Infection Control Fact Sheets
DOCUMENT CONTROL

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<th>Infection Control Team</th>
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SUMMARY

The Infection Control fact sheets provide staff with up to date information of transmissible conditions and how the prevention of cross infection can be achieved. Although they are not within the Infection Control Policy document there will be a hyperlink facility to link them to the policy. The information can be downloaded from the web site by individual areas, but the most up to date version will be on the intranet.

The infection control fact sheets are:

- Bed Bugs
- Blood Borne Viruses
- Campylobacter
- Care of patients with infective diarrhoea
- Clostridium difficile
- Cryptosporidiosis
- E. coli 0157
- Flees
- Hepatitis A
- Hepatitis B Virus (HBV)
- Hepatitis C Virus (HCV)
- HIV
- Lice
- Meningitis
- Parvovirus
- Rubella
- Salmonella
- Scabies
- Scabies
- Shigella
- Transmissible Spongiform Encephalopathy Agents
- Tuberculosis
- Varicella Zoster Virus
- Viral Gastro-enteritis

These will be reviewed when any new national guidelines are published and every 3 years (2008)
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1. INTRODUCTION

In order to reduce healthcare associated infection it is critical that all Trust staff have a clear understanding with regards to the infections which can have an impact on healthcare. Through knowledge about the organism, the route of transmission and infection control measures to reduce spread the potential for cross infection can be minimised.

2. OBJECTIVE

To ensure that all Trust staff have clear knowledge and understanding of transmissible healthcare associated infections that can have an impact on healthcare.

3. SCOPE OF POLICY

All individuals who have any involvement with the care and management of patients.

4. POLICY

These information fact sheets provide specific information regarding organisms and should be read in their entirety.
5. **BED BUGS**

**BEDBUGS**

*(Cimex lectularius etc.)*

**Introduction**

Scabies and lice live permanently on the skin or hair so topical treatment of the individual is needed to eradicate them.

Fleas and bedbugs live in the environment and are carried only transiently while they are feeding. For these, environmental decontamination only is needed.

Environmental Health Services will be able to advice about disinfestation in the community.

Removal of cockroaches, silver fish, pharaoh's ants etc. which are not parasitic to man but live within the hospital, is the responsibility of the Estates Department.

The aims of management are:

1. To eliminate infection in the patient or environment
2. To prevent transmission to other people.

Control of spread of infestation depends on prompt diagnosis and treatment of any suspected cases.

When a patient with suspected infestation is admitted, please notify Infection Control Team. If any of the above ectoparasites are seen, please send to the Bacteriology laboratory for identification, in a dry universal container.

**Background Information**

These wingless insects live and lay eggs in walls, furniture and bedding.

**Transmission**

Directly from infested bedding or baggage. Bedbugs are rarely found on the person, but may be brought into hospital on patients' clothes or effects.

**Treatment**

- No specific treatment is necessary for the patient.
- At home, clothes, bedding and baggage can be put in plastic bags for disinfection by the Environmental Health Department.

In hospital, the domestic manager will arrange decontamination of infested room.
6. **BLOOD BORNE VIRUSES**

**BLOOD-BORNE VIRUSES**

**General Information**

**Risks to health care workers**

Each of these viruses are an occupational risk for Health Care Workers (HCW). Cases of infection following percutaneous exposure have been well documented for all 3. The risks of infection after significant exposure to the blood of a known positive patient are:-

- Hep B 1 in 3
- Hep C 1 in 30
- HIV 1 in 300

**Routes of Spread**

These three viruses are all spread by the "parenteral" route i.e. by inoculation with blood and certain other body fluids i.e.:-

- Cerebrospinal fluid
- Peritoneal fluid
- Pleural fluid
- Synovial fluid
- Semen
- Vaginal secretions
- Breast milk

- Any other body fluid containing visible blood, including saliva in association with dentistry.

- Unfixed tissues and organs.

Individuals may carry these viruses for many years without any signs or symptoms of illness. The only way to tell if a person is infected is to do specific blood tests. However, they all have the potential to cause severe, life threatening illness.

**The following are significant exposures:**

- A sharps injury where the skin is penetrated by a sharp object (e.g. needle, broken glass) which has been contaminated by blood/other body fluids.

- Contamination of broken skin (e.g. cuts, patches of eczema) with blood/other body fluids.

- Splashes of blood to mucous membranes (eyes and mouth).
  Splashes of blood to intact skin are not considered as significant exposures.
Practical Management

Most patients with blood-borne infections may be safely nursed in a general ward unless one or more of the following apply:

- Patient has an open wound or lesion liable to bleed (Please contact Infection Control for advice on this situation).
- Patient is confused or disturbed
- Patient has a known infection risk such as TB or Salmonella or is being investigated for possible infection e.g. respiratory or gastro-enteric tract.

Prevention

There are several approaches to preventing infection with blood-borne viruses in HCW. The main ones are:

1. Education of HCW about the risks.
2. Prevention of significant exposures by good Infection Control practices. See Standard Infection Control procedures for the care of all patients.
3. Immunisation against Hepatitis B.
4. Treatment following significant exposures, i.e.:
   - immediate first aid
   - reporting of all incidents
   - specific immunoglobulin for Hepatitis B/ post exposure prophylaxis for HIV
   - follow-up and counselling.

Reference

GENERAL MEASURES TO AVOID EXPOSURE TO HIV AND BLOOD-BORNE HEPATITIS VIRUSES IN THE HEALTH CARE SETTING

<table>
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<tr>
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<tr>
<td>1. Wash hands before and after contact with each patient, and, before putting on and after removing gloves.</td>
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<td>2. Change gloves between patients.</td>
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<td>3. Wear gloves where contact with blood/body fluid is anticipated.</td>
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<td>4. Cover existing wounds, skin lesions and all breaks in exposed skin with waterproof dressings.</td>
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<td>5. Wear gloves when cleaning equipment prior to sterilisation or disinfection, when handling chemical disinfectants, when cleaning up spillages and handling contaminated sharps.</td>
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<td>6. Wear plastic apron to protect clothing. Use facial protection to prevent splashes of blood to eyes and mouth.</td>
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<td>7. Avoid wearing open footwear in situations where blood may be spilt or where sharp instruments or needles are handled.</td>
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<td>8. Avoid sharps usage where possible, and where sharps usage is essential, exercise particular care in handling and disposal.</td>
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<tr>
<td>9. Clear up spillage of blood promptly and disinfect surfaces, see spillage categories and how to deal with a spillage</td>
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<td>10. Follow safe procedures for disposal of contaminated waste &amp; linen.</td>
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ALL BLOOD SHOULD BE REGARDED AS POTENTIALY INFECTED WITH HIV AND/OR OTHER BLOOD-BORNE PATHOGENS.
7. CAMPYLOBACTER

Background Information

In the U.K., children & young adults are most commonly affected, usually during summer months.

Incubation Period is 2-5 days.

Symptoms: - commonly last 2-5 days but may last for 10 days

- diarrhoea
- abdominal pain
- malaise
- fever
- nausea and vomiting
- blood and mucous may be present in stools

Reservoir of infection

Animals, especially cattle & poultry. Birds may spread Campylobacter by pecking milk bottle tops. Pets, especially young puppies and kittens.

Routes of Spread

- Eating undercooked meat/chicken (especially barbecued ) or drinking un-pasteurised milk, or water
- Contact with infected animals.

Management of Patients

Person-to-person transmission is uncommon, but enteric precautions should be observed for all cases.

Management of Infected Health Care Workers

- Exclude food handlers from work until asymptomatic for 48 hours.
- Health Care Workers including food handlers may return to work when they have been symptom free for 48 hours, provided they are fit and have reported to Occupational Health.

See A – Z Routes of spread of infection
8. **CARE OF PATIENTS WITH INFECTIVE DIARRHOEA**

**CARE OF PATIENTS WITH INFECTIVE DIARRHOEA**

**GASTRO-ENTERITIS**

Diarrhoea may have a variety of causes, not all of which are infective. Most cases of bacterial gastro-enteritis which are admitted to hospital are food-borne in origin (i.e. food poisoning), while viral gastro-enteritis is more likely to be spread from person-to-person.

Food poisoning/food borne infections are acquired by eating or drinking contaminated food or water. They are caused by a variety of agents and may present a range of symptoms including vomiting and/or diarrhoea, headache & malaise, abdominal pain and fever.

The commonest causes in North Cumbria of **community-acquired** bacterial gastro-enteritis are *Campylobacter* and *Salmonella* sp.

Other important, though less common bacteria are *E coli 0157* and *Shigella* sp.

