

Chapter 3: Prevention and Control of Infection

Background

The purpose of these guidelines is to prevent and control the spread of infection. In order to do that, school staff must have a basic knowledge of common infections; know what the signs and symptoms are, and understand how infection spreads (Chapter 2). Within the school system sound infection control policies are rooted in the development of good standards of hygiene. Implementing these standards is the most effective way to interrupt the spread of infections commonly encountered in schools. The spread of infection in schools can be reduced by:

1. Immunisation of susceptible people

Immunisation of pupils and staff (Chapter 4). If all potential targets for infection were made resistant by immunisation then the infectious chain would be broken. This approach has been successfully adopted for many of the infections that were previously common childhood, e.g. polio and diphtheria.

2. Exclusion of the infectious source

Many infectious diseases are most transmissible as or just before symptoms develop. It is important therefore that pupils and staff who are ill when they come to school, or who develop symptoms during the school day, should be sent home. Whenever possible, ill pupils should be removed from the classroom while waiting to go home. Obvious symptoms of illness are diarrhoea, vomiting, fever, cough, sore throat and rash.

For most illnesses, pupils and staff may return to school once they feel well enough to do so. In some instances however, it may be necessary to exclude pupils and staff from school for specified periods to prevent the spread of infection. Pupils and staff with gastrointestinal illness (i.e. diarrhoea and/ or vomiting) for example, are advised to stay at home until they are symptom free for at least 48 hours. In certain circumstances additional exclusions may be necessary, e.g. in a case of measles the local Department of Public Health may recommend temporary exclusion of unvaccinated siblings of a case or other unvaccinated pupils. The full list of exclusion criteria is outlined in Chapter 9.

3. Implementation of Standard Precautions and basic good hygiene practices

Placing reliance on the identification of all potentially infectious individuals and their exclusion from schools will not effectively control the spread of infection in schools, which is why standard precautions and good hygiene practices are also recommended. Standard precautions are work practices that were designed based on the assumption that all blood and all body fluids are potentially infectious. These precautions are recommended to prevent disease transmission in schools and should be adopted for contact with all blood and body fluids. The precautions include:

- Good hygiene practices, including hand hygiene.
- Appropriate use of barriers such as personal protective clothing (PPE) e.g. gloves, aprons.
- Environmental hygiene (including management of body fluid spillages).
- Appropriate disposal of waste and sharps.

Hand washing

Hand washing is the single most effective way to prevent the spread of infection; its purpose is to remove or destroy germs that are picked up on the hands. Germs can be picked up in lots of ways including when we touch other people, animals, contaminated surfaces, food and body fluids. These germs can then enter our body and make us ill or they can be passed to other people or to the things that we touch. Germs picked up on the hands can be effectively removed by thorough hand washing with soap and running water. Hand washing protects pupils and staff.

Many infections are spread by the faecal-oral route due to inadequate hand washing after using the toilet or before preparing, handling or eating food.

Pupils of all ages should be encouraged to wash their hands and school staff should avail of every opportunity to emphasise the importance of clean hands to pupils in the prevention of the spread of infection. School staff should 'lead by example'.

Hand washing facilities

Good toilet and hand washing facilities are important for infection control.

- Hand washing facilities should be provided and should be adequate to meet the needs of the school population.
- Wash hand basins, warm running water, liquid soap dispensers and hand drying facilities should be provided in all toilets, kitchens and other food preparation areas.
- Foot operated pedal bins should be located near wash basins for disposing of paper towels.
- Hand washing facilities should be maintained in a good condition and supplies of paper towels and soap should be topped up regularly to encourage pupils to use them. Cleaning staff should be reminded to check the soap dispensers at frequent intervals.
- Wash hand basins should be at an appropriate height for staff and pupils of all ages.

