Infection in School

A Manual for School Personnel

Revised and updated edition 2006

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(A Manual for School Personnel)

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From original document in 1995

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Introduction

The aims of this booklet are to foster an awareness of common and important infectious diseases, to provide information to help you differentiate between minor (does not require home care) and more significant (should not remain in school) infections and to give guidance in the prevention and management of infectious disease within the child care/educational system.

The booklet is divided into three main sections.

1: Infection

What it is?
Who gets it?
How it is transmitted?
How do we fight it?

2: Halting the spread of infection

Good hygiene is the key to controlling the spread of infection. The potential for spread of infection exists whenever people congregate. In schools spread of infection is facilitated by the relatively close proximity of large numbers of people of different ages for considerable periods each day. As good hygiene is the basis for any effective infection control policy, this section is in essence a guide to good hygiene practices within schools. Practical advice on first aid kits and the safe delivery of first aid is also included.

3: Specific infectious diseases

The third section gives specific information about infections which are frequently encountered in schools, infections which although rare have potentially serious consequences and those vaccine preventable diseases which should, with the effective implementation of immunisation programmes, become a thing of the past.

1. Infection

1.1 Infection in School – the problem

Infections in school children are common. Some are acute (just there for a short time) and some are chronic (there for a longer time, even for the life of the child). Even minor infections, by resulting in school absenteeism, can have a negative impact on child welfare. Some infections although relatively innocuous in children are more serious in adults and others pose a specific threat to pregnant women. Some of the more serious chronic infections in children e.g. hepatitis B and Human Immunodeficiency Virus (HIV) can give rise to a lot of anxiety. For all of these reasons it is important that you should be knowledgeable about the infections encountered in school.

1.2 Infection – what is it?

As we go about our daily lives we are surrounded by an unseen world, the world of micro-organisms (or germs). Some germs live in the environment, some in animals and humans, and some can only live in humans. They fulfil many important functions in life and indeed the presence of certain germs in the body is necessary for health. Infection develops when germs which are not usual inhabitants of the human body take up residence, or when germs which belong to one particular area of the body get into another part, e.g. when gut organisms get into the urinary system, or when germs normally present at low levels in the body suddenly increase in numbers such that disease or illness results.

An infectious disease is an illness in which the symptoms and signs of illness are caused by germs. These germs can be any of a number of different types; bacteria, viruses, fungi, protozoa and parasites. For example, strep throat is caused by a bacteria called group A streptococcus and impetigo, a common bacterial skin infection in children, can be caused by this or other bacteria, whereas measles, mumps and chickenpox are all caused by viruses.

Not all infectious diseases are contagious. Any illness caused by germs is an infectious illness, but that which can pass from one person to another is contagious. Ear infections are caused by germs, but are not passed from child to child. Thus, although an ear infection is an infectious disease it is not a contagious disease. On the other hand, chickenpox rapidly spreads from person to person and is an example of a highly contagious infectious disease.

1.3 Infection – Who gets it?

We are all susceptible to infections of one kind or another. Once we come in contact with an infectious agent or germ, a number of factors come into play which determine whether or not we become ill.

Some of the factors depend on the germ itself, for example, were we exposed to a low dose or a high dose of germs, how efficient is the particular germ at causing disease or how virulent is the germ, etc. Other factors depend on us; how strong is our immune system, have we met that germ before, are we resistant to it? Some infections are followed by the development of life-long immunity to that infection. This is why most of us will only develop chickenpox or measles once in our lives.

However, some infections like the common cold can be caught over and over again. Given the right set of circumstances **we are all vulnerable to developing infections.**

1.4 Infection – How is it transmitted?

Germs are commonly passed in one of five ways (Table 1):

- **through the gastrointestinal tract,** (intestines and stools) e.g. infectious diarrhoea and hepatitis A.
- **through the respiratory tract,** (eyes, nose, mouth and lung secretions) e.g. colds and influenza.
- **through direct contact,** (skin contact, contact with saliva and other body fluids, sexual contact), e.g. bacterial skin infection.
- **by blood contact,** e.g. hepatitis B, hepatitis C, and HIV/AIDS.
- **through food,** e.g. food poisoning.

1.4 Table 1: Infections and their principal routes of transmission

Gastrointestinal tract spread	**Respiratory tract spread**	**Spread by Direct Contact**	**Spread by Blood Contact**
Infectious diarrhoea	Respiratory viral	Skin Contact	Hepatitis B
Giardia Lamblia	Illness e.g.	Impetigo	Hepatitis C
Shigella	Cold. 'flu.etc.	Ringworm	HIV/AIDS
Salmonella	Roseola	Scabies	
Campylobacter		Head Lice	
E-Coli e.g. E. coli O157	Group A		
Cryptosporidisois	Streptococcal	Secretion Contact	
Viruses e.g. Norovirus	infection	Cytomegalovirus	
(Winter vomiting)		(CMV)	
	Chickenpox	Herpes Simplex	
Pinworms		(HSV)	
Hepatitis A	Meningococcal	Sexually	
	disease	transmitted	
		diseases	
	Haemophilus		
	influenza (Hib)		
	disease		
	Tuberculosis		

1.4.1 Spread through the gastrointestinal tract or gut

Some diseases are caused by germs, which live and multiply in the intestines or gut and are passed out of the body in the stool. For disease to spread, stool containing these germs must be carried to the mouth and swallowed.

Disease can spread when even very small amounts of stool, amounts so small that they cannot be seen by the naked eye, contaminate hands or objects and are unknowingly brought to the mouth and swallowed. This is also called the faecal-oral (stool to mouth) mode of transmission and usually occurs when hands are contaminated at toileting. Soiled hands bring the germs to the mouth, or contaminate food which, together with the germs, are eaten. Hands can contaminate objects such as pencils and door-handles, which are in turn handled allowing the germs pass to the next pair of hands and ultimately to the mouth of the next person and so the infectious chain continues. The efficiency of faecal-oral transmission is influenced by the numbers of germs present, whether small or large numbers of germs are needed to cause infection and the ability of the germs to survive outside the body on objects like door handles, countertops etc.

Gastrointestinal spread is responsible for spread of most infectious diarrhoea as well as some more generalised infections such as hepatitis A. Worm infestation is also spread in this way (Table 1 – page 9). Anyone can catch these infections and many of them e.g. infectious diarrhoea and thread worms, can be caught again and again. **Good hand-washing breaks this chain of spread and is the single most effective tool in decreasing the spread of gastrointestinal infections.** It is not enough to wash hands when they are visibly dirty. The germs are too small to see, and even clean looking hands can be contaminated. Hands must be washed whenever the likelihood of contamination arises, e.g. after toileting, after helping a child go to the toilet etc. **Be aware** – these germs can be present in people who look and feel quite well, yet are capable of causing illness in another person. You cannot always tell who has these germs, so get into good hand-washing habits and protect yourself. **Hand-washing protects you.**

1.4.2 Spread through the respiratory tract

Diseases spread through the respiratory tract are those in which the germs live and multiply in the eyes, airways (including the nose and mouth), and the lungs. They are a mixed group of diseases including infections that remain localised to those areas, e.g. the common cold and strep throat, and more generalised infections such as influenza, bacterial meningitis, and tuberculosis. Common infections spread through the respiratory tract are listed in Table 1 (page 9).

Age can influence susceptibility to respiratory infections. Serious infection due to Haemophilus influenza type B, a bacteria that is also know as Hib, usually occurs in children less than 5 years of age and is very rare in older children and adults. Similarly children are more uniformly susceptible to influenza, caused by a virus, than are adults, some of whom could have already had the particular type of influenza before and are thus relatively immune to it. Adults and children are equally susceptible to colds and to many other infections passed through the respiratory tract.

Hands also spread the germs of the respiratory tract. All of us unconsciously touch our faces many times each day. Germs readily pass from our nose and mouth to our hands and from there to the next item handled. This could be another hand, in which case the germs might infect that person when the hand is unconsciously brought up to touch their nose or mouth, or

it could be an inanimate object, such as a pen or pencil. These are often sucked, chewed and passed around the school-room facilitating spread of respiratory infections. Some infections, transmitted through the respiratory tract, do not require direct contact for spread but can spread as aerosol droplets through the air. Droplet spread usually requires the infected person and the susceptible contact to be relatively close to one another, within a few feet, and occurs during talking and sneezing. This type of transmission occurs most readily in situations of over-crowding and poor ventilation.

Be aware – germs can be spread even before the person develops signs of infection. The interval between contact with infection and the time symptoms develop is called the incubation period. People are often infectious during the latter part of the incubation period. For example children with measles are infectious for about 3 days before the appearance of a rash. Furthermore, some germs can happily live in the nose and throats of people who never develop symptoms of infection, yet they can pass it to another person. These people are referred to as 'carriers'. For example, some people can carry streptococcal infections in their throats with no symptoms, but when they pass the germ along to the next person that person might develop a really sore throat.