NB. These pathogens are easily transmitted from person to person.

In contrast the commonest bacterial cause of **hospital-acquired** diarrhoea is *Clostridium difficile*.  

Other important causes of diarrhoea include viruses e.g.:- *Rotavirus*, *Norwalk like virus* and Protozoa e.g. *Cryptosporidium*.

Rare causes of diarrhoea in the UK include Cholera and amoebic dysentery, which may be acquired abroad.

For more information on individual bacteria see separate Fact Sheets.

Prevention of spread of infection, regardless of the particular organism involved, depends on:-
- good personal hygiene i.e. handwashing
- safe handling and proper disposal of faeces - see below.
INFECTION CONTROL PRACTICES FOR ENTERIC PRECAUTIONS

1. Patients with diarrhoea will require a single room if incontinent, confused, acutely unwell or unable to manage personal hygiene. Contact Infection Control Department for advice.
   Send a stool specimen to Bacteriology as soon as possible. **N.B.** Always isolate the patient according to symptoms - do not wait for a laboratory result first.

2. Aprons and gloves should be worn when emptying bedpans, helping patients on the toilet/commode, removing soiled clothing or bedding.

3. **Handwashing after removal of gloves and after patient contact is essential.**

4. Linen from patients with known infections or undiagnosed gastro-enteritis should be sent as infected.

5. Thorough cleaning is always essential. Environmental disinfection with hypochlorite may be advised by the Infection Control Department in certain cases but is not routine.

**Reference**

9. CLOSTRIDIUM DIFFICILE

CLOSTRIDIUM DIFFICILE
(causative organism for pseudo-membranous colitis)

Background Information

Clostridium difficile is the commonest cause of hospital acquired diarrhoea. Clostridium difficile infection is associated with the use of antibiotics. The illness may be mild and self-limiting, or may cause severe colitis, with significant morbidity and mortality. Recurrence of diarrhoea after treatment may occur in up to 20% of cases. The main risk of cross infection occurs while patients have diarrhoea. The risk to Health Care Workers is minimal.

Risk factors for Clostridium difficile infection

- Age > 65
- Prolonged hospital admission
- Previous treatment with antibiotics

Symptoms

- Abdominal pain and cramps.
- Explosive, watery, foul smelling diarrhoea.
- Some patients may have low grade pyrexia.

Reservoir of infection

- Human GI tract
- Spores may survive in the hospital environment.

Routes of Spread

- direct patient to patient spread
- transmission between patients on the hands of staff
- contamination of the environment, instruments and equipment.

See A – Z Routes of spread of infection.

Diagnosis

The diagnosis is made by detecting Clostridium difficile toxin in stool specimens. Send specimens to the Bacteriology Laboratory, and ask for "Clostridium difficile toxin" on the request form as this is not part of the routine investigations.

N.B. If the initial specimen is negative and symptoms persist a repeat specimen should be sent.
Endoscopy may show non-specific colitis or yellow-white raised plagues or membranes.

**Treatment**

1. If the patient is still on antibiotics, these should be stopped unless continued treatment is essential.
2. Oral Metronidazole (400mg tds) or oral Vancomycin (125mg qds) for 10 days are both effective, Metronidazole is the initial treatment of choice.

**Infection Control Measures**

- Isolate all patients with suspected antibiotic-associated diarrhoea and report to Infection Control. Do not wait for the results of toxin detection
- Wear gloves and aprons when giving patient care and disposing of excreta.
- Wash hands thoroughly with detergent and hot water on leaving the room.
- Send linen as infected.
- Maintain high level of cleaning.
- These precautions must be continued until the patient has been asymptomatic for 48 hours. Follow-up stool specimens are not needed unless the patient develops further diarrhoea. There is a significant risk of relapse, and if this occurs, the patient must be isolated again. When treatment is completed, the floor, all horizontal surfaces, commodes or toilets, and any equipment must be thoroughly cleaned with Chlorclean or detergent and water followed by an alternative hypochlorite and the curtains changed.

**Reference**

10. **CRYPTOSPORIDIOSIS**

**(A Protozoal Infection in caused by Cryptosporidium parvum)**

**Background Information**

A common cause of self limiting gastro-enteritis in the under 5’s. May cause prolonged severe infection in immuno-compromised patients, especially AIDS patients.

**Incubation Period**

About 7 days

**Symptoms (may persist for 2-3 weeks)**

- Profuse watery diarrhoea
- Cramping abdominal pain
- Diarrhoea may be preceded by anorexia and vomiting in children

**Reservoir of infection**

Cattle and other domestic animals.

**Route of Spread**

Faecal-oral, with person-to-person, animal-to-person and waterborne spread are all possible. It is not inactivated by the normal concentration of chlorine in drinking water. Large outbreaks have been associated with contaminated water supplies and swimming pools.

**Management of Patient**

Isolate in single room using enteric precautions while patient remains symptomatic. There is no effective antimicrobial therapy for Cryptosporidium.

**Management of Infected Health Care Workers**

Exclude from work while symptomatic.

See A – Z Routes of spread of infection
11. **E. COLI 0157**

**Background Information**

Since the late 70’s has emerged as a significant problem in Europe and North America. It has a much higher mortality and morbidity than Salmonella. Single cases and large outbreaks may occur. Infection may cause renal failure, especially in children and the elderly.

**Incubation period:** - 2-8 days

**Symptoms**

Spectrum of disease from mild diarrhoea to watery stools containing large amounts of blood. May lead to Haemolytic Uraemic Syndrome (HUS) and renal failure.

**Reservoir of infection**

Cattle and other domestic animals.

**Routes of Spread**

- Consumption of contaminated food/milk/water (especially minced beef as in beef burgers).

**N.B.** E. coli 0157 may easily spread from person to person so enteric precautions are **essential** in hospital - see below. The infectious dose is very small and Health Care Workers (HCW’s) have caught E coli 0157 from infected patients.

**Management of Patient**

Isolate in single room using strict enteric precautions.

See A – Z Routes of spread of infection

**Management of Infected Health Care Workers**

Exclude symptomatic HCW and food handlers until microbiological clearance obtained (2 negative stool samples at least 2 days apart).

**References**


circumstances leading to the 1996 outbreak of infection with E. coli 0157 in Central Scotland, the implications for food safety and the lessons to be learned. The Stationary Office, Edinburgh
12. FLEAS

Introduction

Scabies and lice live permanently on the skin or hair so topical treatment of the individual is needed to eradicate them.
Fleas and bedbugs live in the environment and are carried only transiently while they are feeding. For these, environmental decontamination only is needed.
Environmental Health Services will be able to advice about disinfestations in the community.
Removal of cockroaches, silver fish, pharaoh's ants etc. which are not parasitic to man but live within the hospital, is the responsibility of the Estates Department.

The aims of management are:

1. To eliminate infection in the patient or environment
2. To prevent transmission to other people.

Control of spread of infestation depends on prompt diagnosis and treatment of any suspected cases.
When a patient with suspected infestation is admitted, please notify Infection Control Team. If any of the above ectoparasites are seen, please send to the Bacteriology laboratory for identification, in a dry universal container.

Background Information

There are many species of fleas. Eggs are laid on floors, carpets or pets' bedding. In Britain, most bites are by the cat flea or the dog flea.

Transmission

The flea jumps onto a human from the environment, bites, and jumps off again.

Treatment

- No specific treatment is necessary for the patient.
- At home, vacuum cleaning of carpets etc. is the quickest way to eliminate fleas.
- Treat animals and their bedding with insecticide.
13. HEPATITIS A

HEPATITIS A

Background Information

Hepatitis is inflammation of the liver which can be caused by a variety of infectious agents, one of which is the Hepatitis A virus (HAV). Hepatitis A occurs world-wide, and is spread in the community by the faecal-oral route. It can survive for several months in sewage and in the environment.

People travelling in countries where the risk of transmission is high such as the Eastern Mediterranean, Africa, Middle or Far East should be offered immunisation against HAV infection.

Incubation Period

The incubation period may be 15 to 50 days, (average 28 to 30 days). The period of infectivity is at least a week, possibly longer before the onset of symptoms and for a few days after the development of jaundice.

Symptoms

- Fever
- Malaise
- Anorexia
- Nausea
- Abdominal discomfort, followed within a few days by dark urine and pale stools.
- Some patients have asymptomatic infection.
- Most patients recover in a few weeks but fatigue and debility may persist for many months. In some the illness is more prolonged and severe but eventually recovery does occur and, unlike some other viruses, HAV does not cause chronic liver damage.

Diagnosis

Detection of Hepatitis A IgM antibody in the blood.

