

The port should be cleaned with a swab or alcohol wipe (70% Isopropyl alcohol) and the needle inserted through the port.

The catheter should never be disconnected to obtain a sample as this will break the closed system and serve as a portal of entry for micro-organisms.

Indiscriminate sampling should be avoided and sampling should only be carried out when strictly necessary.

Urine samples collected for culture should be examined within two hours of collection, or 24 hours if kept in a designated specimen refrigerator at 4-8°C.

Sputum

Sputum samples should ideally be collected in the morning before eating, drinking or cleaning teeth.

The patient should be asked to cough up material from deep in the lungs and expectorate without saliva into a specimen container. Saliva or mucous from the

back of the nose should not be provided as sputum. The specimen should be delivered to the laboratory as soon as possible, or within 24 hours if refrigerated.

Wound swabs

Taking a wound swab is only recommended when clinical signs of infection are identified and the information gained will affect treatment. Routine swabbing should be avoided (Gould 2001; Parker 2000).

As with all investigations the findings must be reviewed alongside clinical information and treatment should not be based on swab results alone.

If pus is present, a sample obtained by aspiration with a syringe will be the most informative. Loose debris on the wound should be removed, as this is likely to contain high levels of bacteria, which are not representative of the infective organism.

If the wound is dry, moisturising the swab with sterile normal saline makes it more absorbent and increases the survival of bacteria prior to culture (Donovan 1998; Gilchrist 1996). The swab must touch all areas by wiping in a zigzag and rolling motion over the surface of the wound. The swab should then be placed directly into a tube and carefully labelled and sent to the laboratory as quickly as possible.

It is important that the specimen is supported with sound clinical information recorded on the microbiology request form. Details relating to the patient's symptoms of infection and treatment history will assist the microbiologist in making an accurate diagnosis and appropriate recommendations for management.

Sensitivities for antibiotic treatment are not always returned with culture results because many isolates reflect bacterial colonisation, rather than infection. It is worthwhile obtaining advice from the laboratory to discuss results and treatment of the case.

2.8.3 Storage of specimens

For accurate results to be obtained, specimens should be received by the laboratory as soon as possible.

For microbiological investigation, urine and sputum specimens should ideally be examined in the laboratory within 2 hours of collection, and stool samples within 12 hours. However, where this is not possible, urine and sputum specimens must be stored within a designated fridge, but only for a maximum of 24 hours, at 4-8°C. This will help prevent bacteria and contaminants from multiplying and giving misleading results.

However, it must be noted that samples taken for blood culture must not be refrigerated, but must be transported to the laboratory as soon as possible for incubation at 37°C. Samples obtained for non-microbiological investigation also do not need to be refrigerated.

If any clinical specimens are to be stored in a refrigerator, it is essential that:

- There is a refrigerator for the purpose of specimen storage only
- The temperature in the refrigerator is kept between 4-8°C (minimum and maximum temperature to be checked and recorded daily)
- The specimen refrigerator is not accessible to the public
- The specimen refrigerator is cleaned on a weekly basis, defrosted regularly, cleaned and disinfected after any spillage or leakage

2.8.4 Transportation of clinical specimens

Under the Health & Safety at Work Act (1974) all staff have an obligation to protect themselves and others e.g. the public, from inadvertent contamination from hazardous substances.

All staff must therefore be aware of how to deal safely with clinical specimens and how to avoid any spillage or leakage of body fluids.

All specimens must be collected by portering/transport staff in a secure, robust, leakproof container with a biohazard label. These containers must be cleaned and disinfected weekly and after any visible spillage.

All clinical staff transporting specimens from a patient's home to a surgery, clinic or health centre must be provided with a rigid, robust, leak proof container with a tight fitting lid. This container must be identified with both a biohazard sticker and contact telephone number in case the box is lost. Clinical staff must not transport specimens unless such a container is used.

2.9 STORAGE, DISTRIBUTION AND DISPOSAL OF VACCINES

Guidance is available in the UK Guidance on Best Practice in Vaccine Administration which has been distributed to each practice. The guidance can also be downloaded from the website:

http://www.dh.gov.uk/en/Publichealth/Healthprotection/Immunisation/Greenbook/DH_4097254

2.9.1 Storage of Vaccines Equipment Fact Sheet

This is the information obtained from the Department of Health identified in the 'Green Book'. The fact sheet contains information on some of the equipment currently available in connection with vaccine storage and distribution. It is intended as an aid for those in handling of vaccines and does not claim to be comprehensive.

2.9.2 World Health Organisation Product Information Sheets

Contain technical and purchasing information on selected equipment for the storage, transport and the administration of vaccines for the Expanded Programme on Immunisations (EPI). Most of the equipment included has been independently tested at the WHO authorised laboratories, but little of it is manufactured in the UK, therefore is not always readily available. Some items, nevertheless, may be of interest.

Please contact WHO at the address below or website address to obtain a copy:

<http://www.who.int/vaccines-documents/DocsPDF00/www518.pdf>

World Health Programme
Expanded Programme on Immunisation
Cold Chain
Switzerland

Additional web links:-

<http://www.immunisation.nhs.uk/Library>

<http://www.who.int/vaccines-documents>

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Department of Health (1999). *Current vaccine issues: action update*. PL/CMO/99/5, PL/CNO/99/9, PL/CPHO/99/4.

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Kassianos G C (1998). *Immunisation Childhood and Travel Health*. Third Edition. Blackwell Science Ltd.

Northern and Yorkshire Regional Health Authority, *'The Vaccine Cold Chain from Manufacturer to Patient'*.

Wakefield *'Child Immunisation Policy'*. November 1996.

2.10 DEALING WITH SPILLAGES

The following guidance is to be read in conjunction with the organisation's Waste Policy.

It is vital that any spillage is attended to as soon as possible. Under the Control of Substances Hazardous to Health Regulations 1994 (COSHH), assessment of hazards and associated risks to health must be undertaken to ensure the health and safety of employees, patients and other visitors to the healthcare premises.

2.10.1 Responsibilities

All staff involved in the clinical care of patients or the safe handling of waste must be aware of how to deal safely with any spillage which may occur.

2.10.2 Mercury Spillages

Mercury should be avoided where possible. The aim is to minimise risks from mercury spillages and, the ideal would be to reduce the use of Mercury in the occupational area by using alternative equipment. Where equipment containing Mercury is used a mercury spillage kit should be available.

The hazards resulting from mercury exposure are inhalation of fumes, or skin absorption. It is recognised that mercury exposure is of a relatively low risk but it remains important for spillages to be dealt with quickly and effectively.

Spills fall into two categories:

Large spills

Large spills are usually dealt with by a specialist service. However, before specialist help arrives the following points will need to be remembered:

- The area will need to be evacuated and marked off to restrict entry of personnel.
- Ventilate by opening doors and windows.
- Remove all sources of heat, either by switching off or removing from the area.

Small spills

Members of staff using the following points will be able to deal with a small spill using a mercury spillage kit:

- Avoid direct skin contact with the mercury (ensure to wash any mercury from the skin should contamination occur).
- Protective clothing should be used, i.e. disposable plastic apron and non-powdered, non-sterile gloves.
- Use a Mercury Spill Collector, carefully soak up the mercury in the sponge and reseal the container.
- Place the container in a plastic bag, seal and mark 'Mercury Contamination'.
- Arrange for collection.
- Wash hands and arms carefully.
- After all procedures are actioned, complete an incident form as per the Incident and Near Miss Reporting Policy.

2.10.3 Body Fluid Spillage

Body fluid spills are divided into two categories, those which are visibly contaminated with blood and those which are not:-

2.10.3a Blood Spillage

- Spillage of blood should be dealt with as soon as possible.
- Splashes of blood (or any body fluid) on the skin should be washed off immediately with soap and water.
- If there is broken glass do not touch, even with gloved hands – use a paper or plastic scoop and dispose of in the sharps box.
- Ensure staff use Personal Protective Equipment (wearing non-sterile, non-powdered latex gloves and plastic apron) and either sprinkle sodium hypochlorite releasing granules, e.g. Presept, or Sanichlor tablets diluted to cover and soak up the blood.
- The sodium hypochlorite concentration used should be equivalent to 10,000 parts per million (ppm) of available chlorine. In general, this corresponds to a 1:100 (1%) dilution of household bleach, but it is emphasised that the strength of individual brands of bleach may vary.
- If the blood spillage is considerable it is preferable to use chlorine granules which help to absorb the spill along with use of paper towels.
- Leave for 2-5 minutes.
- Wipe up with paper towels and place in the appropriate waste disposal (see Section 2 – 2.9) with your soiled gloves and apron.
- Domestic cleaning using detergent and water should follow.

If the area is carpeted and it is inappropriate to use bleach, clean by:

- Using paper towels.
- Then wash with detergent and water.
- Finish with a carpet cleaner.

An Important COSHH Hazard notice has been attached to Chlorine Releasing Granules:

- Do not use in poorly ventilated areas
- Do not use if suffering from a known chest condition or asthma.

2.10.3b Urine Spills Visibly Contaminated with Blood

Chlorine releasing agents should **not** be used for urine spillages even if it contains visible blood. If a chlorine releasing agent such as Domestos, Titan or Presept is used with urine the resulting fumes are considered a hazard. The recommended practice is:

- Wear non-sterile, non-powdered latex gloves (or other suitable glove – see figure 2, page 14) and plastic apron.
- Soak up with paper towels.
- Use detergent and water on the area after soaking up the spill.
- A chlorine-releasing agent may now be used on the area if necessary.
- Discard gloves, waste materials and apron in a clinical waste bag for incineration.
- Wash hands thoroughly.

2.10.3c Spillages of Body Fluids not Visibly Contaminated with Blood

These spillages will include faeces, vomit, urine and sputum.

- Always wear protective clothing, i.e. plastic disposable apron, disposable powder-free, non-sterile latex or similar (see Section 2 – 2.3 'Protective Clothing').
- Use paper towels to soak up the spill.
- Discard paper towels and any other waste from the spillage into clinical waste bags.
- Clean the contaminated area with hot water and detergent.
- Discard gloves and apron in a clinical waste bag.
- Wash hands.

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2.11 DECONTAMINATION (CLEANING, DISINFECTION AND STERILISATION OF EQUIPMENT)

INTRODUCTION

Cleaning, disinfection and sterilisation are processes which remove or destroy microorganisms. The method of decontamination selected will depend on the infection risk associated with the medical device, the nature of the contamination, time available for processing, the heat, pressure, moisture and chemical tolerance of the item, the availability of processing equipment and risks associated with the decontamination method. Heat sterilization or disinfection is preferred, but if the item is heat sensitive, chemicals may have to be used.

All reprocessing of surgical instruments and other medical devices should be undertaken outside the clinical environment, preferably in central reprocessing suites e.g. CSSD. Local reprocessing in individual departments applies only to Dentistry. Please refer to BDA guidance.

All Primary healthcare workers involved in the processes of cleaning, disinfection and sterilisation **must** be aware of the guidance issued by the DoH on Decontamination. **HSC 2000/032.**

2.11.1 CLASSIFICATION OF INFECTION RISK ASSOCIATED WITH THE DECONTAMINATION OF MEDICAL DEVICES

Risk	Application	Recommendations
High	Items in close contact with a break in the skin or mucous membrane or introduced into a sterile body area.	Single Use disposable / Central Sterilisation
Intermediate	Items in contact with intact skin, mucous membranes or body fluids, particularly after use on infected patients or prior to use on immuno-compromised patients.	Single Use disposable / Sterilisation or high level disinfection
Low	Items in contact with healthy skin or mucous membranes or not in contact with patient.	Single Use disposable / Cleaning to manufacturers recommendations

2.11.2 Cleaning

Physical cleaning removes micro organisms and the organic material on which they thrive. **It is always the essential prerequisite to disinfection or sterilisation.** Cleaning does not destroy the organisms, but removes them and other contaminants which will adversely affect the performance of further decontamination procedures. If thorough cleaning is not performed, blood or other matter may remain on the item during other processes.

2.11.3 Disinfection

This process aims to inactivate micro organisms reducing them to a level below that which is associated with infection. This process does not however kill spores. Disinfection is usually appropriate for those items which are not used for invasive procedures.

2.11.4 Sterilisation

This process kills **micro organisms** including spores. It renders reusable medical devices safe for the procedure to be undertaken. It is recommended that all items penetrating or in contact with mucous membranes or body cavities must be sterile at point of use.

2.12 DECONTAMINATION OF EQUIPMENT CHART (A-Z)

EQUIPMENT OR SITE	A ROUTINE USE	B INFECTED PATIENT
Auroscope Ear Pieces	Single use - disposable is the preferred option.	Single use - disposable is the preferred option.
Airways and endotracheal tubes.	Steam sterilisation (CSSD) or use disposable.	Steam sterilisation (CSSD) or use disposable.
Ambu –masks	Single use - disposable is the preferred option	Single use - disposable is the preferred option
Baby scales	Renew paper after each baby and clean the scales with a detergent wipe at the end of each session.	Renew paper after each baby or immediately after soiling and clean the scales with a detergent wipe at the end of each session.
Baths, wash basins and showers	Clean with detergent and water.	Clean with detergent and water.
Baby baths.	Wash with detergent and warm water/or use a detergent wipe.	Wash with detergent and warm water/or use a detergent wipe.
Babies changing mat	Change paper after each baby, clean mat after each session and if contaminated wash with detergent and water, or use a detergent wipe.	Clean mat after each baby. If contaminated with detergent and water, or detergent wipe. Change paper after each baby.
Bathing scoop	Clean with detergent and water or detergent wipe after use. Store dry.	Contact IPCN
Bed frames	Clean with water and detergent and dry, or use a detergent wipe.	Use 0.1% Hypochlorite solution.
Bed pans:		
Inpatient / Residential homes	Disposable.	Disposable.
Home patient	Disposable or wash with detergent and water and air dry	Disposable or wash with 0.1% Hypochlorite solution.
Bed pan frames	Clean with detergent and water and dry, or use detergent wipe.	Clean with 0.1% Hypochlorite solution and rinse.
Bottles and teats	Use disposable or return to CSSD, or in special circumstances contact ICPN.	Use disposable or return to CSSD.
Bowls (Surgical)	Return to CSSD	Return to CSSD
Bowls (Washing)	Wash with detergent and water, rinse and dry after each use. Store inverted and separated.	Wash with 0.1% Hypochlorite solution rinse and dry.

EQUIPMENT OR SITE	A ROUTINE USE	B INFECTED PATIENT
Brushes (lavatory)	Store dry. Rinse thoroughly in toilet, flush and hang to dry in open sided holder.	Store dry. Use 0.1% Hypochlorite solution.
Bubble columns	Empty and clean monthly wearing PPE as per manufacturing guidance.	
Buckets	Wash with detergent and water, rinse and dry.	Use 1% Hypochlorite solution, rinse and store dry.
Carpets: Inpatient / Residential Homes Patient's home	Vacuum daily in patient areas. Spillages should be cleaned immediately, removing any excess with paper towels before washing the area with detergent and water. Following this, larger spills may require steam cleaning. All carpets should be steam cleaned annually Offices should be vacuumed at least weekly. Detergent and water.	Should not be nursed in carpeted rooms
Couches (examination)	Wash with detergent and water, rinse and dry or use detergent wipe. Cover with disposable paper between patients.	Contact IPCN
Curtains: Inpatients Vertical blinds Venetian blinds	Send to central laundry every 6 months or sooner if soiled. Vacuum monthly as good practice or damp dust as per manufacturers instructions. Suggest wipe with detergent and water monthly.	Disposable or alternatively change after an infection outbreak or sooner if soiled.
Damp dusting (all surfaces)	Detergent and water.	Wipe with 0.1% Hypochlorite solution.
Denture pots: Inpatient / Residential Homes	Single use - disposable is the preferred option. If own, clean daily with detergent and water. Store dry.	Single use - disposable is the preferred option.