Good hand-washing tops the list of items to control the spread of infection transmitted through the respiratory tract. Wash hands after contact with nasal and oral secretions. Children must be taught how to use tissues and to correctly dispose of them. Runny noses should be wiped and kept dry. If children sneeze into their hands they should wash them afterwards. **Sneeze or cough into a tissue or, if there are no tissues, towards the floor and not into the face of the next person.** Discourage sucking and chewing of pencils and other inanimate objects. Discourage sharing of cups, mugs etc. Eating utensils should be washed in hot soapy water and air-dried. Good ventilation is essential with a complete airing of the classrooms at least once a day.

1.4.3 Direct contact

A number of infections and infestations (an infestation is when one is infected with a parasite e.g. head lice or worms) require direct contact for transmission (Table 1-page 9). With some, e.g. conjunctivitis (pink eye), impetigo (a bacterial skin infection), ringworm, and scabies, superficial skin contact with the infected site is adequate to spread infection. With others, infection is only passed if there is either direct contact with the infected site or with contaminated objects e.g. head lice. Other infections require more intimate or prolonged contact for transmission.

Infections caused by some viruses, for example glandular fever (also called infectious mononucleosis, or infectious mono), is caused by the Epstein Barr virus or EBV, cold sores (caused by the herpes simplex virus, HSV) and cytomegalovirus infection (CMV), can be spread by contact with body secretion such as saliva (EBV, HSV, CMV) and urine (CMV), or by contact with the actual lesions (HSV). All of these infections, as well as many others can also be transmitted by sexual contact.
Again hands help spread infection and washing hands, after any contact with potentially infec-

tious secretions, is very important in stopping the spread of infection. Wash hands after contact with any weeping or oozing skin lesions. Cover open infected sores to eliminate the possibility of direct contact with potentially infectious lesions. Inanimate objects can spread infections which normally require direct skin contact. For example head lice can be spread by the communal use of hats and combs. **Children should not share hats, combs, hairbrushes etc.** Occasionally a child with a very contagious skin condition may need to be excluded from school until they are receiving effective treatment.

Good hygiene practices and effective hand-washing are the most effective ways to prevent the spread of infection. Staff and children should wash hands after any contact with blood, nasal secretions, saliva, vomit, urine, stool, skin sores or genital secretions. It is important that clean, dry towels are available at all sinks where hands are to be washed.

1.4.4 Blood Contact

Those germs which require blood contact for spread are the ones least likely to spread within the school environment. Hepatitis B, hepatitis C and HIV/AIDS are three important infections spread through blood contact. The potentially serious consequences of infection with these agents mandates that a thoughtful policy for the handling of all potentially infectious body fluids, including blood, should be in place. As clinical illness is not always evident in the infected individual, (indeed infected individuals, students or staff, may not even be aware that they are carriers of infection), such policies must be applied on a **universal** basis. **It should be assumed that blood is infectious, regardless of its source.** Application of such policies on a universal basis, rather than relying on the identification of infectious children and staff is the only way to guarantee a safe environment for staff and children alike.

Infection with these germs can be passed if infected blood gets into the bloodstream of an uninfected person. In general, this requires breaching of the skin or mucous membranes. (The mucous membranes are the delicate linings of the body orifices: the nose, mouth, rectum and vagina). Intact skin is an effective barrier to these agents and infection following contamination of intact skin is extremely unlikely. However if the skin is broken, if there are open cuts, or if the infected blood is carried through the skin e.g. on a needle or sharp instrument, then infection can occur.

It is also possible for infection to occur when infected blood contaminates mucous membranes, although again if there are no breaks in the surfaces, infection is very unlikely. Infection can also be passed from mother-to-infant during pregnancy or at the time of delivery.

These infections are difficult to catch. Provided that the correct procedures are followed they pose little threat to school personnel or students.

1.4.5 Spread through food

Food-poisoning is an illness caused by eating contaminated food. Whilst not a common problem in schools, it can occasionally occur. It happens when food which is contaminated by germs, or by toxic substances produced by germs, is eaten. Food can become contaminated either at source or during preparation. The contaminated food can then serve as an efficient vehicle to pass the germs to a number of people. For this reason and others (e.g. the possibility of specific food allergies), in general, it is better that children do not share food within school.

1.5 Infection – How we fight it

The body comes equipped with a variety of mechanisms to combat infection. There are the physical barriers which prevent germs from getting into our systems, i.e. the skin and the mucous membranes which line all body orifices, e.g. the nose, mouth, eyes etc. If these defences are breached the second line of defence, the body's immune system is called into play. Were it not for the efficiency of these natural defences none of us would survive infancy. For these natural defences to work optimally, health and nutrition are essential. In the developed world, improvements in nutrition and in living standards have been significant steps in combating sickness and death caused by infectious diseases. Together with the development of antibiotics and the implementation of effective vaccination programmes they have been responsible for the marked decrease in the incidence of serious infectious diseases, which has occurred over the last 40 years. There is now a wide variety of medicines available to treat most common bacterial infections, and a smaller range of medicines effective against some of the more serious viral infections is also in use. Preventative strategies have also improved dramatically and effective vaccination programmes have resulted in a situation where it is only the older generations who have first hand experience of diseases such as polio and diphtheria.

2 Infection control policies – halting the spread

The ultimate goal of any infection control policy is to prevent needless infection. The first step is education. Know the enemy. Know the common infections, how they manifest, how spread occurs. Once you understand how infections are caused and how they are passed, the logic behind infection control guidelines will be evident and their implementation becomes a much more sensible and realistic proposition. Within the school system sound infection control policies are rooted in the development of good standards of hygiene. Implementing these standards is the most effective way to interrupt the spread of most of the common infections encountered in schools.

2.1 Identify the chain of infection

Infection results from contact between an infectious agent, or germ, and a susceptible host. This first contact is made when the germ is transmitted from the infectious source, usually an infected person, to the susceptible host. Three interrelated factors: the infectious source, the mode of spread, and the susceptible host represent the chain of infection. Infection control policies aim to break this chain. Several different points in the chain can be attacked either singly or as part of a combined approach.

2.2 Break the chain – Eliminate the susceptible host

2.2.1 Immunisation

If all potential targets for infection were made resistant to it then the infectious chain would be broken. This approach has been successfully adopted for many of the previously common infections of childhood, e.g. polio, diphtheria, tetanus. Immunisation programmes which involves giving a killed germ, a live but very weakened germ, or just a critical part of the germ, to a susceptible person induces activation of the immune system and results in immunity to that specific germ. Where feasible, immunisation remains one of the most effective strategies to combat spread of infectious diseases.

2.2.2 Childhood Immunisations

The incidence of many of the common infectious diseases of childhood would be further reduced if all children entering school were appropriately immunised. There are a few children in whom specific immunisations are truly contraindicated. However if all suitable vaccine candidates received their immunisations then even the unimmunised child would be afforded a degree of protection. Immunisation of all suitable children would ultimately reduce the number of infected children in the community and thus reduce the likelihood of a susceptible child being exposed to infection.

By 5 years of age all children should be immunised against polio, diphtheria, tetanus, whooping cough (pertussis), Hib (Haemophilus influenza type B), meningococcal C, measles, mumps, rubella (German measles), and tuberculosis (see table 2 opposite).

2.2.2. Table 2: Schedule of Immunisation

Vaccines	**Age**
BCG (tuberculosis) Diphtheria, Tetanus, Whooping Cough (Pertussis), Polio, Haemophilus Influenzae B (Hib), and Meningococcal C	Birth 2 months
Diphtheria, Tetanus, Whooping Cough,(Pertussis), Polio, Haemophilus Influenzae B (Hib) and Meningococcal C	4 months
Diphtheria, Tetanus, Whooping Cough (Pertussis), Polio, Haemophilus Influenzae B (Hib) and Meningococcal C	6 months
Measles, mumps and rubella (MMR)	12 - 15 months
Diphtheria, Tetanus, Whooping Cough (Pertussis) and Polio (Booster), MMR (2nd dose)	4-5 years
MMR (omit if 2 previous doses)	11 – 12 years
BCG – only for those known to be tuberculin negative and have had no previous BCG	10 – 14 years
Dipththeria (low dose) and tetanus (booster)	11 – 14 years – usually in 2nd year in secondary school
This timetable can vary. You should discuss the details with your public health nurse or doctor.	

Most serious infections with Hib occur in the pre-school child (<5 years of age) and thus, although it is an important immunisation, it is less relevant to school health than are the other immunisations listed. Hepatitis B vaccine is also available and children who might be at risk of infection (i.e. those who live in the same household with either an infected individual or someone at risk of infection) should be immunised.

