

Infection Prevention Guidelines

for

Schools (Primary) and Child Care Centres

Third Edition

2019

Contents

Introduction	3
Standard Precautions	5
Cleaning and Disinfection	13
Handling and disposal of infectious waste	20
Immunisation	22
Infectious diseases	24
<i>Chickenpox</i>	24
<i>Conjunctivitis</i>	26
<i>Hand, Foot and Mouth Disease (HFMD)</i>	29
<i>Head lice (Pediculosis Capitis)</i>	32
<i>Influenza</i>	35
<i>Measles</i>	38
<i>Norovirus</i>	40
<i>Rotavirus</i>	42
<i>Rubella (German measles)</i>	44
<i>Scabies</i>	46
<i>Tuberculosis (TB)</i>	48
Body contact and organised sports	51
Infectious Disease Outbreak	54
Appendix A	61
<i>Hand hygiene</i>	61
Appendix B	62
<i>Putting on and removal of a surgical mask</i>	62
Appendix C	63
<i>Recommended exclusion periods</i>	63

Introduction

The purpose of the infection prevention guideline is to assist schools with children aged 12 years and below, to prevent or minimise the spread of infectious diseases to staff, students and others. Spread of infectious diseases requires a source of infection, a route of transmission and a host-person capable of acquiring the illness or disease. Most infectious diseases are spread by a single, well-defined route.

Routes of transmission include:

(a) Droplet - When infected people sneeze, cough or talk, germs can spread by way of respiratory droplets. Hands and other surfaces soiled with nasal and throat discharges are often responsible for the spread of disease. Examples of infectious diseases spread by droplet mode of spread include: common cold, influenza, parvovirus B19, measles, mumps, rubella and pertussis (whooping cough).

(b) Airborne – This occurs when bacteria or viruses have the ability to remain suspended in the air and be borne by air currents e.g. after sneezing. Examples of infectious diseases spread by airborne mode of spread include chickenpox and tuberculosis.

(b) Faecal-oral – Some viruses, bacteria and parasites are spread by this route. In these cases they are present in the faeces of infected people and may be passed from soiled hands to others either directly to the mouth or indirectly via objects, surfaces or food. The sites most commonly contaminated with faeces are hands, toilet areas (e.g. flush handle/buttons), tap handle, door handle, hand rails, table tops and floor. Examples of infectious disease transmitted via the faecal-oral route are norovirus, rotavirus, salmonellosis, campylobacteriosis, hepatitis A and hand, foot and mouth disease.

(c) Contact - Some diseases can be spread directly via skin-to-skin contact, or indirectly by contact with contaminated objects or surfaces. Such spread can occur with impetigo (skin boils or sores), ring worm, scabies and head lice.

(d) Vector - Some viruses and parasites are spread by insect or animal bites such as dengue, Zika and malaria.

(e) Blood or blood products - Some diseases, such as AIDS, caused by the human immunodeficiency virus (HIV), hepatitis B and hepatitis C are spread through blood or blood products. Transmission can occur when infected blood or blood products enters another person through broken skin, mucous membranes of the eyes, nose and mouth. It has been noted that such diseases can spread via needle-stick injuries if the needle is still contaminated.

(f) Urine – Urine can carry infectious organisms. Hands, objects or surfaces that have been soiled by urine from an infected person can enable the spread of infection, such as cytomegalovirus (CMV).

Standard Precautions

Body fluids include all secretions and excretions of the body. This includes blood, saliva, sputum, faeces, urine, vomitus, open lesions, broken skin and secretions from the wounds.

Exposure to blood and body fluids poses a potential risk of spreading infections to those providing care. The safe and effective management of blood and body fluids is necessary to prevent infection that spread via this route. Infectious diseases can spread from blood and body fluids through:

- **Faecal-oral and urine:** Viruses, bacteria and parasites that are present in the faeces of the student who have an infectious disease may be passed directly from soiled hands to others either directly to the mouth or indirectly via objects, surfaces or food. The sites most commonly contaminated with faeces are hands, floors, tap handles, toilet areas (e.g. flush handles/ buttons) handrails, door handles and table tops. Examples of infectious diseases transmitted via faecal-oral route include gastroenteritis, salmonellosis and shigellosis and infectious diseases transmitted via urine include cytomegalovirus (CMV).
- **Vomitus:** Hands, objects or surfaces that have been soiled by vomitus from an infected child can enable the spread of infection, such as bacterial and viral gastroenteritis.
- **Blood:** Some diseases such as HIV, Hepatitis B and Hepatitis C can spread through blood or blood products. Mode of spread can occur when infected blood enters another person through broken skin or needle stick or sharp injuries.

Standard Precautions are to be adopted at all times. Standard precautions are work practices assume that all blood and body fluids are potentially infectious. These precautions should be used as a first-line approach to preventing infection and should be adopted for contact with all blood and body fluids. Gloves are worn to prevent contact with broken skin, moist mucous membranes, and body fluids; masks and eye protection are worn when there is a chance of splashing body fluids into the eyes, nose or mouth; gowns are worn if there is a chance that clothing may become soiled with body fluids. Precautions also include proper disposal of contaminated equipment and good hand washing practices.

In summary, the precautions include:

- hand hygiene
- Respiratory and cough hygiene
- Use of personal protective equipment (PPE)
- Appropriate cleaning and disinfection of contaminated items
- Appropriate handling and disposal of sharps and other infectious waste.

Good hygiene practices include:

Hand washing

- a. Hand washing is one of the most important measures in preventing spread of infection.
- b. Mild liquid soap should be available at hand basins. Antiseptic soaps are not necessary and may irritate some skin types. Liquid soap dispensers should be fitted in preference to bars of soap.
- c. Paper towels or air dryers should be available at hand basins for drying hands and in other relevant areas for general drying and cleaning. Clean fabric cloths, towels or rags may be used in place of paper towels for single-use drying or cleaning. Individual cloth towels may be provided for students in some settings, such as prep/childcare, provided these are laundered regularly and not shared between students. Communal cloth towels should not be used.
- d. A copy of the picture on Hand Washing Technique (Appendix A) should be laminated or placed in a plastic sleeve and placed on the wall adjacent to washing facilities.
- e. Hands should be washed using soap and water and then dried:
 - Before handling, preparing or eating food
 - Before and after assisting students with eating/meals
 - Before and after assisting students with toileting
 - Before and after providing first aid or medication
 - Before and after touching an ill or injured person
 - After touching blood or body fluids
 - After removal of protective gloves
 - After a diaper change, or using the toilet;
 - After touching animals,
 - After playing the sand, or whenever their hands become soiled after playing.

- f. Alcohol-based hand rubs may be used routinely as an alternative; however the safety issues, including flammability, skin reaction and student access to the product (i.e. ingestion) must be considered. It is recommended that alcohol-based hand rubs have a minimum of 70% alcohol. This amount has proven to be effective in significantly reducing germs. Hand rubs should be used when soap and water are unavailable. Hand rubs are not to be used if hands are visibly soiled with dirt or other contaminated material (e.g. blood, vomit, stool, urine).

Respiratory and Cough Hygiene

Ideally, staff and children with flu-like illness should not be in school/centre. During recovery stage, they may return to school/centre but should cover their mouth and nose with a surgical mask.

Diaper Changing and Toileting

Care staff need to be very careful when diapering or helping a child use the toilet. There should be a designated diaper changing area located close to a sink and separated from the food preparation area. Areas such as couches, play areas should not be used for diaper changing.

Diapering surfaces should be smooth, non-absorbent and easy to clean. Recommended materials for the surface include formica, metal and plastic; rough/porous surface e.g. unsealed cement should be avoided as maintenance will be difficult and subsequent chances of contamination will be higher.

Required materials should be organised within reach and this include: fresh diaper and clean clothes, disposable baby wipes or dampened paper towels for cleaning the child's bottom, gloves and disposable bags for rubbish.

Surfaces should be cleaned and disinfected after each diaper change. Disposable diapers are to be discarded into covered trash bins. Hand hygiene should be performed by both the staff and child after diaper changing or visiting the toilet.

The following diaper-changing steps are recommended for staff:

1. Place disposable paper towels or any other disposable covering on the portion of the diapering table where you will place the child's bottom.
2. Put on disposable gloves and apron (if needed).
3. Using only your hands, pick up and hold the child away from your body. Prevent cradling the child and risk soiling your clothing.
4. Lay the child on the diapering table.
5. Unfasten the soiled diaper, but leave it under the child.
6. Clean child's bottom using disposable baby wipe or dampened paper towel.
7. Fold the soiled diaper surface inward. The potentially contaminated diaper should be wrapped in a plastic bag, tied securely before being discarded into a plastic-lined foot-operated lid bin.
8. Slide a clean diaper under the child and adjust it.
9. Dispose of any paper towels on the diapering table and clean any visible dirt from the table. Dispose the gloves /apron.
10. Disinfect the diapering table with household bleach (1 part bleach with 9 parts water).

Bathing & Tooth brushing

Bath towels must not be shared. Individual bath towels may be provided either by the centre or brought from home. Bath towels should be labelled for identification and stored in an area where the children can retrieve them easily.

Toothbrushes must not be shared. Each child must have his/her own toothbrush and toothpaste which is clearly labelled with her his/her name.

Wounds

Keep wounds covered (e.g. with a water-resistant dressing).