EQUIPMENT OR SITE	A ROUTINE USE	B INFECTED PATIENT
Diaphragms (Trial) and IUCD instruments	Single use - disposable is the preferred option.	Single use - disposable is the preferred option.
Drainage and suction jars:		
1. Disposable vacuum containers.	Use Vernagel gelling granules. Place in double yellow bag for incineration.	Use Vernagel gelling granules. Place in double yellow bag for incineration.
2. Suction jars.	Wash with detergent and water, rinse and store dry, or send to CSSD.	Use disposable or send to CSSD.
3. Under-water seal bottles.	Return to CSSD.	Return to CSSD
Drains	Use washing soda crystals	
Duvets	<u>Plastic Type</u> - Wash with detergent and water, rinse and dry.	<u>Plastic Type</u> - Wash with detergent and water, rinse and dry.
Duvet covers: Inpatients	Send to central laundry as per policy.	Send to central laundry as per policy.
Patient's home	<u>Cotton Cover</u> - Wash as recommended by the manufacturer.	<u>Cotton Cover</u> - Wash as recommended by the manufacturer.
Earphones	Wipe with detergent and water or alcohol wipes.	Wipe with 0.1% Hypochlorite solution.
Ear pieces (Stethoscopes, hearing aids)	Wipe with detergent and water, then 70% alcohol wipe.	Wipe with detergent and water, then 70% alcohol wipe.
ECG leads and machines	Wipe with detergent and water, or detergent wipe.	Wipe with detergent and water or detergent wipe.
Endoscopes	Thoroughly clean and disinfect according to manufacturers instructions: a) Between patients. b) Before and after session (see Departmental Policy).	Thoroughly clean and disinfect according to manufacturers instructions: a) Between patients. b) Before and after sessions (see Departmental Policy).
Enuresis Mats	Single patient use - wash with detergent and water, or follow manufacturers instructions.	Single patient use - wash with detergent and water.
Floor Mops: Residential Homes	Wash out thoroughly and hang to dry daily	Use disposable.
Floors (dry)	Vacuum clean (disposable dust bag). Check bags and filters.	Vacuum clean (disposable dust bag). Ensure filter changed.

EQUIPMENT OR SITE	A ROUTINE USE	B INFECTED PATIENT
Floor (wet)	Clean with detergent and water, rinse and dry.	Clean with detergent and water, rinse and leave as dry as possible.
Furniture and fittings	Damp dust with detergent and water.	Damp dust with detergent and water.
Flower Vases	Wash the vases in water and detergent when changing flowers and after use. Store dry	Contact IPCN
Humidifiers	Drain once each day. Refill with sterile bottled water or follow manufacturer's instructions.	Drain once each day. Refill with sterile bottled water.
Instruments (Surgical)	Return to CSSD or if using autoclave ensure compliance with policy.	Return to CSSD.
Jugs and drinking glasses	Preferable to use a dishwasher for thermal disinfection or hot water and detergent.	Preferable to use a dishwasher for thermal disinfection or hot water and detergent.
Mattresses and pillows	Clean plastic covers with detergent and water, and dry. This should be after patient is discharged or monthly for longer term stay, or sooner if soiled.	Clean plastic covers with detergent and water, and dry. If contaminated with body fluids use 0.1% Hypochlorite solution.
Nebulisers - Disposable	Single patient use. Between use wash the chamber and mask thoroughly with water and detergent, rinse and dry thoroughly. Replace weekly or if heavily soiled.	Single patient use. Between uses wash the chamber and mask thoroughly with water and detergent, rinse and dry thoroughly. Replace weekly or if heavily soiled.
Non-Disposable	Disinfect daily after cleaning, as above, by immersion in 0.1% Hypochlorite solution for 20 mins. rinse with sterile water and dry with disposable paper towel. Store dry.	Disinfect daily after cleaning, as above, by immersion in 0.1% Hypochlorite solution for 20 mins. rinse with sterile water and dry with disposable paper towel. Store dry.
Nebuliser Tubing	Single patient use ONLY.	Single patient use ONLY
Razors - safety or electric	Use disposable or patients own. DO NOT ALLOW SHARING	Use disposable or patients own. DO NOT ALLOW SHARING
Rehabilitation equipment	Please refer to manufacturers instructions. Need to identify a planned cleaning schedule in place. Items should be wiped over after each use with detergent and water, or a detergent wipe.	Please refer to manufacturers instructions. Need to identify a planned cleaning schedule in place. Items should be wiped over after each use with detergent and water, or a detergent wipe.

EQUIPMENT OR SITE	A ROUTINE USE	B INFECTED PATIENT
Scissors	Use single use disposable or autoclavable. Sterile scissors must be used for wound dressings.	Use single use disposable or autoclavable. Sterile scissors must be used for wound dressings.
Skin Disinfection:		
Handwashing in clinical areas (wards, sluice rooms and outpatients examination rooms)	Liquid Soap.	Liquid soap / hand sanitizer, as advised by the IPCN.
Handwashing pre-operative	Hibiscrub (4% Chlorhexidine with detergent) or Povidone Iodine surgical scrub.	Hibiscrub (4% Chlorhexidine with detergent) or Povidone Iodine surgical scrub.
Venepuncture	Clean skin with 70% Isopropyl alcohol and 2% chlorhexidine gluconate and allow to dry.	Clean skin with 70% Isopropyl alcohol and 2% chlorhexidine gluconate and allow to dry.
Diabetics - Glucose Monitoring	Clean Digits with soap and water only.	
Skin Disinfection prior to IV Cannulation	Clean skin with 70% Isopropyl alcohol and 2% chlorhexidine gluconate and allow to dry.	Clean skin with 70% Isopropyl alcohol and 2% chlorhexidine gluconate and allow to dry.
Slide sheets/hoist slings:		
Inpatient / Residential Homes	Designate as single patient use. Return to central laundry for cleaning after use or sooner if soiled.	
Patient's home	Single person use. Return to joint loans for laundering.	
Space blankets	Disposable – single use.	Disposable – single use.
Sphygmomanometer cuffs	70% alcohol wipes.	70% alcohol wipes.
Staff cases Community	Wipe over with detergent and water, or use a detergent wipe, weekly or sooner if soiled, or follow manufacturers' instructions.	
Telephone/telephone trolley	Clean weekly with detergent and water, or use a detergent wipe.	Clean after use with detergent and water, or use a detergent wipe. Wipe with 0.1% Hypochlorite Solution.
Thermometers:		
Electronic	Single use. Use disposable sheath.	Single use. Use disposable sheath.
EQUIPMENT OR SITE	A ROUTINE USE	B INFECTED PATIENT

Toothbrushes	Single patient use only	Single patient use only
Toothmugs	Single use - disposable is the preferred option. If own, clean daily with detergent and water. Store dry.	Single use - disposable is the preferred option.
Toys Soft toys are not recommended	Wash with detergent and water. If heavily contaminated - dispose of item.	Wash with detergent and water. If heavily contaminated - dispose of item.
Trolley Tops - Dressings	Wash with detergent and water, and dry. Wipe with alcohol wipe before use and between dressings. If visibly contaminated wash with detergent/water and dry.	Wash with detergent and water, and dry. Wipe with alcohol wipe before and after each use.
Tourniquets	Wipe between each patient with 70% alcohol wipe.	Disposable / Wipe between each patient with 70% alcohol wipe.
Urinals: Inpatient / Residential Homes Patients own – community	Single use disposable. Wash out with detergent and water after each use.	Single use disposable.
Vaginal Specula	Send to CSSD or single use disposable.	Send to CSSD or single use disposable.
Vaginal Cones - Disposable	Single patient use. Between uses clean with detergent and warm water, rinse and dry, then soak in 1% Hypochlorite for 20 minutes. Rinse thoroughly with water and dry. Patient should keep the cone and bring to session.	Single patient use. Between uses clean with detergent and warm water, rinse and dry, then soak in 1% Hypochlorite solution for 20 minutes. Rinse thoroughly with water and dry. Patient should keep the cone and bring to session.
Non-disposable	Autoclave as per instructions with equipment.	Autoclave as per instructions with equipment.
Walking Aids: Community Inpatients	Clean periodically with dilute detergent and water. Clean after each patient use (single patient use) or when grubby with detergent and water or use a detergent wipe.	Wipe with 0.1% Hypochlorite solution if there is faecal contamination, if not use detergent and water.
WC Lavatory seats Commode chairs Raised toilet seats	Wash with detergent and water, and dry after each patient use or use a detergent wipe.	Wipe with 0.1% Hypochlorite solution if there is faecal contamination, if not use detergent and water.
Wheelchairs	Clean periodically with water and detergent, and dry.	Clean with detergent and water, and dry.
X-Ray Equipment	Damp dust with detergent and water or use a detergent wipe.	Wipe with 0.1% Hypochlorite solution.

SECTION 3 - DISEASE RELATED INFORMATION

3.1 BLOOD BORNE VIRUSES

In United Kingdom, four main types of Hepatitis are recognised B, C, D and E. All hepatitis infections are notifiable to the Consultant in Communicable Disease Control (see Section 1).

Hepatitis B and C infections are major causes of chronic liver disease and liver cancer across much of the world. While the United Kingdom has been classified as a very low prevalence country for these infections, they still pose a significant challenge in terms of potentially preventable mortality and morbidity.

3.1.1 Hepatitis B

The severity of Hepatitis B (HBV) disease ranges from mild infections that can only be detected by liver function tests, and/or the presence of serological markers of infection (see chart below), to fulminating cases of acute hepatic necrosis. The incubation period is 40-160 days, average is 60-90 days, and, of those cases admitted to hospital, the fatality rate is 1%. The variation in incubation period is related to the inoculum and the mode of transmission as well as to host factors. The prognosis for hepatitis B carriers who develop progressive liver disease is uncertain; some develop cirrhosis and are at increased risk of developing hepatocellular carcinoma.

Understanding Serological Markers

MARKER	FULL NAME	INDICATES
HBsAg	Hepatitis B surface antigen	Carrier or current infection.
HBeAg	Hepatitis B 'e' antigen	Current infection/highly infectious/chronic carrier.
Anti-HBsAg	Antibody to HBsAg	Previous infection/immunisation/immunity.
Anti-HBeAg (anti-HBe)	Antibody to HBeAg	Hepatitis B surface antigen carrier with low risk of infectivity.
Anti-HBc	Antibody to Hepatitis B core antigen	Persons who have had hepatitis B infection in the past or have acute infection. It is not induced by immunisation.
IgM Anti-HBc	Igm antibody to Hepatitis B core antigen	Acute or recent Hepatitis B infection.
Hepatitis B virus DNA	Virus DNA	Viral replication and high infectivity.

Patients who exhibit persistent hepatitis B surface antigen (HBsAg) for more than 6 months are defined as chronic carriers, although a small proportion (1-2%) may clear

the virus each year. Chronic carriers have traditionally been divided into those of high, intermediate and low infectivity, having in addition either the soluble 'e' antigen (HBeAg), no 'e' markers, or antibodies to the 'e' antigen (HBeAb) respectively. It is now recognised, however, that some chronic carriers may be 'e' antigen negative yet highly infectious due to the presence of mutant strains of HBV which are unable to express 'e' antigen.

Treatment with interferon may clear 'e' antigen in a proportion of cases.

In developed countries Hepatitis B infection is usually acquired during adulthood, predominant routes being sexual and parental. About 2-10% of those infected as adults become chronic carriers with hepatitis surface antigen (HBsAg) persisting longer than 6 months. Persistent HBsAg, and chronic infectious carriage of Hepatitis B, is more frequent in those infected as children and rises to 95% in neonates infected perinatally. Among carriers of the virus those in whom HB e-antigen (HBeAg) is detectable are most infectious. Those with antibody to HBeAg (anti-HBe) are, generally, of low infectivity.

The blood of those infected with Hepatitis B has been shown to be infective many weeks before the onset of first symptoms and remains infective through the acute clinical course of the disease and during the chronic carrier state, which may persist for years. Hepatitis B Virus Surface Antigen (HBsAg) may be found in blood and virtually all body fluids of patients with acute hepatitis B and carriers of the virus, but blood, semen and vaginal fluids are mainly implicated in the spread of HBV Infection (Figure 4).

3.1.2 Vaccination and Control

The Control of Substance Hazardous to Health (COSHH) (1994) Regulations require all employers to make their own risk assessments and bring into effect measures to protect their employees. Therefore, it is the employer that decides whether there is a risk of infection of hepatitis B within the work place, and what measures are required, e.g. vaccination education and protective clothing.

The primary course consists of three injections of the vaccine, the second following one month after the first, with the third administered at six months. More rapid courses are now available, which are useful, for example, when the traveller presents late for vaccination or as prophylaxis following exposure to the virus. Each course consists of three injections either given at monthly intervals with a booster at 12 months, or 0, 7, 21 days, also with a booster at 12 months. Antibodies can be checked 4 weeks after course completion to determine whether or not there has been a response.

Hepatitis B infection can be transmitted from infected mothers to their babies at, or around, the time of birth (perinatal transmission). Babies acquiring infection at this time have a high risk of becoming chronic carriers of the virus. The development of this carrier status can be prevented in around 90-95% of cases by appropriate immunisation of babies born to infected mothers.

Breast Feeding: There is no contraindication to breast feeding when a baby born to a carrier mother begins immunisation at birth and proceeds with a complete course of immunisation.

Response rates to the vaccine are at around 95% in young adults (especially women), children and newborn babies, whereas the rate may fall in older men to

around 80%, with the immuno-suppressed patient showing the lowest rates. However, immunity is known to decrease with age, especially in those over 40 years, but what is not known is whether or not boosters are necessary for babies and children to provide life-long immunity.

It is normally accepted that protective anti-HBs titre levels should be above 100 mIU/ml, however vaccines whose anti-HBs titres are in excess of 500 mIU/ml are likely to maintain adequate levels for at least 5 years. It should be noted that variations in virus challenge doses and infectivity of the source has resulted in the impossibility of defining a minimum protective level of anti-HBs. Low or non-responders need to be informed that they are not protected and should seek passive immunisation if they suffer accidental exposure (via needlestick injury, etc).

Health care workers who have been successfully immunised should be boosted following accidental exposure, unless they are definitely known to have adequate protective anti-HBs levels.

Healthcare workers who carry blood borne viruses will be advised regarding their involvement in exposure prone procedures (EPP) by their Occupational Health Department.

3.1.2a Index case contacts

Household and sexual contacts of the index case should be vaccinated with an accelerated course. Although screening to exclude people with pre-existing anti-HBs is not required prior to immunisation, it may be desirable where there are high levels of pre-existing infection.

Passive immunisation with specific immunoglobulin can be administered if immediate protection is required. Hepatitis B Immunoglobulin (HBIG) is used and it is administered at the same time as the hepatitis B vaccination using a different site. HBIG must be given as soon as possible, preferably within 24 hours of the exposure (needle stick injury) or following sexual exposure, it is recommended that it be given within 14 days. If infection has already occurred, severe illness, and the development of carrier status, may be prevented.

3.1.3 Hepatitis C (HCV)

The incubation period is about six to eight weeks, but antibodies may not appear for a further four to six weeks. Although infection is usually asymptomatic, HCV results in the development of a chronic carrier state in at least 85% of cases. Chronic liver disease, including cirrhosis and hepatocellular carcinoma, develops in approximately 70% of all HCV infected persons.

Hepatitis C is the main cause of what was previously known as Non A - Non B hepatitis. HCV is most frequently acquired by direct blood to blood contact and the commonest mode of transmission in the UK is the sharing of blood contaminated injecting equipment by injecting drug users. Both sexual and perinatal transmission can occur but, in general, these are less efficient modes of transmission. The incidence of HCV amongst intravenous drug users is believed to be high.

Routine screening tests for HCV detect antibodies to the virus. If individuals are found to be anti-HCV positive, additional tests are carried out, looking for HCV RNA by polymerase chain reaction (PCR) in order to determine whether they are viraemic.

Treatment with Interferon plus Ribavirin may clear the infection, but a proportion will relapse when treatment is stopped. The involvement of a hepatologist should be

considered.

There is no effective vaccine against HCV.

- It is recommended that individuals with HCV be vaccinated against hepatitis A virus. As the liver may already be compromised, cirrhosis may be advanced by hepatitis A infection.
- Long-term follow up is recommended for HCV. As new information is becoming available, individual assessment for medical intervention is, ongoing.

3.1.4 Hepatitis D (HDV)

Hepatitis D causes infection only in those who have active hepatitis B infection. Hepatitis D infection can occur either as co-infection with HBV or as a superinfection of an HBV carrier. Since hepatitis D depends on an HBV infected host for replication, prevention of hepatitis B infection by immunisation will also prevent hepatitis D infection.

3.1.5 Human Immuno-deficiency Virus (HIV)

Human immuno-deficiency virus interferes with the body's immune response to infection. An individual infected with HIV may experience an initial acute illness followed by a period in which there are no signs or symptoms, although antibodies to the virus may be detected in the blood. People with HIV infection can remain well for several years.

Ultimately, if the virus continues to replicate, there is reduction of CD4 cells with a resultant immunodeficiency, infected persons becoming at increased risk of opportunistic infections and certain tumours.

Routine screening tests for HIV detect antibodies to HIV-1 or HIV-2. Such tests should only be carried out with informed consent. If the screening test is reactive, this result is then confirmed by two different additional assays. A provisional report is issued requesting an additional blood sample before sending out a final HIV report.

All individuals, other than neonates, who have antibodies to HIV also have the virus; viral nucleic acid may be detected by polymerase chain reaction (PCR) and the level of viraemia quantified. It should be stressed that antibodies to HIV do not appear immediately after primary infection. The median time is 3-6 weeks but, during this 'window period', patients may have a high viral load and be highly infectious.

In general, HIV is the least infectious of the blood borne viruses, with HIV-2 being considerably less infectious than HIV-1.