2.2.3 Staff Immunisations

Protection against diphtheria, tetanus and pertussis, all provided by childhood immunisation, wane with the passage of time. Adults who have had five doses of tetanus and diphtheria do not require further immunisation. Reimmunisation against pertussis is not routinely recommended for adults, as disease in adults is rarely associated with serious complications. Immunity provided by the polio vaccine is enduring and reimmunisation of adults is not nec-

essary. Lifelong immunity follows natural measles, however for some people immunity provided by measles vaccination wanes over time. For those who received the measles, mumps and rubella (MMR) vaccine as a child and have not received a second dose during adolescence, a booster vaccination is necessary. It is currently recommended that children who receive MMR at 15 months should get a second dose at primary school entry (4 to 5 years).

Immunisation against influenza is also available. Although influenza is rarely associated with serious complications among healthy adults it can be temporarily disabling and result in significant absence from work. In general influenza vaccine is strongly recommended for adults who are at particular risk of developing complications, e.g. adults with chronic heart or lung problems or other medical problems, and for adults who might pass the infection to other at high risk of developing complications. Because the influenza virus changes somewhat each year vaccination against it must be done on a yearly basis. Individuals who elect to receive the vaccine should do so during the months of October and November so that they will be protected when the influenza season arrives. Most epidemics of influenza occur between November and May each year.

A variety of other vaccinations including vaccines against two types of hepatitis, hepatitis A and B, and against infections caused by a variety of different bacteria, are also available. These are recommended only for individuals who are at particular risk of developing these infections, or who might be expected to develop serious complications. In areas of special education, e.g. in institutions for the mentally handicapped where infection with hepatitis B is common, staff should be immunised against hepatitis B. Immunisation of staff against Hepatitis B should also be strongly considered in areas where Hepatitis B is common within the local community, for example in communities where intravenous drug use is prevalent.

2.3 Break the Chain – Exclude the Infectious source

In general preventing infection by the quarantine of children and keeping them away from school is ineffective and impractical. For many of the minor illnesses of childhood, e.g. the common cold, it is simply not practical nor justifiable to try and remove all potentially infectious children or teachers from the school environment. Furthermore, infection is often spread by people who do not look or feel ill. A person can be infectious for several days before they feel ill during which time the infection may spread to others. An illness can be so mild that the person may be unaware that they are infected and yet they can pass the germs to others. At times a person may have germs within their systems without any illness, i.e. they can be carriers of infection, and still be infectious to other individuals. Placing reliance on the identification of all potentially infectious individuals and their exclusion from schools will not effectively control the spread of infection in schools. There are some illnesses where exclusion is justified, e.g. children with measles should not attend school during the acute infection, teachers with active tuberculosis should be excluded from school until they are receiving treatment and are no longer infectious. Children or teachers with hepatitis A should be excluded until one week after the onset of the illness or seven days after onset of jaundice, whichever is the longest. However, as individuals with hepatitis A are most infectious during the two weeks before they develop symptoms, exclusion alone will not always prevent spread of infection. Additional measures including immunisation may be necessary to abort an outbreak within a

school. (See under individual diseases for specific recommendations).

In general the aim of infection control policies should not be exclusionary but rather to provide an environment whereby children and staff may safely fulfil their duties. Children should be excluded only if they are actually ill, are a specific hazard, or are unable to benefit from the school's normal activities.

2.4 Break the Chain – Interrupt transmission

For many of the infections commonly encountered within the school setting e.g. viral respiratory illness, gastro-enteritis, the best infection control policy is to have procedures in place which routinely aim to prevent spread of infection by interrupting the passage of the germ from its source, i.e. the infected person to the susceptible host. Some of the many ways in which we can fight the spread of infection are listed below.

2.4.1 Physical space and quality of the facilities

It is important that the physical space and facilities provided are conducive to the health of the staff and children. Overcrowding promotes infection and infections pass most readily when children are confined in small spaces. Germs thrive in warm moist environments and do not survive well in dry clean conditions. At least once a day, even in winter, the classrooms and staff-rooms should be aired and the windows opened.

Older children should be encouraged to keep a box of tissues in their desks for use as needed. For younger children, or where this is impractical, a box should be available within the classroom. Children should play outside for a time each day except when the weather is wet or extremely cold. Legislation is now in place, which prohibits smoking outside of a specific designated area in schools. Passive inhalation of smoke by children is associated with an increase in respiratory tract infections and may be associated with an increased risk of lung cancer in later life.

The availability of a quiet space, removed from the classroom where a child who becomes acutely ill during school hours can go and lie down or rest is recommended. This may take the form of an easy chair or bed in a supervised area. This is an obvious comfort to the child, but more importantly it allows supervision of the child while awaiting collection by their parents and removes the acutely ill child from close contact with other children thus decreasing the risk of spread of infection.

2.5 Hand-washing and Sanitary Facilities

Hand washing is the single most important defence against the spread of infectious diseases. Improperly washed hands are the primary carriers of infection.

Children should wash hands:

Before eating.
After toileting.
After handling body secretions or using hankies or tissues.

Adults should wash hands:

Before beginning work each day.
Before preparing food, eating or helping children eat.
After toileting or helping a child at the toilet.
After using a tissue or helping a child do so.
After contact with any body secretions.

2.5.1 Good hand-washing techniques must be taught

How to wash hands:

- Wash hands under running water in an unstoppered sink.
- Soap is essential, either liquid or powdered soap is best.
- Rub hands together for about 15 seconds and rinse well.
- Dry well after washing. Where cloth towels are used they should be changed regularly. It is important that clean dry towels are available. Cloth towels, which are constantly wet, can facilitate the spread of infection. Ideally paper towels should be used - provided the children are trained not to put them down the toilets thus causing blockages.
- Taps with an automatic turn-off are ideal. Where these are not available, use a paper towel to turn off the tap. Taps are turned on by dirty hands and so should be considered dirty at all times.
- Provide adequate bins for the disposal of paper waste. Working, lined pedal bins which are foot operated are ideal.

2.5.2 Sanitary Facilities

Adequate toileting facilities are essential in any school situation. Beware of blocked sinks/drains as these make good breeding grounds for germs. Wash and disinfect toilets and sinks at least once a day with a disinfectant such as dilute bleach ($^1/_4$ cup bleach to 1 gallon of water), a commercial preparation such as Harpic, or some other cream cleanser which contains hypochlorite as the active ingredient. Bleach is cheap and effective but do remember that a fresh solution must be made each day as it loses its strength when exposed to air. For general cleaning bleach solution $^1/_4$ cup to 1 gallon of water is adequate (e.g. for cleaning sinks, table tops, etc). Any cleaning that involves blood should be done with a stronger bleach solution (1 part bleach to 9 parts of water). In schools dealing with post-pubertal children (any school with girls of 9 years or older) there should be adequate facilities for the disposal of sanitary towels and tampons. Similarly, these should be available in staff toilets for women. Containers for such items should not be permitted to reach the point of overflow.

2.6 Food handling procedures

Most children bring packed lunches from home. However, food can serve as a vehicle for the transmission of infection, therefore if food is prepared within school it is essential that correct food handling procedures are observed. To summarise the correct handling of food in one short sentence; hot foods must be kept hot (above 60°C/140°F),cold foods kept cold (below 7°C/44.6°F), and cross contamination between cooked and uncooked food avoided. Food supplies should be obtained from reputable sources and use of unpasteurised (raw) milk and cracked eggs avoided. All equipment used in the preparation and storage of food should be adequately cleansed after use and cleansed between preparation of raw and cooked foods.

Discourage children from sharing cups, mugs, straws etc. and from passing half-eaten foodstuffs around.

2.7 Communicate and Educate

2.7.1 Staff

Integral to the success of any infection control programme is the education of all staff members. Familiarise yourself with the common infections and how to prevent spread of infection. For the most part infection control procedures are tasks, like washing hands after toileting, which make good practical sense and have application not just in the classroom but also in every part of life.

Be aware of the impact of your own health on the situation. **Be current with immunisations:** This will protect you from many of the common childhood infections.

It is important to remember that you can serve as a source of infection to children. Thus you must pay attention to your own health. As with the children, most common infections do not require your exclusion from the classroom, providing that you feel well enough to be there, but pay attention to ways of minimising the spread of infection. On rare occasions, if you have a significant illness, like TB you will not be able to continue teaching until you are under treatment and no longer infectious.

2.7.2 Pupils

As teachers gain a better understanding of the fundamentals of transmission of infection and its prevention, this information should in turn to be passed on to pupils. Thus promotion of personal hygiene, of hygienic practices and of the prevention of infection becomes an integral part of the school curriculum.

