NATIONAL HEALTH LABORATORY SERVICE

Recommendations for the Control of Common Communicable Diseases in Educational Settings

Developed by the National Institute for Communicable Diseases (NICD)
A Division of the National Health Laboratory Service

Version 1

Last updated: April 2011

Acronyms

Department of Health (DoH)

Hand, foot and mouth disease (HFMD)

National Institute for Communicable Diseases (NICD)

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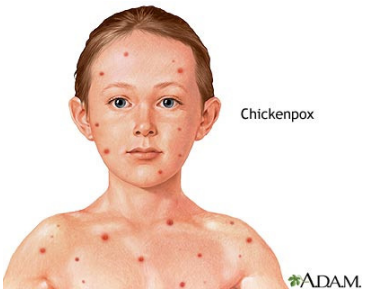
Overview

This document provides an outline of communicable diseases that commonly occur in nursery, pre-primary, primary and secondary school settings. It is written specifically for educators (although the information may also be useful for care-givers) and provides basic information and recommendations for the control of: chickenpox, conjunctivitis, hand, foot and mouth disease, head lice, impetigo, measles, molluscum contagiosum, mumps, ringworm, rubella (German measles), scabies and warts. The document is based on currently available information. If there are any further enquiries, please contact the Department of Health (DoH), the National Institute for Communicable Diseases (NICD) or a qualified health care provider.

Chickenpox

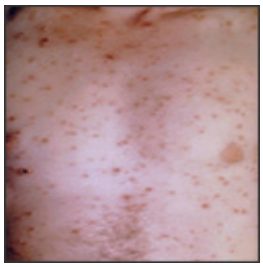
Chickenpox is an infection that results in a very characteristic, itchy rash that first blisters and then crusts over. It is caused by the varicella-zoster virus. Chickenpox is highly infectious and is spread by direct contact or through droplets of saliva or mucus that are coughed or sneezed into the air. A person with chickenpox will become infectious about 5 days before the onset of the rash and will remain so until 5 days after the first appearance of blisters.

Description of the Illness:



Although learners with chickenpox may have more general complaints (e.g. headache, fever and aching, painful muscles) in the first few days of the infection, the most important feature will be the development of a characteristic rash. This will begin with a few itchy red spots which can occur anywhere on the body but are usually located on the chest, abdomen, arms, legs, face, scalp and behind the ears. Approximately 12 hours after the onset of the rash, the first crop of blisters (called vesicles) will erupt. These vesicles are initially filled with clear fluid and are very itchy (and sometimes painful). They will occur in several successive crops. After 1 to 4 days, the vesicles will dry to form crusts which will, in turn, fall off naturally after 1 to 2 weeks.

Control:



Chickenpox
(Source: cdc.org)

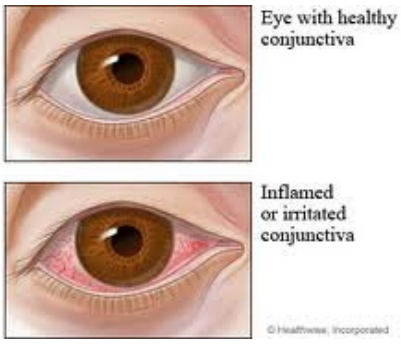
Learners with chickenpox **<u>should be excluded from school</u>** until 5 days after the onset of the rash. The infection will generally follow a natural course, as outlined above. However, care-givers should be advised to consult their health care providers regarding the treatment of chickenpox. Learners should be told not to scratch or pick at chickenpox crusts as this may result in permanent scarring.

Conjunctivitis (infective)

Conjunctivitis refers to any irritation or inflammation of the conjunctiva of the eyes. The conjunctiva is the thin clear membrane that covers the white part of the eye (sclera) as well as the inside of the eyelid. Conjunctivitis may either result from an infection (infective conjunctivitis, or 'pink eye'), a specific allergy (allergic conjunctivitis) or an irritant such as shampoo or pool chlorine. Infective conjunctivitis is most relevant to communicable disease control in the school setting and hence will be the exclusive focus here. It is caused by either viruses or bacteria - usually the same ones that cause common lower and upper respiratory tract infections (i.e. 'coughs' and 'colds'). Infective conjunctivitis is spread by direct contact with infected persons.