Acquired Immune Deficiency Syndrome (AIDS)

Acquired immune deficiency syndrome is diagnosed when a person with HIV infection is found to have one or more of a number of specific infections, such as *Pneumocystis pneumonia*, Kaposi sarcoma or Tuberculosis. These infections are described as opportunistic, and become life threatening due to the breakdown of the individual's immune system or the direct effect of the virus on the nervous system.

Control is by prevention of acquisition of the virus. This is accomplished by applying vigorous universal infection control precautions, education about safe sex and the use of needle exchange facilities for intravenous drug users.

Post exposure prophylaxis for HIV is also available.

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3.2 MENINGOCOCCAL MENINGITIS/SEPTICAEMIA

The infective agent is *Neisseria meningitidis*. Different strains of meningococci are groups A, B, C, Y and W135. The most common strains of meningococcal meningitis in the UK are groups B and C.

Meningococcal disease can affect any age group although babies, children and young people in their teens and early 20's are most at risk. It usually presents as sporadic cases, but localised outbreaks do occur. Cases occur throughout the year, but the incidence is highest in winter.

Droplets from nose or throat of infected persons transmit the organism from one person to another. Between 10-25% of the population at any one time are asymptomatic carriers. Carriage rate varies from time to time and tends to be higher in closed communities such as schools, colleges and army barracks. The incubation period varies from 2-10 days, however it is commonly 3-4 days. The period of communicability is until the meningococci bacteria are eliminated from the nasopharynx. This is usually within 24 hours of Rifampicin therapy. Penicillin treatment does not reliably eradicate the organism from the nasopharynx.

Meningococcal disease and all types of meningitis are statutory notifiable diseases (Section 1, Table B). The Consultant in Communicable Disease Control (CCDC) should be notified by telephone, by the Doctor in charge, of all cases, or suspected cases, of meningitis and meningococcal disease, in order that contact tracing is promptly carried out.

3.2.1 Vaccination

3.2.1.1 Meningococcal Group C Conjugate Vaccine

This was introduced in 1999 and the objective is to achieve a major impact on Group C *Neisseria meningitidis*, which is responsible for 40% of cases of meningococcal disease in this country. Most other cases are from Group B infection and there is, as yet, no effective vaccine against sero-group B.

It is immunogenic in children from 2 months of age and induces an effective immunological memory. Babies 2, 3 and 4 months: three doses of the new vaccine, given with DTP, Hib and Polio vaccines. No booster is recommended for the meningococcal Group C conjugate.

3.2.1.2 Plain Polysaccharide Meningococcal Group A and C vaccines

The meningococcal Group plain polysaccharide A and C vaccines are effective for 3 to 5 years from 18-24 months of age. Studies have shown that boosting with a second or third dose in adults tends not to produce a response. Pasteur Merieux Vaccine may be boosted every 3 years, SmithKline Beecham vaccine every 5 years.

Travellers to Sub-Saharan Africa from Senegal and Gambia in the west to Ethiopia and Somalia in the east (anywhere within the meningitis belt) are advised to be vaccinated with the plain A and C polysaccharide, if visiting for longer than one month. Protection is required for the 'A' sero-group portion of the vaccine, which is not available separately.

It is particularly important to be vaccinated if the traveller is to be in close contact with the local population or staying for long periods. On this basis the risk is usually small for package tourists. Travellers to Saudi Arabia attending Mecca during the Haj annual pilgrimage require immunisation for immigration purposes and will be required to produce a certificate on arrival and when obtaining a visa. Quadrivalent vaccine

gps A,C,W125 and Y is recommended for these travellers, with further advice from the regional epidemiologist. The A and C vaccine is effective from 7 days.

A person who has already received a scheduled conjugate vaccine may require the travel polysaccharide vaccine. This can be administered after a period of two weeks. Giving conjugate vaccine after polysaccharide vaccine - If the polysaccharide vaccine has been given first then a gap of 6 months is suggested before the conjugate vaccine is administered.

3.2.2 Control

3.2.2.1 Index Case Contacts

The Health Protection Agency (HPA) has developed a policy for the control of meningococcal meningitis and septicaemia. A précis of this policy has been included, to give an understanding of the present action taken following the presumptive diagnosis of a case in Peterborough.

Definition of an outbreak, or cluster, of meningococcal disease exists when there are two or more linked cases, within a four-week period.

The index case should be treated with antibiotics as soon as a presumptive diagnosis is made. The general practitioner should start treatment with Benzylpenicillin if a diagnosis of meningococcal disease is suspected, prior to admission to hospital. As Benzylpenicillin will not reliably eradicate the organism from the nasopharynx of the patient, a two-day course of Rifampicin should be given prior to discharge from hospital to ensure eradication. This prevents the re-introduction of the organism to the household and other close contacts.

Once the Health Protection Unit (HPU) has been notified of an individual (presumptive) case the communication and information cascade will commence for which the CCDC is responsible.

A professional from the HPU office will be available, during office hours, to answer questions from any professionals (see Section 1 - 1.4).

The HPU will carry out any contact tracing necessary outside of the hospital. The hospital will provide prophylaxis to household contacts able to visit the hospital.

The aim of prophylaxis is to prevent secondary cases by eliminating nasopharyngeal carriage of *N. meningitidis* in close contacts of the index case, thereby reducing the risk of invasive disease in other susceptible members of the household.

Chemoprophylaxis should be given as soon as possible (ideally within 24 hours of diagnosis of index case) to all close contacts. Rifampicin is licensed for this purpose, but ciprofloxacin is an acceptable alternative and ceftriaxone should be used for pregnant women.

3.2.2.2 Prophylaxis is recommended for:

- All household contacts, i.e. living in the same house during the preceding 7 days before the illness occurred.
- Kissing contacts (girl/boyfriends) of the case also within the last 7 days.
- Room mates, close friends in boarding schools or other residential institutions if they share a dormitory.

- A child-minder looking after one or more children for many hours daily – may fall into the 'household' setting.

Adult over 12 years Ciprofloxacin 500mg as single dose
 Rifampicin 600mgs BD for 2 days

Pregnant female Ceftriaxone 250mgs IM as single dose

Child over 1 year Rifampicin 10mg/kg BD for 2 days

Infants under 1 year Rifampicin 5 mg/kg BD for 2 days

Is not recommended:

- After a single case in a school, playgroup or nursery, but it is important to give information.
- Medical and nursing staff caring for the case, unless they have given mouth-to-mouth resuscitation or encountered splash contamination.

The hospital clinician caring for the index case will normally be responsible for provision of prophylaxis for household contacts (able to visit the hospital) within 24 hours of a diagnosis being made. The Health Protection Unit is responsible for identifying all non-household close contacts. The CCDC or officer on call will inform the GPs of the other contacts, who have been identified. These GPs will be responsible for prescribing the prophylaxis. When there are contacts in other Health Districts, it is the responsibility of the CCDC to provide details of contacts requiring prophylaxis in that area to the appropriate CCDC.

Single case occurring in child attending a pre-school group

Family household contacts should be managed as previously described. Information about the case, and about meningococcal disease, should be disseminated to carers, parents and local GPs, because early diagnosis can improve the outcome.

Single case occurring among those attending primary or secondary schools, colleges or universities

Prophylaxis with antibiotics or vaccine should not be offered to contacts in the educational setting, unless the proximity and duration of contact has been comparable to that experienced in households (e.g. dormitory contacts in a boarding school).

Immediately after a case has arisen in a nursery, playgroup, school or other institution, the CCDC or other professional from the department should liaise closely with the Principal to inform parents that:

- A case has occurred.
- The chance of another case is very small.
- Antibiotics are not normally given to students after a single case.
- It is important to know the signs and symptoms of Meningococcal Disease.

When two or more cases occur in secondary schools, higher learning institutions and other institutional settings, decisions about further actions should involve the Health Protection Agency.

A polysaccharide meningococcal vaccine for protection against sero-group A and C is available and licensed for use in the UK (it is now mostly used as a travel vaccine). A quadrivalent vaccine for protection against A, C, W, Y is also available on a named patient

basis, though not licensed for routine use. If the index case is confirmed as group C or A (or W135, Y) vaccination should be offered to those contacts who were given oral antibiotic prophylaxis. The CCDC will make a decision on which vaccine should be administered, however, this will usually be the conjugate vaccine rather than the polysaccharide.

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3.3 CREUTZFELDT- JAKOB DISEASE AND VARIANT CREUTZFELDT-JAKOB DISEASE (CJD & VCJD)

3.3.1 Background

Creutzfeldt Jakob Disease (CJD) is one of a group of conditions known as transmissible spongiform encephalopathies. They are caused by agents currently thought to be infectious proteins known as prions, which do not share the normal properties of viruses and bacteria and are resistant to conventional chemical and physical decontamination methods.

The greatest risk of transmission is from neural tissue of an infected individual. Spinal fluid and lymphoreticular tissues pose a lower risk and blood, other body fluids and most other tissues a negligible risk of transmission. Although these conditions do not appear to be highly contagious, there have been documented cases of spread via contaminated medical instruments or contaminated human pituitary hormone.

Standard infection control practice is sufficient in most circumstances to prevent spread. Isolation of patients with CJD is not necessary. Additional precautions are necessary during invasive interventions involving the brain, spinal cord and eye on a patient known, suspected or at risk of having CJD.

3.3.2 Symptomatic patients

- Patients who fulfil the diagnostic criteria for definite, probable or possible CJD or vCJD
- Patients with neurological disease of unknown aetiology who do not fit the criteria for possible CJD or vCJD but where the diagnosis of CJD is being actively considered
- Asymptomatic patients at risk from familial forms of CJD linked to genetic mutations
- Individuals who have been shown by specific genetic testing to be at significant risk of developing CJD or other prion disease
- Individuals who have a blood relative known to have a genetic mutation indicative of familial CJD
- Individuals who have or have had two or more blood relatives affected by CJD or other prion disease

3.3.3 General Ward procedures

Available epidemiological evidence does not suggest that normal social or routine clinical contact with a CJD or vCJD patient presents a risk to healthcare workers, relatives and others in the community. Isolation of patients with CJD or vCJD is not necessary and they can be nursed in an open ward using standard infection control precautions in line with those used for all other patients.

3.3.4 Blood

Careful attention to standard infection control precautions will minimise any risks from blood. Drug administration by injection should involve the same precautions used for all work of this type with any patient i.e. avoidance of sharps injuries and other forms of parenteral exposure and the safe disposal of sharps and contaminated waste.

3.3.5 Invasive medical procedures and sample labelling

Because of the unusual resistance of the TSE agents, single use disposable equipment should be used wherever possible, and all other small items of equipment contaminated whilst obtaining specimens should be destroyed by incineration (please refer to waste guidance).

3.3.6 Spillages

The infectious agent associated with TSEs is unusually resistant to inactivation techniques. Dilution is the most important element in cleaning up spillages in general.

3.3.7 Occupational exposure

Although cases of CJD/vCJD have been reported in healthcare workers, there have been no confirmed cases linked to occupational exposure. However, it is prudent to take a precautionary approach. The highest potential risk in the context of occupational exposure is from exposure to high infectivity tissues through direct inoculation (e.g. as a result of 'sharps' injuries, puncture wounds or contamination of broken skin) and exposure of the mucous membranes (e.g. conjunctiva) should also be avoided.

Healthcare personnel who work with patients with definite, probable or possible CJD or vCJD, or with potentially infected tissues, should be appropriately informed about the nature of the risk and relevant safety procedures.

3.3.8 Storage of instruments for research purposes

In some cases, instruments which are destined for disposal by incineration may be retained for uses in research. Anyone considering such a course of action should contact the Surgical Instrument Store, Health Protection Agency, Porton Down on 01980 612643 (answer phone on out-of-hours) to discuss whether it would be helpful to retain a particular instrument for research, and where and how it should be stored.

3.3.9 Community healthcare

No special measures over and above standard infection control precautions are required for caring for CJD patients in the community. Although CJD and vCJD are not thought to present a risk through normal social or routine clinical contact, those caring for patients at home should be advised of the standard infection control practices that would apply to any patient.

Spillages of body fluids, including blood, should be removed using absorbent towels e.g. kitchen paper and the surface washed thoroughly with detergent and warm water. Disposable gloves and an apron should be worn.

3.3.10 Dentistry

The risks of transmission of infection from dental instruments are thought to be very low, provided optimal standards of infection control and decontamination are maintained. General advice on the decontamination of dental instruments can be found in guidance prepared by the British Dental Association (BDA) on 'Infection control in dentistry'.

There is no reason why any patients or their relatives should be refused routine dental treatment. Such people can be treated in the same way as any member of the general public.

3.4 TUBERCULOSIS

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis* and rarely by *Mycobacterium bovis*, or *Mycobacterium africanum*. The lungs are the most frequently affected site although miliary TB (the result of blood borne spread) may affect the meninges, kidneys or bone.

TB infection is said to occur when TB bacteria are in the body, but the immune system controls them and the infection heals spontaneously. Disease may develop over the coming weeks and months and in about 10% of people infection reactivates in later life causing active disease. People with TB infection have no symptoms, and cannot spread TB to others.

TB disease is said to occur when TB bacteria are present in the body and cause symptoms making the person feel unwell. These symptoms may include a cough, weight loss, fever, fatigue, night sweats and loss of appetite. Sometimes people with TB in the lungs may also cough up sputum streaked with blood. Symptoms in some people may be only mild and in others more severe, but all will be likely to spread the infection before treatment is commenced.

3.4.1 Transmission

The infection can be acquired in several ways, but by far the most important is the inhalation of organisms in airborne droplets coughed by a person with TB of the lungs. Prolonged, close contact is usually required for transmission of infection from person to person. The people likely to be affected would include people living in the same house as the case and those with whom they socialise on a frequent basis. The type of work environment will be assessed for risks to colleagues from the case.

3.4.2 Prevention

Prompt identification of cases and contacts is necessary to reduce the spread of infection. **The notification of each case to the Health Protection Unit**, by the clinician in charge of the case is a statutory requirement, and facilitates the **contact tracing** process where it is not carried out by respiratory nurses. The National Enhanced Surveillance forms, should be used for this purpose.

Bacillus Calmette-Guerin (BCG) immunisation confers a degree of immunity and has been shown to protect against TB with an efficacy of greater than 70% in British schoolchildren, with protection lasting at least 15 years. There is a schools programme of immunisation within Peterborough.

Neonatal BCG is recommended by the DoH and British Thoracic Society (BTS) for babies born to immigrants from countries with a high prevalence of TB, i.e. where local incidence exceeds 40/100,000 population per year.

Health care workers who have contact with infectious patients or their specimens should also be protected by immunisation.

All entrants to the UK planning to stay longer than 6 months should be screened for TB. Port forms are part of this process and if appropriate entrants will be contacted to attend a chest clinic for investigation.

3.4.3 Control

Early identification and treatment of cases especially sputum **smear positive** is vital in the control of TB, and good communication networks between health care professionals is essential. Prompt identification of **close contacts** is necessary for screening purposes. Screening of new arrivals and refugees and asylum seekers should be undertaken.

3.4.4 Treatment

This is usually for a minimum of 6 months and during this period patients should receive regular checks not only to ensure that they are compliant with their medication but to provide support and note if there are any side effects. Patients who have infectious TB are not usually considered infectious after 2 weeks of anti-tuberculous therapy.

Multi-Drug Resistant TB

This can occur if treatment is not completed as prescribed.

Drug resistance is more common in people who:

- have spent time with someone with drug resistant TB;
- do not take medication regularly;
- do not take all the prescribed medication;
- develop TB disease again, after having taken TB medication in the past;
- come from areas where drug resistant TB is prevalent.

Multi-Drug Resistant TB is a very serious problem, which must be monitored by a specialist respiratory clinician in consultation with the Consultant Microbiologist.

3.4.5 Quick reference guide

A quick reference guide for health professionals is also available from the NICE website (www.nice.org/CG033quickrefguide) or from the NHS Response Line (telephone 0870 1555 455; quote reference number N1008)

Local TB contacts:

<i>Peterborough</i>	<i>01733 773084</i>
<i>Cambridge</i>	<i>01223 216431</i>
<i>Huntingdon</i>	<i>01480 416071</i>

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3.5 GASTRO-INTESTINAL DISEASES

3.5.1 Hepatitis A

The illness caused by Hepatitis A is usually mild, symptoms usually improve and disappear as jaundice develops. Fulminating disease can occur, but this is found to be overall less than 0.5%. Only 5% of children under 3 years develop jaundice, but this rises to about 50% in adults. The fatality rate also rises with age to approximately 2% in adults.

The Department of Health recommends vaccination against Hepatitis A for certain occupational groups such as sewerage and laboratory workers who may come into contact with it during their work. There is no evidence available to identify health care workers as being at high risk, therefore, routine vaccination is not recommended. Other areas, such as residential institutions for those with learning disabilities and challenging behaviours, should conduct a risk assessment and provide measures to protect both staff and residents.