Personal Protective Equipment (PPE), Facilities and Materials

The use of personal protective equipment (PPE), facilities and materials is required to prevent or minimise the spread of infection, illness and disease. The following PPE, facilities and materials should be readily available in the workplace, particularly in food preparation, first aid, and special and physical education areas:

- a) Hand-basins in or near toilet facilities, first aid and food preparation areas.
- b) Disposable gloves and plastic aprons for all situations involving contact with blood and body fluids (Gloves should be powder-free latex or vinyl). Food handling type gloves do not provide adequate protection. Disposable gloves are for single-use only and are not to be re-used.
- c) Waste handling equipment e.g. a pair of sturdy tongs for handling potentially infectious waste.
- d) Leak-proof sealable plastic bags for disposal of potentially infectious waste.
- e) Rigid-walled, puncture-resistant container such as a sharps container for disposing of “sharps” e.g. used needles or syringes (Sharps disposal kits containing a small sharps container, disposable gloves and band-aids, plastic disposable tweezers, and an antiseptic cleaning tissue, may be purchased. Note that plastic tweezers are not recommended for handling used needles and syringes as these can cause the sharp to flick and cause injury).
- f) Trash disposal bins containing a sealable plastic lining.
- g) If there is a risk of discarded needles and syringes; leather or puncture-resistant gloves should be provided to at-risk staff such as school cleaners, and Schools Officers (Facilities and Grounds).

Food Hygiene

Children are particularly vulnerable to the effects of food poisoning, so it is essential to protect them from this hazard by taking care when preparing their food. Strengthening food safety measures in centres would better protect students and staff from outbreaks of food-borne illness.

Frequent hand washing is the single most effective means of preventing the spread of bacteria and viruses that can cause food-borne illness. Staff who changes diaper for children or assist in toileting children are frequently exposed to faeces and to children with infections of the intestines (often with diarrhoea). Staffs who prepare food in the kitchen should not change diapers or assist in toileting children.

Food preparation and consumption

1. If food is to be prepared in the childcare centre/kindergarten/pre-school, the food handlers must undergo the Basic Food Hygiene Course accredited by the Singapore Food Agency.

2. If food is catered, operators of childcare centres/kindergartens/pre-schools/student care centres must ensure that the catered food is from a caterer licensed by the Singapore Food Agency.
3. Staff and parents are discouraged from bringing home-cooked food for the children as prolonged storage of food could increase the risk of food poisoning.
4. All food that requires preparation prior to being cooked and sold must be prepared under hygienic conditions at all times and persons handling food must observe good hygiene practices at all times.
5. Food handlers should wear clean, tidy clothes and an apron, if possible, when handling food.
6. Food handlers with sores or cuts on their hands should cover them with waterproof plasters and wear disposable waterproof gloves when handling food.
7. Food handlers should thoroughly wash their hands before handling food; after using the toilet; after coughing, sneezing, using a handkerchief or disposable tissue; after handling raw meats or unwashed product; and/or after engaging in any activity that may contaminate the hands.
8. Food should be kept properly covered to prevent contamination. If storing is required for longer periods, cooked food should be kept at below 10°C or above 60°C to prevent harmful bacteria from multiplying.
9. Bare hands should not be used to handle cooked food and other food, like salad and ice, which do not require further cooking. These food items should be handled with suitable utensils such as deli paper, waxed paper, tongs, forks, spatulas, spoons or single-use gloves.
10. Every child should have individual eating and drinking utensils. Children should not share or be fed from the same eating utensils.
11. Cracked or chipped eating and drinking utensils should not be used for serving food as they may harbour bacteria as well as pose risk of cut injuries to children.
12. Rubbish bins should be properly covered and emptied daily.
13. Staff with diarrhoea, fever or any other symptoms of food-borne diseases should not be allowed to work and handle food or feed the children.
14. Staff who prepare food in the kitchen should not change diapers or assist in toileting children.
15. Utensils and food-handling equipment should be stored at least 30 cm off the floor/ground and in a manner that protects from dust, wind, rain, spillage, drainage and other sources of contamination. Food should be protected from contamination by storing them in a clean, dry location where it is not exposed to splash, dust, or other contamination and is at least 30 cm above the ground.

16. During celebrations and parties where parents are requested to contribute food / drinks that are to be consumed by students / teachers / visitors, they should avoid contributing home-cooked food or food prepared by non-NEA licenced vendors (e.g. private home bakers) as they may not have the capacity to prepare large quantity of food safely. Food should either be:

- Processed food (e.g. soft drinks, cookies, chips) that is in its original package, not expired and ready-to-eat upon opening, OR
- Cooked food or ready-to-eat food prepared by a NEA licensed vendor

Milk for babies:

- Follow the manufacturers' instructions for making formula milk
- Use freshly boiled water that you have allowed to cool
- If possible, where parent/guardian has supplied the dried formula for reconstitution, make up each feed before using it.
- Dispose of any milk left after a feed.
- Wash bottles, teats, plastic spoons and other utensils thoroughly and return to parent/guardian at the end of the day.

Relevant PPE, facilities and materials should be used during the following:

- a) Handling or preparing food (to avoid latex contamination of food, do not use latex gloves for food handling and preparation).
- b) Administering or assisting with first aid or medication (First aid staff, facilities and equipment should be provided in accordance with the relevant departmental procedure for first aid.)
- c) Assisting a student to change clothing soiled with blood or body fluids (including excreta such as urine and faeces), using the toilet to change sanitary pads and soiled clothing.
- d) Assisting a student in feeding involving potential contact with saliva.
- e) Administering medication into the feeding gastrostomy tube.
- f) Handling or disposal of potentially infectious waste such as when cleaning and disinfecting blood or body fluid spills.
- g) Emptying or disposal of containers of potentially infectious waste such as rubbish or soiled dressings.
- h) On playground duty, bus duty or similar work activity, it is recommended that staff carry a pair of disposable gloves in case they need to attend to an ill or injured student.

- i) If general waste is to be picked up, it is recommended that gloves and waste collecting equipment (e.g. a pair of sturdy tongs) be used to protect against injury from concealed sharps, and to prevent direct contact with soiled items such as used tissues.

Cleaning and Disinfection

Cleaning works by using detergent and water to physically remove dirt and impurities from surfaces or objects. Cleaning does not kill germs.

Disinfection works by using disinfectant to kill germs on surfaces or objects. In order for a disinfectant to work properly, a dirty surface should first be cleaned with detergent and water. Disinfectants will not work properly without first removing the dirt and other impurities.

Common Types of Disinfectants

Quaternary Ammonia Compounds (QAC) – are commonly used on ordinary environmental surfaces such as floors, furniture and walls. It is effective against a range of bacteria and also enveloped viruses such as the flu viruses. However, QAC is not effective against non-enveloped viruses such as Rotavirus and the *Coxsackievirus* that causes Hand, Foot and Mouth Disease. QAC is widely used in hospitals for routine daily disinfection.

Chlorine (Sodium Hypochlorite) / Bleach – is a safe, inexpensive and effective disinfectant when diluted appropriately. Concentrated chlorine can come in liquid, powder or tablet form. Chlorine is commonly used in hospitals for more intensive environmental disinfection. Certain precautions must always be adhered to when using chlorine, including:

- Dilute and use chlorine solution in a well-ventilated area; i.e. open all windows and doors.
- Never use concentrated chlorine. Always dilute the chlorine according to the instruction of the vendor / manufacturer.
- Never combine chlorine with other chemical or detergent, especially acids (such as vinegar) or ammonia. Mixing chlorine with other products can produce toxic gas.
- Wear appropriate personal protective equipment such as gloves, apron and face mask when using chlorine.
- Never use a spray bottle to avoid aerosolizing of the chlorine solution. Using a “pump” or “pour” bottle is preferred.

- Diluted chlorine solution should be prepared daily. Discard any diluted chlorine solution at the end of the day. Diluted chlorine breaks down quickly and it will be ineffective if used the next day.
- Opened bottles of concentrated liquid chlorine should be discarded after 30 days.
- If a splash occurs to the eyes/noses/mouth, flush with water immediately.
- Keep chlorine out of reach from children. Toys and other items disinfected with chlorine should also be kept out of reach from children until dry.
- As disinfectants come in varying strengths, please follow the manufacturer's instructions on dilution and contact time.
- Areas that are heavily soiled with body fluids (e.g. diaper changing areas) will require more frequent cleaning and disinfection than areas that are minimally soiled or not soiled (e.g. offices).
- Adopting a colour coding for cleaning of the environment and cleaning equipment is based on best practice. All cleaning items, for example, cloths (re-usable and disposable), mops, buckets, aprons and gloves, should be colour coded to reflect the different areas within the centre.

Table 1 Dilution guide when using aqueous chlorine solution of 5.25% to 6.15% sodium hypochlorite (e.g. household bleach)

Surfaces	Dilution ratio	Strength
Excrement-soiled surfaces	1 part bleach to 9 parts water (1:10)	Strong
General surfaces	1 part bleach to 49 parts water (1:50)	Normal
Surfaces in contact with food/mouths	1 part bleach to 249 parts water (1:250)/	Weak

Table 2 Disinfection guide

S/No.	Item & recommendations	Disinfection steps	Remarks
1 (a)	<u>Communal toys</u> Communal toys that are shared between 'children'	Disinfect at least daily or at the end of every session.	The used toys should be segregated in an empty basin that is out of the children's reach until disinfected and dried.