Routes of spread

- Person to person spread via faecal/oral contact.
- Via contaminated food and water. Raw shellfish (e.g. oysters) which have become contaminated by growing in sewage polluted water have been responsible for several large outbreaks.

See A – Z Routes of spread of infection.
Infection Control Measures

- The patient should be nursed in a single room. Enteric precautions must be taken for the first week of jaundice.

- Cases should be referred to Public Health for identification of contacts and prophylaxis as appropriate.
14. HEPATITIS B VIRUS (HBV)

Hepatitis B Virus (HBV).
(one of several viruses which cause viral hepatitis)

Background Information

The Hepatitis B virus is found throughout the world. There may be up to 350 million carriers worldwide. It is commonest in South East Asia and Africa, where up to 10% (1:10) of the population are chronic carriers of the virus (i.e. HBsAg positive).

In Britain, it is much less common - only 0.1% (1:1000) of the population are chronic carriers.

Routes of spread

The virus is spread parenterally, by contact with blood, and other body fluids. The main routes of spread are;
- by sexual transmission
- in intravenous drug users by sharing injecting equipment.
- from mother to baby
- by sharps injuries in the healthcare setting

It may be present in the blood stream in very high concentrations, and can be extremely infectious. In hospital it may be spread by contact with tiny amounts of blood, so good Infection Control practices are essential.

Clinical Illness

After exposure to the virus, there is a long incubation period of 6 weeks - 6 months (average = 2-3 months).
The symptoms of acute infection are:
Gradual onset of anorexia, nausea, malaise and fatigue, followed by jaundice, with pale stools and dark urine.

The jaundice is often very slight and may not be obvious clinically, but liver enzymes are always raised. Most people recover completely, but a small number become chronic carriers of the Hepatitis B virus and may be infectious to others. Some also develop chronic liver disease.
Diagnosis

Hepatitis B is diagnosed by looking for specific markers (antigens & antibodies) in the blood.

<table>
<thead>
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<th>Markers of infection</th>
<th>Hep. BsAg &amp; Hep. BeAg</th>
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<td>Hep. BcAb (evidence of previous infection)</td>
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<tr>
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<td>Hep. BsAb (produced after immunisation with Hep. B vaccine)</td>
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Treatment

There is no specific anti-viral treatment for acute viral hepatitis. If people develop chronic infection with Hepatitis B, Interferon may be used to try and eradicate the virus.

Prevention

The main ways of preventing infection with Hepatitis B are:
- screening blood and blood products
- good infection control practice when dealing with blood and other body fluids
- safe practice when handling contaminated sharps
- active immunisation of high risk groups
- specific immunoglobulin after exposure

See also Needlestick injury Policy and Occupational Health Guidelines and Standard Infection Control procedures for the care of all patients.
15. HEPATITIS C VIRUS (HCV)

Hepatitis C Virus (HCV)
(The main cause of post transfusion hepatitis)

Background Information

Hepatitis C was not identified until 1988. Following its discovery, it was recognised as the major cause of post-transfusion hepatitis. (Also called none A non B hepatitis.)

Hepatitis C virus is found throughout the world. It is commonest in parts of Africa and the Middle East. There are an estimated 150 million carriers of HCV worldwide.

In Britain, the virus is present in less than 1% of the general population. Information from screening blood donors suggests that approximately 1:1400 blood donors in the UK are carriers of Hepatitis C. Intravenous drug users are at high risk of Hepatitis C through sharing needles etc and other injecting equipment.

Routes of Spread

The virus is spread through contact with blood and blood products. The main risk groups in the UK are:
- haemophiliacs
- other patients who have had multiple blood transfusions
- intravenous drug users (see above).
- HCW may be infected by inoculation injuries.

Spread through sexual contact or from mother to baby appears to be much less common than for HBV and HIV (i.e. less than 10%).

Clinical Illness

The incubation period is 2 weeks – 6 months. The initial acute infection is usually mild or asymptomatic, only 5% of acute cases develop jaundice. However, unlike Hepatitis B, the virus may persist in >60% of cases, and cause chronic hepatitis. 20% of chronic Hepatitis C carriers may develop liver cirrhosis after 20-30 years, and like Hepatitis B, there is an increased risk of developing liver cancer. Excess alcohol may increase the risk of liver damage.

Diagnosis

Blood is examined for evidence of Hepatitis C antibodies.

Treatment

There is no specific treatment for acute Hepatitis C. If chronic liver disease develops, combination treatment with Interferon and Ribavarin may be used.
Prevention

There is no vaccine or specific immunoglobulin which is effective against Hepatitis C. The main ways of prevention are:

- screening of blood products (introduced in September 1991)
- needle exchange projects for Intravenous Drug Abusers
- the implementation of Universal Precautions.
16. HIV

Human Immuno-deficiency Virus (HIV)
(causes Acquired Immuno-deficiency Syndrome (AIDS))

Background Information

AIDS was first recognised as a clinical problem in gay men in Los Angeles in 1981-82, when they began to develop rare infections and tumours. The HIV virus was identified a year later in 1983.

HIV infection is a relatively "new" disease. The evidence suggests that the virus may have originated in Central Africa 20-50 years ago. From there, the virus has spread throughout the world as a major epidemic. The worst affected areas are Africa and South East Asia. The virus mainly affects young, sexually active adults.

Scale of the epidemic

The WHO estimated that the total number of living people infected with HIV by the end of 1996 was 27 million. This figure has increased since, but accurate figures are hard to obtain from many parts of the world. By June 1998, there have been 32,240 reports of HIV positive people in the UK. Again, this is probably an underestimate.

Routes of Spread

The virus is not spread by normal day to day domestic contact.

HIV infection may be acquired by unsafe sex, unsafe injecting, or other exposure to blood e.g. by needlestick injuries or transfusion. The most important route of spread of the virus world wide is by heterosexual intercourse. In the UK, the main groups who have been infected so far are gay men, and intravenous drug users, but heterosexual spread of HIV infection is increasing. The virus may also spread from mother to baby, during pregnancy or at birth, or by breast-feeding. There is an occupational risk for HCW exposed to HIV positive blood through inoculation injury.

Clinical Illness

The acute stage of HIV infections lasts for approximately 3 months.

During the acute stage, 50-90% of people develop symptoms which are like influenza or glandular fever, e.g. fever, fatigue, muscle aches and pains. These are generally mild and settle spontaneously.

The next stage is called the latent or asymptomatic stage, and during this time the HIV positive person is clinically well. This lasts 2-13 years (average time is 10 years).
However, throughout this period, the virus progressively damages the immune system, and this gradually impairs the person’s ability to respond to infections.

**The first signs of impaired immunity are:**

- recurrent viral infections (*Herpes simplex* or warts)
- persistent oral Candida (thrush)
- weight loss, fever, night sweats
- diarrhoea.

Eventually, the individual becomes susceptible to:

- a wide range of "opportunistic" infections. These are infections which do not cause serious illness in normal, healthy people. The commonest of these are:
  - *Pneumocystis carinii* pneumonia
  - Candida infection of the oesophagus

- developing unusual malignancies which are rare in HIV negative people. The commonest of these is Kaposi’s sarcoma, which affects the skin.

The onset of these opportunistic infections or tumours in an HIV positive person defines the onset of clinical AIDS.

**Diagnosis** is usually made by testing blood for HIV antibodies.

**Treatment**

There is no curative treatment for HIV infection yet, but the use of combination drugs i.e. triple therapy appears to prolong survival.

**Prevention**

There is no vaccine against HIV. The main ways of preventing the spread of HIV are:

- health education;
  - e.g. safe sex (using condoms)
  - needle exchange programmes for intravenous drug users

- screening blood before transfusion adopting "Universal Precautions" in hospitals, to avoid coming into contact with blood and other body fluids.
  - See Standard Infection Control procedures for the care of all patients.

- Post Exposure Prophylaxis (PEP) following exposure to known HIV positive blood (see inoculation injury policy).
17. LICE

Introduction

Scabies and lice live permanently on the skin or hair so topical treatment of the individual is needed to eradicate them. Fleas and bedbugs live in the environment and are carried only transiently while they are feeding. For these, environmental decontamination only is needed. Environmental Health Services will be able to advice about disinfestations in the community. Removal of cockroaches, silver fish, pharaoh's ants etc. which are not parasitic to man but live within the hospital, is the responsibility of the Estates Department.

The aims of management are:

- to eliminate infection in the patient or environment
- to prevent transmission to other people.

Control of spread of infestation depends on prompt diagnosis and treatment of any suspected cases.

When a patient with suspected infestation is admitted, please notify Infection Control Team. If any of the above ectoparasites are seen, please send to the Bacteriology laboratory for identification, in a dry universal container.