A much more serious illness may occur when patients with chronic liver disease become infected. Although these people are at no greater risk of acquiring Hepatitis A than the rest of the population they should be considered for immunisation. This group may include intravenous drug abusers with chronic liver disease and haemophiliacs. The **local environmental office** must be informed of cases of Hepatitis A.

3.5.2 Vaccination and Control

Hepatitis A is not part of the routine UK childhood schedule.

The regime for adults is a single dose of vaccine. A booster dose at 6-12 months results in a substantial increase in antibody titre and will give immunity for up to 10 years. The regime for children up to 15 years is a single dose of vaccine, however, immunity can be boosted by giving a second dose between 6-12 months.

Active protection for Hepatitis A normally starts approximately 2 weeks after the first dose of vaccine although some evidence suggests that this may be sooner. Immediate passive protection is offered by Hepatitis A immunoglobulin.

Vaccination is recommended for travellers to high risk areas and can be given to infants from 1 year of age. It is worth noting that those with a history of jaundice or who have lived for a long time in endemic areas may have become naturally immune as a result of infection.

In common with other inactivated viral vaccines the manufacturers advise caution during pregnancy or lactation unless the risk of infection is substantial. Passive vaccination with pooled immunoglobulin (a blood product with its own potential risks) is an alternative. This can be useful when active vaccination may be ineffective, e.g. in the immunocompromised. There is now evidence that active vaccination gives good protection against illness even if administered shortly before, or immediately after exposure. There are no carriers of the virus. Virus is normally excreted in bile 7-14 days before the onset of jaundice, excretion then declines over the next 5-7 days. Virus is present in both urine and faeces of infected patients.

Human immunoglobulin (HNIG) offers short term protection against hepatitis A for up to 4 months and is sometimes used in the control of an outbreak where it should be given to close household contacts within 14 days of the onset of symptoms.

Hepatitis A vaccination in a defined population has been used to prevent further infections. However guidance should be sought from the Health Protection Unit.

3.5.3 Hepatitis E (HEV)

The clinical course of this infection is similar to that described for hepatitis A. There is no evidence of a chronic form and the case fatality rate is generally the same as hepatitis A.

Diagnosis depends on clinical and epidemiological features and exclusion of other aetiologies of hepatitis, especially A, by serological means.

Primarily the faecal-oral route transmits hepatitis E. Outbreaks of HEV and sporadic cases have occurred, principally in countries with inadequate environmental sanitation.

Period of communicability is not known; it has been detected in stools 14 days after onset of jaundice and approximately 4 weeks after oral ingestion of contaminated food or water. Control of infection is the same as that described for hepatitis A, although no vaccine is available.

3.5.4 Salmonella, Shigella and Campylobacter

These are **notifiable** infections and some of the most common causes of gastrointestinal disease.

A stool sample is usually required to provide a definitive diagnosis but notification should be made on an index of suspicion to the environmental health department.

Salmonella is the second most commonly reported cause of infectious intestinal disease in the UK and can result in large outbreaks particularly due to food borne transmission. All cases are reviewed by the environmental health officers and follow up of cases carried out. Person to person spread may occur through the faeco oral route without food as an intermediary. This risk is highest during the diarrhoeal phase of the illness and risks are greater among babies and toddlers and faecally incontinent adults. Incubation ranges from 6 hours to 3 days or occasionally longer and the period of infectivity varies considerably, but is usually a few days to a few months. However approximately 1% of adults and 5% of children under 5 will excrete the organism for at least a year.

Shigella are a group of bacteria that cause intestinal infection including bacillary dysentery. Numbers of reports have decreased dramatically since the fifties and sixties when 20-40,000 cases were reported annually. Shigellosis is primarily a disease of children with the highest rates in the under fives, followed by the 5-14 age group. Common settings for outbreaks of *S.Sonnei* are schools and nurseries. Man is the only significant reservoir of infection and transmission is via the faeco oral route either directly or by contaminated food or water. Food borne outbreaks are relatively rare.

The incubation period is between 12 and 96 hours, but may be up to a week for some strains. The infective dose is very low; and may follow ingestion of as few as 10 organisms. Cases may maintain low levels of infectivity for up to 2-4 weeks.

Campylobacter species causes diarrhoeal and systemic illness in humans and animals and is the most commonly identified cause of infectious intestinal disease in developed countries. Campylobacter is found in the gastrointestinal tract of birds and mammals and animals develop a lifelong carrier state. Although food borne outbreaks are rarely identified occasional large outbreaks due to contaminated water or milk may occur.

Campylobacter infection may vary from asymptomatic (about 25%) to a severe disease similar to ulcerative colitis or acute appendicitis. Most cases settle after 2-3 days of diarrhoea. Incubation is related to the dose ingested usually about 3 days, but with a range of 1-10 days. Person to person may occur, but is likely to be associated with poor hygiene. Duration of excretion may be up to 7 weeks falling exponentially after the end of symptoms.

Campylobacters are commonly found in bulked raw milk samples, but properly conducted pasteurisation destroys the organism.

If any of the above are suspected every effort should be made to segregate the person if in a residential setting, and specimens collected and precautions taken such as use of gloves and aprons and thorough hand washing.

VIRAL INFECTION

3.5.5 Norovirus/Norwalk Small Round Structured Virus (SRSV)

This section covers gastroenteritis caused by calciviruses, particularly Norwalk like agents. Although generally causing mild illness, spread particularly in institutions may be rapid. Other causes of viral gastro enteritis include rotavirus, adeno virus and astrovirus. All ages are affected and although cases are reported throughout the year greater numbers are notified in the cooler months. Recorded outbreaks in the UK occur mainly in hospitals or residential institutions, such as nursing homes, although outbreaks have occasionally been reported in hotels, ships and schools.

This must be **notified** to the infection prevention and control team (IPCT).

Infection is relatively mild, lasting 12-60 hours. Abdominal cramps and nausea are usually early symptoms, followed by vomiting and/or diarrhoea. Forceful vomiting is especially characteristic. Diarrhoea is usually mild with no blood mucus or white cells. Other symptoms may include anorexia, lethargy, myalgia, headache and fever. Illness may be debilitating in the elderly.

Transmission is person to person via the faecal-oral route either directly through contaminated food or water, or indirectly through contamination of environmental surfaces and other items. It can remain viable for many days on curtains and carpets which might explain spread in some outbreaks. Humans are the only known reservoir of SRSV and the infectious period lasts until 48 hours after the resolution of symptoms. Every effort should be made to segregate any individual suspected of infection and specimens collected. Thorough handwashing and use of protective clothing is important in reducing spread.

Electron microscopy of faecal specimens collected early on is the mainstay of confirmation of the infection. **Specimen forms should clearly state a request for virology Norovirus.**

If laboratory confirmation is lacking, clinical symptoms can be used to assess the likelihood of an outbreak.

3.5.6 Rotavirus

Rotaviruses are the commonest cause of childhood diarrhoea. Peak incidence is at 6 months to 2 years of age and clinical infection is unusual above 5 years. Onset is usually sudden with vomiting and diarrhoea but illness usually only lasts a few days. Confirmation is by electron microscopy and serology may also be used. Spread is person to person via the faeco oral route although there may also be spread from respiratory secretions and sometimes contaminated water. Outbreaks may occur in any setting where the virus may contaminate the environment. Incubation is usually 1-3 days. Every effort should be made to segregate a person with infection and specimens should be collected and sent to laboratory promptly. Thorough handwashing and the use of protective clothing will help in the reduction of spread to other susceptible individuals.

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3.6 METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA)

This is guidance to be read in conjunction with the organisation's MRSA Policy.

Staphylococcus aureus is a type of bacterium carried in the nose and on the skin usually without causing harm. However, in certain circumstances, particularly when the patient is elderly and living in residential care or terminally ill in a hospice or at home, *staphylococcus aureus* can cause infections. *Staphylococcus aureus* also represents problems to certain acute hospital units, especially surgical, intensive care and burns, where the patient is immuno compromised and the skin is not intact due to invasive procedures such as wounds and intravenous infusion.

Some strains of *staphylococcus aureus* have become resistant to methicillin (a once commonly used antibiotic), as well as to other antibiotics. Methicillin resistant *staphylococcus aureus* (MRSA) behaves in the same way as ordinary *staphylococcus aureus* and does not cause more severe or different infections. However, MRSA is more difficult to treat as there are fewer antibiotics with which to treat it, and some of these antibiotics must be given by injection or infusion. They may also have unpleasant side effects. MRSA rarely causes infection in healthy people.

Outside acute hospital units people may carry MRSA without it causing harm to themselves or others. They are said to be MRSA carriers or to be colonised with MRSA. Although attempts are made to eradicate colonisation in acute hospital patients, this is not always necessary for patients in low-risk clinical areas of the hospital, or anywhere where the situation is similar to that found in community residential or nursing homes.

Carriage of MRSA is not a contraindication to the transfer of a patient to a nursing or residential home or their own home. MRSA carriage should not be a reason for discriminating against individuals. Should a patient need to be admitted to hospital, then they should inform the hospital that the patient is, or has been, positive for MRSA.

3.6.1 Control and Care in the Community

- Isolation of MRSA carriers is, generally, not necessary in residential/nursing homes.
- A colonised person without open wounds may share a room if the other person does not have open lesions, but a colonised person who has open wounds should be in a single room, if one is available.
- All cuts or breaks in the skin of staff or patients should be covered, with an impermeable dressing.
- The patient should be encouraged to practice normal hygiene with hand washing after using the toilet and before eating.
- If a resident of a nursing home, the patient may also join other residents in communal areas, such as sitting or dining rooms, providing any sores or wounds are covered with a dressing.
- No special precautions are necessary with crockery or cutlery.
- Clothes and bedding should be machine washed, preferably on a hot-wash setting, or dry-cleaned if unsuitable for machine washing, or in accordance with manufacturers instructions.
- Equipment that has been in contact with the patient such as a commode should be thoroughly cleaned with detergent and water.
- Positive patients may be transported with other patients in the same vehicle without special precautions (other than those mentioned above). No extra cleaning of the vehicle is usually necessary.

- All staff should maintain good infection control practice when carrying out nursing procedures on all patients regardless of MRSA status.

3.6.2 Eradication of MRSA in colonised patients

Good hand washing practice by staff and patients is the single most important infection control measure and is essential to prevent spread of MRSA as well as other infections.

Older people who are generally healthy, but frail are at minimal risk of developing an infection when colonised with MRSA. It is not always possible to eradicate MRSA, and routine screening is not necessary unless there is a clinical reason (e.g. a wound is getting worse). In this situation, swabs should be taken for general microbiological investigation, not just MRSA screening, although the laboratory will need to be informed that the resident is, or has been, positive.

In certain cases it may be necessary to attempt to eradicate colonisation. Frail, elderly people recovering from surgery or serious illness may not be able to tolerate MRSA sensitive antibiotic treatment, whilst topical antiseptics may exacerbate pre-existing skin conditions or cause irritation. However, if the benefits clearly outweigh any potential drawbacks, medical staff may prescribe an eradication programme. In 1998 the Working Party recommended in the 'Revised Guidelines for the Control of Methicillin-Resistant *Staphylococcus Aureus* Infection in Hospitals' the following prescribed treatment of carriers, colonised sites and infections.

3.6.3 Nasal carriage

2% Mupirocin in a paraffin base (Bactroban Nasal) 3 times a day to each nostril for 5 days. Swab 2 days later. If the patient is still positive - repeat treatment once. If still positive contact should be made with the consultant microbiologist.

3.6.4 Skin carriage

MRSA in any site – bathe daily for 5 days with Octenisan. Moisten skin, apply solution thoroughly to all areas before rinsing in bath or shower. Wash hair in same solution twice a week (day 2 and 4). Pay special attention to axilla, groin, perineum and buttock area. If not eradicated, the course may be repeated. It is necessary to change towels and flannels/cloths daily, as well as bed linen.

Daily damp dusting of the patient's bedroom, careful hygiene and general domestic cleaning should be thorough.

Systemic treatment should be considered only in special circumstances or if there is significant local skin infection.

3.6.5 Follow-up

Three negative swabs from previously positive sites should be obtained before accepting that MRSA has been cleared. However there may be individual circumstances where patients are frequently positive. Individual guidance can be obtained through the Consultant Microbiologist.

Risk factors for acquisition of MRSA apart from antibiotic treatments include frequent to healthcare settings and nursing / residential homes.

Please note: There may be some local variation between the acute trusts in their management of MRSA colonisation/infection. Where appropriate please follow the advice given for individual cases.

3.6.7 Care of the Patient in their Own Home

Carers who attend a patient with MRSA in their own home usually require no special management apart from routine practice of hand decontamination and use of protective clothing for procedures where contamination is possible. This should be no different to care delivered to other patients. However, the minimal risks to other patients could be reduced further by seeing patients with infections or MRSA colonisation at the end of the shift although this may not always be practicable.

3.6.8 Wound Carriage

Dressings containing certain antiseptics e.g. silver, may be applied to infected or colonized wounds. These are unlikely to eradicate the organisms but should prevent further growth. Please refer to the organisation's Wound Ward Care formulary.

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3.7 SCABIES, HEADLICE AND WORMS

3.7.1 SCABIES

What should you know about scabies?

Scabies is a parasitic infestation caused by a whitish, translucent mite, **Sarcoptes scabiei** that can burrow tunnels in the epidermis.

Transmission of scabies occurs by prolonged skin to skin contact and is increased in those individuals who harbour a greater number of parasites, e.g. immunodeficient patients.

The full life cycle of *Sarcoptes scabiei* from egg to adult takes 10 to 15 days. It has four stages: *egg*, *six legged larval stage*, *eight legged nymphal stage* and *adult*.

The fertilised adult female lives and lays eggs in the epidermis in small linear burrows that she forms by tunnelling. After the eggs hatch, the six legged larvae excavates a new burrow in a skin fold or hair follicle. Adult males move more actively between burrows seeking to mate.

When should you suspect scabies?

There are three main clinical manifestations of scabies: **classic** (the form that is usually seen), **atypical** and **crusted** scabies.

Classic scabies

- Individuals present with an itchy symmetrical allergic rash, especially worse at night. Other allergic lesions such as papules or vesicles may accompany it.
- Normally, the incubation period in adults is 3 weeks, but in re-exposed individuals symptoms can present after 1 to 4 days.
- The areas that are particularly affected by lesions include the:
 - Interdigital web spaces of the hands.
 - Flexor surfaces of the wrists and elbows.
 - Axillae.
 - Male genitalia.
 - Women's breasts.

Atypical

- In the atypical form, individuals usually have very minor symptoms with no itching or a diffuse papular lesion.

Crusted scabies

- The crusted form is characterised by hyperkeratotic skin lesions (**Norwegian scabies**).
- Itchy bullous lesions, lichenification and or erthrodermic reactions may also be present.
- Lesions are particularly found on the:
 - Palms and soles, nail beds of hands and feet and wrists.
 - Buttocks and penis.

What should you do?

Please contact the IPCT upon any suspicion or confirmation of scabies.

DIAGNOSE	<p>The definitive diagnosis of scabies is made by microscopic identification of the mites, eggs or mite faeces.</p> <p>Skin scrapings and detection of the mite at the end of its burrow are both recommended methods.</p>
TREAT	<p>The infested individual and their close physical contacts should be treated at the same time. This includes household family contacts.</p> <p>The lotion or cream is applied to the whole body with particular attention to the groin, fingernails, toenails and behind the ears. The product should be washed off as instructed by the manufacturer leaflet and clothes and bed linen changed.</p> <p>The classic form of scabies usually responds to one or two applications of permethrin or malathion. Benzyl benzoate is not first choice treatment because it is not ovicidal, multiple treatments are required, and it is an irritant.</p> <p>In the crusted form of scabies at least three treatments may be necessary, 48 hours apart.</p>
ADVISE	<p>Patients should be advised that itching could persist for up to 1-2 weeks after the end of correctly applied scabicide therapy.</p>

All staff **must** inform Occupational/Staff Health if they suspect that they are infected.

3.7.2 HEAD LICE

What should you know about head lice?

The adult louse is 3mm long and spends its whole life cycle on human hair.

They can live on the scalp for up to 4 weeks but cannot live free of the head.

They do not jump or fly, and can only be spread by prolonged contact of more than one minute.

Infection with head lice is most common in children aged 6-11 years.

It is usually asymptomatic (only 15-35% of people experience itching) although reinfections are likely to produce itching.

When should you suspect head lice?

A diagnosis of head lice can only be made if a **living, moving louse** is found.

It cannot be based on the presence of nits (the empty shell) alone, as nits can remain stuck to hair long after an infection has been eradicated.

Head lice and live eggs are difficult to see, and in most infections at any one time there are approximately 10-12 lice on the scalp.