When to wash hands

Before

- Handling or preparing food
- Lunch and meal breaks
- Providing first aid or medication

After

- Providing first aid or medication
- Touching blood or body fluids
- Using the toilet
- Coughing, sneezing or wiping ones nose
- Touching animals
- Removing protective gloves

See Appendix 2, 3, 4 and 5 for posters on hand washing

Hand washing products

- Liquid soap and warm running water should be provided.
- A mild unscented liquid soap is preferred especially for staff and pupils with sensitive skin. Antibacterial soap **is not recommended or necessary**.
- Disposable cartridges of liquid soap that are wall mounted are the "gold standard". Bar soap is not recommended as the soap can easily become contaminated with bacteria.
- If the liquid soap container is refillable, the container and pump should be emptied, cleaned, and dried completely before being refilled.
- Soap and water must be used if hands are visibly soiled.

Water temperature

- Ideally, wash hand basins should have hot and cold mixer taps that are thermostatically controlled to deliver hot water at a maximum temperature of 43°C to avoid scalding.
- Warm water is preferable to hot or cold water because it is kinder to skin and soaps emulsify more readily in warm water. If the plumbing system only supplies cold water, a soap that emulsifies easily in cold water should be provided.

How to wash hands

- Wet hands under warm running water to wrist level.
- Apply liquid soap. Lather it evenly covering all areas of the hands for at least 10 seconds. Include the thumbs, finger tips, palms and in between the fingers, rubbing backwards and forwards at every stroke (see Posters on hand washing technique in the Appendices).

- Rinse hands off thoroughly under warm running water.
- Dry with paper towel using a patting motion to reduce friction, taking special care to dry between the fingers.
- Use the disposable paper towel that has been used to dry the hands to turn off taps.
- Dispose of the disposable paper towel in a waste bin using the foot pedal to avoid contaminating hands that have just been washed.

Drying

- Good quality disposable paper towels (preferably wall mounted) should be available at or near the wash hand basins for drying hands.
- Hot air hand dryers are an acceptable alternative although they are often not used properly; either because the machines are not very efficient (too slow, wrong height) or there are not enough dryers for the numbers requiring them, especially at break times. If hand dryers are provided they must be regularly maintained.
- If roller type cloth towels are used, school staff must ensure that they are maintained properly and replenished regularly so that contaminated portions of towels are not re-used.
- Posters displaying hand washing technique and promoting hand-washing could be placed on the wall adjacent to washing facilities (these can be downloaded free from www.hpsc.ie and laminated or placed in a plastic sleeve).

Alcohol based hand rubs/gels

Alcohol based hand rubs/gels are not a substitute for hand washing with soap and running water and are not generally recommended for routine use in educational settings because of concerns over safety, and the fact that the rubs/gels are not effective when used on hands that are visibly dirty (a common feature among school children).

Alcohol-based hand rubs and gels are a good alternative when soap and running water are not available, (e.g. on a field trip or excursion) as long as hands are not visibly dirty. If hands are visibly dirty, liquid soap and water must be used.

Method

- Apply the required volume of the product to the palm of one hand and rub the hands together. The amount of gel used should be enough to keep the hands wet for at least 15 seconds.
- Ensure all surfaces of the hands and fingers are covered with the gel and keep rubbing until the hands are dry.
- The alcohol content of the product generally evaporates in 15 seconds so after the alcohol evaporates it is safe to touch the mouth or eyes.

Health and Safety

As with any other household product or chemical, alcohol hand rubs can be hazardous if used inappropriately. Alcohol hand rubs are flammable and can be toxic if ingested.

If alcohol hand rubs/gels are used in the school setting, care should be taken to ensure that children do not accidentally ingest hand washing products. Young children should not have independent use of containers of alcohol gel.

Hand washing and young children

Good hand washing habits should be taught to young pupils as early as possible. This can be done by:

- Showing children a good hand washing technique (See posters on hand washing in Appendices).
- Supervising and assisting young pupils to wash their hands.
- Always leading by good example.

Protective Clothing

Basic protective clothing (i.e. gloves) is required for situations where contact with blood or body fluids is likely and a barrier is needed to prevent a person with open cuts, sores or cracked (non-intact) skin and their eyes, nose or mouth (mucous membranes) from having contact with another person's blood or body fluids. This includes dealing with non intact (broken) skin.