2.7.3 Parents

Parents must be included in the team approach to infection control. A co-operative approach with ready dialogue between parents and school will ensure a healthy environment for the child.

- **Encourage parents to inform the school of infectious illness in their children.** This is of particular importance if the illness might affect other children, e.g. if their child develops chickenpox, or is known to have hepatitis etc.
- **Let parents know if there are any outbreaks of infection in the school.** Have a standard notification form for some of the common conditions (see Appendix III). Parents can then be vigilant in observing their own children. For example informing parents as soon as a child with head lice is identified in a classroom reminds the parents to check their own children and by treating them promptly a wider outbreak might be aborted. Even more importantly, there may be a child in a classroom for whom infection with something as trivial as chickenpox can be a severe threat. Chickenpox can be a lethal infection in children with deficiency of their immune system. In this situation alerting parents to an outbreak within the school is not only considerate, it could be life saving.
- **Facilitate open dialogue between parents and teachers.** Inform parents at the time of first contact with the school that the school has an active infection control policy,

applied equally to all children, aimed at maintaining a healthy environment for the children.

– **Reassure parents that it is the school's philosophy to include all children who are fit and able to participate in the school's activities.** Parents of children with chronic infectious conditions such as HIV infection or hepatitis will be encouraged to share such information with the school.

2.8 Being Prepared – First aid kits and equipment

An important component of any infection control policy is the provision of readily accessible First aid kits. The number required will obviously depend on the number of children and the physical layout of the school. For a small school it may be adequate to have just one kit in the Principal's office, always provided that it is close to the areas where it will be needed and that there is access to it at all times. In larger schools a kit might be placed in a designated location on each floor, staff room, division etc. It is critical that all personnel involved in tending to individuals with cuts, abrasions, nosebleeds, and injuries that occur in school should have ready access to it. Alternatively the kit may be located with a staff member, designated as the First Aid provider and who will, in the ordinary course of events, deal with all minor emergencies. Disposable gloves should, however, be available to all who might come in contact with infectious bodily secretions e.g. blood.

Components of a First aid kit to help fight infection:

- Antiseptic for cleansing (e.g. Betadine antiseptic solution, Savlon)
- Antiseptic cream, ointment, or wipes (e.g. Savlon, Medicaid)
- Dressings; non-adherent dressing, sterile gauze pads and eye pads
- Disposable gloves
- Cotton balls
- Adherent tape
- Band-aids (including some that are hypoallergenic)
- Bandages
- Small bowl
- Ice-packs
- Scissors and Tweezers
- Flashlight
- Eye-wash bottle
- Paper cups
- Fever gauge or Thermometer

Antiseptics. There are many different preparations available, which, in liquid form, can be used to cleanse cuts and abrasions and, as a cream or ointment, can be applied after the wound is cleansed.

Dressings. These are available in a variety of sizes or may be cut to size. Non-adherent dressings have a shiny side which does not stick to the wound as it dries, and yet are permeable to air and moisture. They are useful for covering most cuts and abrasions.

Disposable Gloves. As all blood must be considered potentially infectious it should not be

handled. Gloves are an essential component of the First aid kit. Gloves should be the first thing taken out of the kit and put on when going to dress a blood injury. In the absence of gloves, however, emergency care should not be withheld. Skin exposed to blood should be washed with soap and water immediately. Staff with open cuts and abrasions should keep them covered with a waterproof plaster. (Remember, gloves are just an added protection – your main barrier to infection is your skin. Look after your skin, moisturise it well and use gloves when washing up).

Cotton ball. Useful for cleaning wounds.

Adherent tape. Also referred to as surgical tape. It is needed to hold the dressings in place. A variety of different types is available.

Band-aids of assorted sizes. Useful for the more minor cuts and abrasions.

Bandages. For treatment of strains and sprains or for providing some pressure over a cut that is bleeding heavily. It is important however that bandages are correctly applied. In wrapping a limb or joint which has been injured start at the part furthest removed from the body and roll the bandage gently around the limb overlapping by half the width of the bandage each time and advancing toward the body. Do not pull it tightly. Anyone who has sustained an injury severe enough to warrant bandaging of this nature should be referred for medical assessment to a local GP or the Accident and Emergency department of the local hospital.

A multipurpose bowl/container. This is useful for holding water to clean a wound, or holding the diluted disinfectant, or indeed it might be used if someone were to have a severe nose bleed etc. Remember to wash it thoroughly in hot soapy water and clean with the dilute bleach solution after use. If it has contained blood, clean with the stronger bleach solution (1 part bleach to 9 parts water).

Ice packs. Although chemical varieties are commercially available they can be effectively and cheaply made by placing ice cubes in a plastic bag and wrapping with kitchen paper or a towel. They are useful in reducing swelling associated with blunt injuries or strains and sprains.

Scissors. A most necessary item, the use of which needs no explanation. Just make sure it stays in the First aid kit and doesn't disappear into the classroom. Tweezers can be very useful for removing splinters. (Only try to do it if the splinter is readily accessible, don't go chasing splinters or dirt deep within a wound).

Flashlight. Helpful when looking for dirt in a wound or to find splinters. Often the ambient light is inadequate.

Eye-wash bottle. A bottle with a soft flexible nozzle suitable for irrigating eyes with water. It can also be used for flushing cuts and abrasions with water when cleaning them.

Paper cups. You can never find a cup when you need it.

Thermometer. It is helpful to clarify whether or not a child has fever when trying to make decisions about sending the child home. The temperature can be taken either by placing the tip of the thermometer under the arm and holding the arm against the child's chest for 10 min-

utes or by placing the tip of the thermometer under the tongue and maintaining it there for 2 to 3 minutes. Children are said to have fever if the temperature is >38°C/100.4°F, whether taken orally (in the mouth) or axillary (in the armpit). Alternatively and simply, a fever gauge placed on the forehead of the child will rapidly display the child's temperature.

2.8.1 First aid accessory kit

As well as items listed in the First aid kit which are needed to directly aid the patient, it is also necessary to have items available for cleaning up after an event, e.g. blood spill. Gloves appropriate to the task should be available. Regular household rubber gloves are suitable for cleaning up most spills. Disposable refuse sacks and disposable paper towels are also useful. Household bleach or Milton solution, used as indicated below, are effective environmental disinfectants.

2.9 Being Prepared – Know what to do

2.9.1 Blood precautions

Avoid direct contact with blood or bloody fluids. Gloves should be worn whenever contact with blood is anticipated, e.g. going to dress a cut, helping a child with a nosebleed. However, should blood come in contact with skin the likelihood of transmission of infection through intact skin is very remote. DO NOT PANIC.
Wash the area with soap and water. If blood splashes into the eye or mouth, rinse with water.

Blood spills should be cleaned up promptly and the area suitably disinfected. Cover the spill with enough paper towels to soak it up. Pour a disinfectant solution onto the paper towels and let it sit for 2 minutes before removing and cleaning up. A solution of ordinary household bleach, 1 part bleach with 9 parts of water or a 1% Milton solution, used neat, are very effective disinfectants and kill the germs present in blood. After disinfection, clean the area with detergent and hot water. Wear rubber gloves (household gloves) for the clean up procedure. This is important not only to minimise any infectious risk, but also because bleach can be quite irritating to skin. Countertops or tabletops which have been splashed with blood should be wiped down with the bleach solution.

To disinfect areas without blood spillage, the more dilute solutions are adequate (1 part 1% Milton to 9 parts water or 1 tablespoon household bleach per litre of water). These hypochlorite solutions can damage plastic and are corrosive to metals thus all surfaces should be washed with hot water after their use. Blood stained clothing should be bagged and sent home to be washed with laundry detergent and hot water.

2.9.2 Management of cuts and abrasions

Put on gloves. **(N.B: Please note that First Aid should not be withheld if gloves are not available. There have been no cases of casual transmission of HIV within households in handling potentially infectious fluids. Fear of infection should never prevent First Aid being given).**

Most cuts and abrasions encountered in the school yard are relatively minor and readily dealt with. Wash the area gently with soap and water, apply an antiseptic cream (e.g. Savlon) and cover with a waterproof dressing. For small cuts and abrasions a band-aid may be sufficient. For larger abrasions use non-adherent dressing and adhesive tape. If there is persistent bleeding make a pad with the dressing and apply gentle pressure over the wound. Any deep or very dirty wounds should be referred for further medical treatment. Children who are not fully up to date in their immunisation should be referred for their tetanus shot.