Description of the Illness:

Learners with infective conjunctivitis may complain that their eyes feel gritty and/or are more watery than usual. The white of their eyes will appear pink or red, and there may be a sticky coating (discharge) on the eyes and eye lids. This discharge may cause their eyelids to feel 'stuck together' after they sleep. Their eyelids may also be swollen and pain is sometimes present (although usually not severe). Infective conjunctivitis may start with one eye but usually spreads to both.



Control:

Learners with infective conjunctivitis **<u>should normally not be excluded from school</u>** unless an outbreak of several cases occurs. In the event of an outbreak, the DoH and the NICD should be contacted and further advice will be promptly given. Learners should be educated with regards to good hand-washing techniques to prevent further spread. Infective conjunctivitis usually clears in a few days. However, if it persists and/or severe symptoms occur (such as severe pain, severe swelling around the eyes and/or a decrease in vision) parents should be contacted immediately and should consult their health care providers so as to avoid any serious complications.

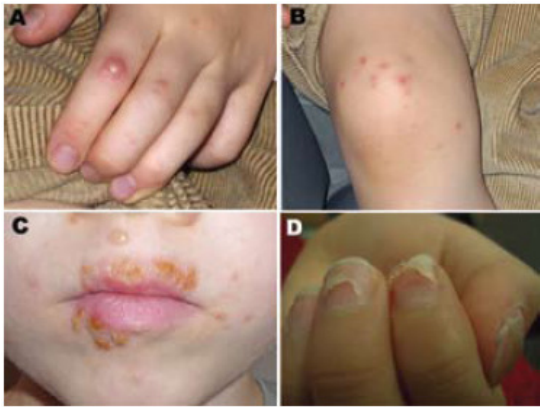
Hand, foot and mouth disease

Hand, foot and mouth disease (HFMD) is a contagious viral infection that causes fever, an eruption of sores in the mouth and/or a non-itchy rash on the hands and feet. While it most commonly affects children under the age of 10, it can also occur among adolescents and adults. HFMD is caused by enteroviruses (most frequently the coxsackie A virus). It is often confused with foot-and-mouth disease which occurs in animals; these are different diseases and HFMD cannot be transmitted between humans and animals. It is spread from person to person by direct contact or from droplets that come from the mouth or nose when an infected person coughs or sneezes. It can also be passed on through contaminated objects or faeces. An infected person is most contagious during the first week of illness.

Description of the illness:

- *Mouth sores*: Learners with HFMD will often first complain about having a fever, losing their appetite and generally not feeling well. They may also have a sore throat. 1 to 2 days after the onset of fever, there will be an eruption of red spots in the mouth that can go on to blister. These will eventually form painful ulcers on the tongue, gums and inside of the cheeks. Learners may have difficulty eating and drinking because of these ulcers.

- *Skin rash*: A non-itchy skin rash may also develop over 1 to 2 days. This rash consists of small, red spots (smaller than chickenpox spots) and may be flat or raised. They sometimes also blister. The rash often occurs on the palms of the hands, the soles of the feet and in the web spaces between the fingers and toes (hence the name hand, foot and mouth). It can also occur on other areas of the body.



Hand, foot and mouth disease
(Source: Österback et al, cdc.org)

Control:

Learners with HFMD **should not be excluded from school**. However, if there is an outbreak of several cases the DoH and the NICD should be contacted. The disease usually clears up in 7 to 10 days and affected learners should be encouraged to rest and drink plenty of fluids. Good hygiene is critical to the control of HFMD and educators should therefore ensure that appropriate measures are undertaken. These include: regular hand-washing, the cleaning of shared/dirty surfaces and the avoidance of close contact with those with HFMD (e.g. not sharing eating utensils).

Head lice

Head lice (*Pediculus humanus capitis*) are wingless, parasitic insects that infest the head. They are very small; an adult head louse typically grows to about 3mm in length and is very difficult to see with the naked eye. During the early stages of infestation, learners may not have any symptoms. However, about 2 to 3 weeks after the onset of infestation they may begin to complain about itching and may start scratching affected areas of the scalp. Learners will remain infectious as long as there are live, adult lice on their heads. Spread is by direct contact (typically head-to-head; they cannot jump from one person to another) or, less commonly, by sharing personal items (such as combs and brushes), clothing or bedding.

Detection:

Lice can be detected by running a fine-tooth comb through wet hair (ideally with conditioner left on) - this process is called 'wet combing.' If lice are present, they will either be stuck to the comb or will fall out. Please note: the presence of empty eggshells (called 'nits') alone is not evidence of an active infestation.