S/No.	Item & recommendations	Disinfection steps	Remarks
(b)	Any toy that is contaminated by saliva, stool, blood or body fluids.	Wash with soap and water and wipe with antiseptic wipes before being handled by other children.	Toys that are allowed: Washable toys, toys with hard surfaces that can be easily disinfected by wiping with antiseptic wipes. Diapered children should be given only washable toys. Individual toys belonging to the 'child' are to be cared for by his/ her own family. These toys are not shared with other 'children' and are to be kept with the child. Toys that are brought from home should not be shared with other children.
(c)	All washable toys should be cleaned daily.		
(d)	Immersible toys are toys with no moving parts, no hollow spaces and a non-porous surface and they will not soak up water into closed cracks or spaces (e.g. stacking cups, Lego blocks).	Disinfect as follows: a) Immerse in warm soapy water, wash surfaces, rinse in clean water and dry. Disinfect by submerging in household bleach diluted 1 part of bleach with 49 parts of water and air dry OR b) Wipe surface of toy thoroughly using alcohol impregnated wipe	

S/No.	Item & recommendations	Disinfection steps	Remarks
(e)	Non-immersible toys – toys with inside spaces, small openings or hinges (e.g. robots, cars) or are too large to be immersed (e.g. slides, castles).	Wipe surface of toy thoroughly using alcohol impregnated wipe. Clean all the nooks and crannies.	
(f)	Uncleanable toys – toys that can soak up water and are damaged by immersion (e.g. games, soft books, puzzles, activity books, crayons, stuffed toys). Use is discouraged.	NA	Use is discouraged
(g)	Board games are allowed provided the parts can be easily disinfected. Cards / false money e.g. Monopoly etc. should be laminated to allow for easy disinfection.		
(h)	Toys that are not allowed: Stuffed toys (unless disinfected by high temperature washing), toys that resemble food items (as children will be more inclined to place them in their mouths) or non-washable toys.	NA	Such items are prohibited
2	Utensils and milk bottles	Used milk bottles and teats are to be washed and sterilized, using the sterilizer, immediately after use.	Sterilization of utensils, teats and milk bottles
3	Soiled clothing	Soiled clothing should be placed into a separate pail which should not be used for any other purpose. The pail should be stored in	Clothing soiled with urine or stool is to be rinsed at the centre. It should be done in a pail designated or this purpose in the centre. The soiled clothing should be

S/No.	Item & recommendations	Disinfection steps	Remarks
		<p>a designated place. This pail should be disinfected after each use.</p>	<p>packed in plastic bags to minimize exposure of staff and children to disease-carrying agents. Hands should be washed after handling soiled clothing.</p>
4	Diaper-changing areas	<p>Disinfect with a solution of household bleach diluted 1 part of bleach with 9 parts water.</p>	<p>Diaper-changing surfaces should be sanitized between uses. Alternatively, the diaper changing surface should be covered with disposable paper pads, which are discarded after each use. If the surface becomes wet or soiled, it should be cleaned and sanitized.</p>
5	<p>Potty chair – the use of potty chairs should be discouraged. However, if used, potty chairs should be emptied into the toilet, cleaned in a utility sink, and disinfected after each use.</p>	<p>Disinfect with a solution of household bleach diluted 1 part of bleach with 49 parts of water in a utility sink. After 2 minutes contact time with the bleach, rinse and dry.</p>	
6 (a)	<p><u>General Surfaces</u> Floor, low shelves, doorknobs and other surfaces often touched by diapered children</p>	<p>Wash and disinfect daily with household bleach diluted 1 part of bleach with 49 parts of water.</p>	<p>The disinfecting cloth should not be washed in a sink used for washing hands. If it is, all surfaces of the sink should be properly cleaned and disinfected with diluted household bleach (1 part bleach with 49 parts</p>

S/No.	Item & recommendations	Disinfection steps	Remarks
			water) after use.
(b)	<u>Cleaning of Horizontal Surfaces</u> Uncarpeted floors and other frequently touched horizontal surfaces (e.g. tables, door knobs)	Clean regularly and if spills occur.	
(c)	Carpeting	Vacuum regularly & cleaned if spills occur and given a shampoo whenever a thorough cleaning is indicated.	
7 (a)	Centre premise	Wash and disinfect daily with household bleach diluted 1 part of bleach with 49 parts water	Clean and disinfect 2 to 3 times throughout the day to provide a clean and safe environment.
(b)	Toilet & bathroom facilities	Clean toilet twice daily and disinfect highly touched areas e.g. taps, door handles, toilet seat with their disinfectant solution after cleaning. Wipe down also high touch surfaces (e.g. table surfaces and shared toys) with disinfectant solution.	
(c)	For surfaces in bathroom like faucet handles and toilet seats	Wash and disinfect with diluted household bleach (1 part of bleach with 50 parts of water) at least once a day.	
(d)	Surfaces that infants and young toddlers are likely to	Wash daily and disinfected with	

S/No.	Item & recommendations	Disinfection steps	Remarks
	touch	diluted household bleach (same dilution).	
8	Mattress covers	Warm water and detergent	Should be used only by a single child and should be cleaned and sanitized before being assigned to another child.
9	Bedding sheets and blankets	Warm water and detergent	Should be assigned to each child and cleaned and sanitized when soiled or wet.
10	Cleaning Walls, Blinds and Curtains	Routine daily cleaning of walls, blinds and curtains are not recommended unless visibly soiled.	

Note: Depending on the varying strength of the disinfectant product, please follow the manufacturer's instructions for dilution.

It is strongly recommended that child care / school operators use only disinfectants that are recommended by internationally-recognized organizations. One such organization is the United States Centers for Disease Control and Prevention (*you could see a list of their recommended disinfectants by visiting <https://www.cdc.gov/infectioncontrol/guidelines/disinfection/disinfection-methods/chemical.html#>*). Operators should be aware of the disinfectant's effectiveness in killing specific germs and how to use it safely.

If a child care / school operator wishes to use a disinfectant that is not listed by any internationally-recognized organizations, they should evaluate the disinfectant by requesting the vendor / manufacturer to provide relevant research papers to prove the product's efficacy. It is also advisable to have a person who is competent in understanding research papers to evaluate the product.

Handling and disposal of infectious waste

Infectious waste refers to the waste containing substances or microorganisms that can transmit infectious diseases.

Appropriate handling and disposal of potentially infectious waste is very important in preventing or minimising the spread of infection, illness and disease. When cleaning and disposing of potentially infectious waste such as blood or body fluids, or items containing these products, such as bloodstained items or soiled clothing, the following points should be taken:

- Wear disposable powder-free latex or vinyl gloves, and a plastic apron if necessary. Eye protection is recommended as additional personal protective equipment (PPE) when managing blood and body fluid spills.
- For vomitus or faeces
 - i. Immediately absorb the bulk of the spill with disposable materials such as paper towels.
 - ii. Clear other persons away from the area.
 - iii. Clean and decontaminate area. Staff is to wear disposable gloves and apron/gown to remove material for safe disposal (plastic dustpan may be used)
 - iv. Area and equipment must then be disinfected with 1 in 50 dilution of household bleach (1 part bleach to 49 parts water). All cloths used are to be thrown away later.
 - v. For food contact surfaces, clean with detergent and water, using a disposable cloth, followed by disinfection by wiping down with 1 in 50 dilution of household bleach (1 part bleach to 49 parts water).
 - vi. Soiled carpets and soft furnishing should be cleaned with water and detergent or carpet shampoo. Steam cleaning may be used as an alternative on soft furnishings (if material can withstand cleaning with steam).
- Special care should be taken if waste contains sharp materials such as broken glass. Sharp material should be picked up with sturdy tongs, and wrapped securely in several layers of newspaper or put into a puncture-resistant rigid-walled container such as a sharps container.
- Clean the spill with water and detergent, followed by disinfecting the area with freshly prepared solution of diluted household bleach (1 part bleach with 9 parts water). Leave the bleach disinfectant on the affected area for at least

one minute then clean the entire area again with soap and water, and leaving the area to dry. For small spills (e.g. spots of blood), an alcohol impregnated wipe may be sufficient.

- Clean equipment such as mops and buckets with water and detergent and dry in an open area. Dispose the mop head if it is heavily contaminated.
- Remove and dispose of gloves and other waste such as paper towels into a sealable plastic bag. Dispose of the sealed plastic bag properly.
- Wash hands thoroughly with soap, water and dry with paper towels.
- If the spill is on the carpet, clean with a detergent and arrange for the carpet to be cleaned with an industrial cleaner as soon as possible.
- If staff or students find potentially infectious waste items, such as used needles and syringes, they should immediately inform the relevant staff. Where possible, an adult should remain with the item while another retrieves appropriate handling and disposal equipment. No attempt should be made to recap, break or bend the needle as this is a common cause of injury.
- In the event of a needle stick injury or other injury involving exposure to blood or body fluids during handling and disposal of potentially infectious waste, the person should be sent for medical assessment as soon as possible.

Immunisation

Vaccination is important part of boosting the bodies' immune system in order to prevent or reduce the severity of certain illnesses. The centre's operators should ensure that the child has received age-appropriate immunisations before allowing enrolment. In addition, the operator/ supervisor should also check the child's immunisation records to ensure that the child receives his/her immunisations according to the National Childhood Immunisation Schedule. Most infants and toddlers should have received all the recommended vaccines by the age 2 years. Refer to Table 1 for national childhood immunisation schedule.