Gloves

Disposable gloves should be worn when dealing with blood, body fluids, broken or grazed skin, and contact with mucous membranes (e.g. eyes, nose and mouth).

Medical/examination gloves

- Disposable, powder free gloves made of either natural rubber latex or nitrile are suitable for use in these circumstances as they have good barrier properties.
- Latex free gloves should be available for staff or children who have latex allergy.

- Gloves should conform to European Community Standard (CE marked).
- Clear plastic (polythene) gloves are not suitable for handling blood or body fluids as these gloves tear easily and do not have good barrier properties.

Medical/examination gloves are recommended for:

- Dealing with nosebleeds or cuts.
- Handling items, surfaces or clothing soiled with blood or body fluids.
- Staff members who have open cuts, sores or cracked skin and contact with blood or body fluids is anticipated should cover any cuts with a waterproof dressing before putting on gloves.

Household gloves are suitable for:

- Cleaning and disinfecting bathrooms or any areas contaminated with faeces, vomit or urine.

General points

- Single use gloves should be discarded after each use or if punctured, torn or heavily contaminated.
- Gloves should fit well.
- Hands must be washed after removing gloves.
- Household gloves should be durable so they do not rip or tear during use.
- Gloves are not a substitute for hand washing.

Personal hygiene

Items that may be contaminated with blood or body fluids should not be shared including:

- Towels, flannels and toothbrushes.
- Water bottles/cups/drinking glasses/eating utensils/straws.
- Mouth guards.

Pupils and staff should also be encouraged NOT to share items such as lip gloss, lip balm, lipstick, head gear, combs and hairbrushes to prevent spreading germs to others.

Suitable bins should be provided for female staff and pupils to dispose of sanitary protection.

Respiratory hygiene and cough etiquette

Respiratory hygiene and cough etiquette are effective ways to reduce the spread of germs when coughing and sneezing.

- Everyone should be encouraged to turn away when sneezing or coughing.
- Everyone should cover their mouth with a tissue (or their sleeve if there are no tissues available) when they cough or sneeze and wash their hand afterwards.
- Everyone should put their used tissues in a bin and wash their hands after contact with respiratory secretions.

In addition:

- Older children should be encouraged to keep a box of disposable paper tissues in their schoolbags for use as needed. For younger children, or where this is impractical, a plentiful supply of disposable paper tissues should be available in classrooms especially during the 'flu season'.
- Foot operated pedal bins that are lined with a plastic bag should be provided for disposal of used/soiled tissues.

See Appendix 6 for poster on cough etiquette.

Preventing blood and body fluid exposures

It is important to avoid unnecessary direct contact with blood or bodily fluids. Gloves should be worn whenever contact with blood is anticipated, e.g. going to dress a cut, helping a pupil with a nosebleed. However, should blood come in contact with intact and undamaged skin there is no risk of transmission of blood borne viruses, e.g. HIV, hepatitis B and hepatitis C. **DO NOT PANIC.** Wash the area with soap and water.

If blood comes in contact with broken/damaged skin or the eyes/mouth there may be a small but remote risk of infection and the pupil or staff member who may have been exposed should be medically evaluated either by a GP or in a hospital emergency department. If blood splashes into the eye or mouth, it is important to rinse with lots of water. Further information on the emergency management of injuries is available on the HPSC website at:

<http://www.hpsc.ie/hpsc/A-Z/EMIToolkit/>

Management of cuts, nose bleeds and bites

When dealing with cuts, nose bleeds or bites, school staff should follow the school's first aid procedure. Schools should ensure that a first aid kit is readily accessible at all times. The Health and Safety Authority (HSA) in conjunction with the Department of Education and Skills produced guidelines on managing health and safety in post primary schools. **Part 2** of *Guidelines on Managing Safety and Health - Post Primary* contains recommendations on the contents of first-aid boxes and kits (Page 86), and first-aid training requirements and number of occupational first-aiders required (Page 228). These guidelines and others of relevance to the education sector are available on the HSA website at: http://www.hsa.ie/eng/Publications_and_Forms/Publications/Education.