Control:

Learners with head lice **should not be excluded from school**. Care-givers should be alerted in suspected cases, and should be advised on wet combing. Household contacts should also be checked and treated where appropriate. If head lice are present, specially prepared lice medicine called pediculocides can be used (these are available at pharmacies - care-givers should be encouraged to follow instructions carefully and should first consult their health care provider if the learner has known allergies or asthma). The removal of lice by regular wet combing every four days for two weeks can also help to break the life cycle of head lice.

Impetigo

Impetigo is a very contagious bacterial infection of the skin. The bacteria that commonly cause impetigo are *Staphylococcus aureus* (which is responsible for most cases of impetigo) and *Streptococcus pyogenes*. It should be noted that symptoms usually only occur 4 to 10 days after the initial infection, during which time the person will have already become infectious. Although impetigo can occur anywhere on the body, it usually affects the face, neck, legs and/or arms. Impetigo is characterized by the development of fluid-filled blisters that eventually rupture and become covered with 'honey-coloured' crusts. Impetigo can be spread by direct contact or indirectly through contaminated objects such as shared clothing and towels.

Description of the Illness:

There are two main types of impetigo 1) bullous impetigo, and 2) non-bullous impetigo. In bullous impetigo there are usually large, painless (but sometimes itchy) fluid-filled blisters that occur on the trunk, arms and legs. They spread quickly, and rupture after a few days leaving behind a yellow-crust. Non-bullous impetigo (which is more contagious) starts with the appearance of red sores usually around the nose and mouth. These sores quickly burst and become covered with a 'honey-coloured' crust.

Impetigo
(Source: seattlechildrens.org)

Control:

Learners with impetigo **should be excluded from school** until they their blisters have dried up or until 2 days after starting treatment. Educators should promptly contact care-givers where there are suspected cases. Care-givers should be encouraged to consult their health care providers as infected learners may need

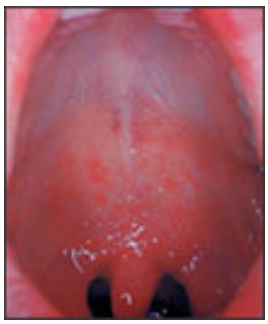
antibiotics (either in the form of tablets or creams). Impetigo usually resolves within 7 to 10 days following the commencement of treatment. Learners should be told not to scratch their sores/blisters (as this may contribute to the spread of the disease) and should be educated with regards to good hand-washing techniques.

Measles

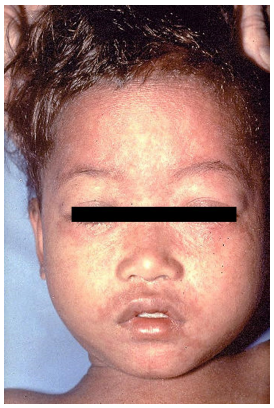
Measles (sometimes known as 'English measles' or rubeola) is a highly contagious disease caused by infection with a morbillivirus. Typical features of measles are a fever, a rash and respiratory disease. It can be transmitted from person to person by droplet spread (through coughing and sneezing). These tiny droplets can remain in the air and can be breathed in causing the disease to be passed on. Droplets can also settle on surfaces - measles may then be spread if others touch these contaminated surfaces and then put their hands near their mouths or noses. The period between exposure to the virus and the development of symptoms (i.e. the incubation period) is about 8 to 12 days. A person with measles will be most infectious before the rash appears.

Description of the Illness:

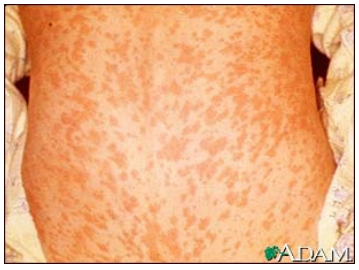
Measles can be suspected if there is a fever (above 39°Celsius if measured) plus a rash plus at least one of the following: cough, conjunctivitis and coryza (coryza can present as nasal congestion, a runny nose, a headache and/or a sore throat). In the early stages of the disease (i.e. the first 4 to 5 days) learners may have a fever, sneezing, coughing, coryza and may complain about feeling generally unwell. They may also have Koplik's spots - tiny grayish-white spots surrounded by red rings that can be found inside the mouth and throat. Koplik's spots generally appear 2 days before the rash starts and disappear 1 to 2 days after the onset of the rash. The measles rash begins in the hairline, but then quickly spreads to cover the face, chest, abdomen, arms and legs. The spots of the rash are reddish, flat and may be covered with small bumps (this type of rash is described as 'maculopapular'). The spots are initially small but quickly get larger and begin to join together. The rash starts on day 3 or 4 and usually last for 1 to 2 weeks.