Table 1 National Childhood Immunisation Schedule

Vaccination against	Birth	1 mth	3 mths	4 mths	5 mths	6 mths	12 mths	15 mths	18 mths	10-11 years*
TB	BCG									
Hepatitis B	Hep B (D1)	Hep B D2			Hep B (D3)*					
Diphtheria, tetanus, pertussis			DTaP (D1)	DTaP (D2)	DTaP (D3)				DTaP (B1)	DTaP (B2)
Poliovirus			IPV (D1)	IPV (D2)	IPV (D3)				IPV (B1)	OPV (B2)
<i>Haemophilus influenzae</i> type b			Hib (D1)	Hib (D2)	Hib (D3)				Hib (B1)	
Measles, mumps, rubella							MMR (D1)	MMR (D2)		
Pneumococcal disease			PCV (D1)		PCV (D2)		PCV (B1)			
Human papillomavirus	<i>Recommended for females 9-26 years.</i> <i>Females aged 9 to 13 years: 2 doses are recommended at interval of 0 and 6 months.</i> <i>Females aged 14-26 years: 3 doses are required at intervals of 0,1-2,6 months.</i>									

Recommended Immunization for people working with children

Immunisations are essential for people who work with children to prevent the spread of vaccine preventable diseases from staff members to children and vice-versa. Ideally, the management of the school/centre should keep documentation of the staff immunity status.

- I People who work with children include;

- Teachers, including student teachers
- Child counsellors and therapists
- People who work in youth and children services
- People who work as carers for children outside school hours
- Childcare and pre-school staff

II The following vaccines are recommended

- Measles, mumps, rubella vaccine (MMR)
- Chickenpox (or varicella)
- Whooping cough (pertussis) vaccine (available as TdaP)
- Hepatitis B vaccine
- Seasonal influenza vaccine (annual)

All these vaccines are included in the National Adult Immunization schedule (NAIS).

Table 2 Summary of recommended immunization (if not given during childhood) for people (18-65 years and older) working with children

Vaccine	Schedule
Influenza	1 dose annually
Tetanus, diphtheria and pertussis	1 dose per adulthood and per pregnancy (16-32 weeks gestation)
*Measles, Mumps, Rubella (MMR)	2 doses (one month apart)
Hepatitis B	3 doses (intervals 0, 1 and 6 months in previously unvaccinated adult)
Varicella	2 doses (one month apart)

**For adults without evidence of immunity and / or prior disease*

Infectious diseases

Chickenpox

Chickenpox is caused by the varicella zoster virus (VZV).

Signs and symptoms

Chickenpox is the primary infection with VZV. It usually occurs in children less than 10 years of age, although it may occur in older children and adults.

Symptoms include an itchy rash that begins as maculopapular lesions and rapidly progress to vesicles, pustules and crust. The more severe the infection, the greater the number of skin lesions. Fever associated with chickenpox can last 5 days. Complications include bacterial superinfection of the skin lesions, varicella pneumonia and encephalitis (brain infection).

Zoster or shingles is a secondary infection with VZV. It occurs only in persons who have a previous varicella infection.

Mode of spread

The major sources of VZV are the respiratory tract and moist skin lesions. Individuals who have not previously been infected with VZV or have never been vaccinated are at risk of developing varicella following exposure to someone with either varicella or shingles.

The VZV is spread by the airborne route and person-to-person contact. The diagnosis of varicella can be made on clinical grounds.

Incubation period

The incubation period ranges from 10-21 days.

Infectious period

A person with chickenpox is infectious beginning 1-2 days before rash onset until all chickenpox lesions have crusted (within 5-7 days).

Treatment

Oral acyclovir should be started within 24 hours after onset of rash. Acyclovir shortens the duration of illness by about one day. The adult dose is 800mg five times a day for 5 days. Oral acyclovir is not recommended for routine use in otherwise healthy children.

Prevention and control

A live attenuated varicella vaccine is licensed for use in children over the age of 12 months and adults who are susceptible to chickenpox. Children below 13 years of age are recommended to receive first dose at 12 months of age and a second dose at least three months later, i.e. at 15 to 18 months. Those above 13 years old are recommended to have two doses at six-week interval. Varicella vaccine can provide protection to non-immune staff exposed to chickenpox, if given within 3 days of exposure.

However, women who are pregnant and those with severely weakened immune systems should not receive varicella vaccine. If non-immune staff who are pregnant or immunocompromised are inadvertently exposed to varicella, they may be given post-exposure immunoglobulin (VZIG) within 10 days after exposure.

Children with acute natural chickenpox should not attend day care or preschool until all the lesions have crusted.

Conjunctivitis

Red eye, also known as conjunctivitis, is one of the most common and treatable eye conditions. It is an inflammation of the conjunctiva, the thin, clear tissue that lines the inside of the eyelid and the white part of the eyeball. This inflammation makes blood vessels more visible and gives the eye a pink or reddish colour. The most common causes of conjunctivitis are viruses, bacteria and allergens.

Viral Conjunctivitis

- Can occur with symptoms of a cold, flu, or other respiratory infection
- Usually begins in one eye and may spread to the other eye within days
- Discharge from the eye is usually watery rather than thick

Bacterial Conjunctivitis

- More commonly associated with discharge (pus), which can lead to eyelids sticking together
- Sometimes occurs with an ear infection

Allergic Conjunctivitis

- Usually occurs in both eyes
- Can produce intense itching, tearing, and swelling
- May occur with symptoms of allergies, such as an itchy nose, sneezing, scratchy throat, or asthma.

Conjunctivitis caused by Irritants

- Can produce watery eyes and mucus discharge

Signs and symptoms

Viral Conjunctivitis

- Conjunctivitis accompanies a common cold or respiratory tract infection, and
- Discharge from the eye is watery rather than thick.

Bacterial Conjunctivitis

- Conjunctivitis occurs at the same time as an ear infection
- Discharge from the eye is thick rather than watery

Allergic Conjunctivitis

- Conjunctivitis occurs seasonally when pollen counts are high
- Patient's eyes itch intensely
- It occurs with other signs of allergic disease, such as hay fever, asthma or eczema.

Mode of spread

It is usually spread from an infected person to others through Close personal contact, such as touching or shaking hands, through air by coughing and sneezing, and touching an object or surface with germs on it, and then touching your eyes before washing hands.

Incubation period

The incubation period is usually 24-72 hours.

Infectious period

The infectious period is while the eye discharge is present.

Treatment

Viral Conjunctivitis

- Most infections will usually clear up in 7 - 14 days without treatment and without long term consequences.
- Antiviral medication to treat more serious forms of conjunctivitis.
- Antibiotics will not improve viral conjunctivitis; these drugs are not effective against viruses.

Bacterial Conjunctivitis

- Mild bacterial conjunctivitis may get better without antibiotic treatment and without causing any complications. It often improves in 2 - 5 days without treatment but can take 2 weeks to go away completely.
- Topical antibiotic eye drops or ointments. Antibiotics may help shorten the length of infection, reduce complications, and reduce the spread to others.
- Antibiotics may be necessary in the following cases:
 - With discharge (pus)
 - When conjunctivitis occurs in people whose immune system is compromised
 - When certain bacteria are suspected

Allergic Conjunctivitis

- Conjunctivitis caused by an allergen (such as pollen or animal dander) usually improves by removing allergen from the person's environment.
- Allergy medications and certain eye drops (topical antihistamine and vasoconstrictors), including some prescription eye drops, can also provide relief from allergic conjunctivitis.

Prevention and control

The key is cleanliness. Wash hands often with soap and water, and help young children do the same. Wash hands after touching someone with pink eye or their personal items. Avoid touching or rubbing eyes. This can worsen the condition or spread it to the other eye. Do not share personal items, such as pillows, washcloths, towels, eye drops.

Hand, Foot and Mouth Disease (HFMD)

HFMD is a viral infection caused by a group of enteroviruses and is most commonly caused by the *Coxsackie* virus or *Enterovirus 71*.

Signs and symptoms

- Fever
- Sore throat
- Rash (flat or raised spots) or small blisters on palms of hands, soles of feet, or buttocks.
- Mouth ulcers on the inside of the mouth or sides of the tongue
- Poor appetite
- Lethargy

Mode of spread

It is easily spread from one person to another by droplet, saliva as well as by coming in contact with fluid from inside the blisters. It can also be in faeces for up to several weeks after being infected

Incubation period

The incubation period of HFMD is 3 to 5 days. Symptoms can last between 7 to 10 days.

Infectious period

A child infected with HFMD is contagious throughout the duration of the illness. They cease to be contagious when their illness resolves.

Treatment

Treatment is mainly symptomatic with paracetamol to relief pain and fever and use of mouth washes or sprays that numb mouth pain.

Prevention and control

All centres must maintain high standards of personal and environmental hygiene to minimise the risk of HFMD transmission. There are no vaccines available against *Enterovirus*.

The overall health of the children should be checked daily upon arrival at the childcare centre. Children with any unusual symptoms or behaviour should be removed from the child care centre for further assessment. This is an important measure in preventing the mode of spread of infectious diseases to other children.

Children with HFMD should stay at home, away from school, child care, playgroup, kindergarten and crowded public places until the fluid in the blisters has dried. During this period, contact with other children should be avoided until the child recovers.