2.9.3 Management of nosebleeds

Nosebleeds are very common in children. Most stop within a few minutes. However some can be quite severe. Get the child to lean forward (just so the blood doesn't run down the back of his/her throat making them cough or splutter) and apply pressure to the nose by placing the fingers at the side of the bleeding nostril with the thumb against the opposite cheek and compressing gently. Take the time to put on gloves before giving direct assistance. **(N.B. Please note that First Aid should not be withheld if gloves are not available. There have been no cases of casual transmission of HIV within households or in school settings and while due care and caution is important in handling potentially infectious fluids, fear of infection should never prevent First Aid care being given).** If the bleeding persists despite 10-15 minutes of pressure applied in this way, the child should be referred for medical treatment. Once bleeding has stopped any areas contaminated by blood should be cleaned as outlined above. It is not unusual for children to cough or vomit swallowed blood after they have had a severe nose bleed.

2.9.4 Management of bites

Human and nonhuman bites are common among children. Most are not serious. The first step is to look at the area and see if the skin is broken. If the skin is not broken then reassurance and washing with soap and water is all that is necessary. If the skin is broken the wound should be cleansed with an antiseptic such as betadine and covered with a band-aid. If there is anything more than a superficial abrasion the child should be referred to the local casualty department or GP for further treatment. If the biting child is known to be hepatitis B infected, the bitten person should be immediately referred to their doctor.

2.9.5 Management of vomitus

If a child or staff member vomits on site, cover the vomit thoroughly with plenty of paper towels. A responsible member of staff with household rubber gloves should clean this into a plastic bag and then wash the areas of contamination thoroughly with hot water.

3 Specific infectious diseases

3.1 Diseases spread via the gastrointestinal tract

3.1.1 Infectious diarrhoea

What is it?

Diarrhoea is when:

- **there is an increase in the number of stools** over and above what is normal for that person (remember people are quite different in the frequency of bowel motions; some people may go only once every one to two days and other people two to three times a day, the important thing is that it is a change for the individual person) and
- **stools are loose and unformed** and take the shape of the container in which they are held.

What causes it?

Diarrhoea can be due to infectious and non-infectious causes. Common non-infectious causes include antibiotic use or food intolerance. Other diseases such as coeliac disease and cystic fibrosis can have diarrhoea as one of their symptoms. With these situations the diarrhoea is not usually associated with symptoms such as vomiting and fever. This type of diarrhoea is not contagious and will not spread to other people.

Infectious diarrhoea is when the diarrhoea develops due to infection with a virus, bacteria or parasite in the gastro-intestinal tract. Often there will be a history of contact with another person who has had similar symptoms. There may be associated symptoms of fever, nausea and vomiting. Infectious diarrhoea is readily transmissible from person to person. Common causes of infectious diarrhoea include viruses e.g. Rotavirus, Norovirus, bacteria e.g. Salmonella, Shigella, Campylobacter, E. coli O157/O26 and parasites e.g. Giardia lamblia and cryptosporidium. A variety of other agents can cause diarrhoea in children but within the school system the same principles of management apply to all infectious diarrhoea.

Who gets it?

Anyone can become infected with the germs, which cause infectious diarrhoea.

How is it passed?

The main method of spread is faecal-oral transmission which literally means from the stools of one person to the mouth of the next and the ways in which this can happen are outlined above (see Page 10). Some of these germs can also be passed orally, either directly from person to person or indirectly by toys and other objects.

How is it diagnosed?

Everyone recognises when they develop diarrhoea. Most times the illness is short lived and does not even require a doctor's visit. Very often, therefore, a specific diagnosis, that is identifying the specific germ responsible for the symptoms, is never made. If someone is very sick, has bloody diarrhoea, if symptoms persist more than a few days, or if there is a significant outbreak within a school, then a specific diagnosis should be sought. To do this the doctor will

send stool samples to a hospital laboratory for analysis. The microbiologist will see what germs are present in the sample and can also examine it for parasites. The results usually take a few days.

How is it treated?

Most cases require no specific treatment and resolve with time. Some do need treatment and the treatment depends on the specific germ that is causing diarrhoea. A course of antibiotics is recommended for the treatment of Shigella infections but is not usually given to people with uncomplicated Salmonella diarrhoea. Antibiotics may be useful in treating Campylobacter infections but have no role in managing Rotavirus infections. A short course of antibiotics is necessary if Giardia is found. A visit to the doctor is indicated if:

- There is bloody diarrhoea.
- The patient is acutely ill with high fever.
- There is severe vomiting.
- The patient is unable to take in fluids adequately.
- Diarrhoea persists beyond a few days.

Who should be excluded?

Children or staff who are acutely ill with gastrointestinal symptoms, especially if they have an elevated temperature or vomiting, are best cared for at home. Children with severe or bloody diarrhoea should likewise be nursed at home until the acute symptoms resolve.

How to stop the spread

Methods to stop the spread have been outlined above in the section on Gastrointestinal spread. Briefly:

- Pay rigorous attention to hand-washing.
- Ensure adequate cleansing of toilet facilities, including the toilet seat, cistern handle and washroom door handles.
- Exclude children with acute infection.
- Notify parents if there is a real outbreak within the school so that they can be vigilant with their own children and bring a stool sample to their doctor if symptoms develop in their child.

3.1.2 ***Norovirus (winter vomiting)***

In recent years norovirus, the main symptom of which is vomiting - often of sudden onset - has been responsible for a number of outbreaks of illness both in communities and in institutions. It can also be accompanied by diarrhoea. It is highly contagious and can spread both by person to person as well as by food and water. It is generally of short duration (24-36 hours) and in the absence of concurrent other factors is usually a mild self limiting illness. As for many other infectious diseases, hygiene is key in its control. In view of its infectiousness those affected should remain at home until better and should where possible not visit hospitals/nursing homes etc.

3.1.3 ***Giardiasis***

What is it?

Giardia Lamblia is a protozoan, i.e. a unicellular parasite which can infect humans. In

humans it lives in the small intestine (the part of the gut that is attached to the stomach) and may result in no symptoms or cause significant illness. Giardia can also live in dogs and while most infections are the result of person to person transmission, animals can serve as a source of infection. Infection with Giardia is called Giardiasis. Many people although infected will not develop symptoms. They will pass the cysts in their stool and are potentially infectious to other people. Some will develop mild symptoms; fever, nausea, diarrhoea and others can develop a protracted illness and become quite ill. Symptoms may be present for a long time before a diagnosis is made. Typical symptoms include nausea, belly pain, flatulence, and an increase in the frequency of bowel movements, with or without diarrhoea. The stool is usually very foul smelling. In severe cases, the presence of a lot of cysts in the gut can interfere with food absorption and result in weight loss and debilitation. Symptoms typically develop 1-4 weeks after exposure.

Who gets it?

Anyone can become infected with Giardia. It is a very common infection. Many (up to 40%) of infected individuals will develop no symptoms. People with weakened immune systems are particularly prone to severe symptoms.

How do they get it?

Giardia lives in the small gut and its infectious form, the cysts, are passed in the stool. Transmission of infection is predominantly faecal-oral i.e. stool to mouth. Infection may also be acquired if contaminated water is drunk.

How is it diagnosed?

Sometimes the parasite can be found in the stool. The likelihood of getting a positive stool result increases if multiple samples are sent. If your doctor suspects giardiasis you will be asked to collect three separate samples to send for testing. Even this will not always give the diagnosis and at times more invasive tests are necessary.

How is it treated?

Antibiotics are necessary to treat this infection and a variety of different drugs are available.

Should children be excluded?

Children should be excluded if acutely ill and unable to participate in the normal activities. Exclusion of asymptomatic children who are known to excrete the cysts in their stool is not necessary. However, most children in whom a diagnosis of giardiasis is made will receive treatment for it.

When can children return?

When the acute symptoms have resolved and treatment given.

How to stop spread?

Wash hands appropriately.
Enforce the usual practices to inhibit the spread of gastrointestinal germs.

3.1.4 ***Threadworms (Pinworms)***

What are they?

Enterobius vermicularis, the threadworm, is a common parasite which at some time will cause infection in almost every child. It is a tiny worm, which only infects humans. An itchy bottom is the main symptom of threadworm infection. This is usually worse in the evenings and during the night. It may interfere with sleeping. Sometimes the worms can migrate into the vaginal area and cause intense irritation. Worms do not cause grinding of teeth or bed-wetting and are rarely associated with any other symptoms.

Who gets them?

Anyone can become infected with threadworms. Furthermore people can become infected on several different occasions.

How do they get them?

The worms live in the intestine. The adult female worm leaves the intestine at night to lay her eggs on the skin surrounding the anus. As the worms die when their eggs are deposited, the infection would cease were it not for the continuing auto-infection which occurs. Children, irritated by the presence of the worms scratch their bottoms, picking up the eggs onto their hands in the process. These eggs are then carried to the mouth, swallowed, and once in the intestine they can hatch and mature into the adult worm. This is the process of auto or self-infection, which guarantees persistence of the infection. In a similar fashion the child may, by putting their fingers into another mouth or by touching food, pass the eggs to their classmates and to other family members. Eggs can also be transferred indirectly as they can get onto bedding and clothes and survive for up to two weeks.