Koplik's Spots inside the mouth
(Source: cdc.org)



Measles rash on the face
(Source: cdc.org)



Measles rash on the back

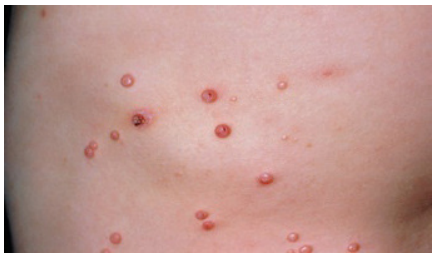
Control:

Learners with measles **should be excluded from school** until 4 days after the onset of the rash. If there are suspected measles cases, educators should contact health officials of the DoH. Staff of the NICD will be available to provide further support. Educators should also immediately inform care-givers and should encourage them to contact their health care providers.

Molluscum contagiosum

Molluscum contagiosum is viral infection of the skin. The molluscum contagiosum virus causes small, raised, firm spots on the skin. These are usually painless, but may be itchy. In the majority of cases, molluscum infection is a mild condition and will usually clear within 18 months. However, it is highly contagious and is spread either by direct contact or via objects (e.g. towels, clothes) that have been contaminated by an infected person.

Description of the illness:



Molluscum Contagiosum
(Source: nhs.uk)

The most common feature of molluscum contagiosum is the appearance of firm, raised, whitish or pinkish bumps on the skin that have dimples/pits in the centre. The bumps are quite small, measuring about 2 to 6 mm in diameter. They usually develop in clusters and are generally painless. Although they can spread to anywhere on the body, they often appear on the hands, arms, face, neck, chest and abdomen in children. Sometimes the molluscum bumps have a grayish head in the centre and can look almost pearly. These heads can rupture (open up) to release a yellowish substance that is highly infectious and may, indeed, result in spread of the bumps to other parts of the body. Each bump will usually crust over in 6 to 12 weeks and will eventually fall off. They generally don't scar, although they can leave behind a small patch of lighter skin or a tiny pit.

Control:

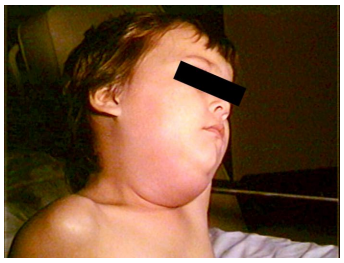
Learners with molluscum contagiosum **should not be excluded from school**. It is a self-limiting condition and, as has been mentioned, will usually clear within 18 months. It is, however, imperative that educators institute preventive measures to avoid spread of the molluscum contagiosum virus. These include: regular hand-washing, no sharing of clothes, keeping affected areas of skin covered where possible, no picking at or scratching of bumps and no contact sports or swimming unless the molluscum bumps can be covered. If there is an outbreak of several cases of molluscum contagiosum, the DoH and NICD should be contacted.

Mumps

Mumps is a viral infection caused by a paramyxovirus. It occurs most commonly in children and is very contagious. Mumps most often presents as swelling and tenderness of the parotid glands (the parotid glands are located on either side of the face, just below the ears. The virus can be spread if an infected person coughs or sneezes, if they touch their nose and/or mouth and then transfer the virus onto an object (e.g. a desk) or if they share eating utensils, cups or plates. A person with mumps is infectious up to 7 days before the parotid swelling starts and then up to 9 days after.

Description of the Illness:

Learners with mumps may only start presenting with symptoms 14 to 25 days after they are infected. The most common feature of mumps is swelling and tenderness of the one or both of the parotid glands. These are located on either side of the face, just under the ears. Swelling of the parotid glands causes the 'hamster face' appearance of mumps. It can also cause pain and/or difficulty with swallowing. Other symptoms may include: fever, headache, a dry mouth, tiredness, joint pain, nausea, abdominal pain and loss of appetite.



Mumps
(Source: cdc.org)

Control:

Learners with mumps **should be excluded from school** until 5 days after the onset of the parotid swelling. If there are suspected mumps cases, educators should contact health officials of the DoH. The NICD can also provide additional support. Measures that can be taken to prevent the spread of mumps include regular hand-washing and the safe disposal and cleaning of contaminated objects (e.g. tissues, utensils). Educators should encourage care-givers of learners with mumps to contact their health care providers.