Both staff and children must wash their hands frequent enough to maintain their hands in a clean state. Staff and children should follow the following recommended handwashing procedures to reduce the risk of disease mode of spread in the centres:

- Use liquid soap and running water;
- Run hands vigorously as they are washed for at least 10 seconds;
- Wash all surfaces, including back of hands, wrists, between fingers and under fingernails;
- Rinse hands well after washing;
- Dry hands with single-use towel

Staff should wash their hands:

- When they come to the centre in the morning;
- Before they prepare or serve food;
- After they change diapers, clean up or wipe the nose of a child;
- After contact with blood or body fluids such as fluids from the nose, mouth and chest as well as from inside the blisters ;
- After they have been to the toilet, either with a child or by themselves;
- After handling pets, pet cages, or other pet objects;
- After outdoor activities (e.g. playing with children in the playground);

- Before giving or applying medication or ointment to a child or self;
- Before going home

Children should wash their hands:

- When they arrive at the centre;
 - Before they eat or drink;
 - After they use the toilet;
 - After they come into contact with a child who may be sick;
 - After having their diapers changed;
 - After playing on the playground;
 - After handling pets, pet cages, or other pet objects;
 - Before going home
4. Do not share food, utensils, drinking cups, toothbrushes or towels with other children.
 5. Proper disinfection of articles such as toys, eating utensils and towels contaminated by droplet, saliva, vesicular fluid or faeces of infected cases
 6. Communal toys
 - Toys or appliances that are contaminated by nasal or oral secretions should be cleaned before they are used again.
 - Only washable toys should be used with diapered children. Separate toys should be provided for each child group so that no sharing should occur between groups. This will limit the exposure of the infectious agents to only a single group during disease outbreaks.
 - Hard surfaced toys should be washed and disinfected with household bleach regularly.
 - Stuffed toys should be discouraged, i.e. toys that cannot be sanitized should not be allowed.
 - A toy that is mouthed by a child should be washed and disinfected before other children handle it.

Head lice (Pediculosis Capitis)

Pediculus humanus capitis is the human head louse. Both nymphs and adult lice feed on human blood.

Signs and symptoms

Itching is the most common symptom of head lice infestation. Adult lice (2-3mm long, tan to grayish-white) or eggs (match hair colour) and nits (empty egg shells, white) are found on the hair and are most readily apparent behind the ears and near the nape of the neck. Excoriations and crusting caused by secondary bacterial infection may occur and are often associated with regional lymphadenopathy. Head lice usually deposit their eggs on a hair shaft 4 mm or less from the scalp. As hair grows at a rate of approximately 1 cm per month, the duration of infestation can be estimated by the distance of the nit from the scalp. Both nymphs and adult lice feed on human blood.

Mode of spread

Head lice are not a health hazard and are not responsible for spread of any disease. Head lice are only able to crawl and transmission occurs mainly by direct head to head contact with hair of infested people. Transmission by contact with personal belongings, such as combs, hair brushes, sporting gear, and hats, is uncommon. Away from the scalp, head lice survive less than 1 day at room temperature, and their eggs generally become nonviable within a week and cannot hatch at a lower ambient temperature than that near the scalp. In addition to standard precautions, contact precautions are recommended i.e. use of gloves and apron/gown as personal protective equipment.

Incubation period

The incubation period from the laying of eggs to hatching of the first nymph usually is about 1 week (6 to 9 days).

Infectious period

Children with head lice are infectious as long as the eggs or lice are alive.

Treatment

Pediculicidal agents are effective to treat head lice. Pediculicidal should only be used as directed and with care. Therapy can be initiated with over-the-counter 1% permethrin lotion or with pyrethrin combined with piperonyl butoxide. Drugs that have residual activity may kill nymphs as they emerge from eggs. No treatment is 100% ovicidal. Retreatment (with benzyl alcohol lotion, spinosad suspension, or malathion lotion) is performed commonly 7 to 10 days after treatment i.e. after eggs present at the time of initial treatment have hatched but before new eggs are produced. Rinsing of hair after topical pediculicide application should be done over a sink rather than during a shower or bath to limit skin exposure and with warm water instead of hot water to minimise skin absorption attributable to vasodilation.

Prevention and Control

Household and other close contacts should be examined and treated if infested. Children should not be excluded or sent home early from school because of head lice, because head lice have a low contagion within classrooms. Parents of children with infestation (i.e., at least 1 live, crawling louse) should be notified and informed to seek treatment for their child. The presence of nits alone does not justify treatment. "No nit " policies requiring that children be free of nit before they return to a child care facility or school should be discouraged. Egg cases (nits) farther from the scalp are easier to discover but are of no concern.

Routine classroom or school wide screening for lice is discouraged, because it is not an accurate or cost effective way of lowering the incidence of head lice in the school setting. However, parents who are educated on the diagnosis of lice infestation may screen their children's heads for lice on a regular basis and if the child is symptomatic.

Head lice rarely are transferred via fomites from shared headgear, clothing, combs, or bedding. If desired, hats, bedding, clothing, and towels worn or used by infested person in the 2 day period just before treatment is started can be machine-

washed and dried using the hot water and hot air cycles, respectively, because lice and eggs are killed by exposure to temperatures greater than 54⁰ C for at least 5 minutes. Vacuuming furniture and floors can remove an infested person's hairs that might have viable eggs attached.

Influenza

Influenza (flu) is an infection caused by the influenza virus.

Signs and symptoms

Fever often with chills or rigors, headache, extreme tiredness, dry cough, sore throat, runny or stuffy nose, and muscle aches. Nausea, vomiting, and diarrhoea also can occur, but are much more common in children than adults. In some children, influenza can appear as an upper respiratory tract infection or as a febrile illness with few respiratory tract symptoms. In infants, influenza is more severe and occasionally can cause croup, bronchiolitis or pneumonia.

Mode of spread

Influenza is spread from person to person mainly by droplets through coughing and sneezing of infected persons. It can also be spread by direct contact with influenza virus-contaminated surfaces e.g. someone touching something with influenza viruses on it and then touching their mouth or nose.

Incubation period

The incubation period for influenza is 1-4 days, with an average of 2 days.

Infectious period

People with influenza can potentially infect others during the 24 hours before symptoms develop and up to 5 days after becoming sick. That means that you may be able to pass on the flu to someone else before you know you are sick, as well as while you are sick. Viral shedding in nasal secretions usually peaks during the first 3 days of illness and ceases within 7 days but can be prolonged in young children and immunodeficient patients for 10 days or even longer.

Treatment

Symptomatic treatment is only required.

Prevention and control

Influenza vaccination is recommended for children and care providers in child care settings as this is the best method for preventing influenza and its potentially severe complications in children.

A. Encourage care providers and children

- To use soap and water to wash hands when hands are visibly soiled, or an alcohol-based hand cleaner when soap and water are not available and hands are not visibly soiled.
- Advise children and care providers to cover their noses and mouths with a tissue when sneezing or coughing, and to put their used tissue in a waste basket.
- Make sure that tissues are available in all nurseries, child care rooms, and common areas such as reading rooms, classrooms, and rooms where meals are provided.

B. Hand hygiene to prevent the spread of germs

1) Care providers to wash their hands

- When the hands become soiled especially after they have sneezed or coughed on their hands.
- Between contacts with infants and children;
- Before meals or feedings;
- After wiping the child's nose or mouth;
- After touching surfaces soiled with saliva or nose drainage;
- After diaper changes;
- After assisting a child with toileting

2) Children are to wash hands when their hands have become soiled. Teach children to wash hands for 15-20 seconds (long enough for children to sing the "Happy Birthday" song twice). When using alcohol-based hand cleaner:

- Rub hands thoroughly until the alcohol has dried, when using alcohol-based hand cleaner.
- Keep alcohol-based hand cleaner out of the reach of children to prevent unsupervised use.

- Ensure that sink locations and restrooms are stocked with soap, paper towels or working hand dryers.
- 3) Ensure that each child care room and diaper changing area is supplied with alcohol-based hand cleaner when sinks for washing hands are not readily accessible.
 - 4) Keep the child care environment clean and make sure that supplies are available.
 - 5) Clean frequently touched surfaces, toys, and commonly shared items at least daily and when visibly soiled.
 - 6) Observe all children for symptoms of respiratory illness
 - Observe closely all infants and children for symptoms of respiratory illness. Notify the parent if a child develops a fever of 37.8°C or chills, cough, sore throat, headache, or muscle aches.
 - Encourage parents of sick children to keep the children at home and away from the child care setting until the children have been without fever for 24 hours, to prevent spreading illness to others. Similarly, encourage sick care providers to stay home.

Measles

Measles is caused by the measles virus.

Signs and symptoms

Measles is an acute disease characterised by fever, runny nose), red, watery eyes, cough and rash. The rash starts on the face and progresses to the feet over 3 days changing from a discrete to a confluent rash. Once the rash appears, the fever and respiratory signs tend to improve. The rash fades over the next few days to leave a brown stain with generalised peeling of the skin. The course of measles generally resolves over a 10-day period.

Mode of spread

Measles is spread by contact with secretions of infected persons by large-particle droplets requiring close contact or small-particle aerosols which allow distant mode of spread. Direct contact may also occur via contact with contaminated surface or objects. Measles is considered contagious from onset of symptoms through the first day of rash.

Incubation period

The incubation period range from 7 to 21 days.

Infectious period

The infectious period is from 4 days before the rash starts until about 4 days after that. They are most infectious while they have fever, runny nose and cough.

Treatment

Measles is a self-limiting disease and treatment is mainly supportive. Antibiotics should be given only for proven bacterial complications such as otitis media.

Prevention and control

MMR vaccine: 2 doses of vaccination required, 1st dose at 12 months and 2nd dose at 15-18 months.

A child with known measles should be excluded from child care or preschool until 5 days after onset of rash. Unvaccinated children who are 6 months of age older should receive the live MMR vaccine. If the vaccine is given within 72 hours of exposure, it may give protection against infection.