Background Information

These wingless insects live near the skin in hairy areas. Eggs are fixed to hairs (and to clothing fibres by the body louse). Lice bite and suck blood and this causes irritation. Body lice are only found in those who are unable to change their clothing or bath regularly. Head and pubic lice may infect anyone.

See A – Z Routes of spread of infection.

HEAD LICE (Pediculus capitis)

Egg cases (nits) are seen fixed to hairs near scalp or eyebrows. (Crab lice nits may be seen on eye lashes in children and adults as well as on pubic hairs). Visible nits are usually old and empty and reflect long term infestation. School nursing and medical officer’s deal with cross infection in the classroom.

Transmission

Through close contact
Treatment

Discuss with Pharmacy about the current recommended treatment and follow instructions. Do not repeat treatment unnecessarily.

**PUBIC LICE** (*Phthirus pubis*)

Eggs are fixed to hairs near pubic skin, or on eyelashes or eyebrows.

Transmission

This is a sexually transmitted disease and is most often seen in the Genito-urinary medicine outpatient clinics. The guidance below is for inpatients coincidentally found to have this infestation.

Treatment

The patient does not need to have affected hair shaved. Apply the prescribed lotion to dry hair according to the directions on the container. Make sure that axillary, chest and abdominal hair are treated as well as the pubic hair. Remove any nits from lashes or brows with tweezers. Wash hands. Clothes and bedding need not be treated.

**BODY LICE** (*Pediculus corporis*)

These are found on body areas and the seams of inner clothing. Eggs fix to cloth fibres, in seams and sometimes to body hairs. They usually occur in patients with poor attention to personal hygiene who do not change their clothes.

Treatment

It is unnecessary to shave body hair but it may be reasonable to cut hair short. Remember the nits are old egg cases and do not reflect ongoing infestation.

Put patient into warm bath and wash with soapy cloth. The lice will float off. Personal clothing, etc. hot tumble drying of clothes is preferable to laundering to kill lice. Dry cleaning is also effective.
18. MENINGITIS

MENINGITIS

Meningitis is inflammation of the membranes covering the brain. It may be caused by bacterial or viral infections.

Bacterial Meningitis - Children (>1 month old) and Adults

This is a potentially life threatening infection. Antibiotic therapy must be started as soon as possible once the diagnosis has been made. The main symptoms are:

- fever
- neck stiffness
- photophobia
- headache

The main bacteria which cause meningitis are:

- *Neisseria meningitidis* (meningococcus)
  - This is the commonest cause of bacterial meningitis, and mainly affects young children (<2 years old). Patients often have a septicaemia, with a petechial or purpuric rash, as well as signs of meningitis.
  - The Department of Health advise that GP’s should give IV or IM penicillin to suspected cases of meningococcal infection before sending them to hospital.
  - The organism may be carried asymptomatically in the nose and throat, and only occasionally causes invasive disease. It cannot survive for long outside the body and is spread from person to person by close contact over a period of time.
  - Because close household and "kissing" contacts of a case have an increased risk of developing meningitis, they are given prophylactic antibiotics.
  - There is a small risk to Health Care Workers, who are in close contact with respiratory droplets or secretions (e.g. mouth to mouth resuscitation or airway management such as intubation) during the first 24 hours of antibiotic therapy. (See Reference Goh, S., North Cumbria Health Authority (1995). Meningitis Protocol Preventing Secondary Meningococcal Disease in Health Care Workers: Guidance for North Cumbria).
  - Notify the Health Protection Unit of suspected cases as soon as possible, so that they can organise antibiotic prophylaxis for the close contacts of the case.

- *Streptococcus pneumoniae* (pneumococcus)
  - This occurs mainly in young children, and in elderly or debilitated patients. There is no evidence of spread from person to person so prophylactic antibiotics are not needed.

- *Haemophilus influenzae* (Hib)
  - This used to be a problem in children aged from 3 months to 5 years, but has become much less common since the introduction of the Hib vaccine in 1992. Antibiotic prophylaxis is given to contacts <5 years old, who have not been immunised against *Haemophilus influenzae*. 
Management of the Patient

- Isolation is recommended until the first 24 hours of antimicrobial treatment has been completed.
  Wash hands thoroughly on leaving the room.

See A – Z Routes of spread of infection.

**Bacterial Meningitis in neonates (0-1 month old)**

The three main causes of bacterial meningitis in neonates are:

- Group B streptococcus
- *Escherichia coli*
- *Listeria monocytogenes*

Management of the Patient

- None of these pose a risk to adult Health Care Workers
- **Strict isolation and hand decontamination** are required to prevent spread of infection to other susceptible neonates. Outbreaks of infection with these organisms have occurred in neonatal units, and these may have a high mortality.

See A – Z Routes of spread of infection.

**Viral meningitis**

**Background Information**

This is commoner than bacterial meningitis, but is usually less severe. The main viruses which cause meningitis are the Enteroviruses, i.e. Echovirus, Coxsackie viruses, and the Mumps virus.

**Routes of Spread**

- They enter the body via the G.I. tract
- May be detected in the throat, respiratory secretions and faeces.
- They are transmitted by the faeco-oral route.
- In most cases, they cause mild respiratory infections, rather than meningitis.

Management of the Patient

- Single room isolation is not needed for all cases, but is recommended for babies and young children. Discuss individual patients with Infection Control.
- Care should be taken when disposing of excreta.
- Careful handwashing after patient contact is essential to prevent spread.

See A – Z Routes of spread of infection.
References

19. **PARVOVIRUS**

**Background Information.**

Parvovirus infection may cause a flu-like illness and rash similar to measles, and, in some patients, joint pains and swelling. Up to 30% of infections are asymptomatic.

In general, Parvovirus infection is self limiting and does not have serious consequences; but there are 3 groups which may develop more serious problems:

- Women up to 20 weeks of pregnancy. There is an increased risk of miscarriage. (foetal loss in approximately 9% of pregnancies and hydrops foetalis in 3% of pregnancies). There is no evidence that parvovirus causes congenital abnormalities.
- Patients with haemoglobinopathies e.g. thalesaemia, sickle cell anaemia (may get transient aplastic crisis).
- Immunocompromised patients (may get chronic anaemia).

**Risks to Staff.**

Parvovirus does not spread from person to person very easily. The number of infections attributable to exposure at work is usually no greater than that in the general community. The main risk for acquiring parvovirus infection is daily contact with school age children.

**Infection Control Measures**

In order to minimise the occupational risk of acquiring parvovirus infection, the following precautions should be taken.

- Health Care Workers (HCW’s) should not be at work if they have a flu-like illness with a rash.
- Confirmed or suspected cases of parvovirus infection (i.e. flu-like illness with a maculopapular rash) should be nursed in single rooms with respiratory precautions.
- HCW’s who are <20 weeks pregnant (or in other risk groups) should not be in contact with confirmed or suspected cases of parvovirus infection.
- Information about parvovirus infection should be available for pregnant women.
- A risk assessment should be carried out for all incidents involving confirmed parvovirus infection.

See A – Z Routes of spread of infection.

**References**

1. Consensus Guidance Notes Prepared by CsCDC & regional Services
CDSC (Thames)


20. RUBELLA

Background Information

Rubella (German measles) is highly infectious. Only by ensuring that all staff (including males) are immune, can cross infection in the hospital environment be prevented.

Incubation Period

16-18 days (range of 14-23 days). The disease is communicable for about one week before, to at least 4 days after the onset of the rash.

Symptoms

- Rubella causes a mild, febrile illness with a diffuse rash like measles or scarlet fever (but 50% of infections may occur without evident rash).
- Adults may have low-grade fever, headache, malaise and conjunctivitis 1-5 days before the rash.
- The foetus of a pregnant woman may be severely affected if disease is acquired in the first 16 weeks of pregnancy. After this stage foetal damage is rare.

Infection Control Measures

If a patient is suspected of or confirmed as infected with rubella;
- Nurse patient in a single room with the door closed until 5 days after the onset of the rash.
- Use disposable aprons and gloves for direct contact with patient.
- Send linen as infected.
- Decontaminate hands on leaving the room.
- Staffs who are not immune to rubella should be excluded from looking after the patient.
  Non-immune staff should contact Occupational Health as soon as possible.

See A – Z Routes of spread of infection.

Screening Staff

All non-medical staff must attend the Occupational Health Department for pre-employment assessment and at this time anyone who works on clinical areas will be screened for rubella. Screening consists of examining serum for antibodies and those who are not immune are offered rubella vaccine as soon as is practicable.
The rubella screening and immunisation service is offered by the Student Health Service for students of the Newcastle and other medical schools upon entry. Infection Control recommend that medical staff working on high risk areas such as Paediatrics, Obstetrics and Gynaecology should be screened on commencing their post unless they have documented evidence of immunity.