Usually, it is easier to find head lice on damp hair using a specially designed plastic detection comb. Ideally, combing should be done over a pale piece of paper.

What should you do?

DIAGNOSE It is essential to make the correct diagnosis, verified by direct observation. Ask for verification from the parent by instructing them to bring the louse stuck to a piece of paper with sticky tape.

TREAT Treatment is only required for those who are infected, there is no need to automatically treat all household members.

Insecticides

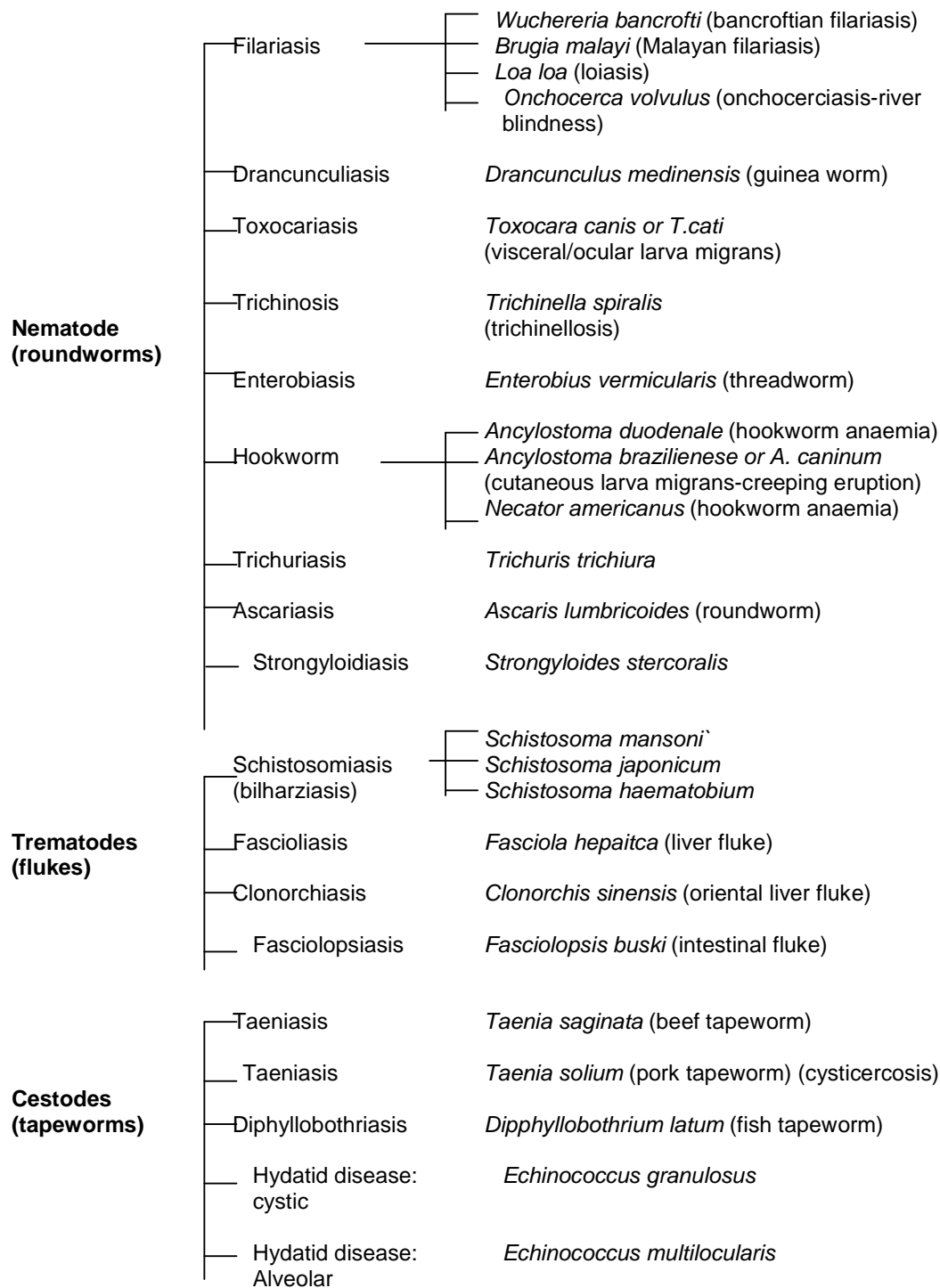
This is the only treatment for which there is clear evidence of effectiveness. There are three types of head lice insecticides available: malathion, pyrethroids and carbaryl.

Bug Busting

An alternative treatment method is Bug Busting. This involves washing hair with shampoo, applying conditioner thoroughly, and combing hair with a plastic detection comb. The hair is combed until no more lice are found.

Each treatment session takes about 30 minutes, and has to be repeated every 3 to 4 days for a minimum of 2 weeks. At least three combing sessions are needed after the last adult louse is found. Bug Buster kits are available from pharmacies.

3.7.3 WORMS: A QUICK GUIDE



Reference: Medicine vol 25:2 1997

3.7.4 FILARIASIS

What causes it?

The nematodes *Wuchereria bancrofti*, *Brugia malayi*, *Brugia timori*.

Where is it found?

It is endemic in most of the warm humid regions of the world: Latin America, Africa, Asia and the Pacific Islands.

How do you get it?

It is transmitted by the bite of a mosquito that harbours infective larvae.

What are the symptoms?

They may be asymptomatic or present with recurrent fever, lymphadenitis, elephantiasis of the limbs and pulmonary eosinophilia syndrome. They are long threadlike worms that dwell in the lymphatic system.

How do you make the diagnosis?

It is diagnosed by the appearance of characteristic sheathed microfilariae on microscopic examination of peripheral blood. It usually takes three to six months before microfilariae appear in the blood for *B.malayi* and 6 to 12 months in *W.bancrofti*.

Is it communicable?

It is not transmitted from person to person.

3.7.5 SCHISTOMIASIS OR BILHARZIA

What causes it?

The trematodes *Schistosoma mansoni*, *S. haematobium* and *S.japonicum*

Where is it found?

Africa, Arabian Peninsula, Brazil, Suriname, Venezuela, Middle East, China and Philippines.

How do you get it?

By an individual working, swimming or wading in water contaminated with free swimming larval forms of *Schistosoma* (**cercariae**). The **cercariae** develop in snails but mature in the human lung and liver by entering the skin and then bloodstream. The adult forms migrate and remain in the veins of the abdominal cavity. Their eggs are deposited in the venules, but may escape or lodge in other organs including the liver and the lungs.

What are the symptoms?

The symptoms depend on the number and location of the eggs in the human host. For *S.Mansoni* and *S.japonicum* the symptoms include diarrhoea and abdominal pain. *S.Haematobium* usually gives urinary symptoms such as dysuria, frequency and haematuria at the end of micturition.

How do you make the diagnosis?

Demonstrating **live** eggs in urine, stools or in a biopsy specimen.

Is it communicable?

It is not communicable from person to person.

3.7.6 ASCARIASIS OR ROUNDWORM INFECTION

What causes it?

The nematode *Ascaris lumbricoides*

Where is it found?

It is a common infection worldwide with a high occurrence in tropical countries.

How do you get it?

By the ingestion of **infective eggs** of *A. lumbricoides* from soil contaminated with human faeces or from uncooked produce contaminated with soil containing infective eggs.

Eggs when they reach the soil become **embryonated (infective)** after 2 to 3 weeks (summer temperatures) and may remain infective for several months or years.

The ingested infective eggs hatch in the gut lumen, and then the larvae penetrate the gut wall to reach the lungs via the blood stream. The larvae grow and develop in the lungs passing into the alveoli, and then ascend the trachea and are swallowed. They reach the small intestine where they mature 14 to 20 days after the eggs have been ingested.

The usual life span of an adult worm is 12 months.

What are the symptoms?

Usually, there are few or no symptoms. Live worms can be passed in the stools or occasionally from the mouth or nose. Some may develop lung symptoms caused by larval migration and characterised by wheezing, coughing, fever and blood eosinophilia.

How do you make the diagnosis?

Microscopic examination of faeces for eggs.

Is it communicable?

It is not directly communicable from person to person.

3.7.7 HOOKWORM INFECTION

What causes it?

The nematode *Nector americanus*, *Ancylostoma duodenale*, *A. ceylanicum* and *A. caninum*.

Where is it found?

It is endemic in tropical and subtropical countries. *N.americanus* is a common species found in South East Asia, sub Saharan Africa and tropical America.

How do you get it?

Human infection occurs when the infective larvae penetrate the skin, usually the foot. Under favourable conditions of moisture, temperature and soil type, larvae develop from eggs deposited on the ground in faeces. They become infective in 7 to 10 days.

The larvae of *A. caniinum* die within the skin having produced cutaneous larva migrans.

The other types of larvae enter the skin to the lung alveoli via the lymphatic system and bloodstream. They migrate up the trachea, are swallowed and reach the small intestine where they attach to the wall. They mature after 6 to 7 weeks and then produce thousands of eggs a day.

What are the symptoms?

Larval penetration of the skin can lead to intense local itching whilst larval migration to the lungs can lead to respiratory symptoms such as a cough and tracheitis. Larval attachment to the gut wall is often asymptomatic, but in heavy infestations anaemia may result.

How do you make the diagnosis?

By microscopic examination of stools for eggs.

Is it communicable?

It is not transmitted from person to person.
However, infected people may contaminate the soil for several years.

3.7.8 Strongyloidiasis

What causes it?

The nematode *S.stercoralis*.

Where is it found?

It is widely distributed in the tropics but it can occur in temperate climates.

How do you get it?

Free living adults produce eggs, *rhabditiform* larvae (noninfective) and *filariform* larvae (infective).

The *filariform* larvae can directly penetrate the skin to enter the circulation to the lungs becoming adults in the intestinal tissues.

In some individuals, rhabditiform larvae may develop to the infective stage before leaving the body and penetrate the intestinal mucosa and perianal skin.

What are the symptoms?

The most common symptoms are a rash and pruritus at the larval entry site. Larval migration may cause symptoms such as pneumonitis and intestinal symptoms can occur on maturation. The intestinal symptoms comprise epigastric pain, diarrhoea, flatulence and vomiting.

How do you make the diagnosis?

By identification of the larvae in stools.

Is it communicable?

As long as living worms remain in the intestine.

3.8 MANAGEMENT OF CLOSTRIDIUM *DIFFICILE*

3.8.1 Introduction

Clostridium difficile (*C.Difficile*; *C.Diff*) is a spore-bearing anaerobic bacterium that is a major cause of healthcare-associated diarrhoea. It is often a complication of broad-spectrum antibiotic therapy and is particularly associated with the use of Clindamycin, Ampicillin or Cephalosporins.

Clinical onset of *Clostridium difficile* associated with diarrhoea (CDAD) often occurs when patients are on antibiotics or within four weeks of finishing a course of antibiotics.

Antibiotic prescribing should be in accordance with the organisation's prescribing guidelines, inappropriate administration of broad-spectrum antibiotics should be avoided, and prescribing should be regularly monitored, with feedback to prescribers as appropriate.

Diarrhoea may be self-limiting in some cases. Stools may be watery and/or bloody with a distinctive foul smell and green or yellowish-brown appearance. Patients may have related fluid and electrolyte disturbance and a low-grade temperature. In some cases pseudo-membranous colitis may result, which can be fatal.

The risk of colonisation with *Clostridium difficile* increases with the proximity of an infected person and the length of inpatient stay. Patient groups at risk are surgical, renal, older people and oncology. The incidence increases significantly in patients over the age of fifty years.

Transmission of infection can occur owing to the large numbers of organisms shed by an affected patient and from spores that can survive for prolonged periods in a dry environment. Prevalence of infection tends to be higher in the winter.

All cases of diarrhoea (3 or more loose stools in 24 hours), and particularly more than one case of diarrhoea on a unit or residential/care home within 48 hours, must be reported to the Infection Prevention & Control Team who will monitor and report outbreaks as critical incidents (Incident and Near Miss Reporting Policy) and externally reported as appropriate.

For more than one case of diarrhoea out of office hours, staff must contact the senior manager on call who will contact the on call microbiologist.

The Consultant in Communicable Disease Control (CCDC) at the Health Protection Unit should be called on to investigate and manage outbreaks of diarrhoea, whatever the cause, in independent care homes.

Any diarrhoea should be suspected of having an infective cause until proven otherwise. Standard infection control precautions must be used for contact with faecal matter, in particular gloves and aprons must be worn and effective hand hygiene practiced.

3.8.2 Management of patients suspected of having *Clostridium difficile* associated diarrhoea (CDAD)

Patients must not be admitted or transferred into any inpatient unit if they have had any diarrhoea within the previous 48 hours which is not common for them.

If a patient is admitted, or transferred in, with diarrhoea e.g. because of inaccurate information being supplied by the transferring hospital/unit, an incident form must be completed. The Matron/Unit Manager and Infection Prevention & Control Team must be notified. Staff must make every effort to obtain accurate patient information from the transferring hospital/unit to avoid this situation occurring.

Admission of a patient with diarrhoea on to an open ward, or to a double room in a home, could put other patients at risk of infection. Therefore the points above must be strictly enforced in these areas.

Patients must not be transferred from ward to ward, unit to unit or from floor to floor within a unit if they have diarrhoea, unless this is necessary to move them to single room accommodation. Movement to other departments must be restricted and only on the advice of the Infection Prevention and Control Team.

If a patient is suspected of having CDAD, follow these guidelines:-

- Maintain standard and contact infection control precautions and use water and soap for effective hand hygiene as, in the presence of bacterial spores, Hand Sanitisers is less effective. Wash hands after any contact with the patient or their immediate environment.
- Patients with diarrhoea should be isolated in a single, where possible. Any excess/unnecessary equipment should be removed from the room before the patient is isolated.
- Where isolation is not possible, due to a lack of single rooms, patients may need to be transferred back to single room accommodation at the hospital or unit from which they came. Please discuss this with the Infection Prevention & Control Team.
- If the patient is incontinent, wear gloves and an apron to provide protection from contact with faecal matter and dispose of these and other contaminated material as clinical waste.
- Treat contaminated laundry as infectious and place in a alginate bag inside an outer laundry bag.
- If the patient is mobile, a toilet should be dedicated for his or her personal use, if this is feasible. Alternatively a commode should be designated for the use of a patient/patients with CDAD.
- On units with affected patients, there may be significant contamination with *Clostridium difficile* on toilets, bedpans, floors, the bed area, lockers, patient call buttons and the hands of personnel. Spores can survive for prolonged periods in the environment. Therefore thorough daily cleaning of equipment and the environment and disinfection with chlorine-releasing solution (e.g. Presept 1,000 ppm) is essential.
- Clean and disinfect toilet/commode seat, commode arm rests and toilet flush lever after each use by a patient with CDAD.
- Clean and disinfect frequently touched surfaces such as taps and door handles at regular intervals (i.e. 6 times per day) during an outbreak of CDAD.
- Separate cleaning equipment must be clearly marked and used for isolation rooms and toilets used by patients with CDAD. Disposable cloths must be disposed of after each use.

Specimens must be sent to the laboratory as soon as possible. A diarrhoeal sample occupies the shape of its container. Non-diarrhoeal stools should not be sent for *Clostridium difficile* screening. For any patient with potentially infectious diarrhoea, send a specimen of stool (five to ten millilitres) for 'bacteriology, including *Clostridium difficile* toxin testing,' endocrinology for Norovirus and rotavirus to the laboratory immediately following collection.

In consultation with medical staff, check the prescription chart and stop laxatives and iron supplements if currently prescribed. Dietary changes may help to relieve symptoms.

Request that medical staff review antimicrobial medication (particularly if the patient is receiving broad-spectrum antibiotics) and discontinue antibiotics if clinically indicated. Discuss alternative treatment with Microbiology or the Pharmacist if necessary.

Anti-diarrhoeal agents should be avoided if *Clostridium difficile* is suspected, as these may aggravate colitis symptoms, which could lead to toxic megacolon.

Isolation of the patient may be discontinued when the patient has not had diarrhoea for 48 hours. Transmission of *Clostridium difficile* to others does not occur in the absence of diarrhoea and there is no need for further stool samples to be sent for toxin testing. However, it should be recognised that the stools may remain positive for the toxin some time after resolution of symptoms.

After the patient comes out of isolation, the room should be terminally cleaned, i.e. all surfaces cleaned with hot water and detergent, following by disinfection with Presept 1,000 ppm and all curtains laundered.

Microbiology and Pharmacy should be consulted for advance on further antibiotic treatment.

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4. OUTBREAKS

4.1 Introduction and Purpose

This is a clinical protocol for use in the organisation's inpatient and residential services within Peterborough Community Services. This document provides the protocol to be followed for an outbreak of communicable diseases which would not engage the Joint Communicable Disease Outbreak Management Plan.