Ringworm

Ringworm (also called dermatophytosis or tinea) refers to fungal infections of the skin. These infections are caused by various fungal species and can affect many areas of the body including the scalp, face, nails, feet, hands, legs or trunk. Ringworm is spread by microscopic fungal spores via direct skin-to-skin contact with an infected person or animal, or indirect contact with objects (e.g. combs, clothing) or surfaces (e.g. communal changing-rooms) that have been contaminated by hair or skin scales containing spores.

Description of the Illness:

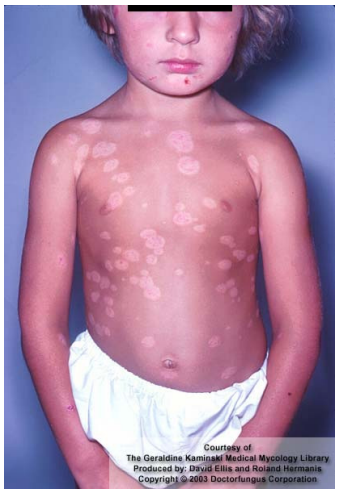
- *Ringworm of the scalp (tinea capitis).* This starts as small red spots on the scalp. As the infection spread, hair becomes brittle and breaks easily, leaving behind a scaly bald patch.

- *Ringworm of the body (tinea corporis).* An affected area of the trunk (chest and abdomen) and/or legs usually has round, scaly patches with prominent red margins.

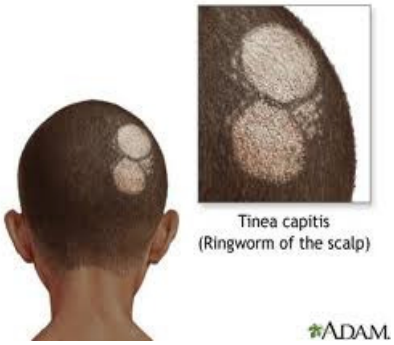
- *Ringworm of the feet, or 'athlete's foot' (tinea pedis).* This can affect the toes, folds of skin (web spaces) between the toes and soles of the feet.

- *Ringworm of the nails (tinea unguium).* This can result in a thickening and discolouration of nails.

Ringworm of the nails
(tinea unguium)
(Source: doctorfungus.org)



Ringworm of the body
(tinea corporis)
(Source: doctorfungus.org)



Control:

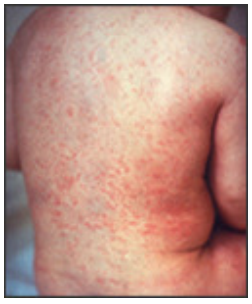
Once treatment has started, learners with ringworm **should not normally be excluded from school**. However, if treatment proves difficult, exclusion may be considered on a case-by-case basis. Emphasis should be placed on early detection of infected learners and prompt treatment. High levels of environmental hygiene (such as hand-washing and regular cleaning of class room floors & surfaces as well as swimming & changing areas) are also essential. Treatment is usually by means of ointment or cream that can be applied to the skin (topical antifungals) and care-givers should be advised to contact their health care professionals with regards to these.

Rubella (German measles)

Rubella (also known as 'German measles') is a highly contagious viral infection that is characterized by a fever and a distinctive red-pink rash. Although anyone can get the disease, young children are particularly susceptible. Rubella is transmitted via droplets when an infected person coughs, sneezes or talks. Someone who has rubella will be infectious for about 1 week before symptoms appear until 4 days after the rash has started.

Description of the illness:

Learners with rubella may develop a mild fever, sore throat, a runny nose and conjunctivitis for about 2 to 3 days before the rash appears. The rubella rash has a distinctive pink-red colour and appears as spots which may be mildly itchy. The rash usually starts behind the ears, and then spreads around the head and to the neck. It may continue to spread to the chest, abdomen, legs and arms. The rubella rash usually lasts for about 3 to 7 days. In addition to the rash, this stage of the disease may also be characterized by: a high fever, 'cold'-like symptoms (e.g. runny nose, sore throat and cough), painful and/or swollen joints (although this is less common in children) and swollen lymph nodes or 'glands' behind the ears and in the neck.