**Voluntary Workers**

Voluntary Services Organisers should, wherever possible, encourage their volunteers to accept screening for rubella if they work in obstetric units, gynaecology and children's departments. Screening is available from the Occupational Health Department.

**Guidelines for Management of Pregnant Women Who Come Into Contact With Rubella**

- Establish previous rubella or rubella vaccination history in the pregnant woman.
- Take a clotted blood sample and request rubella antibody titre stating full history of contact, gestation of the pregnancy, any recent illness or rash, vaccination history and results of previous tests.
- If no antibodies are present, repeat tests will be needed at 28 days after exposure (or one week after the onset of an illness) to determine whether infection has been acquired.
- If there is a delay between the contact and the first specimen, it may be extremely difficult to determine the susceptibility of the mother to rubella at the time of contact. Detailed discussions with a virologist is then required.

**Reference**


21. **SALMONELLA**

**Background Information**

There are approximately 2000 serotypes of Salmonella. *S. enteritidis* and *S. typhimurium* (Phage type 4) are the commonest serotypes in the U.K.

**Incubation Period**

Usually 12-48 hours.

**Symptoms**

May last from 1-2 days up to 3 weeks (usually 5-7 days).

Symptoms include:
- sudden onset of headache
- abdominal pain
- diarrhoea
- fever
- nausea and/or vomiting

Dehydration may be severe especially among the very young and very old. Salmonella bacteria can occasionally cause septicaemia or other localised infections e.g. arthritis, cholecystitis, pericarditis or meningitis. Deaths are uncommon except in the very young, the very old or immuno-compromised patients.

**NB** Salmonella bacteria can be excreted in the stools for weeks or even months after the symptoms have subsided. When this occurs, people are called 'carriers'. The risk of asymptomatic carriers passing on salmonella infection is extremely small provided they have good personal hygiene.

**Reservoir of infection**

The gastro-intestinal tract of food-producing animals particularly poultry, pigs and cattle.

**Routes of Spread**

- Ingestion of Salmonella in food (food poisoning). This includes raw eggs and egg products, unpasteurised milk and milk products, meat, meat products and poultry.
- Spread from person to person is important especially when diarrhoea is present. Infants and young children and faecally incontinent adults pose a much greater risk of spread than asymptomatic carriers.
Hospital outbreaks may be caused either by food-poisoning, or by person to person spread.

Management of Infected Health Care Workers

Infected food handlers must be excluded from work until symptom-free for 48 hours. The need for clearance stool samples will be decided on an individual basis, by Infection Control and Occupational Health.

Other infected health care workers including nursing, medical and paramedical staff should also remain off duty until symptom free for 48 hours. They must also contact Occupational Health before returning to work. The need for clearance samples will be decided on an individual basis as above.

See A – Z Routes of spread of infection
22. SCABIES

Introduction

Scabies and lice live permanently on the skin or hair so topical treatment of the individual is needed to eradicate them. Fleas and bedbugs live in the environment and are carried only transiently while they are feeding. For these, environmental decontamination only is needed. Environmental Health Services will be able to advice about disinfestations in the community. Removal of cockroaches, silver fish, pharaoh's ants etc. which are not parasitic to man but live within the hospital, is the responsibility of the Estates Department.

The aims of management are:

- to eliminate infection in the patient or environment
- to prevent transmission to other people.

Control of spread of infestation depends on prompt diagnosis and treatment of any suspected cases.

When a patient with suspected infestation is admitted, please notify Infection Control Team. If any of the above ectoparasites are seen, please send to the Bacteriology laboratory for identification, in a dry universal container.

Background Information

Scabies is a parasitic disease of the skin caused by the mite Sarcoptes scabiei. It is visible as tiny linear burrows within the skin. These contain the mites and their eggs. The rash is caused by an allergic reaction to the mites and eggs. Itching is intense, especially at night, and there may be scratch marks on the skin.

These lesions are most commonly found around:
- finger webs
- anterior surfaces of wrists and elbows
- axillary area
- thighs and buttocks (females)
- beltline, thighs & genitals (males)

In elderly patients and immuno-compromised individuals, scabies infestation can appear as a generalised dermatitis more widely distributed than the burrows, with extensive scaling, and sometimes vesiculation and crusting. This is called “Norwegian scabies”; and the usual severe itching may be reduced or absent. NB Norwegian scabies is highly contagious. Scabies is a particular problem in long-stay institutions where residents are frequently in skin-to-skin contact with carers.
Diagnosis

May be confirmed by recovering the mite from its burrow and identifying it microscopically: however, this is not easily done except by experienced individuals and because of this, hospital patients should always be referred to a Dermatologist to confirm the diagnosis.

In the community the diagnosis is based on finding burrows, the intense itch, and the distribution of the rash.

Transmission

Direct skin-to-skin contact. Studies have shown that a contact time of 15-20 minutes is necessary for successful transfer. Once transferred, however, mites can burrow into the skin in about 2.5 minutes. The human host is the only reservoir of infection.

**Norwegian scabies is rare but highly transmissible** because of the large number of mites in the exfoliating skin scales. For these patients their clothing and bedding should be handled with care (wearing disposable non sterile gloves and plastic apron) and should be treated as infected linen.

Infection Control Measures

- Wear non-sterile disposable gloves and a plastic apron for all episodes of hands on care.
- Dispose of protective clothing as clinical waste once the episode of care is complete
- Wash and dry hands and forearms thoroughly after removing protective clothing

See A – Z Routes of spread of infection.

Treatment of case

Contact Pharmacy to obtain the recommended treatment. The treatment should be applied over the whole body (except the face and scalp) and washed off after 24 hours. Pay particular attention to the finger webs, under the fingernails and ears. The elderly (>65) and the young (<2) also need treatment of the scalp, with appropriate lotion and cream (not shampoo, it is too dilute). It is sensible, but not essential to change bedding and clothing the same day. Special laundry procedures are not necessary, as the mite does not survive off the human body.

Please report genuine treatment failures to Consultant in Health Protection, Cumbria & Lancashire Health Protection Unit, 4 Wavell Drive, Rosehill, Carlisle. Telephone 01228 603500

**NB**. In some cases the itch of scabies persists for some days after the infestation has been eliminated and should not be regarded as a sign of drug failure or re-infestation.

Contacts

- Staff who have taken proper precautions as above are not at any risk of contracting infestation or spreading it to other patients or their families. They do not require any prophylactic treatment.
- Staff who have had skin-to-skin contact with any ordinary case of scabies and who were unable to take proper precautions are not at any great risk unless that contact was for longer than 15-20 minutes and they did not wash their exposed skin (e.g. hands and arms) immediately after
handling the patient.

- Staff who have had skin-to-skin contact with a case of severe, widespread scabies, especially Norwegian scabies, or who were unable to take proper precautions must be regarded as contacts and they should report as soon as possible to the Occupational Health Department for prophylactic treatment.

It is not necessary for family members of staff contacts to have any treatment: only family members of cases require treatment.

STAFF CASES

If any member of staff thinks that they may have actually contracted scabies from whatever source, they should report as soon as possible to the Occupational Health Department.
23. SHIGELLA

Background Information

There are four species of Shigella: S. sonnei, S. boydii, S. flexneri and S. dysenteriae.
S. sonnei is the commonest species in UK and usually causes mild infection.
S. dysenteriae is imported from abroad and may be associated with serious disease (dysentery).
In UK S. sonnei may cause outbreaks in nursery/school children by person to person spread.

Incubation Period is 1-3 days.

Symptoms

- diarrhoea with fever
- nausea and sometimes toxaemia
- vomiting and cramps
- stools may contain blood, mucous and pus
- mild and asymptomatic infections occur

Reservoir of infection

Man

Route of Spread

Person to person, by faecal-oral route.

Management of Patients

Patients must be nursed in single rooms and enteric precautions MUST be observed - this infection is more easily spread than most gastro-intestinal infections.

Management of Infected Health Care Workers

Food handlers will be excluded from work until symptom-free for 48 hrs. Other Health Care Workers will be excluded from work until symptom-free and stool formed. Follow up stool samples are only required for S. dysenteriae.