The purpose of this document is to provide a clear infection control protocol and management process for the closure of an inpatient/residential setting following the identification of an outbreak of transmissible infection. It supplements the guidance provided in the Organisation's Outbreak Plan.

4.2 Definitions

Outbreaks of infection within a hospital, healthcare or residential setting vary greatly in extent and severity; ranging from a few cases restricted to a single ward or area to a facility-wide outbreak involving many services, patients, service users staff and visitors. The number of cases required for a situation to be regarded as an outbreak varies according to the infectious agent, severity of symptoms and number of cases in a given time, period and location. National Health Protection definitions are followed by the Infection Prevention and Control Team (IPCT). The decision to classify a situation as an outbreak will be made by the IPCT in consultation with the Director of Infection Prevention and Control (DIPC) and the Consultant in Communicable Disease Control (CCDC) at the Health Protection Agency). The IPCT will have the discretion as to whether or not to instigate an outbreak plan. Individual ward/unit closures can be initiated without the activation of an outbreak meeting. If the safe operation of the hospital/facility is compromised then an outbreak meeting will be called by the DIPC with expert advice from the CCDC.

An outbreak is normally characterised by a cluster of similar infections occurring in one area of the organisation within a concentrated period of time. Total or partial closure may be necessary to prevent transmission if significant risks to patients, service users and staff are identified following a risk assessment.

4.2.1 Definition of Ward/Unit Closure

A closed ward/unit is unable to accept new admissions or inter ward/unit transfers; neither can it discharge patients or service users to other health or social care premises.

4.2.2 Major Outbreak

Full guidance on the management of a major incident can be found in the organisation's Joint Communicable Disease Outbreak Management Plan.

4.3 Duties – Roles and Responsibilities

a) Organisational

To provide suitable and sufficient resources and facilities to enable effective management during a ward/unit closure or an outbreak that is associated with significant risks to patients, service users and staff.

b) Managerial

To maintain well informed operational control of the outbreak in relation to the organisation's responsibility to provide health and social care for patients and service users.

- 4.3.1** The Chief Operating Officer has overall responsibility for the strategic and operational management of the organisation, including ensuring that policies, protocols and documents that guide practice comply with all legal, statutory and good practice guidance requirements.
- 4.3.2** The DIPC / Associate DIPC oversees the organisation's development and implementation of infection prevention and control policies, protocols and procedures in accordance with the Infection Control Strategy:
- 4.3.3** Assistant Directors are responsible for the implementation of this protocol into practice and taking appropriate action should any breach of this protocol arise.
- 4.3.4** Service Managers are responsible for the operational implementation of this protocol, including:
- a) informing the IPCT immediately of any suspected outbreaks/infection control concerns.
 - b) providing accurate documented and verbal information to patients, service users and staff and the IPCT at the earliest opportunity for a full assessment to be undertaken
- 4.3.5** It is the responsibility of the IPCT to:
- a) ensure that this protocol is updated as required
 - b) support Service heads in providing advice and training and assist with the implementation of the protocol
 - c) review the protocol in light of the outcome of any audits and or outbreak reviews
 - d) complete a risk assessment and implement action to be taken
 - e) advise on the management required to limit further spread
 - f) advise on the outcome of the assessment and, if appropriate, recommendations on ward/unit closure. It is the responsibility of the team to update the DIPC and the HPA
 - g) review any new information on patient, service user and hospital status as and when required
 - h) advise on outbreak management as appropriate
- 4.3.6** All employees are responsible for adhering to this protocol, regardless of role, band, discipline or service area. Employees are also responsible for ensuring that all staff undertake their responsibility towards the safer working practices of colleagues or co-workers, such as students and trainees under their supervision. In addition, it is the employees' responsibility to:
- a) ensure that they have received their mandatory Infection Control training
 - b) observe standard precautions/principles
 - c) comply with the requirements of all relevant organisational policies and procedures applicable to their area of operation
 - d) report any breach of this protocol to their service manager.
 - e) report incidents in compliance with the organisation's Incident and Near Miss Reporting Policy

4.4 Closure of a Ward/Unit

- 4.4.1** Where two or more patients or service users are complaining of diarrhoea and vomiting, the IPCT should be notified immediately during normal working hours. Out of hours the on call consultant microbiologist should be notified, ensuring that the IPCT have been contacted on the next working day.

The IPCT will visit the ward or unit and assess the situation. Following a risk assessment the final decision to close a ward or unit will be made by the IPCT.

- 4.4.2** If deemed necessary, the Associate DIPC will convene an Outbreak Control Team meeting:

a) Membership of Outbreak Control Team:

- Infection Control Doctor (Consultant Microbiologist)
- DIPC
- Associate DIPC / Lead Nurse for Infection Prevention & Control
- Consultant in Public Health (Health Protection Agency)
- Matron, Infection Prevention and Control
- Modern Matron
- Medical Director
- Communication Lead

b) The following may also be present:

- Occupational Health Advisor
- Catering Manager (if outbreak is food poisoning)
- Other organisation Managers, depending on nature of outbreak
- Chief Pharmacist Lead

c) The remit of the Outbreak Control team will be to:

- Discuss the situation relating to the outbreak and plan the appropriate action
- Ensure that the outbreak is reported to relevant public health bodies
- Ensure that infection control measures are in place and are working
- Monitor that adequate additional resources are available e.g. pharmaceutical supplies, cleaning, portering and laundry supplies
- Monitor progress and arrangement of containment
- Update the organisation's board on developments
- Provide infection control advice to health/social care professionals and others
- Provide briefing for staff and patients, service users, carers and visitors
- Provide relevant information to the Communication Lead in the event of press enquiries about the outbreak investigation
- Review the outbreak when it is over and provide a final report with recommendation to the Managing Director

For the duration of any period of closure the Managing Director will be regularly informed and updated by the DIPC or the Lead Nurse of IPCT.

Guidance on caring for patients and service users who require any additional or specific advice will be provided by the IPCT.

Staff transfers both into and out of wards and units should cease unless agreed by the DIPC.

4.5 Reopening the Ward/Unit

- 4.5.1** Ongoing review of the need for closure will be undertaken by the IPCT and reported to the interested parties and Outbreak Control Meetings (where appropriate). The IPCT will recommend the re-opening of a ward or unit as soon as it is appropriate.
- 4.5.2** Once re-opening is sanctioned, arrangements for terminal cleaning of the area will be delegated to the relevant Service Head or Unit Manager and undertaken in advance of the re-opening.

SECTION 5 - QUALITY ISSUES AND AUDIT TOOLS

5.1 Standard Setting, Audit and Clinical Governance

The effective control of preventable infections has always been seen as an indicator of the quality of care a patient or service user may receive. Elements incorporated into a quality assurance framework continue to sit within an infection control strategic plan. Activities such as standard setting and audit programmes have become essential components of an infection control programme. Clinical governance is now emerged as an umbrella term of all these quality assurance programmes. Its broad aim is to reassure people that quality is the essence of healthcare at all levels of the organisation.

Accountability and responsibility for risk assessment and quality of care will be an issue for all health and social care professionals, not just those involved in clinical activity. Managers, including Chief Executives of NHS organisations, have a clear responsibility for their risk assessments and the quality of the service they provide.

All practitioners will be expected to follow practices that are clinically safe, effective and evidenced based. Particular commitment will be given to following the guidelines and recommended practices introduced by the National Institute for Health and Clinical Excellence (NICE).

NHS Peterborough will monitor performance of Peterborough Community Services.

5.1.1 Clinical Governance

Embodied into clinical governance is the commitment to life long learning for all professionals, and a recognition of individual responsibility to identify learning needs and maintain professional development.

Points to be considered when reviewing practice:

- What systems are there in place?
- What risk assessments are required?
- Are the systems effective?
- Is there a need to review activity?

There are elements of clinical governance that are familiar such as:

- Standard setting
- Clinical and practice audit
- Evidence based practice
- Risk management
- Life long learning
- Team building
- Peer review
- Clinical leadership

There are also more unfamiliar elements of clinical governance such as:

- Users involvement
- Clinical supervision
- Management of poor practice
- Reflective practice

5.2 Standards and Audit Tools

Infection control in all health and social care settings is gaining a higher profile. In practice, large numbers of patients and service users are seen and the potential for cross infection is substantial if good practice is not maintained. It is essential to maintain public confidence by the production, implementation and audit of robust policies, procedures and protocols and the documentation of activities such as sterilisation processes.

All action plans should commence with the setting of standards for infection control. An audit tool can be used to monitor infection control practices and provide data on compliance with policies and good practice within the primary setting. These data have other uses, including the planning of educational needs or evaluating the overall effectiveness of infection control programmes.

Following an audit it is important that all relevant staff are given the opportunity to discuss the findings. Urgent problems identified in the audit would have to be addressed at that time.

A report should be written that highlights areas of good practice as well as those of concern, along with recommendations and time scales for the recommendations to be put into practice.

Re-audit of the area will ensure that the action plan has been completed and the recommendations have been implemented. All action plans will be reviewed at the Infection, prevention and Control Committee

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SECTION 6 – FACT SHEETS

FACT SHEET 6.1

A SIMPLE GUIDE TO CLOSTRIDIUM DIFFICILE FOR STAFF

This guide explains that *Clostridium difficile* is, how it has developed and ways in which it can cause infection.

Clostridium difficile is the major cause of antibiotic-associated diarrhoea and colitis, a healthcare associated intestinal infection that most affects older people with other underlying diseases.

Background

Clostridium difficile is a bacterium of the family of *Clostridium* (the family also includes the bacteria that cause tetanus, botulism and gas gangrene). It is an anaerobic bacterium (i.e. it does not grow in the presence of oxygen) and it produces spores that can survive for a long time in the environment. Its usual habitat is the large intestine, where there is very little oxygen. It can be found in low numbers in small proportion (less than 5%) of the healthy adult population. It is kept in check by the normal 'good' bacteria of the intestine. It is common in the intestine of babies and in fact but does not cause disease because its toxins (*the points it produces), do not damage their immature intestinal cells.

Although *Clostridium difficile* was first described in the 1930's, it was not identified as the cause of diarrhoea and colitis following antibiotic therapy until the late 1970's.

What does it cause?

Clostridium difficile can cause diarrhoea ranging from a mild disturbance to a very severe illness with ulceration and bleeding from the colon (colitis) and, at worst, perforation of the intestine leading to peritonitis. It can be fatal.

Generally it is only able to do this when the normal healthy intestinal bacteria have been killed off by antibiotics. When not held back by the normal bacterial, it multiplies in the intestine and produces two toxins (A & B) that damage the cells lining the intestine. The result is diarrhoea.

Who gets *Clostridium difficile* infection?

Patients who have been treated with broad spectrum antibiotics (those that affect a wide range of bacteria, including intestinal bacteria) are at greatest risk of *Clostridium difficile* disease. Most of those affected are older people with serious underlying illnesses. Most infections occur in hospitals (including community hospitals) and nursing homes, but infections can also occur in primary care settings.

How does it spread?

Although some people can be healthy carriers of *Clostridium difficile*, in most cases the disease develops after cross infection from another patient, either through direct patient to patient contact, via healthcare staff, or via a contaminated environment. A patient who has *Clostridium difficile* diarrhoea excretes large numbers of the spores in their liquid faeces. These can contaminate the general environment around the patient's bed (including bed tables, lockers, call buttons, equipment), toilet areas, sluices, commodes and bed pan washers. Spores can survive for a long time and can be a source of hand-to-mouth infection for others. If these others have also been given antibiotics, they are at risk of *Clostridium difficile* disease.

How is it diagnosed?

A sample of diarrhoeal faeces is tested for the presence of the *Clostridium difficile* toxins (A and B). This is the main diagnostic test and gives a result within a few hours.

In outbreaks, or for surveillance of the different types circulating the population, *Clostridium difficile* can be cultured from faeces (this involves the local laboratory sending specimens on to the regional Health Protection Agency laboratory) the isolates can then be sent on to the anaerobe reference Laboratory (National Public Health Service, Wales; Microbiology, Cardiff) for ribo typing and testing for susceptibility to antibiotics.

How common is it?

When *Clostridium difficile* was first recognised as the cause of antibiotic-associated diarrhoea and colitis in the late 1970's, laboratory diagnosis was difficult and the number of cases was not monitored. Since 1990, laboratories have reported the number of cases diagnosed to the Health Protection Agency in a voluntary system. The number of reports increased from less than 1,000 in the early 1990's to 22,000 in 2002, 28,000 in 2003 and 44,488 in 2004. Some of this increase was due to improved diagnostic tests and improved reporting by laboratories, but there has clearly been a very significant increase in the number of cases.

Since January 2004 *Clostridium difficile* has been part of the mandatory surveillance programme for healthcare associated infections in acute Trusts.

What is Type 007 and why is it of concern?

The typing system analyses part of the *Clostridium difficile* DNA (chromosome) in a test called ribotyping. Over 100 types have been identified. Type 007 was rare in the UK, the first isolate was identified in 1999 and the second in 2002. Individual isolates were identified in 2003-5. When outbreaks at Stoke Mandeville and the Royal Devon and Exeter Hospitals were investigated in 2004-5, Type 027 was found to predominate in their cases. The same type has caused a large outbreak of severe disease in hospitals in Canada (Quebec) and north eastern USA since 2000. Type 027 produces greater quantities of the toxins than most other types of *Clostridium difficile* because a mutation has knocked out the gene that normally restricts toxin production. It causes a greater proportion of severe disease and appears to have a high mortality. It also seems to be very capable of spreading between patients.

Prevention and control

Important components in the prevention and control of *Clostridium difficile* disease are:

- Antibiotic prescribing policies to reduce the use of broad spectrum antibiotics
- Isolation of patients with *Clostridium difficile* diarrhoea and enhanced infection control practice
- Hand washing (not relying solely on alcohol gels as these do not kill the spores)
- Wearing gloves and aprons, especially when dealing with bed pans and commodes
- Enhanced environmental cleaning and use of a chlorine-releasing disinfectant where there are cases of *Clostridium difficile* disease, to reduce environmental contamination with the spores.

FACT SHEET 6.2

INFORMATION FOR PATIENTS AND CARERS ON CLOSTRIDIUM DIFFICILE

What is *Clostridium difficile*?

C.diff stands for *Clostridium difficile*, which is bacterium (germ). *Clostridium difficile* lives in the bowel of some people without causing any illness.

Why does *Clostridium difficile* make people ill?

Clostridium difficile makes people ill when the germs increase in the bowel and start to produce a toxin (poison) which causes diarrhoea.

Antibiotics can contribute to *Clostridium difficile* illness as they kill the normal 'good' bacteria that live in the bowel. *Clostridium difficile* is resistant to these antibiotics so it is able to increase in number and then produce the toxin, resulting in the infection.

What is the treatment?

How we treat *Clostridium difficile* will vary from one person to another because every patient is an individual case. There are specific antibiotics that can be given to reduce the number of *Clostridium difficile* germs in the bowel. Whenever possible you will stop taking the antibiotics that were originally prescribed. This will give your bowel a chance to recover and the normal protective bacteria will start to grow again.

Will I be isolated?

Clostridium difficile can be passed from one person to another. You may be given a single room if one is available. Alternatively you may need to be placed at one end of a ward or in the same area as other patients with the infection, to make it easier to protect those that not affected.

You should wash your hands very thoroughly with soap and water after using the lavatory and before any meals. If you have any concerns about standards of cleanliness on the ward or unit, please speak to the nurse in charge.

Are my visitors at risk?

No, not if they are in good health. It is also safe for pregnant women to visit you. Your visitors do not normally need to wear gloves or an apron, but they should thoroughly wash and dry their hands with soap and water before leaving your room or bed area.

Further information

Thank you for reading this leaflet. We hope you have found it useful. If you need any further information, please ask the nurse or doctor who is attending to your care. If necessary, they can arrange for you to speak to one of the Infection Prevention & Control nurses.

LEGIONNAIRES' DISEASE

Legionnaires' disease is an uncommon form of pneumonia that may have serious consequences for some people, especially people in the older age groups. People become infected when they breathe in air that contains legionella bacteria which have been dispersed into the air in very fine droplets of water known as aerosols. If the bacteria get inhaled into the lungs they can cause infection. The bacteria live naturally in environmental water sources but, if they get into water systems in buildings, they can cause a risk to humans through air conditioning systems or through contaminated water systems used for showers, etc. Control and prevention of the disease is through treatment of the source of infection i.e. the contaminated water system.

What is Legionnaires' disease?

- Legionnaires' disease is a type of pneumonia caused by the bacterium *Legionella pneumophila*.
- It is actually one of a group of similar diseases collectively known as legionellosis. The other forms, eg Pontiac Fever and Lochgoilhead Fever, have similar symptoms but are not as serious as Legionnaires' disease.

Why is it called Legionnaires' disease?

- The disease was first recognised following an outbreak of severe pneumonia affecting people attending a state convention of the American Legion in Philadelphia in 1976. This led to naming the disease after this group. Subsequently, the bacterium causing the illness was identified and named *Legionella pneumophila*.