Norovirus

Norovirus is a very infectious virus that causes vomiting and diarrhoea.

Signs and symptoms

Abrupt onset of vomiting accompanied by watery diarrhoea, abdominal cramps, and nausea are characteristic of norovirus gastroenteritis. Acute diarrhoea without vomiting may also occur, most notably in children. Symptoms can last from 24 to 60 hours, but usually no more than 48 hours. However, more prolonged courses of illness can occur, particularly elderly people, young children, and hospitalized patients.

Mode of spread

Transmission is by person-to-person spread via the faecal-oral or vomitus-oral routes, through contaminated food or water, or by touching surfaces contaminated with norovirus and then touching the mouth. Common source outbreaks have been described after ingestion of ice, shellfish, and a variety of ready to eat foods, including salads, berries, and bakery products, usually contaminated surfaces and aerosolized vomitus has been implicated in some outbreaks. In addition to standard precautions, contact precautions are recommended for suspected cases if acute gastroenteritis attributable to norovirus infection until 48 hours after symptoms resolution.

Incubation period

The average incubation period is 12-48 hours.

Infectious period

The child is infectious from during the incubation period and for as long as the virus is shed (usually about 3 days after symptoms stop).

Treatment

Supportive therapy includes oral or intravenous rehydration solutions to replace and maintain fluid and electrolyte balance.

Prevention and Control

Appropriate hand hygiene is the most important method to prevent norovirus infection and control transmission. Reducing norovirus present on hands is best accomplished by thorough hand washing with running water and plain or antiseptic soap. Washing hands with soap and water after contact with a patient with norovirus infection is more effective than using alcohol-based hand sanitizers for reducing transmission.

Several factors favour transmission of norovirus, including low infectious dose, large numbers of virus particles excreted, and prolonged shedding. The spread of infection can be decreased by standard measures for control of diarrhoea, such as educating child care providers and food handlers about infection control, maintaining cleanliness of surfaces and food preparation areas, using appropriate disinfectants (chlorine bleach), excluding caregivers or food handlers who are ill and for a period after recovery (e.g. 48 hours), and exercising appropriate hand hygiene. If a source of transmission can be identified (e.g. contaminated food or water) during an outbreak, then specific interventions to interrupt transmission can be effective.

Infants and children should be excluded from child care centres until stools are contained in the diaper or when toilet-trained children no longer have accidents using toilet and when stool frequency becomes no more than 2 stools above the child's normal frequency for the time the child is in the program, even if the stools remain loose.

Rotavirus

Rotavirus is a major cause of diarrhoea in humans. Group A viruses are the major causes of rotavirus diarrhoea worldwide in humans, although rotaviruses of groups B and C have been associated with acute gastroenteritis.

Signs and symptoms

Clinical manifestations vary and depend on whether it is the first infection or reinfection. After 3 months of age, the first infection generally is the most severe. Infection begins with acute onset of vomiting followed by 24 to 48 hours later by watery diarrhoea. Symptoms generally persist for 3 to 7 days. In moderate to severe cases, dehydration, electrolyte abnormalities, and acidosis may occur. In certain immunocompromised children, including children with congenital cellular immunodeficiencies or severe combined immunodeficiency (SCID) children who are haematopoietic stem cell or solid transplant recipients, severe, prolonged, and sometimes fatal rotavirus diarrhoea may occur. Rotavirus is present in high titre in stools of infected patients several days before and several days after onset of clinical disease.

Mode of spread

Transmission occurs via faecal-oral route. In addition to standard precautions, contact precautions are indicated for diapered or incontinent children for the duration of illness i.e. use of gloves and apron/gown as personal protective equipment.

Rotavirus is very stable and may remain infectious in the environment for weeks to months. Rotavirus can be found on toys and hard surfaces in child care centres, indicating that fomites may serve as a mechanism of transmission. Respiratory transmission may play a minor role in disease transmission. Spread within families and institution is common. Rarely, common-source outbreaks from contaminated water or food have been reported.

Incubation period

The incubation period for rotavirus diarrhoea is short, usually less than 48 hours.

Infectious period

The infectious period is 2 days before and up to 8 days after diarrhoea.

Treatment

No specific antiviral therapy is available. Oral or parenteral fluids and electrolytes are given to prevent or correct dehydration.

Orally administered Human Immune Globulin, administered as an investigation therapy in immunocompromised patients with prolonged infection, has decreased viral shedding and shortened the duration of diarrhoea.

Prevention and control

Rotavirus can be administered concurrently with other childhood vaccines. Rotavirus vaccines are given by putting drops in the child's mouth.

General measures to interrupt enteric transmission in child care centres:

- Surfaces should be washed with soap and water.
- Bleach solutions or other products with confirmed virucidal activity against rotavirus can be used to inactivate rotavirus and may help prevent disease transmission resulting from contact with environmental surfaces.
- Infants and children with rotavirus infection should be excluded from child care centres until stools are contained in the diaper or when toilet-trained children no longer have accidents using the toilet and when stool frequency becomes no more than 2 stools above that child's normal frequency for the time the child is in the program, even if the stools remain loose.

Rubella (German measles)

Rubella is an infection caused by the rubella virus.

Signs and symptoms

Clinical manifestations can be unapparent and hence unrecognised. It is generally a mild disease, characterised by slight fever, rash and enlarged lymph nodes (commonly in the neck region). The rash first appears on the face and then spreads downward and peripherally. The usual duration is 2-5 days. The illness is often more severe in adolescents and adults, with joint pain and arthritis being common.

Mode of spread

Rubella is transmitted by respiratory droplets from nasopharyngeal secretions or direct contact with an infected patient.

Incubation period

The incubation period ranges from 14-21 days.

Infectious period

The period of communicability occurs from up to 7 days before rash onset until 5 to 7 days after onset of rash. Incubation is from 14 to 21 days.

Treatment

No specific treatment is currently available.

Prevention and control

1. Rubella vaccine is recommended to be administered together with measles and mumps vaccine (MMR) when a child is 12 months of age, with a second dose at 15 to 18 months.

2. Children with rubella should be excluded from child care or preschool for 7 days after rash onset.
3. In the event of a rubella outbreak in a child care centre, the first step is to verify that other children in the centre have already been immunized against rubella. The immunized children may continue to attend the centre. Vaccination is recommended to protect against subsequent exposures if the child is not already incubating mild rubella infection.
4. All staff members should provide a documented history of immunization or serologic evidence of immunity at the time of employment.
5. Pregnant non-immune women who are exposed to rubella should see their obstetrician for counselling regarding the risk of rubella to the foetus.

Scabies

The mite *Sarcoptes scabiei* subspecies *hominis* is the cause of scabies. The adult female burrows in the stratum corneum of the skin and lays eggs. Larvae emerge from the eggs in 2 to 4 days and moult to nymphs and then to adults, which mate and produce new eggs. The entire cycle takes approximately 10 - 17 days.

Signs and symptoms

Characterized by an intensely pruritic, erythematous eruption that may include papules, nodules, vesicles, or bullae. This is caused by the burrowing of adult female mites in upper layers of epidermis, creating serpiginous burrows. Itching is most intense at night. In older children and adults, the sites of predilection are fingers, wrists, elbows, armpits, waistline, thighs, navel, genitalia, areolae, abdomen and buttocks. In children younger than 2 years, the eruption is more often vesicular and often occurs in areas such as the scalp, face, neck, palms, and soles. The eruption is caused by a hypersensitivity reaction to the proteins of the parasite.

Mode of spread

Humans are the only host. Transmission usually occurs through prolonged close, personal contact with an infected person. Because of the large number of mites in exfoliating scales, even minimal contact with patient contact with patients with crusted scabies or their immediate environment can result in transmission. Scabies can be transmitted as long as the patient remains infested and untreated, even before symptoms develop.

In addition to standard precautions, contact precautions are recommended until the patient has been treated with an appropriate scabicide.

Incubation period

The incubation period in people without previous exposure is usually 4 - 6 weeks before itching occurs. People who were previously were infested are sensitized and develop symptoms 1 to 4 days after repeated exposure to the mite; however, these re-infestations are usually milder than the original episode.

Infectious period

As long as the child has about 10-12 mites on their body and has skin-to-skin contact with others, that child is infectious and can pass it to others. In addition, a person who has recently acquired scabies and is in the incubation period (without symptoms) is also infectious.

Treatment

Topical permethrin 5% cream or off-label use of oral ivermectin both are effective agents for treatment of scabies. Most experts recommend starting with topical 5% cream as the drug of choice, particularly for infants, young children (not approved for children younger than 2 months), and pregnant or nursing women. Children and adults with infestation should apply lotion or cream containing this scabicide over their entire body below their head. Permethrin kills the scabies mite and eggs. Two (or more) applications, each about a week apart, may be necessary to eliminate all mites. Because scabies can affect the face, scalp, and neck in infants and young children, treatment of the entire head, neck, and body in this age group is required.

Prevention and Control

Most experts recommend prophylactic therapy for household members, particularly for those who have had prolonged direct skin-to-skin contact. Manifestations of scabies infestation can appear as late as 2 months after exposure, during which patients can transmit scabies. All household members should be treated at the same time to prevent re-infestation. Children can be allowed to return to child care or school after treatment has been completed. Environmental disinfection is unnecessary and unwarranted. Thorough vacuuming of environmental surfaces is recommended after use of a room by a patient with crusted scabies.