How are they diagnosed?

In a child with symptoms suggestive of worms the diagnosis can sometimes be made by looking at the perianal area about an hour after the child has gone to sleep. With a good light or torch, gently pat the buttocks and look at the skin around the anus. The worms can be seen as small white threads less than half of a centimetre long.

This is not always successful, even when the child is infected. The most effective way to make the diagnosis is to carry out a sellotape test. First thing in the morning, before the child is washed, a piece of sellotape is placed on the skin beside the anus and then removed and taped to a glass slide. Your doctor can look at the slide under the microscope for the presence of eggs.

How are they treated?

A variety of agents are available to treat worms including some, which are available without prescription at the chemist. If infection is diagnosed in one member of the family, all members should be treated because of its extremely infectious nature. It is recommended that the treatment is repeated after two weeks to ensure eradication of infection. After treatment all bedding and underwear should be washed in the hot cycle in the washing machine to destroy any eggs present.

Should children be excluded?

No.

How to stop spread?

- Good hand-washing can prevent this infection. Even without medication, meticulous hand-washing can abort this infection because it prevents the necessary cycle of auto-infection.
- All family members should be treated at the same time to prevent infection passing back and forth between members.
- If there is a serious outbreak within a classroom or infection appears to be passing back and forth between children then consideration to mass treatment might be given, with co-ordination of treatment schedules between the involved families.

3.1.5 ***Hepatitis A***

What is it?

Hepatitis A, also called infectious jaundice, is an infection of the liver caused by the hepatitis A virus. It is a total body illness with fever, nausea, loss of appetite, jaundice (yellowing of the whites of the eyes), general tiredness and malaise. The urine becomes a dark orange and stool may become pale. Many children will only experience a very mild or even no illness with the infection. Unlike infection with the other common hepatitis viruses (hepatitis B and C), infection with hepatitis A quickly resolves and prolonged infection does not occur. When symptoms occur they typically develop 15 to 50 days after exposure and last for one to two weeks.

Who gets it?

Anyone who has not had hepatitis A can get it.

How do they get it?

Most infections are acquired from other people who are infected. The virus is passed through the gastrointestinal tract in the stool and from there, either through contaminated hands or other objects, finds its way back into the mouth of a susceptible person completing the infectious cycle. An infected person is most infectious for the two weeks before they develop any symptoms of illness. Thus people will have been exposed to the infection before any risk of infection is realised. By the time jaundice appears the person is much less infectious to others. Outbreaks of hepatitis A have also occurred where food and water supplies have become contaminated with infected sewage. Most notorious perhaps are the outbreaks associated with shellfish ingestion where the shellfish were harvested from a contaminated area.

How is it diagnosed?

It is usually diagnosed based on the clinical picture and a history of contact with others who had a similar illness. Specific blood tests can be done to confirm the diagnosis and blood can be tested to see if someone has had infection in the past.

How is it treated?

There is no specific treatment once symptoms have developed, however it is possible to prevent infection. If exposure to an infectious person is recognised within 2 weeks of the exposure, immunoglobulin (an antibody preparation) if available can be given to prevent the subsequent development of infection. Hepatitis A vaccine may be offered to close contacts within approximately one week of exposure. Isolated school room exposure does not usually constitute a great risk of infection and is not generally considered an indication for use of immunoglobulin (if available) or hepatitis A vaccine. Immunoglobulin (if available) may be given to those who have had close personal contact with the infected person.

Should children be excluded?

Children with acute hepatitis A should be excluded until seven days after the onset of illness or onset until jaundice, (whichever is the longest), and until jaundice has resolved.

When can children return?

When the symptoms have resolved and at least 7 days after the onset of the illness.

How to stop spread?

- Wash hands appropriately: after toileting and before touching or eating food.
- Exclude individuals with acute infection.
- Consideration may have to be given to excluding individuals who have been exposed to hepatitis A within the preceding two weeks and who did not receive either immunoglobulin or/and hepatitis A vaccine.
- Refer close contacts of the infected person for immunoglobulin or/and hepatitis A vaccine.
- Household contacts should also be referred for immunoglobulin or/and Hepatitis A vaccine.

3.2 Diseases spread through the Respiratory tract

3.2.1 ***Colds and flu***

What are they?

Colds are the most common infections in children. Symptoms include a combination of runny nose, sore throat, and fever which develop over a day or so. Influenza or flu is less common and results in a sudden onset of symptoms. With real flu a sufferer can often pinpoint, almost to the minute, when it began. Typical symptoms include fever, which is usually high and lasts for a few days, and is associated with headache, chills, muscle pains and aches, extreme malaise and weakness, cough, sore throat etc. Most people with flu are too sick to come to school.

What causes them?

Colds are caused by a great number of different viruses, many of which belong to the family called Rhinoviruses, which translated literally means nose viruses. Flu is also caused by a virus, the influenza virus, of which there are three main types, A, B, and C. The influenza A Virus has been responsible for some of the great influenza pandemics in history.

Who gets them?

Anyone can catch a cold. There are so many different types that at times it seems as if children never clear a cold, whereas in fact they are going through a series of infections, one after the other. The more people a child comes in contact with the more likely they are to come in contact with cold viruses and develop a cold. This is particularly likely to happen when the child enters a new school and meets the population of viruses for the first time. As they spend time in the one environment and work their way through the common infections, they gradually build up their immunity and are less likely to develop symptomatic infection. Thus frequent runny noses are most common among the younger classes within a school.

How are they passed?

The main method of spread is through the respiratory tract, either by droplet spread, direct contact with infected secretions or through contact with articles recently contaminated by infectious secretions. Coughing and sneezing help the spread of infection by dispersing the infectious droplets. People who develop these types of viral illness are usually infectious for a few days before any symptoms develop, thus infection can spread even before it is recognised.

How are they diagnosed?

Colds and flu are diagnosed based on the symptoms present. A specific diagnosis of the exact virus responsible for the symptoms can be made in laboratory but is expensive, time consuming and not usually needed. Some conditions e.g. allergies can mimic cold symptoms very closely and if a cold seems to persist beyond the usual 5 to 7 days then the possibility of a non-infectious cause e.g. allergy can be considered. Colds may also persist longer than expected if they are complicated by the development of a secondary bacterial infection, e.g. ear infection or sinusitis, which might require an antibiotic to clear it up.

How are they treated?

TLC. Tender loving care. There is no effective cure for the common cold, however a variety of medicines are available to make one feel more comfortable. If there is a very high fever or if the child is more ill than would be anticipated with a cold then they should be evaluated by their GP to make sure that there is no bacterial infection present. Although no specific treatment is usually given to flu sufferers a medicine, Amantadine, is available which can decrease the severity of symptoms of influenza A if given early in its course. Its use is usually reserved for those with severe symptoms who are at particular risk of developing complications. Amantadine can also be used to prevent the development of infection in contacts of influenza A sufferers. It has no effect on influenza B.

Children with flu should not receive aspirin or aspirin containing products as it can result in Reyes syndrome, a serious and potentially lethal condition. Fever can be safely controlled using paracetamol (panadol), and tepid sponging. However, as a general rule, the administration of medication to pupils while at school should be avoided.

Should children be excluded?

Only if too ill to participate in regular activities. Most children with colds do not need to be excluded and most people with flu will want to stay at home.

When can children return?

As soon as they are well enough to participate in regular activities.

How to stop spread?

Implementation of good hygienic practices:

- Wash hands after contact with nasal secretions (after wiping or blowing noses).
- Don't cough/sneeze toward the face of another person.
- Use tissues and dispose of them adequately.
- Ensure good ventilation and air the classrooms at least daily.

3.2.2 ***Roseola***

What is it?

It is a viral illness which causes high fever which lasts four to five days and then suddenly falls at the time that a diffuse pink rash appears over the body. The rash can last 1 to 2 days. The fever can be very high, 40°-41°C /104-105°F, causing real concern. Sometimes the infant can fit as the temperature rises rapidly.

What causes it?

It is now known to be caused by one of the herpes family of viruses, human herpes virus 6, a virus that most of us catch within the first years of life.

Who gets it?

Usually very young children. It is rare over four years of age.

How is it passed?

It is assumed that it is spread though the respiratory tract.

How is diagnosed?

Based on the typical sequence of high fever followed by the appearance of the rash as the fever breaks.

How is it treated?

There is no specific treatment. By the time the diagnosis is made, i.e. when the rash appears, the illness is essentially over.