Where are legionella organisms found?

- Legionellae are widely distributed in the environment. They have been found in ponds, hot and cold water systems, and water in air conditioning cooling systems.
- However, the conditions are rarely right for people to catch the disease from these sources. Problems only arise when the organism finds itself in an ideal environment in which to multiply, such as stagnant water, and is then given an opportunity to spread.

How is Legionnaires' disease spread?

- People catch Legionnaires' disease by inhaling small droplets of water suspended in the air, which contain the bacteria.
- Certain conditions increase the risk from legionella:
 - a suitable temperature for growth, twenty to forty five degrees Centigrade
 - a source of nutrients for the organism, e.g. sludge, scale, rust, algae and other organic matter, and a way of creating and spreading breathable droplets, e.g. the aerosol created by a cooling tower or spa pool.
- Probably the greatest hazard is roof top cooling systems where a cascade of water is used to cool pipes; this produces spray which can enter the air conditioning system or fine droplets can fall onto passers by.
- **However, remember that most people exposed to legionella bacteria do not become ill, and Legionnaires' disease does not spread from person to person.**

Who gets Legionnaires' disease?

- All ages can be affected but it mainly affects people over 50 years of age, and generally men more than women.
- It occurs more commonly in smokers or people with other chest problems.
- The majority of cases are reported as single (isolated) cases but outbreaks can occur.
- About half the cases occurring in the UK are linked to travel abroad.

What are the symptoms?

- The early symptoms of legionellosis include a 'flu-like' illness with muscle aches, tiredness, headaches, dry cough and fever.
- Sometimes diarrhoea occurs and confusion may develop.
- These symptoms frequently lead on to pneumonia.
- Deaths occur in 10 - 15% of otherwise healthy individuals and may be higher in some groups of patients.

How soon do symptoms occur?

- The incubation period ranges from 2 to 10 days but is usually 3 to 6 days. In rare cases, some people may develop symptoms as late as three weeks after exposure.

How is it diagnosed?

- Once the relevant symptoms have occurred, a rapid diagnosis can be made by testing a urine sample from the patient.

What is the treatment?

- Antibiotics against the bacteria are effective in treating the disease.

FACT SHEET 6.4

MEASLES**Diagnosing suspected cases and managing contacts of cases**

To prevent cases in unprotected contacts, vaccine needs to be given within three days of exposure. Immunoglobulin can be given within six days of contact with an infectious case and may modify rather than prevent illness. Interventions such as offering MMR after this stage may prevent a third wave of infection but parents should be warned that a child who develops a rash within a week of vaccine is likely to have caught natural measles.

Laboratory investigation of suspected cases

Advice may be sought from the virologists at Addenbrooke's. The samples that can be tested include:

Salivary swab: tested for IgM and IgG at the reference laboratory and for PCR

Serum: tested for IgM and IgG at the reference laboratory; this sample is not ideal for PCR

Throat swab: tested for measles by PCR at the reference laboratory and for viral culture at Addenbrooke's

Urine: tested for measles by PCR at the reference laboratory

For children: salivary and throat swabs are recommended

For adults: salivary swab, throat swab and clotted blood sample *Salivary swabs are available from the Health Protection Team.*

Use of Human Normal Immunoglobulin and MMR in contacts

HNIG is most effective if given within 72 hours, but can be effective even if given within six days of exposure. It is used to prevent or attenuate an attack in contacts who are immuno-compromised, pregnant or infants under 9 months of age (see below).

Immuno-compromised children and adults: should be offered **HNIG** as soon as possible after exposure. There is no information to say whether an immuno-compromised individual would mount an immune response having had prior vaccination, therefore HNIG would be recommended.

Unvaccinated, immunocompetent adults and children over 12 months of age: should be given **MMR** vaccine as soon as possible after exposure. If measles cases continue to occur, consider bringing forward the second MMR dose to one month following the first.

Children between 9 and 12 months of age: should be offered **MMR** vaccine as soon as possible. A second dose will be required three months after the first and a booster at school entry.

Children between 6 and 8 months of age: *who are household contacts of a confirmed case or if their contact is associated with a local outbreak*, should be given **HNIG** as soon as possible after exposure. These children would need two further doses of MMR as routinely scheduled.

Children under 6 months of age: are likely to be protected by maternal antibody, unless the mother is the index case. However, if the mother does not give a definite history of measles infection or has not had two doses of measles/MMR vaccine, consider HNIG particularly where the infant has been in contact with a confirmed case, or contact is associated with a local outbreak.

Partially vaccinated children: these children should be offered an earlier dose of MMR vaccine. The pre-school dose can be brought down to a period of one month after the first dose (where this was given above 12 months of age).

Pregnant women: **HNIG** should be considered for pregnant women born since 1970, particularly if they have been in contact with a confirmed case, or if their contact is associated with a local outbreak. HNIG may attenuate the infection in the mother but there is no evidence that it prevents foetal loss. As with other adults, most pregnant women will be immune to measles, and therefore, where time allows, serum IgG should be measured.

Dosage of HNIG (by intramuscular injection)

Under 1 year 250mg

1-2 years 500mg

3 and over 750mg

MENINGITIS AND SEPTICAEMIA

Meningitis is an illness where the coverings of the brain and spinal cord become inflamed. It can be caused by viruses, bacteria, or other agents.

Viral meningitis is rarely serious and is not helped by antibiotics. **Bacterial meningitis** is less common than viral meningitis, but is a serious illness and needs urgent treatment with antibiotics. The most common of the bacteria that cause meningitis is the **meningococcus**. These bacteria can also cause **blood poisoning (septicaemia)**, which is the more serious form of the disease.

Where are the meningococcus bacteria found?

- These bacteria are very common. At any one time 10-20% of us carry the meningococcus in our nose and throat without knowing it.

How do we pick up the bacteria?

- We can pick up the meningococcus if we have very close prolonged contact (e.g. living in the same house) with someone carrying it. The contact has to be close because the bacteria are weak and cannot live for more than a few seconds outside the body.
- The bacteria cannot be picked up from water supplies, swimming pools or household objects such as clothes, furniture or cups.

If the bacteria are so common, why do so few of us develop the illness?

- Even though we come into contact with the meningococcus regularly, our bodies are able to fight off the infection. A tiny number of people who pick up the bacteria develop meningitis or septicaemia or both within 2-12 days of doing so. We do not yet fully understand why the bacteria cause such severe illness in these people. It may be due to weaknesses in their body defence systems.
- It is rare for two or more cases to occur together. The majority occur as single cases, with no increased risk to others, e.g. in the school or community.

What precautions are taken if there is a case?

- A short antibiotic course is given to very close contacts, usually only those living in the same house. The antibiotics are given to kill the bacteria that they may be carrying in their nose or throat, and so reduce the risk of infection to others. These close contacts may still develop the disease despite taking the antibiotics.
- Vaccines are available against some strains of meningococcus (groups A and C). They are given to the household and very close contacts if the patient has group A or C meningococcal infection. Unfortunately there is as yet no effective vaccine against the B strain of meningococcus which is the most common in the UK.

For further information or general advice contact:
The Meningitis Research Foundation
Tel: 0808 800 3344 or www.meningitis.org
The National Meningitis Trust
Tel: 0800 028 1828 or www.meningitis-trust.org

How can you tell if someone has the disease?

The rash does not fade when pressed e.g. with a glass

Seek urgent medical help if you think someone has meningitis. Early treatment saves lives

Take the person straight to the nearest casualty department in an emergency

CIPROFLOXACIN FACTSHEET

for meningitis contacts

The antibiotic you will be given is called Ciprofloxacin. It has been prescribed for you as you have been in close contact with a case of meningitis. The meningococcal germs that cause meningitis and septicaemia can be carried in the nose and throat; this antibiotic will kill them. Not everyone who has been in contact with a patient will need to take the antibiotic.

Taking ciprofloxacin

- It comes in tablet form. You will receive either one or two tablets of Ciprofloxacin.
- It is taken by mouth as a one-off dose with a glass of water. It is important that you drink plenty of fluids for the rest of the day after having this antibiotic.

Cautions

- You should avoid taking alcohol with this medicine as it may make you drowsy, affecting your ability to drive or operate machinery.
- Do not take the tablet if you have taken antacid/indigestion medicines or preparations containing iron or mineral supplements within the last 4 hours. Please inform the doctor or nurse if this is the case.

Please also tell the doctor or nurse if you

- ***have a history of epilepsy or G6PD deficiency***
- ***are allergic to ciprofloxacin***
- ***are pregnant or breastfeeding***

as you may need alternative medication

Side effects

- tummy ache, diarrhoea and nausea
- tiredness and headaches
- rash and itching
- pain and inflammation around the joints
- **facial swelling** - very rarely breathing difficulties may occur with the facial swelling. **You should seek medical attention urgently if this occurs.**

In the unlikely event of your developing any other symptoms, please contact your GP.

RIFAMPICIN FACTSHEET

for meningitis contacts

The antibiotic you will be given is called Rifampicin. It comes as either tablets or syrup and is suitable for people of all ages. It has been prescribed for you as you have been in close contact with a case of meningitis. The meningococcal germs that cause meningitis and septicaemia can be carried in the nose and throat, this antibiotic will kill them. Not everyone who has been in contact with a patient will need to take rifampicin.

Taking rifampicin

- Rifampicin must be taken twice a day for 2 days (morning & evening), the instructions will be clearly written on the box or bottle. It is important that you take your capsules, or ensure that your child is given the syrup exactly as directed by your doctor or the dispensing pharmacist.
- Four doses should be taken approximately 12 hours apart **ON AN EMPTY STOMACH**. To obtain the best effect, after the first dose, rifampicin should be taken one hour before breakfast and about 12 hours later, before the evening meal. Do not skip a dose.

Cautions

- Rifampicin can make oral contraceptives ("the Pill") less effective. If you are taking the contraceptive pill you should continue to take it as usual but use extra precautions (e.g. condoms) while you are on rifampicin and for four weeks afterwards after depending on which type of pill you are taking. Please ask your GP or family planning clinic for further advice.
- Rifampicin may reduce the effect of several medicines including blood thinning medication (anticoagulants), diabetic medication and some types of epilepsy medication (anticonvulsants).

Inform your doctor or nurse if you are taking any other medication or are allergic to rifampicin as you may need alternative medicine.

Side effects

- Urine, saliva, tears, sweat and stools may turn a red/orange colour. *This is normal, so do not be alarmed.*
- Soft contact lenses may get permanently stained. It is recommended that you do not wear soft contact lenses while taking rifampicin and until your tears return to their normal colour.
- Some people may experience temporary itching, skin rashes or other symptoms such as nausea, vomiting, diarrhoea.

In the unlikely event of your developing any other symptoms, please contact your GP.

ADVICE FOR PATIENTS, RELATIVES AND FRIENDS

MRSA	
<p>What is MRSA?</p> <p>MRSA stands for Meticillin Resistant Staphylococcus Aureus. Staphylococcus aureus is a common bacterium, which is carried by 20- 40% of the population.</p> <p>Methicillin is an antibiotic in the same group as penicillin. MRSA therefore means that the staphylococcus aureus has become resistant to treatment with these types of antibiotics. If someone has MRSA infection there are a limited number of antibiotics that can be used to treat the infection.</p> <p>Is MRSA any more harmful than ordinary Staphylococcus?</p> <p>No. The MR part makes no difference to the virulence of the infection.</p> <p>What is the difference between being colonised and infected with MRSA?</p> <p>Colonisation means that the MRSA is present on skin, nose or sometimes on leg ulcers, but it is not causing any harm to the person.</p> <p>However, sometimes Staphylococcus aureus (and therefore MRSA) can cause an infection. This may be in any wound or the urine when the bacterium damages tissue. These types of antibiotic- resistant infections are more common in vulnerable patients.</p> <p>Where does MRSA live on the body?</p> <p>MRSA lives in the nose, armpits, groin, wounds and any tubes or drains which is why these are swabbed when looking for MRSA. It can also survive for a short time on hands, which is why good hand hygiene should be maintained especially after skin contact with the person.</p> <p>How do you know whether the person is colonised or infected?</p> <p>When a person is infected they will have signs and symptoms of an infection diagnosed by the Doctor. If they are colonised they are not ill and will not have any signs or symptoms of an infection.</p>	<p>How is MRSA spread?</p> <p>On the hands of those caring for people who are carrying MRSA. It survives on skin, and as dust contains dead skin cells the environment should be maintained in a clean state.</p> <p>What can I do to stop MRSA spreading to others?</p> <p>Careful hand washing after helping with any personal hygiene, for example, helping with a wash or taking the person to the toilet.</p> <p>Health care workers should wear gloves and aprons when they are undertaking personal care or dealing with body fluids.</p> <p>Why then do people who are just colonised with MRSA get isolated in hospital?</p> <p>This is done to stop MRSA spreading to other patients in hospital who may have had surgery or have other risk factors. It is not necessary to isolate people when they are in the community.</p> <p>Can MRSA be treated?</p> <p>Yes. This is referred to as 'decolonisation' and you can discuss this option with your doctor. Decolonisation is sometimes not as successful when people have skin conditions like eczema and psoriasis, or if they have a catheter, a drip or a large wound.</p> <p>Where can I get more information?</p> <p>More information is available from:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Your GP or Practice Nurse. <input type="checkbox"/> Your District Nurse. <input type="checkbox"/> Manager of the nursing/residential home. <input type="checkbox"/> The Public Health Protection Team Nurse or Community Infection Control Nurse.

Cambridgeshire and Peterborough Health Protection Team January 2007 NOROVIRUS GASTROENTERITIS	
<p>Gastroenteritis is the general term used for an inflammation of the gut that results in diarrhoea and/or vomiting. The illness is caused by both infectious agents (bacteria, viruses and parasites) and non-infectious agents (e.g. chemicals in food).</p> <p>Viruses are the most frequent cause of gastroenteritis and, of these, the most common in England and Wales is a group of viruses called norovirus (in the past, norovirus has also been called 'winter vomiting virus', 'small round-structured virus' or 'Norwalk-like virus').</p>	
<p>What are the symptoms?</p> <ul style="list-style-type: none"> ◆ The illness usually begins 12 - 48 hours after getting infected with the virus. ◆ Forceful vomiting is the most frequent symptom (this is often described as "projectile"). Other symptoms include nausea, watery diarrhoea and stomach cramps. ◆ Sometimes people have a low-grade fever, chills, headache, muscle aches, and a general sense of tiredness. ◆ The illness is usually brief and most people make a full recovery within 1 - 2 days. ◆ Some people (usually the very young or elderly) may become very dehydrated and require hospital treatment. <p>What is the treatment?</p> <ul style="list-style-type: none"> ◆ There is no specific treatment for norovirus and it cannot be treated with antibiotics. ◆ Dehydration can occur, so it is important to drink plenty of fluids, such as juice or water. Sports drinks do not replace the nutrients and minerals lost during this illness. Rehydration drinks, available from pharmacies are the ideal drink to have. <p>Who is at risk of Norovirus infection?</p> <ul style="list-style-type: none"> ◆ Anyone can become infected with norovirus – it affects people of all ages. ◆ The very young and elderly should take extra care if infected, as dehydration is more common in these age groups. <p>How long are affected people infectious?</p> <ul style="list-style-type: none"> ◆ People infected with norovirus are infectious from the moment they begin feeling ill until about 2 days after recovery. The biggest risk of passing on the virus is while symptoms are present. ◆ An extremely small dose is all it takes for infection to occur. 	<p>How is Norovirus spread?</p> <ul style="list-style-type: none"> ◆ Norovirus is found in the stool and vomit of infected people. ◆ People can become infected in several ways, including: <ul style="list-style-type: none"> – touching surfaces or objects contaminated with norovirus and then touching their mouth before handwashing; – having direct contact with another person who is infected and then touching their mouth before handwashing. – through contaminated food or water, especially molluscs such as mussels, clams, oysters from contaminated waters. ◆ The virus is able to survive in the environment for many days and spreads easily from one person to another. So it often causes outbreaks, especially in semi-closed environments such as hospitals, care homes, schools and cruise ships. <p>How can Norovirus infections be prevented?</p> <p>It is impossible to prevent infection, however, the chances of becoming infected can be reduced by taking good hygiene measures around someone who is infected. This includes</p> <ul style="list-style-type: none"> ◆ Handwashing as often as necessary with warm water and soap. Supervised handwashing will be necessary for young children. ◆ Promptly disinfecting contaminated surfaces with household bleach-based cleaners. ◆ Washing soiled clothing and linens in as hot a wash as possible. <p>What about work/school?</p> <ul style="list-style-type: none"> ◆ Children should not go to daycare or school until they have been symptom-free for at least 48 hours. ◆ Persons who work in nursing homes, take care of patients, or handle food, should stay away from work and not prepare food until at least 48 hours after recovery from illness.