People with crusted scabies and their close contacts must be treated promptly and aggressively to avoid outbreaks.

Tuberculosis (TB)

TB is a disease caused by the bacterium *Mycobacterium tuberculosis*.

Signs and symptoms

TB disease can occur in many parts of the body; namely categorised as pulmonary (lung) TB and extrapulmonary (outside the lungs) TB. Extrapulmonary TB is less common, but children and persons with compromised immune systems are more susceptible to it.

The following symptoms raise the suspicion of TB disease (i.e. active TB):

- Cough lasting 3 weeks or longer
- Coughing out blood
- Feeling tired all the time
- Fever and night sweats
- Loss of weight
- Chest pain

Mode of spread

TB is spread by breathing in droplets containing the TB bacteria which are expelled when patients with active pulmonary TB cough or sneeze, and release these droplets into the air. Persons in close, prolonged proximity may become infected when they inhale these TB bacteria.

Not everyone who gets infected with the TB bacteria develops the disease. The body's immune system 'walls off' the TB bacteria, which generally lay dormant in the body for years. This is called latent TB infection. Persons with latent TB infection are well and healthy, and do not spread the germ to others.

90% of those with untreated latent TB infection will never develop active TB. Half of the remaining will develop disease within the first 2 years of infection.

The risk of latent TB infection developing into active TB disease is however higher in:

- Persons with weakened immune systems due to underlying medical conditions such as HIV infection, certain malignancies, kidney failure and diabetes, or being on immunosuppressive drugs
- Children under the age of 5 years old
- Persons who have poor nutritional status

Incubation period

The incubation period may vary from about 2-12 weeks.

Infectious period

An infected person may remain infectious as long as viable TB bacteria are present in the sputum and until appropriate treatment has been given for 2 weeks.

Treatment

TB disease can be completely cured through medication. Treatment usually involves a combination of several different drugs (i.e. rifampicin, isoniazid, pyrazinamide, streptomycin). Because TB bacteria die very slowly, these anti-TB drugs must be taken for at least 6 to 9 months. One is considered non-infectious after the initial 2 weeks of treatment.

Most people with TB need not be hospitalized, but they will need to undergo Directly Observed Therapy (DOT) which requires them to take their TB medication under the supervision at the polyclinics. The World Health Organization (WHO) has advocated DOT as the standard of care for TB patients. This is to ensure that the patient takes his or her medications correctly, and successfully completes the course of treatment. One must continue to take the medicine until the doctor certifies that treatment has been completed.

Irregular or incomplete TB treatment could result in the TB bacteria in the body that survived continue to grow and multiply. However, at this stage, the bacteria may develop resistance to the usual TB drugs. In such situations, a different set of stronger drugs (with more side effects) must be taken for a longer period (approximately 18 months). The chance of cure is also considerably reduced.

Prevention and control

TB is a preventable disease. BCG vaccination at birth helps to reduce infants' and young children's risk. Certain groups of people with latent TB may benefit from treatment to reduce their lifetime risk of developing active TB disease.

There are also measures one can take to help protect oneself and others:

- Complete the full course of the TB medications. TB bacteria have a chance to become resistant to most TB drugs if the full course of TB treatment is not properly adhered to. The mutant TB strains become more deadly and difficult to treat.

If one has active TB, he or she can help minimise transmission by:

- Staying at home especially in the first two to three weeks of treatment.
- Covering your mouth with a tissue when you cough or sneeze and wear a mask in the presence of other people during the first few weeks of treatment.
- Disposing properly the dirty tissue by sealing it in a bag and throwing it away.

Body contact and organised sports

Sports participation provides an opportunity for the transmission of infectious disease to participants, staff and relatives. Those sports that require close body contact such as rugby, wrestling, judo and boxing have more skin to skin contact and inherently carry higher risk for disease transmission.

Organised sports are defined as traditional team sports e.g. baseball, football, soccer, hockey, volleyball, gymnastics and track and field.

Spread of Infection

There are 3 categories of spread of infection in such sporting activities:

- Direct (person to person or skin to skin) contact spread – body contact sport participants are vulnerable to skin infections
- Indirect (person to inanimate surface to person) contact spread. This can occur through sharing of equipment such as braces, towels, water bottles and soap and contact with athletic surfaces such as mats, grass and gym equipment.
- Close contact refers to being within 3 feet of an infected person. This usually refers to airborne or droplet spread occurring in locker rooms or living on campus

Spread of skin pathogens include:

- Bacteria e.g. *Staphylococcus aureus* including methicillin resistant *Staphylococcus aureus* (MRSA) and group A *Streptococcus*
- Fungal infections e.g. *Tinea pedis*, *tinea courts*, *tinea capitis* and *tinea corporis*
- Viral infections e.g. *Herpes simplex*
- Parasitic infections e.g. scabies, bed bugs

Infection Prevention Measures

A. Teaching proper personal hygiene

- Shower and wash with soap and water before and after training especially when there is close contact with another person, where shower facilities are available

- Wash hands with soap and water after using the toilet and before and after using any sports equipment
- Not to share towels and personal items such as drinking bottles or cups
- Wash personal items such as towels, underwear, socks and other sports clothing after every training session
- Clean footwear after training
- Keep cuts and sores covered with waterproof dressing
- Shower prior to and after using the swimming pool

B. Environmental recommendations

Ensure regular (daily, weekly and monthly) cleaning of facilities and equipment (e.g. weight room, railings, mats, locker rooms and showers). Those who manage sports programs and facilities should develop a comprehensive plan for proper cleaning and maintenance. A written cleaning schedule should clearly state what to clean, when to clean and how to clean. All equipment should be maintained as per manufacturer's recommendations. Equipment should be checked daily for damages. Damaged equipment should be removed for repair.

Environmental surfaces should be cleaned with detergent and water detergent wipes or diluted bleach (1:50 dilution).

Special attention should be paid to proper management of blood and body fluids in order to prevent transmission of blood-borne pathogens such as hepatitis B, hepatitis C or HIV in sports activities.

Coaches, trainers and teachers are primarily responsible for reviewing and stressing on the importance of hygiene behaviour needed to minimize the risk of acquiring and spreading infection in sports.

C. Sandpits

Sandpits can be a potential source of infection. They need to be well maintained and kept clean in order to ensure that it is safe place to play.

How to keep sandpits clean

- Make sure that the sandpit is well drained when it is built so that it remains clean and dry as possible.
- Cover the sandpit when it is not in use. The ideal type of covering is fine mesh. This prevents animals from using the sandpit as a toilet and keeps the sand exposed to air. It also enables sand to be washed by rainwater so long as drainage is in place.
- Ensure that the sand is raked regularly to remove rubbish and debris and to stir up the sand so that it gets aired.
- Remove toys out of the sandpit each day.
- Disinfecting the sand pits is only required if it is obviously dirty. Use a mild household detergent diluted in water in a watering can (2 mls diluted concentrated product to 500 mls water). Allow the sandpit to dry before allowing children to play in it.

Infectious Disease Outbreak

Infectious diseases are common among nursery, pre-school or school children and these settings often present as an ideal situation for diseases to spread. Ensuring that infectious and ill children do not attend school is an important aspect of infection control.

Schools tend to be affected by outbreaks more than other settings because their occupants - primarily children - easily transmit illnesses to one another as a result of their close proximity and difficulty in ensuring their compliance with good personal hygiene practices and respiratory etiquette.

An infectious disease outbreak can be defined as “2 or more linked cases of the same illness or when the number of cases of the same illness unaccountably exceeds the expected number.”

There are several ways in which nurseries, pre-schools and schools may become aware that they have an outbreak of an infectious disease.

- a. Several children may be ill in nursery, pre-school or school with the same illness.
- b. There may be a sudden increase in the number of absentees.
- c. Parents may report to the nursery, pre-school or school that their children are suffering from an infectious disease.
- d. The Ministry of Health staff may contact the teacher-in-charge / principal.

Outbreaks of infectious disease may occur in nurseries, pre-schools and schools. Their importance depends on several factors: -

- a. Severity of the disease
- b. Number of children affected
- c. Mode of mode of spread
- d. Amount of anxiety they generate in parents and staff
- e. If any specific action is necessary to stop further cases (e.g. immunisation, improving food-handling practices).

Surveillance

1. It is recommended that all centres practice daily monitoring of their students and staff for common infectious disease symptoms. This is done systematically by keeping records of students and staff with symptoms, the date when they developed the first symptom of the illness and the clinical diagnosis (if any). The overall health of the children should be checked upon arrival, noting any unusual symptoms or behaviour. These include, but are not limited to:
 - Respiratory symptoms – fever, cough, runny nose, sore throat
 - Food poisoning or gastroenteritis symptoms – diarrhoea, vomiting
 - Skin conditions – chickenpox, rash, blisters, enlarged lymph nodes
 - Oral and ocular symptoms - Conjunctivitis (i.e. red eyes), yellowing of the sclera (white part of the eye), excessive eye discharge, mouth ulcers
 - Other physical symptoms - poor appetite, lethargy, headache, chills, muscle ache, joint pain, chest pain
2. Centres should ensure that the screening of children for illness includes promoting good standards of personal hygiene, keeping ill children out of school until they are fully recovered and undertaking daily surveillance i.e. identifying and investigating any new cases on a daily basis.
3. Early recognition of disease outbreaks is necessary to implement effective control methods. Clusters of illness (such as two or more people ill with similar symptoms closely grouped in terms of time and place) should be reported.
4. The regular collection of such records provides centres a baseline data on the average daily/weekly number of students and staff having symptoms of infectious diseases. An increase in the number of persons with infectious disease symptoms above the baseline may be an indication of a possible infectious disease outbreak. Early recognition of disease outbreak is necessary to implement effective control methods.