General points

- Cuts, abrasions or sores should be covered with a waterproof dressing.
- Absorbent material should be used to stop bleeding.
- Disposable latex or nitrile gloves should be worn by school staff when there is visible blood or they are dealing with open cuts.
- Hands should be washed immediately with soap and water after gloves are removed.

Dealing with nose bleeds

Nosebleeds are very common in children. Most stop within a few minutes however some can be quite severe.

- Put on gloves before giving direct assistance. Remember, emergency care should not be withheld if gloves are not available. There have been no cases of casual transmission of HIV in households or in school settings and although caution should be exercised when handling potentially infectious fluids, fear of infection should never prevent emergency care being given.
- Get the pupil or staff member to lean forward (so that the blood doesn't run down the back of his/her throat making them cough or splutter).
- Apply pressure to the nose by placing the fingers at the side of the bleeding nostril with the thumb against the opposite cheek and compress gently.
- If the bleeding persists despite 10-15 minutes of pressure applied in this way, the pupil/staff member should be referred for medical treatment.
- Once bleeding has stopped any areas contaminated by blood should be cleaned as outlined below. It is not unusual for children to cough or vomit swallowed blood after they have had a severe nose bleed.

Dealing with cuts or lacerations

- Put on disposable gloves.
- Stop the bleeding by applying pressure to the wound with a dry clean absorbent dressing.
- Place a clean dressing on the wound and refer for medical treatment if needed e.g. stitches required or bleeding that cannot be controlled.
- Once bleeding has stopped, dispose of the gloves immediately in a manner that prevents another person coming in contact with the blood i.e. bag separately prior to disposing into general domestic waste bag.
- Wash and dry hands.

Pupils or staff members who are known to have HIV, hepatitis B or hepatitis C infections should not be treated any differently from those whose status is unknown. Intact skin provides a good barrier to infection, and staff should always wear waterproof dressings on any fresh cuts or abrasions on their hands. Staff should always wash their hands after dealing with other people's blood even if they have worn gloves or they cannot see any blood on their hands.

Dealing with bites

Human mouths carry a wide variety of germs, some of which can be transmitted to others by bites. Human bites resulting in puncture or breaking of the skin can cause certain bacterial or viral infections so it is important they are managed promptly. The risk of transmission of blood borne viruses (e.g. HIV, hepatitis B and hepatitis C) is remote. Most bites are not serious. The first step is to look at the area and see if the skin is broken.

If the skin is not broken:

- Provide reassurance.
- Clean area with soap and water.
- No further action required.

If the skin is broken:

- Encourage the wound to bleed if not bleeding freely (apply pressure to the sides of the wound).
- Wash the wound thoroughly with running water.
- Cover area with a waterproof dressing.
- If the bite is on the hand the arm should be elevated.
- If the biter has blood in the mouth they should swill it out with tap water.
- Pupils or staff who may have been exposed should be medically evaluated either by a GP or in a hospital emergency department.

Animal bites

Unlike human bites, most animal bites do not become infected but they should still be taken seriously. Bites which do not break the skin should be washed with soap and water. If a bite breaks the skin, wash with soap and water then seek medical advice about the possible need for treatment to prevent infection. If someone becomes generally unwell or the bite looks infected they should seek medical advice.

How to manage a spill of blood or body fluids

Sometimes accidents occur on school premises, which result in the environment becoming contaminated with body fluids including blood, vomit, urine or faeces. This can present a potential risk of infection spreading to others so it is important that all spills are cleaned up as soon as possible.

If there is a spill;

Make the area safe

- Keep everyone (students, staff, parents and guardians) away from the spill. Hazard signs and cordoning may be necessary, according to circumstances.
- Assess the size of the spill and check if there is any broken glass or sharp objects nearby.
- If there is any broken glass or sharp objects in the spill use a scoop (or dust pan and brush or sturdy tongs) to pick up the sharp material and wrap securely in several layers of newspaper before placing in the general domestic waste stream. Alternatively put it directly into a puncture resistant rigid walled container.
- Remember to open nearby windows if the room is small and you are going to use a chlorine releasing disinfectant.