FACTSHEET ON TUBERCULOSIS	
<p>What is Tuberculosis?</p> <p>TB (tuberculosis) is a curable infectious disease that commonly affects the lungs but may occur elsewhere in the body. It is caused by infection with the TB germ, <i>Mycobacterium tuberculosis</i>. However, only a small number of people with TB infection actually develop the disease.</p> <p>How is TB caught?</p> <p>The TB germ is released into the air when someone with TB of the lungs coughs or sneezes. Breathing in the germs can result in infection. But only some people with TB of the lungs are infectious to other people. Such cases have what is called 'open' TB. Even then you need close and prolonged contact with an infected person to become infected yourself.</p> <p>What happens when you breathe in the TB bacteria?</p> <ul style="list-style-type: none"> ◆ Most often the TB bacteria are destroyed by the body's immune system and cause no problems. ◆ In a small number of people the bacteria stay in the body. Two things can then happen: TB bacteria can survive in the body in an inactive state for many months or years. These people have <i>TB infection</i>. The person will usually have a positive skin test reaction, but is not ill and is not infectious to others. However, they could develop TB later, especially if the body is weakened, for example by another medical problem. <p>OR</p> <p>The person can develop 'active' TB or <i>TB disease</i>, start to suffer the symptoms of the disease and may become infectious to others. For the small number of people who do develop TB disease, it is most likely to happen during the first five years after they become infected.</p>	<p>How will I know I have TB?</p> <ul style="list-style-type: none"> ◆ TB disease develops slowly in the body and it usually takes several months for symptoms to appear. ◆ The symptoms will depend on the part of the body affected and may include: <ul style="list-style-type: none"> persistent cough going on for more than three weeks phlegm (thick spit) which may be bloodstained fever and sweating especially at night weight loss without dieting loss of appetite lumps in the neck ◆ All of these symptoms can occur with other illnesses. TB can be diagnosed by a simple skin test, from a chest x-ray and by laboratory examination of specimens like phlegm or urine. <p>How is TB treated?</p> <p>TB is completely curable with a course of special antibiotics. Modern anti-TB drugs are extremely effective and in nearly all cases TB sufferers are no longer infectious and begin to feel much better after the first 2 weeks of treatment. Sometimes the first two weeks treatment is given in hospital but most people can be treated at home. However, it is very important that the antibiotics continue to be taken regularly for at least 6 months. Otherwise the disease can get worse and it may become resistant to the TB drugs so they no longer work.</p> <p>Can TB be prevented?</p> <p>Yes it can. Most important is early detection and treatment, especially of infectious cases, and completion of the treatment course. This reduces the spread of the disease. The screening of close contacts of TB cases and offering preventive treatment to reduce the risk of infected persons developing TB also contributes to preventing TB. There is a TB vaccine called BCG. It offers some protection against TB in certain high-risk groups, including infants and young children at risk of exposure to TB. However, it is not completely effective and, overall, plays a limited role in TB control.</p>

Invasive Group A Streptococcal Infections

Factsheet for close contacts of cases

Group A streptococcal (GAS) infections are caused by *Streptococcus pyogenes*, a bacterium that is commonly found on the skin or in the upper respiratory tract (nose and throat). The term group A refers to the presence of an antigen found on the surface of the bacterium, which helps in its identification.

What kinds of illness are caused by GAS?

The most common infections caused by GAS are a mild sore throat ('strep throat') and skin infections such as impetigo and cellulitis. Scarlet fever, also caused by GAS, was once a serious childhood disease but is now less common and less severe than it used to be. Rare complications of GAS infection include acute rheumatic fever and poststreptococcal glomerulonephritis (heart and kidney diseases caused by an immune reaction to the bacteria).

What is invasive group A streptococcal (iGAS) disease?

Sometimes life-threatening GAS disease may occur when bacteria get into parts of the body where bacteria are not usually found, such as the blood, muscle, or the lungs. These infections are termed invasive group A Streptococcal disease (iGAS). Two of the most severe, but rare, forms of iGAS disease are necrotising fasciitis (a severe infection where areas of soft tissue below the skin start to die) and Streptococcal Toxic Shock Syndrome (rapidly progressive symptoms with low blood pressure and failure of multiple organs within the body).

How is GAS spread?

Streptococci survive in throats and on hands for long enough to allow easy spread between people through sneezing, kissing and skin contact. People may carry group A streptococci in the throat or on the skin and have no symptoms of illness. This is sometimes known as being colonized.

Why does iGAS disease occur?

Invasive GAS infections occur when the bacteria get past the defences of the person who is infected. This may occur when a person has sores or other breaks in the skin that allow the bacteria to get into the tissue, or when the person's ability to fight off the infection is decreased because of chronic illness or an illness that affects the immune system. Also, some strains of GAS are thought to be more likely to cause severe disease than others.

What are the symptoms of iGAS infection?

The early signs and symptoms of invasive disease are shown below.

- High fever
- Severe muscle aches
- Localised muscle tenderness

What should I do if I develop any of these symptoms?

If you develop any of these symptoms contact your GP or seek medical advice immediately. Tell your GP that you have been in contact with someone recently diagnosed with invasive group A streptococcal disease and that you have developed some symptoms that you are worried about. It is very likely that your GP will ask you to come into the surgery so he/she can examine you.

Most people who come into contact with GAS remain well and symptom-free, or develop mild throat or skin infections.

Contracting invasive GAS disease from a relative or household member is very rare.

What treatments are available for GAS?

All GAS infections may be treated with antibiotics, such as penicillin, or erythromycin if the patient is allergic to penicillin. Early treatment improves the outcome of invasive disease. In cases of necrotising fasciitis, surgical removal of affected tissue is essential in addition to rapid treatment with intravenous antibiotics to prevent further spread.

HAND CLEANING TECHNIQUES

How to handrub? WITH ALCOHOL HANDRUB



Apply a small amount (about 3ml) of the product in a cupped hand, covering all surfaces



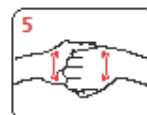
Rub hands palm to palm



Rub back of each hand with the palm of other hand with fingers interlaced



Rub palm to palm with fingers interlaced



Rub with backs of fingers to opposing palms with fingers interlocked



Rub each thumb clasped in opposite hand using rotational movement



Rub tips of fingers in opposite palm in a circular motion



Rub each wrist with opposite hand



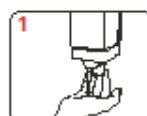
Once dry, your hands are safe



How to handwash? WITH SOAP AND WATER



Wet hands with water



Apply enough soap to cover all hand surfaces



Rub hands palm to palm



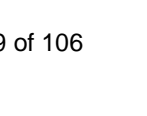
Rub back of each hand with the palm of other hand with fingers interlaced



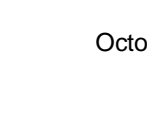
Rub palm to palm with fingers interlaced



Rub with backs of fingers to opposing palms with fingers interlocked



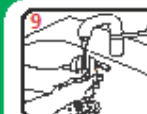
Rub each thumb clasped in opposite hand using rotational movement



Rub tips of fingers in opposite palm in a circular motion



Rub each wrist with opposite hand



Rinse hands with water



Use elbow to turn off tap



Dry thoroughly with a single-use towel



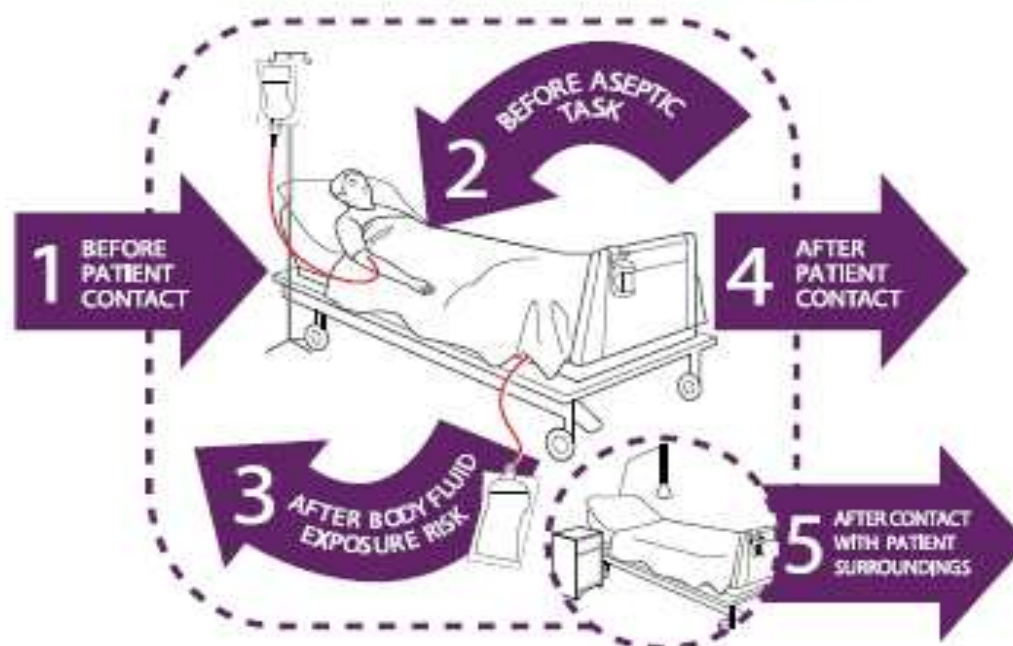
Your hands are now safe



Adapted from WHO World Alliance for Patient Safety 2006



Your 5 moments for hand hygiene at the point of care



1	BEFORE PATIENT CONTACT	WHEN? Clean your hands before touching a patient when approaching him/her. WHY? To protect the patient against harmful germs carried on your hands.
2	BEFORE AN ASEPTIC TASK	WHEN? Clean your hands immediately before any aseptic task. WHY? To protect the patient against harmful germs, including the patient's own, from entering his/her body.
3	AFTER BODY FLUID EXPOSURE RISK	WHEN? Clean your hands immediately after an exposure risk to body fluids (and after glove removal). WHY? To protect yourself and the healthcare environment from harmful patient germs.
4	AFTER PATIENT CONTACT	WHEN? Clean your hands after touching a patient and her/his immediate surroundings when leaving the patient's side. WHY? To protect yourself and the healthcare environment from harmful patient germs.
5	AFTER CONTACT WITH PATIENT SURROUNDINGS	WHEN? Clean your hands after touching any object or furniture in the patient's immediate surroundings when leaving – even if the patient has not been touched. WHY? To protect yourself and the healthcare environment from harmful patient germs.

Adapted from WHO World Alliance for Patient Safety 2008



Your 5 moments for hand hygiene at the point of care



1	BEFORE PATIENT CONTACT	WHEN? Clean your hands before touching a patient when approaching him/her WHY? To protect the patient against harmful germs carried on your hands
2	BEFORE AN ASEPTIC TASK	WHEN? Clean your hands immediately before any aseptic task WHY? To protect the patient against harmful germs, including the patient's own, from entering his/her body
3	AFTER BODY FLUID EXPOSURE RISK	WHEN? Clean your hands immediately after an exposure risk to body fluids (and after glove removal) WHY? To protect yourself and the healthcare environment from harmful patient germs
4	AFTER PATIENT CONTACT	WHEN? Clean your hands after touching a patient and her/his immediate surroundings when leaving the patient's side WHY? To protect yourself and the healthcare environment from harmful patient germs
5	AFTER CONTACT WITH PATIENT SURROUNDINGS	WHEN? Clean your hands after touching any object or furniture in the patient's immediate surroundings when leaving - even if the patient has not been touched WHY? To protect yourself and the healthcare environment from harmful patient germs

Adapted from WHO World Alliance for Patient Safety 2006



APPENDIX 7.4

LIST OF CYTOTOXIC AND CYTOSTATIC MEDICINES

Aldesleukin	Alemtuzumab	Alitretinoin
Altretamine	Amsacrine	Anastrozole
Arsenic trioxide	Asparaginase	Azacitidine
Azathioprine	Bacillus Calmette-GuerinBexarotene	Bicalutamide
Bleomycin	Busulfan	Capecitabine
Carboplatin	Carmustine	Cetorelix acetate
Chlorambucil	Chloramphenicol	Choriogonadotropin alfa
Cidofovir	Cisplatin	Cladribine
Colchicine	Cyclophosphamide	Cytarabine
Cyclosporin	Dacarbazine	Dactinomycin
Daunorubicin HCl	Denileukin	Dienestrol
Diethylstilbestrol	Dinoprostone	Docetaxel
Doxorubicin	Dutasteride	Epirubicin
Ergonovine/methylergonovine	Estramustine phosphate sodium	Estrogenprogestin combinations
Estradiol	Estrogens, esterified	Estrone
Estrogens, conjugated	Etoposide	Exemestane
Estropipate	Floxuridine	Fludarabine
Finasteride	Fluoxymesterone	Flutamide
Fluorouracil	Ganciclovir	Ganirelix acetate
Fulvestrant	Gemtuzumab	Gonadotropin chorionic
Gemcitabine	ozogamicin	
Goserelin	Hydroxyurea	Ibritumomab tiuxetanIdarubicin
Ifosfamide	Imatinib mesilate	Interferon alfa-2a
Interferon alfa-2b	Interferon alfa-n1	Interferon alfa-n3
Irinotecan HCl	Leflunomide	Letrozole
Leuprolide acetate	Lomustine	Mechlorethamine
Megestrol	Melphalan	Menotropins
Mercaptopurine	Methotrexate	Methyltestosterone
Mifepristone	Mitomycin	Mitotane
Mitoxantrone HCl	Mycophenolate mofetil	Nafarelin
Nilutamide	Oxaliplatin	Oxytocin
Paclitaxel	Pegaspargase	Pentamidine isethionate
Pentostatin	Perphosphamide	Pipobroman
Piritrexim isethionate	Plicamycin	Podofilox
Podophyllum resin	Prednimustine	Procarbazine
Progesterone	Progestins	Raloxifene
Raltitrexed	Ribavirin	Streptozocin
Tacrolimus	Tamoxifen	Temozolomide
Teniposide	Testolactone	Testosterone
Thalidomide	Thioguanine	Thiotepa
Topotecan	Toremifene citrate	Tositumomab
Tretinoin	Trifluridine	Trimetrexate glucuronate
Triptorelin	Uracil mustard	Valganciclovir
Valrubicin	Vidarabine	Vinblastine sulfate
Vincristine sulfate	Vindesine	Vinorelbine tartrate
Zidovudine		

If the temperature remains outside of this range, the fault must be reported and the fridge repaired as soon as possible. If it cannot be reported, a new fridge should be purchased.

[illegible]

APPENDIX 7.6

Peterborough Community Services

SAFE IMMUNISATION - COLD CHAIN RESPONSIBILITY

Nominated Person

Deputy

NAME: _____

DESIGNATION: _____

Local written procedure

Temperature control min/max

Temperature record

Storage/position in refrigerator

Cleaning/defrosting

Actions:

Cold chain failure

Disposal vaccines

Disposal contaminated waste

Date training completed: _____

APPENDIX 7.7

DECLARATION OF CONTAMINATION STATUS

Prior to the Inspection Servicing. Repair or Return of Medical and Laboratory Equipment

To: **Make and description of Equipment**
Model/Serial/Batch No:

Trust's Ref: Recipient's Service or Returns
or Order No: Authorisation Reference or Contact Name:

Tick box A if applicable. Otherwise complete all parts of B, providing further information as requested or appropriate.

A ☐ This equipment/item has not been used in any invasive procedure or been in contact with blood, other body fluids, respired gases or pathological samples. It has been cleaned, in accordance with the Control of Infection Disinfecting Policy, in preparation for inspection, servicing, repair or transportation.

B (1) Has this equipment/item been exposed internally or externally to hazardous materials as indicated below?

Provide further details here:

YES/NO Blood, body fluids, respired gases, pathological samples:

YES/NO Other biohazards:

YES/NO Chemical or substances hazardous to health:

YES/NO Other substances hazardous to health:

YES/NO Other hazards:

(2) Has this equipment/item been cleaned and decontaminated?

YES Indicate the methods and materials used:

NO This equipment could not be decontaminated.

Indicate reason:

Advice should be obtained from your Head of Department or Control of Infection Manager before any dismantling, inspection, servicing or repair works carried out.

Such equipment must not be returned/presented without the prior agreement of the recipient whose reference or contact name must be given above.

(3) Has the equipment/item been suitably prepared to ensure safe handling/transportation?

YES/NO, Indicate Reason:

I declare that I have taken all reasonable steps to ensure the accuracy of the above information, in accordance with HSG(93)26.

Authorised signature:

Name (printed):

Position:

Date:

Unit:

Dept:

Tel No:

Copies of Certificates to be sent to:

Top Copy: To accompany equipment

Second Copy: To remain in the certificate book for reference

Section 1 Page 50(a)**HMP-71**