See A – Z Routes of spread of infection
24. TRANSMISSIBLE SPONGIFORM ENCEPHALOPATHY AGENTS

TRANSMISSIBLE SPONGIFORM ENCEPHALOPATHY AGENTS:
SAFE WORKING AND PREVENTION OF INFECTION

Introduction

The agents that cause Transmissible Spongiform Encephalopathies (TSEs) are also called prions. They cause fatal, degenerative brain disease in humans and certain animals (e.g. BSE in cattle, scrapie in sheep).

Human TSE’s are:

<table>
<thead>
<tr>
<th>TSE</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>CJD</td>
<td>Classical familial (15%), iatrogenic (1%) see 1.2 below variant (vCJD) thought to be the same agent as BSE</td>
</tr>
<tr>
<td>GSS &amp; FFI</td>
<td>rare familial forms</td>
</tr>
<tr>
<td>Kuru</td>
<td>Association with cannibalism in Papua New Guinea</td>
</tr>
</tbody>
</table>

CJD is rare (worldwide 1 case/million people/year).

There have been no confirmed cases of occupationally acquired TSE but CJD has been transmitted by:
- human growth hormone (used until 1984)
- human dura mater (used in neurosurgical procedures)
- corneal transplant (3 cases)
- neurosurgical instruments that have not been properly decontaminated.

TSE agents are mainly found in the brain, spinal cord, and spinal fluid. Lymphoreticular tissue may also be involved. However v CJD has also been identified in tonsillar and appendix tissues, and there is still uncertainty about the tissue distribution of the infectious agent in v CJD.

**N.B.** TSE agents are highly resistant to decontamination by conventional chemical and physical methods. Infectivity may persist after chemical disinfection and after standard autoclaving cycles.

Any patient suspected of having CJD on clinical grounds must be notified to the CJD Surveillance Unit in Edinburgh (see details at end of fact sheet)
Infection Control in the Health Care Setting

There is no evidence of person to person spread, except the iatrogenic routes. Therefore for most routine clinical contacts no additional precautions are needed. Isolation of patients with CJD is not essential.

Lumbar punctures - should only be performed by trained staff who are aware of the hazards. Always use disposable needles etc. Wear disposable gloves and eye protection, to prevent splashes of CSF to the eyes.

Linen - treat as infected. No further precautions needed.

Spillages - initial management as for blood spillages. Disinfect with Haz Granules and dispose of all clinical waste by incineration. Then disinfect surface with 20,000 ppm chlorine for 1 hour.

Clinical waste - all clinical waste should be sent for incineration.

Needlestick injuries - follow the normal policy - carry out immediate first aid and report to Occupational Health.

TSE agents are very resistant to inactivation. Therefore effective cleaning of all surgical instruments before sterilisation is of the utmost importance to reduce the risk of transmission of v CJD via surgical procedures. It is therefore essential that all existing cleaning procedures operate to the highest standards.

When invasive procedures are performed on the following groups of patients' stringent additional precautions must be taken.

- Patients with known CJD, or patients who are suspected to have CJD on the basis of their clinical symptoms.
- Asymptomatic patients who are potentially at risk from CJD on the basis of their clinical or family history. To identify this risk group, all patients should be asked the following questions before any surgical or other invasive procedure.
  - Are you closely related to anyone who has or had CJD? i.e. parents, siblings, children, grandparents.
  - Did you receive growth hormone treatment before 1985?
  - Have you had brain or spinal surgery (excluding laminectomy) before 1992?
  - N.B. These risk groups represent very small numbers of patients.

If the answer of any of these questions is “yes” please notify:
  - the consultant in charge of the patient
  - the infection control team
  - if the patient is being admitted for elective surgery/endoscopy, inform theatre staff/endoscopy staff as appropriate, so the procedure can be properly planned.
All surgical/invasive procedures on these groups must be carefully planned. (see algorithm at end of document)

- The patient should be placed at the end of the list.
- CSSD should be informed in advance.
- The minimum number of staff should be involved in the procedure.
- Protective clothing must be worn i.e. water repellent gown over plastic apron, gloves, mask and visor/goggles.
- Use single use, disposable instruments if available. If instruments are not disposable, then refer to algorithm as above for appropriate procedures.
- Clinical waste must be disposed into a rigid container for incineration.

Diagnostic laboratories.

All samples from patients with known or suspected TSE must be labelled as High Risk.

TSE agents have been classified in Hazard Group 3. However, the following samples from at risk patients for routine clinical analysis can generally be handled as normal i.e. blood, urine, swabs, faeces.

When handling specimens from known or suspect patients, disposable equipment (e.g. counting chambers) should be used. Used equipment and specimens should be disposed of by incineration.

Post Mortem/neuropathology specimens

The body should be placed in a body-bag before being moved to the mortuary. There should be discussion with the neuropathologists at Newcastle before undertaking any post mortem examination of these patients.

References


Address of CJD Surveillance Units

Professor R. G. Will  
Director, National CJD Surveillance Unit,  
Western General Hospital,  
Crewe Road,  
Edinburgh,  
EH4 2XUT  
Telephone: 0131 332 2117  
Fax: 0131 343 1404

Dr. P. M. Edwards  
Department of Health  
Room 642B Skipton House  
80 London Road  
London  
SE1 6LH  
Telephone 0207 972 5324  
Fax 0207 972 5092
Algorithm chart

[Diagram of algorithm chart showing decision points for precautions in clinical procedures based on patient symptoms and procedures.]

- Clinical symptoms suggestive of CJD
  - Suspected CJD
    - All clinical procedures
      - No clinical symptoms of CJD
        - In an at risk category
          - No specific precautions needed
    - Definite alternative diagnosis confirmed
      - Use single-use instruments and dispose of items by incineration
    - Diagnosis confirmed
      - Use single-use instruments and dispose of items by incineration
    - Diagnosis not confirmed but still suspected
      - Use single-use instruments and dispose of items by incineration

- If no clinical symptoms of CJD
  - In an at risk category
    - No specific precautions needed
    - Procedure involving brain, spinal cord or eye
      - No specific precautions needed
    - Use specific disinfection and decontamination procedures

- Special precautions for handling CJD
  - Use single-use instruments and dispose of items by incineration
25. TUBERCULOSIS

Background Information

Infection is caused by *Mycobacterium tuberculosis*. This is a slow growing bacterium, and culture can take up to 8 weeks. Tubercle bacilli can spread in droplets produced by coughing, and inhalation of these organisms by susceptible individuals. Fairly prolonged, close contact (e.g. living in the same household with an infectious person) is generally required for transmission to occur. However, spread of tuberculosis is a recognised risk in hospital. Spread may occur from patient to patient, patient to staff and from staff to patients.

Predisposing Features for tuberculosis

- Minority ethic groups – e.g. Indian sub-continent, black African origin. (in 1998 56% reported cases of TB were in people not born in U.K.)
- Old age, immunosuppression, malnutrition, alcoholism
- HIV infection. (see below)

Drug resistant tuberculosis

- In 1998, 6.1% isolates of *Mycobacterium tuberculosis* were resistant to Isoniazid & 1.3% isolates showed multiple drug resistance i.e. to both Isoniazid & Rifampicin
- Drug resistance emerges as a result of inadequate treatment of tuberculosis, either due to incorrect prescribing or poor compliance.
- There is no evidence that drug-resistant tuberculosis is more infectious than drug-sensitive tuberculosis, but it is more difficult to treat.
- Drug resistance is more likely, and should be considered if:
  - the patient has had previous treatment for tuberculosis
  - the patient has had contact with known drug resistant disease, or acquired infection in a country with a high prevalence of drug resistant tuberculosis.
  - the patient is HIV positive
  - the patient fails to respond clinically to standard treatment (e.g. temperature still raised after 2 weeks)
  - the smear or culture remains positive for a prolonged period while on treatment

HIV infection and tuberculosis

Infection with HIV is a risk factor for tuberculosis. In developing countries, tuberculosis is a common problem in people with HIV infection. In 1998 in the UK, 3% of tuberculosis cases occurred in people infected with HIV.
- HIV infection may alter the clinical presentation of pulmonary disease, and the appearance on chest x-ray. The tuberculin skin test may be unreliable.
• However HIV positive people with tuberculosis are not thought to be more infectious than HIV negative people and tuberculosis may be successfully treated using standard 6 month regimens.
• Immunisation with BCG is contraindicated in people with HIV, because of the risk of disseminated infection.

Common Symptoms

Tuberculosis should be suspected in any patient with a chronic cough, lasting more than 3 weeks (sometimes with blood). Other symptoms include;
• malaise
• weight loss
• night sweats.
• anorexia

Diagnosis

To diagnose pulmonary tuberculosis, send sputum samples to the Bacteriology Laboratory on 3 consecutive days. Request microscopy and culture for tuberculosis as this is not done routinely on all sputum samples.