Should children be excluded?

It is not usually a problem for schools as most children will have had it by the time they are four years of age.

3.2.3 ***Chickenpox***

What is it?

Chickenpox is a common contagious illness of childhood. Fever and mild cold symptoms are

often the first signs and are followed by the appearance of the characteristic rash. The rash starts as small pink bumps, often around the neck, ears, back and stomach. These develop a little water blister which in turn becomes yellow and oozy and ultimately crusts as it dries. The rash spreads outwards to involve the whole body finally involving their lower arms and legs. People may have only a few spots or may be virtually covered with them. In children it is usually a relatively mild illness however, occasionally, complications can develop. The incidence of complication is much higher in adults with chickenpox. It is a potentially fatal illness in individuals with a weakened immune system.

What causes it?

It is caused by the varicella-zoster virus, a member of the herpes family of viruses. Chickenpox is the result of our first encounter with this virus. Like others in this family of viruses, once we are infected with it, the virus remains in our systems for life. During most of this time they remain dormant, however a variety of factors can wake them up to activity. When the chickenpox virus is reactivated it manifests as shingles. In shingles pain usually precedes the development of blisters. Fever is unusual and the blisters remain confined to one area of the body, often developing along a line on one side. Chickenpox develops 10-21 days after exposure and people are infectious for up to 3 days before the rash appears and remain contagious until the last spot is crusted over and dry.

Who gets it?

Anyone who has not had it before and who is exposed can, and probably will, get it. (Most adults have had chickenpox, even if they do not recall it. Occasionally illness may be so mild that the few spots which develop are overlooked). A child who is exposed to an adult with shingles can develop chickenpox. Chickenpox is most common in school children, whereas shingles is much more common among the elderly.

How is it passed?

Chickenpox is spread through the respiratory tract and by direct contact with infected secretions from the nose, throat or rash. Susceptible children who are in direct contact with an adult with shingles may acquire the virus from them and develop chickenpox. Adults with shingles are not at all as contagious as a child with chickenpox, as spread usually requires direct contact with the infectious blisters.

How is diagnosed?

Based on the characteristic rash.

How is it treated?

Most children do not require treatment other than symptomatic treatment of fever and itching. Occasionally an antibiotic may be needed if there is a secondary bacterial infection of the rash. A specific antiviral drug, Acylovir, is available for use if there is a risk of serious complications. Do not give aspirin to children with chickenpox as it is associated with a risk of Reyes syndrome (vomiting, liver problems and coma). A vaccine to prevent chickenpox may soon be available for routine use.

Should children be excluded?

This is a hotly debated issue. By the time a child develops the characteristic rash classmates will have already been thoroughly exposed. Thus it is argued that if a child is well enough to attend school the presence of chickenpox does not justify exclusion. Preventing spread of chickenpox by exclusion rarely works. If chickenpox is in a class, most susceptible children will become infected regardless of the exclusion policy. Nonetheless the standard approach has been to exclude children until all the spots are crusted (about 1 week after the rash appears). Adults with chickenpox are usually much too ill to attend school. Staff with shingles are much less contagious than children with chickenpox. As spread requires direct contact with the infectious lesions they may safely attend class if the lesions are fully covered. If however the lesions are in an exposed area, e.g. the face, then they too should be excluded until all lesions are crusted and dry.

When can children return?

It is virtually impossible to prevent the spread of chickenpox within a school.

- Exclusion policies are generally unsuccessful.
- Children who are at particular risk of complications (children with weak immune systems, children with cancer or who have had an organ transplantation, or HIV infected children) may need to receive special immunoglobulin to modify infection. Using a standard notification letter, notify parents of such children if there is any chickenpox within a school and advise them to contact their own doctor immediately.
- Individuals with shingles on exposed areas should remain out of school until all the blisters are crusted and dry. Those with shingles on non-exposed areas, or on areas which can be completely covered can attend school if they are otherwise well enough to do so.

Pregnant staff

It is generally recmommend that non-immune pregnant women who have been significantly exposed to varicella should be offered varicella zoster immunoglobulin as soon as possible and preferably within 96 hours of the contact. There is evidence that the immunoglobulin may modify the illness if given within ten days of the exposure. At all stages of pregnancy the primary aim of varicella zoster immunoglobulin immunoprophylaxis is to modify the illness in the mother.

3.2.4 ***Streptococcal Infections (Strep throat, Scarlet Fever, Impetigo)***

What are they?

This is a group of illnesses caused by the bacteria, group A streptococci, called ‘strep’ for short. The most common of these is the strep throat. The patient complains of a very sore throat (like swallowing barbed wire), has a high fever and swollen tender neck glands. Headache and stomach ache frequently accompany these symptoms. Do remember however that most sore throats are not caused by strep, but by one of the many cold viruses and require no specific treatment.

Scarlet fever is caused by the same bacteria. Its typical feature is the fine red sandpaper textured rash which is most prominent in the joint creases. It is no more serious an infection than

strep throat. Other signs of scarlet fever include a pallor around the mouth, flushed cheeks and a tongue that looks like a red strawberry.

Impetigo is a crusting skin infection caused by the same bacteria. The main problem with strep infection is not the acute illness, which although unpleasant is readily treatable with antibiotics, but the possibility of complications such as rheumatic fever (inflammation of the joints and abnormalities of the heart) and kidney disease (glomerulonephritis). These occasionally develop after untreated strep infections. Symptoms of strep infection develop 2-5 days after exposure and the person remains infectious until they have received about 24 hours of treatment.

What causes them?

These are bacterial infections caused by the group A streptococcus.

Who gets them?

Anyone can.

How are they passed?

It is passed from person to person through the respiratory secretions. Strep skin infections can be passed through contact with the infectious secretions.

How are they diagnosed?

Strep throat is diagnosed by growing the bacteria from a throat swab or by doing a special rapid strep test on the throat secretions. Both scarlet fever and impetigo are diagnosed when the typical skin features appear.

How are they treated?

A number of antibiotics are available to treat strep. Penicillin or one of the many cephalosporin antibiotics are frequently used. A full 10 day course is standard. Alternatively, a single long acting (but painful) penicillin injection can be given.

Should children be excluded?

People with strep throat and a known positive throat culture should be excluded until treatment is started.

When can children return?

When they have received at least 24 hours of antibiotics.

How to stop spread?

- If a definite diagnosis of strep throat has been made in a child or staff member, notify other parents and the staff so that children and staff who develop sore throats can go to their doctor for evaluation.
- Follow the general guidelines to prevent the spread of respiratory disease (page 10).

- If there are more than two to three cases at the same time, seek advice from your health service executive local office. Screening of all children and staff within a classroom might be indicated to end an outbreak, as some people can carry strep in their throats without symptoms of disease but can pass it to others who can become ill.

3.2.5 ***Serious Bacterial Infections/Meningitis (Meningococcal, Haemophilus influenza type B and Pneumococcal infections)***

What are they?

Bacterial infections are infections caused by bacteria. They are usually described according to the site where the infectious symptoms develop. Bacteria in the spinal fluid (the fluid around the brain) result in bacterial meningitis (sometimes called spinal meningitis). Bacteria in the lungs cause pneumonia or pleurisy, and in the bloodstream cause septicaemia (blood poisoning). Although viruses can also cause (and are the more common cause of) meningitis and pneumonia, viral infections are usually less severe, rarely life threatening and generally get better by themselves.

Bacterial infection can be life threatening. The signs of bacterial infection depend on where the main focus of infection is located. Children with meningitis develop fever, headache, stiff neck and vomiting. They may also complain that the light hurts their eyes. Children with pneumonia often have high fever and chills with a marked cough. They may complain that their chest hurts on breathing. Children with bloodstream infection may have no localising signs but will be clearly ill, usually with high fever and chills. All of these children look ill, have high fever and should be seen by a doctor.

Any ill child with fever, headache and vomiting should be sent home as soon as the parent can be contacted and referred to their doctor. If there were any significant delay in contacting the parents the child should be brought directly to the local hospital emergency room. Do not allow a child with fever, headache and vomiting to wait indefinitely in the school sick room. In addition to the above listed symptoms, children with meningococcal infection often develop a rash that starts as red spots but will progress to purple freckles and splotches, and even frank bruising. If this occurs **CALL AN AMBULANCE, GET MEDICAL ATTENTION first and then contact the parents.** Infections with these bacteria usually develop 1-4 days after exposure although occasionally the incubation period can be longer. More usually a definite history of exposure to another ill person cannot be identified and the infectious source is an asymptomatic healthy individual who is a carrier of the infection but remains unaffected by it.

What causes them?