The rubella rash on a child's back
(Source: cdc.org)

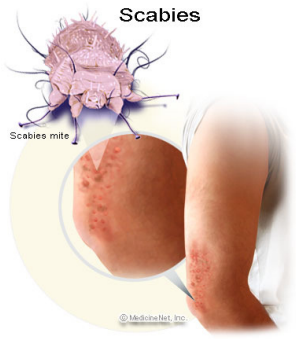
Control:

Learners with rubella **should be excluded from school** until 6 days after the onset of the rash. If there are suspected rubella cases, educators should promptly inform care-givers and should also contact health officials of the DoH. Staff at the NICD will also be available for further support.

Scabies

Scabies is an infection of the skin caused by a mite called *Sarcoptes scabiei* var. *hominis.* These mites are too small to be seen with the naked eye. A person with scabies will usually have an itchy, red rash which can affect many areas including: web spaces between the fingers and toes, wrists, ankles, elbows, knees and underarm areas. Scabies passes from person to person by direct skin-to-skin contact and is not usually spread by objects (e.g. clothing). Those with scabies will remain infectious until they are treated.

Description of the Illness:



The rash consists of red spots caused by scratching around the microscopic insect bites. It is typically very itchy and is usually worse at night (when the skin temperature is warmer). Itching may take 4 to 6 weeks to develop if it is the first infection with scabies. However, subsequent infections may result in itching within 1 to 2 days because the immune system has now developed a response to the infection.

Control:

Learners with scabies **should be excluded from school** until they have been treated. They can, however, return to school the day after treatment. Educators should remain vigilant with regards to possible scabies cases as early detection and effective treatment are important in preventing spread. Creams and lotions that contain insecticides effective against the scabies mite are available at local pharmacies -

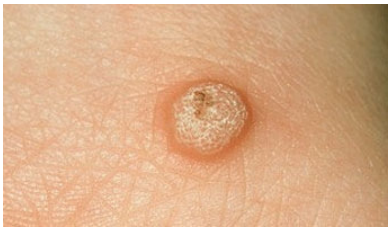
care-givers should be encouraged to contact their health care providers with regards to these. It is also important that all household contacts (including those that don't have the rash) be treated to prevent re-infection.

Warts and Verrucae

Warts are small, rough growths on the skin that are caused by the human papilloma virus (HPV). They vary greatly in shape, size and location but are generally painless. The majority of people will have warts at some point in their lives, however they are most common in children and adolescents. Warts can be spread through direct skin-to-skin contact or indirectly through contaminated objects (e.g. clothes and shoes). They can also spread via contaminated surfaces such as the area around swimming pools and communal washing areas. Warts are most likely to spread if the skin is wet or has been in contact with a rough surface.

Description of the illness:

There are many types of warts and these may differ depending on their location and the strain of HPV that caused them. They are generally firm lumps that have a rough, irregular surface (although some may be smooth). Warts can range in size from 1mm to 1cm. Although they can occur anywhere on the body, they are most commonly found on the hands and feet. Warts are usually painless although some, such as those that occur under the fingernails (periungual warts) can become sore. They can also sometimes be itchy and can bleed (allowing HPV to spread more easily). A wart that occurs on the sole of the foot is a called plantar wart or verruca. Verrucae are flatter and have a dark spot (blood vessel) in the centre. Unlike common warts, they are not raised from the skin. Indeed, the weight of the body can force them to grow into the skin, making them quite painful.



Control:

Learners with warts **should not be excluded from school**. Educators should, however, take precautions to prevent the spread of warts. These include: telling learners not to share towels or clothing with those who have warts and to avoid direct contact with warts; ensuring that those with warts cover them appropriately; encouraging learners to wear flip-flops around swimming pools and communal washing areas; educating learners with regards to good personal hygiene (e.g. keeping feet dry and changing socks every day) and discouraging those with warts from picking at or scratching them.

Further guidance and resources

1. Department of Health (DoH)

Local DoH Communicable Disease Control Staff

2. National Institute for Communicable Diseases (NICD)

Outbreak Response Unit - email address: outbreak@nicd.ac.za

Outbreak Response Unit - hotline: 082 883 9920

3. Centers for Disease Control and Prevention (CDC) website

www.cdc.gov

4. National Health Service (NHS) website

www.nhs.uk

5. Health Protection Agency (HPA) website

www.hpa.org.uk

6. HPA resource document

HPA. *Guidance on infection control in schools and other childcare settings*. London: Health Protection Agency; 2010.
http://www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947358374

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