N.B. Any techniques which induce coughing must not be carried out in the open ward because this may generate infective aerosols (See Aerosol generating procedures).

Patients with acid-fast bacilli seen in their sputum by microscopy (i.e. smear positive) should be managed as infectious (See Care of infected/at risk patient in a single room)

Risks to staff

Transmission of tuberculosis is a recognised risk in health care settings, but the occupational risk to Health Care Workers is thought to be small. Studies have found no evidence of an increased risk of TB in most groups of Health Care Workers. In the past, the only exception to this has been laboratory technicians and mortuary staff who handled infected tissues and specimens.

All staff are required to have a pre-employment health screen. Staff in regular contact with patients or pathological material should be tuberculin skin test positive (Heaf test), or be known to have had BCG immunisation. This gives some protection against TB. For this reason it is usually not necessary to perform detailed surveillance of staff who have been in contact with tuberculosis.

Notification

Tuberculosis is a notifiable disease (Public Health Regulations 1988). All newly diagnosed cases of tuberculosis must be notified to the local Consultant in Health Protection. This is the legal responsibility of the doctor in charge of the patient. Please make the initial notification by telephone, but also complete a Notification Form (available on the wards). Please also inform the Infection Control Team and the Physician with responsibility for Chest Diseases.

Contact tracing is carried out to identify any further cases of tuberculosis among close contacts of the index case.
It is the responsibility of the nurse-in-charge of the ward to inform the Infection Control Team and the T.B. Contact Tracing Nurse when a patient with known or suspected tuberculosis is admitted, even if the patient is already on treatment.

If a patient with infectious (smear positive) tuberculosis has been nursed on an open ward, then other, immuno competent patients, staff or visitors should be considered as casual contacts and would not require screening or follow-up. A list of casual contacts should be kept. For patients, the contact should be recorded in their hospital notes and reported to the GP.

Immunocompromised patients or staff should be followed up if they were on the same ward for 8 hours or more.

If the index case is subsequently found to have MDR TB, more stringent procedures for contact tracing may be necessary

**Infection control measures.**

- Adults with non-pulmonary tuberculosis can be nursed on a general ward, and do not routinely require isolation.
- All patients with suspected or confirmed pulmonary tuberculosis who require admission to hospital must initially be admitted to a single room until their sputum status is known. A risk assessment for the likelihood of infectiousness, and multi-drug resistant tuberculosis (MDR-TB) should be made

See A – Z Routes of spread of infection.

**Isolation of patients in a side-room.**

- The door must be kept closed to limit airborne spread. It is essential that this and other aspects of the treatment are explained to the patient and their visitors, so that they understand the need for these precautions. The number of staff caring for the patient should be restricted. Immunocompromised staff (including staff who are HIV positive) should not care for patients with infectious tuberculosis. Any immunocompromised patients (including patients with HIV infection) should not be nursed on the same ward unless the side room has negative pressure ventilation.

- If patients are infectious (i.e. smear positive) this isolation must be continued for the first 14 days of therapy. Patients should not be moved out of isolation unless this has been agreed by the consultant and the infection control doctor. If appropriate, patients can be discharged home during the initial 14 days of treatment.

- **NB.** All infectious patients with suspected or known MDR-TB should be admitted to a negative-pressure ventilation room. If none is available locally, the patient must be transferred to a hospital with appropriate facilities
Patients who have a very high bacterial load in the sputum at the start of treatment, or have multiply-resistant organisms may require isolation for longer, at the discretion of the medical staff and the Infection Control team.

During this period, patients should be encouraged to cover their mouth and nose with tissues when coughing or sneezing to reduce the production of infected droplets. After this time, the number of infectious organisms in the sputum will be very much reduced in most of the patients, who will no longer be a risk of transmitting infection to others.

Aerosol generating procedures

Any procedures which provoke coughing, and thus generates aerosols must not be carried out on the open ward. This includes sputum induction, respiratory function tests and administration of drugs by nebuliser. Staff should wear masks for these procedures. Bronchoscopy should be performed at the end of the list for the day and all staff involved in the procedure must wear appropriate masks.

Visitors

Only those who have already been in close contact with the patient before diagnosis should be allowed to visit while the patient is still infectious. This includes small children. Immunocompromised individuals should not visit patients with infectious tuberculosis.

Protective clothing

Face masks. Staff should wear masks when direct exposure to respiratory secretions and droplets is unavoidable e.g. for any procedures that may induce coughing. If a patient is coughing profusely, a mask should also be worn for any procedures involving prolonged or very close patient contact. A dust mist-fume mask which meets the 1992 Personal Protective Equipment Regulations is recommended for this purpose and is available from Infection Control Department or the Emergency cupboard at WCH and Infection Control or Willow C at CIC.

If the patient is coughing or sneezing, and is unable to use tissues to reduce the spread of droplets, then they should also wear a face mask while being transported through public or patient areas e.g. to attend other departments.

Plastic aprons. Wear a disposable plastic apron when giving patient care.

Gloves. Wear disposable gloves when handling respiratory secretions (e.g. sputum pots).

Other infection control precautions.

Decontaminate hands after dealing with the patient and when leaving the room.
Linen should be sent as infected.
All waste should be disposed of as clinical waste for incineration (Sulo Bin).
Disposable crockery and cutlery are not necessary.
• Terminal cleaning. Clean all horizontal surfaces, furniture and equipment with hot water and detergent.

References

The Interdepartmental Working Group on Tuberculosis. Recommendations for the prevention and control of tuberculosis at a local level published by the Department of Health, June 1996


26. VARICELLA ZOSTER VIRUS (VZV)

Background Information

This virus causes both chickenpox and shingles. The primary infection with VZV causes chickenpox, a common childhood infection. After an incubation period of 10-21 days, the typical vesicular rash appears. This is usually the first clinical sign of infection. Following chickenpox, the virus remains latent in the sensory nerves. It may re-activate, and cause shingles, with symptoms of pain and localised vesicles. This usually affects one side of the face or the trunk. It is commoner in elderly people. Shingles is less infectious than chickenpox, but the virus is present in vesicle fluid, and susceptible people may develop chickenpox from contact with shingles.

Cases are infectious from 3 days before the onset of the rash until all the lesions are dry and crusted. The virus is highly infectious and may be spread by the airborne route, and by contact with fluid from the vesicles. (Virus may be detected in air samples 1-5 metres from the bed of a patient with chickenpox).

Chickenpox or shingles may cause severe, disseminated infection in immuno-compromised patients, and neonates.

Infection Control Measures

Patients with chickenpox or shingles should be nursed by staff that are immune to chickenpox. (Occupational Health check staff for immunity to varicella as part of the pre-employment screen.)

Chickenpox

- Nurse in a single room. The door should be kept closed wherever possible to limit airborne spread
- Wear disposable aprons and gloves when in contact with the patient
- Wash hands thoroughly on leaving the room
- Send linen as infected

Shingles

Not all patients with shingles will require isolation. Individual cases should be discussed with Infection Control.
Management of Contacts of Chickenpox or Shingles

Staff

If any member of patient care staff (medical/nursing/paramedical) is a household contact of a case of chickenpox or herpes zoster, the following procedures must be followed:

They must report the matter immediately to:

- the manager of their unit or department.
- the Occupational Health Department. The Occupational Health Department staff will check their records for evidence of immunity but if their immune status is unknown a blood sample may be required to be sent to the Bacteriology Laboratory. Please telephone the laboratory so the investigation may be performed urgently. The results will usually be available from the laboratory within 48 hours.

If the member of staff is varicella-immune, no further action needs to be taken.

If the member of staff is varicella-susceptible, then the following precautions must be observed from the 10th to the 21st day after contact: the individual member of staff must not have any direct contact with:

- any patient who is immuno-compromised
- any patient known to be pregnant
- any baby under one month of age, or in the special care baby unit

They may continue to look after patients outside these high-risk groups. If they develop clinical lesions they must go off duty until the lesions are dry and crusted. In addition, pregnant staff who are varicella-susceptible should be considered for VZIG if exposed to chickenpox.

Imuno-compromised Patients/Staff

If these are in contact with chickenpox or shingles, their immune status must be checked. Discuss each case with a Consultant Microbiologist regarding the need for prophylaxis with VZIG.

Neonates

If a pregnant woman develops clinical chickenpox in the period 7 days before to 1 month after delivery, then the infant should be given VZIG. Please discuss each case with a Consultant Microbiologist.