Exclusion and management of sick children upon arrival

The overall health of the children should be checked upon arrival.

- a. Ask the parents about unusual health or behaviour while the child was at home.
- b. Note any unusual symptoms or behaviour like irritability, persistent crying.
- c. Staff should practice good proper hygiene during screening at all times.

- d. Take the temperature of the child upon arrival at the centre. Disposable plastic thermometer probe covers should be used for digital thermometers or tympanic (ear) thermometers. The probe cover used on one child must NOT be used on another child. Read the manufacturer's instructions on the proper use, cleaning instructions and range of normal temperature readings for each type of thermometer.
- e. The child should not be allowed to attend school if the child does not appear well enough to participate in activities.
- f. If child is unwell at any time while attending in centre, separate the child immediately from other children to an isolation room or sickbay. Parents should be informed immediately to bring their sick child for medical treatment and/or back home.
- g. Centres need to provide sick bay for isolating the sick children while they are waiting for their parents to bring them home or to see a doctor. The purpose of the sick bay is to separate the sick children from unaffected children. The room should have good ventilation (preferably the windows to be opened and the fan to be turned on).

Recertification by a medical practitioner is not required for a child to return to the centre if the Medical Certificate (MC) period is over and the child does not exhibit any symptoms of illness. However, if the child still exhibits any symptoms of illness or if there are doubts over the child's health condition, centres may request the parents to bring their child to a medical practitioner for further assessment and certification of fitness to return to the centre.

Prevention

Prevention may be considered in three areas, aiming at:

- a. The outbreak source
- b. Contaminated vehicles of infection mode of spread
- c. Susceptible human

Choice of control measure within these three areas is dictated by factors such as whether the outbreak source is known, whether a suspected vehicle has been identified, and whether a vaccine or prophylactic treatment is available for susceptible humans.

Infectious disease prevention includes immunisations. Parents should be encouraged to ensure that their child receives all appropriate routine vaccinations when they are due, unless there are true medical reasons why they should not be immunised. Nurseries, pre-schools and schools should keep an updated children's immunisation record. Some infections, however, cannot be prevented by immunisation and limiting their spread in the community is dependent on a combination of isolating the infectious source as well as improving personal hygiene practices, where appropriate.

Prevention of spread

1. If a child is suffering from any of the infectious disease, the child should be immediately isolated by placing him/ her temporarily at the sick-bay (for childcare centres), or principal's office (for kindergartens). The child should wear a surgical mask if he has signs or symptoms of upper respiratory tract infections. His/her parents should be informed to bring him/her for medical treatment and isolated at home/hospital.
2. It is the responsibility of the supervisor/ principal of the child care centre/ kindergarten/ pre-school centre/ student care centre to ensure that if any staff or child or person engaged in food preparation or rendering services to the centre / kindergarten is suffering from an infectious disease, he/she should be excluded from the centre/ kindergarten/ pre-school centre until well and displaying no symptoms.
3. Devise a communications system to inform parents of outbreaks, risks and precautions, as well as actions taken by the school and resources for additional information. Communication with parents, staff, families, students and the media is important, and each group may require different, yet consistent, messages. It is imperative that schools maintain up-to-date emergency contact numbers for all pupils, not only so that parents can be contacted if children are ill and need to be taken home, but also to assist in the investigation of any outbreaks.
4. Disseminate messages about preventive hygiene - including effective hand washing and the importance of covering the mouth during coughs and sneezes - by using posters and educational talks to outline recommended procedures for staff and students.
5. Social distancing refers to procedures to decrease the frequency of contact among people to lessen the risk of spreading an infectious disease. Depending on the type and severity of the infectious disease, closing schools may not be enough to slow the spread. Students can re-congregated in malls, private homes,

movie theatres, restaurants or other places in the community, increasing the risk of the spread of the disease. For this reason it is recommended that, when closing schools, public health partners encourage social distancing for students and issue guidelines for social distancing. These procedures or guidelines, which may be distributed through the school networks, will play an integral role in limiting the mode of spread of the disease and delaying the spread of the virus.

6. Childcare facilities should clean and sanitize frequently-touched surfaces (e.g. desks, doorknobs, computer keyboards, toys) routinely and if they become visibly soiled.
7. Conduct training for teachers, administrative staff and food service staff about infectious diseases, their symptoms and treatments, and how to prevent and control outbreaks



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Appendix A

Hand hygiene

Rub hands palm to palm			Right palm over left dorsum with interlaced fingers and vice versa
Palm to palm with fingers interlaced			Back of fingers to opposing palms with fingers interlocked
Rotational rubbing of right thumb clasped in left palm and vice versa			Rotational rubbing, backwards and forwards with clasped fingers of left hand in right palm and vice versa
Wrap left hand over right wrist using rotational movements up to elbow and vice versa			Use paper towel to turn off faucet

Source: Infection Prevention & Epidemiology, Singapore General Hospital, used with permission

Appendix B

Putting on and removal of a surgical mask



1
Tie the upper strings at the top of the head



2
Tie the lower strings at the back of the neck



3
Fix the metallic strip securely over the bridge of the nose



4
Ensure that the mask fully cover the nose, mouth and is stretched gently over the chin and fit snugly over the face



5
Change mask every 4 hrs or if it becomes moist or damaged

Source: Infection Prevention & Epidemiology, Singapore General Hospital,
used with permission

Appendix C

Recommended exclusion periods

Infection or condition	Mode of mode of spread	Criteria for exclusion	Return	Comments
AIDS or HIV	Blood or body fluid	Nil		Children with certain behaviour) e.g. biting, frequent scratching, dermatitis or bleeding problems) should be assessed on an individual basis
Chickenpox (Varicella)	Airborne and contact with vesicle fluid	Clinical diagnosis, laboratory diagnosis or significant rise in blood antibody titre	When lesions have crusted (usually around 5 days) after onset of rash	
Conjunctivitis	Contact with eye drainage	Red/pink mucous membrane of eye with white/yellow discharge, without evidence of allergic reaction	When asymptomatic	
Diarrhoea	Oro-faecal	When diarrhoea is present	When asymptomatic	
Fifth disease (Parvovirus B19)	Droplet, blood or blood products	When a “slapped cheek” appearance and fever are present	When fever is no longer present	
Hand foot mouth disease	Contact	Clinical diagnosis	When fever is no longer present vesicles are dried at	Surveillance of children for similar symptoms

Infection or condition	Mode of spread	Criteria for exclusion	Return	Comments
			about one week from onset of illness	
Hepatitis B	Blood or body fluid	Laboratory diagnosis during acute stage of illness	When acute illness has resolved	Children with behavioural problems that may increase risk of disease mode of spread should be assessed on an individual basis
Hepatitis C	Blood or body fluid	Laboratory diagnosis during acute stage of illness	When acute illness has resolved	Children with behavioural problems that may increase risk of disease mode of spread should be assessed on an individual basis
Impetigo	Contact with discharges from infected lesions	Clinical diagnosis of disease or laboratory isolation of <i>Staphylococcus</i> or <i>Streptococcus</i> from a skin lesion	24 hours after initiation of antimicrobial treatment and lesions on exposed skin are covered	Surveillance of children for similar symptoms
Influenza	Droplet and contact with respiratory secretions	Clinical diagnosis or laboratory confirmation of disease	When fever is no longer present and no other respiratory symptoms	Surveillance of children for similar symptoms
Lice (head or body)	Contact with person or clothing or other	Identification of nymphs or adult lice on hair or	<u>Head lice</u> : after 1 st treatment with appropriate	Examine contacts and treat if infected.

Infection or condition	Mode of spread	Criteria for exclusion	Return	Comments
	items infested with lice	body	pediculicide <u>Body lice:</u> After completion of treatment with appropriate pediculicides. Good personal hygiene, clothing and bedding must be reliably cleaned.	Machine wash clothing, bedding or cloth toys in hot water cycle. Dry cleaning is effective in killing lice or nymphs.
Measles	Contact with respiratory secretions	Clinical diagnosis or laboratory confirmation by IgM testing or virus isolation	5 days after onset of rash or negative laboratory test	Verify immune status of children and staff exposed to patient. Those not immune should be vaccinated within 72 hours of exposure.
Mumps	Contact with respiratory secretions	Clinical diagnosis or laboratory confirmation by IgM testing or virus isolation	5 days after onset of parotid gland swelling	Verify immune status of children and staff exposed to patient. Those not immune should be vaccinated with MMR.
Scabies	Contact with infested person or materials contaminated with mites	Clinical diagnosis of disease	After completion of treatment with an appropriate scabicide	Surveillance of children for similar symptoms. Prophylactic treatment for persons who

Infection or condition	Mode of spread	Criteria for exclusion	Return	Comments
				had skin to skin contact with confirmed cases. Machine wash clothing, bedding or cloth toys in hot water and dry in hot dryer.
<i>Streptococcus pyogenes</i> (strep throat)	Contact with respiratory secretions	Laboratory isolation of organism	24 hours after initiation of appropriate antimicrobial treatment	Surveillance of children for similar symptoms. Exclude those with similar symptoms until asymptomatic or laboratory testing is negative.
TB	Airborne	Laboratory confirmation of TB from clinical specimens or suspected TB based on symptoms	When attending doctor determines that person is no longer infectious	