Protect yourself

- Cover any cuts or abrasions on your hands with a waterproof dressing.
- Always wear the appropriate protective clothing and remember to wash your hands after removing used gloves and apron (if required).

Fetch

- A pair of disposable gloves.
- A disposable plastic apron if splashing to clothing is likely.
- Absorbent disposable paper towels or kitchen towel.
- A disposable plastic waste bag.
- A measuring jug, cup or spoon.
- Chlorine releasing disinfectant i.e. bleach (**not required for spills of urine**).
- A Bucket, warm water and detergent.

Or

- A commercial spill kit .*****

Now

- Put on gloves. A disposable plastic apron may also be needed if splashing to clothing is likely.
- Place the paper towels/kitchen roll over the spill so that it will soak up the fluid.
- Carefully remove the paper towels and discard directly into a plastic bag.
- Clean the spill area with warm water, a general purpose detergent (e.g. washing up liquid or a floor cleaner for floors) and a disposable cloth.
- Then, disinfect the area with a low concentration (1,000 ppm) of bleach and allow the area dry.

- If the spill happens on a metal surface or the surface might come in direct contact with skin or clothing, the surface should be rinsed off with water after using the disinfectant to prevent the effects of bleaching and rusting.
- Discard used gloves, apron and disposable towels/cloths into a plastic bag. Tie the bag securely and place in the general domestic waste.
- Wash your hands thoroughly with soap and water and dry with paper towels.

Note:

If a spill occurs on carpet or upholstery, clean the area initially with a general purpose detergent, warm water and disposable paper towels/cloth and arrange for the carpet to be steam cleaned with an industrial carpet cleaner as soon as possible.

When using disinfectants remember:

- Chlorine releasing disinfectants (bleach) are corrosive and can damage furnishings and fabric and should not be used on carpets or wooden floors.
- Use disinfectants carefully and always read the manufacturers instructions on dilution and contact times, do not guess.
- Always move food out of the way or cover, to prevent chemicals getting into food.
- Always wear rubber gloves when handling disinfectants to avoid contact with your skin. Wear goggles if there is a risk of splashing to eyes.
- Do not mix disinfectants with hot water or other products as it can emit fumes that can be irritating to your eyes or lungs.
- It is safer to add disinfectants to water rather than water to disinfectants.
- Avoid touching your eyes when handling bleach. If bleach splashes into your eyes, rinse immediately with lots of cold water (for at least 15 minutes) and consult a doctor.
- If disinfection is required, you must always clean first and rinse with water afterwards.
- Never recycle old food or drinks containers to store chemicals.
- Always store chemical in a cool shaded place out of reach of children.

Dilution charts**Table 3.1. Dilution chart for household bleach (e.g. Domestos)**

Household bleach (4% Chlorine)	Metric	PPM 40,000ppm	Dilutions
Blood/body fluid spillages and items contaminated with body fluids	Add 25mls bleach to 1 litre water	1,000ppm	1/40

Table 3.2. Dilution chart for Milton 2

Milton 2 (2% Chlorine)	Metric	PPM 20,000ppm	Dilutions
Blood/body fluid spillages and items contaminated with body fluids	Add 50ml (about 2 capfuls) Milton to 1 litre water	1,000ppm	1/20

*******Commercial spill kits:** Typically contain disposable gloves, plastic waste bags, scoops and chlorine releasing disinfectants in the form of tablets, powder or granules. The active ingredient is usually sodium dichloroisocyanurate.

Confidentiality

Pupils and staff have a legal right to confidentiality regarding their medical details. This confidentiality must never be breached by school personnel except to healthcare professionals on a “need to know” basis. School staff should be aware that if they implement standard precautions at all times there should be no need to routinely disclose to them confidential information or sensitive diagnoses. Everyone (pupils and staff) has a right to be treated equally, just as everyone has a right to be protected from exposure to germs.

Resources

<http://www.hpsc.ie/hpsc/A-Z/MicrobiologyAntimicrobialResistance/InfectionControlandHAI/Posters/>