Reference

Salisbury, D.M., Begg, N.T., (Ed), (1996) Immunisation against Infectious Disease, Department of Health Welsh Office, Scottish Office Department of Health DHSS (Northern Ireland) HMSO, Chapter 34, P.251-261.
27.  VIRAL GASTRO-ENTERITIS

INTRODUCTION

Viral diarrhoea has been associated with hospital outbreaks of infection and is also common in the community. The two commonest viral enteric infections are Rotavirus (mainly in infants and young children) and Norwalk agent (children and adults).

ROTAVIRUS

BACKGROUND INFORMATION

Rotavirus causes gastroenteritis, mainly in children under 5. Causes community outbreaks in the spring, and may cause outbreaks in elderly patients in residential care or long stay wards.

INCUBATION

The incubation period is 1-3 days. In some cases, vomiting can precede diarrhoea for up to 48 hours. Patients are infectious during the acute stage of the disease but the virus is not usually detectable after about the 8th day of the illness.

SYMPTOMS

The disease is characterised by:
- diarrhoea and vomiting (often with severe dehydration)
- fever and abdominal pain occur frequently.

RESERVOIR OF INFECTION

Probably man.

DIAGNOSIS

Detection of virus in stool sample.

ROUTES OF SPREAD

Spread by direct contact with faeces (faecal/oral) or vomit in the acute phase of the illness.
Infection Control Measures

- **Scrupulous** attention to hand hygiene for patients, staff and relatives. The use of an alcohol-based hand rub is recommended for hand decontamination between patient care (if hands are not visibly dirty/contaminated).
- Isolation of any patient with diarrhoea – with use of enteric precautions See A – Z Routes of spread of infection.
  N.B. children may remain infectious for 5 days after symptoms resolve.
- Thorough cleaning/disinfection of patient areas is essential. Hypochlorite 1,000 ppm (0.1%) should be used to disinfect following thorough cleaning with soap and water.
- Other prevention measures may involve the restriction of movement of staff and the admission of patients.

**SMALL ROUND STRUCTURED VIRUSES (SRSV)**

**Background Information**

This is the commonest cause of outbreaks of diarrhoea and vomiting in hospitals. Outbreaks mainly occur in winter and can affect both patients and staff. Infection may spread very rapidly.

**Incubation**

12-72 hours

**Symptoms**

- sudden onset of gastro-enteritis (the hallmark is projectile vomiting )
- diarrhoea
- abdominal cramps
- low grade fever
- nausea

NB. Cases may remain infectious for up to 48 hours after symptoms have settled.

**Routes of Spread**

- Hands of staff members, patients, visitors.
- Contamination of environmental surfaces e.g. locker tops, fruit bowls, toilet areas.
- Airborne transmission has been suggested.
  See A – Z Routes of spread of infection.
Infection Control Measures

Recommended control measures for SRSV’s within affected clinical areas

- Cohort nurse or isolate symptomatic individuals
- Wear gloves and apron for contact with an affected patient or environment
- Wash hands with soap and water after contact with an affected patient or environment, after removing gloves and apron
- Remove exposed food such as fruit
- Consider use of antiemetics for patients with vomiting
- Exclude affected staff from the ward immediately until symptom free for 48 hours
- Close the ward to prevent the introduction of new susceptible patients. Avoid transfer to unaffected wards or departments (unless medically urgent and after consultation with infection control team). The priority is to stop spread of the virus to other areas
- Exclude non-essential personnel from the ward
- Caution visitors and emphasise the importance of hand decontamination on entering and leaving the ward
- Clean and disinfect vomit and faeces spillages promptly
- Increase the frequency of routine ward, bathroom and toilet cleaning
- Use freshly prepared 0.1% (1,000 ppm) hypochlorite to disinfect hard surfaces after cleaning e.g. Haz tablet solution or use Chlorclean a detergent and chlorine disinfectant 1,000 ppm combined
- The ward should not be re opened until 72 hours after the last new case and 72 hours after uncontained vomiting and diarrhoea
- Thoroughly clean the entire ward including non-patient areas and change the bed curtains before re-opening.
- Clean carpets and furnishings with hot water and detergent, then chlorine based disinfectant or use Chlorclean a detergent and chlorine combined disinfectant 1,000 ppm. Steam cleaning may be used as an alternative. Vacuum cleaning is not recommended

Recommendations for preventing spread of SRSV’s to unaffected areas

- Staff movement must be kept to a minimum
- Staff working in affected areas must not work in unaffected areas within a single shift. They must also shower and change their uniform if the next shift is to be in an unaffected area (includes agency and bank staff)
- Avoid patient movements to unaffected areas unless medically urgent and after consultation with infection control team and other institutions (e.g. nursing, residential care)

Management of Infected Health Care Workers

Staff developing symptoms at work should inform the Occupational Health Department (OHD) and go off duty. Efforts should be made to submit samples of faeces either via the OHD or
general practitioner. Staff returning to work should have been symptom free for 48 hours and should inform the OHD.

Reference

28. **RESPONSIBILITIES**

28.1 **General Staff Responsibilities**

“Infection Control is Everybody’s Business” therefore it is the individual responsibility of all Trust staff to ensure that they carry out safe infection control practices in order to protect the patient, their colleagues and themselves. In order to be familiar with the requirements for safe practice all staff must familiarise themselves with the contents of these fact sheets.

28.2 **Line Manager/Heads of Departments Responsibilities**

Managers have a responsibility to monitor the compliance of their staff in adherence to these fact sheets and should ensure that regular auditing of practice is carried out. They must disseminate the results of audits and implement appropriate action plans.

28.3 **Infection Control Team Responsibilities**

The Infection Control Teams responsibilities are to ensure that all clinical areas and departments are aware of the Infection Control fact sheets and know how to access them; amend the fact sheets as and when new evidence based information is available and, ensure all information is kept up to date on the Intranet.

29. **VALIDITY OF THIS POLICY**

All fact sheets will be reviewed when any new national guidelines are published as well as when a review is required.

30. **AUDIT DETAILS**

Audit of practice is critical in order to ensure that standards are followed and maintained. This will be completed through Saving Lives High Impact Interventions, the Infection Control Team, Matron or Head of Department.

31. **DEFINITIONS**

All abbreviations are identified within the fact sheets.

32. **REFERENCES**

Any references are at the end of the fact sheet.
33. SIGNATURE RECORD

**Policy Title (to be completed)**

This sheet should be used to record the names of staff members who have read and understood the above policy document.

By signing this document, I acknowledge I have read the above named policy.

<table>
<thead>
<tr>
<th>Name (please print)</th>
<th>Job Title</th>
<th>Date</th>
<th>Signature</th>
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Please print this page for your records
APPENDIX 1  AUDIT TOOL

Audit Tool Guidance

STATEMENT

The Trust will work towards effective Governance and to demonstrate this, regular audits against policy compliance will be carried out. Policy authors will be encouraged to attach audit tools to their policies.

It is suggested that there are three standard statements to each audit tool and that the author will identify a minimum of 5 audit statements to ensure compliance and efficacy against the policy. Members of staff from each hospital site will be selected to assess the audit tool statement questions and the findings of the audit will be reported on the Clinical Audit & Effectiveness Committee.

<table>
<thead>
<tr>
<th>Policy title: Infection Control Fact Sheets</th>
<th>Standard Statement</th>
<th>Yes %</th>
<th>No%</th>
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<tbody>
<tr>
<td>Statement 1</td>
<td>Are staff aware of this policy?</td>
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<td>Statement 2</td>
<td>Do staff know how to locate policies on staff web?</td>
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<td>Statement 3</td>
<td>Have staff had any formal/informal training in suing computer to access the staff web?</td>
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<td>Statement 4</td>
<td>Name 6 fact sheets</td>
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<td>Statement 5</td>
<td>What are the routes of spread for blood borne viruses?</td>
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<td>Statement 6</td>
<td>Name 2 organisms which can cause gastro enteritis?</td>
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<td>Statement 7</td>
<td>What are enteric precautions?</td>
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<td>Statement 8</td>
<td>What does Clostridium difficile cause?</td>
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<td>Statement 9</td>
<td>Identify the infection control measures to prevent cross infection with Clostridium difficile</td>
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<td>Statement 10</td>
<td>What are the main symptoms of meningitis?</td>
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<td>Statement 11</td>
<td>What areas of the body would you commonly find the scabies mite?</td>
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<td>Statement 12</td>
<td>Where would you nurse a patient with pulmonary T.B.?</td>
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<td>Statement 13</td>
<td>When would you wear facial protection when caring for a patient with pulmonary T.B.?</td>
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<td>Statement 14</td>
<td>What does the varicella zoster virus cause?</td>
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<tr>
<td>Statement 15</td>
<td>How do you find out if you are immune to chickenpox?</td>
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