Three types of bacteria: Haemophilus influenza type B (Hib), Neisseria meningitidis (meningococcus), and Streptococcus pneumonia (pneumococcus) cause the vast majority of serious bacterial infections in children. Haemophilus influenza type B (Hib) can cause bloodstream infection, pneumonia, septic arthritis, osteomyelitis (infection of the bone), cellulitis (infection of the skin), epiglottitis (infection of the windpipe) and meningitis. The meningococcus causes bloodstream infection and meningitis. It is more rarely associated with other

types of infection. The serious infection's caused by the pneumococcus include pneumonia, meningitis and bloodstream infection.

Who gets them?

Anyone can.

Serious infections with Hib usually occur in children less than 5 years of age. A very effective vaccine is now widely available for the prevention of Hib infection and all children should be fully immunised by school entry.

Meningococcal infections can occur at any age, however they occur most frequently among children less than 5 years of age. They can be life threatening infections and a real medical emergency when they occur. People with this must be hospitalised immediately and receive intravenous antibiotics. For one of the groups of Meningococcal disease (Meningococcal Group C) a vaccine is given as part of the childhood vaccine schedule. However there is no vaccine as yet, for other meningococcal groups.

The pneumococcus is the most common form of bacterial pneumonia in children. More rarely meningitis can develop. This type of bacteria often causes less serious illnesses such as an ear infection and /or sinusitis. Any age group can become infected with this organism.

How are they passed?

All of these are passed by respiratory spread. They do not survive outside the body on environmental surfaces thus passage is from person to person. Relatively close contact is required for respiratory spread and the germs are passed through coughing, sneezing, and nose and mouth secretions. People, called carriers carry these organisms in their throats and noses without any symptoms. Both carriers and sick people can pass the bacteria to others.

How are they diagnosed?

A diagnosis is made when the bacteria is grown from the infected area; e.g. from spinal fluid in cases of meningitis, from the sputum in cases of pneumonia etc.

How are they treated?

All of these infections need carefully supervised antibiotic therapy. With cases of meningococcal and Hib infection both the sick person and their close contacts must receive a short course of an oral antibiotic called Rifampicin (1-2 days). This eradicates the bacteria from the nose and throat, prevents infection among contacts, and reduces the risk of spread to others. If there is a case of Hib or meningococcal infection within a classroom you should consult your local health board immediately.

Should children be excluded?

Children with these infections are too ill to attend school. It is imperative that children who have had either Hib or meningococcal infection should have received the antibiotic Rifampin prior to returning to school.

When can children return?

When they are well. In cases of meningococcal and Hib infections the course of Rifampin must be completed prior to return.

How to stop spread

- Follow the general guidelines to prevent the spread of respiratory disease (page 10).
- Have a policy regarding the referral of contacts to their doctors for advice regarding the use of Rifampicin (antibiotic) prophylaxis.
- Notify parents if there is a case of Hib or meningococcal infection in the school and advice them to consult their doctor.
- Advise staff to contact their doctor for advice.
- **If there are more than two to three cases at the same time, you have an outbreak. Seek urgent advice from your Health Service Executive local office.**

3.2.6 ***Tuberculosis***

What is it?

Tuberculosis (previously referred to as 'consumption') is a bacterial infection. Infection usually involves the lungs but any part of the body can be infected. With TB a distinction must be made between infection and disease. Most people who become infected with TB do not develop the disease or become ill. Only a small percentage of people infected with TB go on to develop TB disease. In most, the healthy immune system successfully walls off the TB bacteria in tiny nodules in the lungs where they can remain dormant for many years. In these individuals the only evidence of infection, if sought, would be a positive TB skin test (Mantoux). People with a positive skin test do not look or feel ill and are not contagious.

If the immune system is weakened, by other illness, by advancing age or by some other event, these bacteria can reactivate and produce TB disease. Most TB disease in adults is due to this type of reactivation and is called 'reactivation TB' or 'secondary TB'. Sometimes, either because our immune system is not adequate to cope with the primary infection (e.g. in the very young child) or because the initial load of bacteria is great and overwhelms even a normal immune system, TB disease develops following the initial infection, so called 'primary TB'.

With primary TB, time from initial infection to the development of symptoms is about 1 to 6 months. The lungs are the most common site of TB disease however meningitis, kidney infection and infection of virtually every organ system can occur. The main symptoms of active TB lung disease are chronic cough, sometimes with bloody phlegm, weight loss, night time sweating, fever and an abnormal chest x-ray.

What causes it?

Two closely related bacteria can cause TB in humans – Mycobacterium tuberculosis, the most common cause of TB in humans and mycobacterium bovis, a very close cousin which is responsible for most TB in cows. Introduction of milk pasteurisation brought about a marked decline in the incidence of human infection with mycobacterium bovis, however cases of mycobacterium tuberculosis continue to occur.

Who gets it?

Anyone who shares breathing space with someone who has active TB in their lungs can catch TB. Most will not develop disease. The people most likely to develop active disease are the very young, the elderly and those with an immune system weakened either by illness or by certain medications. Post-pubertal adolescents are another group at particular risk of developing active TB disease.

How is it spread?

It is spread by droplets of mucus coughed into the air by an infected person, usually an adult. Not all people with TB are contagious. Adults with infection at body sites other than the lungs are unlikely to transmit infection. Children are rarely contagious as they have much fewer bacteria in their lungs and do not usually cough up infectious secretions.

How is it diagnosed?

Infection with TB can be diagnosed by doing a TB skin test. However, immunisation with BCG will also produce a positive skin test and can confound the diagnosis. Diagnosis of TB disease depends on growing the bacteria from infectious secretions. Once a person with active TB disease is identified all close contacts are screened, using a combination of skin testing and chest x-rays, to detect infection.

How is it treated?

TB infection without active disease can be treated using a single antibiotic for 6 to 12 months. This is done to prevent the later development of active TB disease. Active TB disease requires a much more intensive treatment course. A variety of antibiotics is available for treatment and regimens will vary depending on the age of the patient, the site of infection and what is known about the behaviour of the TB bacteria in that particular area. It is imperative that a full course of treatment is completed. The TB bacteria is very good at becoming resistant to medicines. It must be hit hard and heavy at the beginning of treatment or a much more resistant and difficult to treat bacteria will emerge. Failure to comply with treatment schedules can turn a readily treatable condition into an untreatable lethal disease.

Should children be excluded?

Adults and children with active TB disease must be excluded until they are no longer infectious. Children with primary TB disease are rarely contagious and can usually return to school as soon as they are receiving treatment. Children without active disease who have a positive skin test are not contagious and need not be excluded.

When can children return?

Children with primary TB can attend school providing they are on treatment. Staff with active TB can return when it is certified by the treating doctor that they are no longer infectious and they are receiving treatment.

How to stop spread?

- The local health board should be notified if there are any cases of TB disease within a school and will help with instruction for the identification of any infected individuals and how to prevent spread.
- All close contacts of adults with active TB disease must be screened for infection.
- BCG vaccine can be given to those who are skin test negative and are at risk of exposure to active TB disease. (As policies of BCG administration varied from one health board area to another in the past, uniform protection of children from TB cannot be assumed. Ascertainment of the BCG status should form part of the general health questionnaire for children at school entry).

3.3 Diseases spread through direct contact

3.3.1 ***Impetigo***

What is it?

It is a bacterial skin infection that presents as a red blistering, oozy and ultimately crusty rash which most often develops around the nose and mouth but can occur on any part of the skin. The oozy crust is often honey-coloured.

What causes it?

Bacteria. The most common bacteria implicated are group A Streptococcus called strep, (the same one that can cause strep throats and rheumatic fever) and Staphylococcus aureus called staph (pronounced staff).

Who gets it?

Anyone can. Intact skin protects against bacterial infection. Skin which is broken, by cuts and scrapes, or is macerated, by runny noses and licking lips, is an ineffective barrier and bacteria can get below the skin and set up an infection.

How is it spread?

By direct contact. The bacteria are present in the skin lesions. Secretions from the rash are infectious. Hands that touch the area are readily contaminated and pass the infection along.

How is it diagnosed?

Impetigo can be diagnosed by looking at it. If necessary the bacteria can be grown from swabs of the skin rash.

How is it treated?

An antiseptic soap and an antibiotic ointment can be used to treat it. Sometimes an oral antibiotic is given.

Should children be excluded?

If a child has impetigo, bring it to the parents' attention at the end of the day. Advise them to visit their doctor and get treatment. The child should remain out of school until treatment is started.

When can children return?

As soon as they have received 24 hours of treatment.

How to stop spread?

- Prevent impetigo developing, look after skin; clean all cuts and abrasions with soap and water and dry thoroughly. Keep runny noses dry.
- If impetigo is noticed on a child during school, wash and cover the lesion. Remember to wash your hands well after touching the lesion.
- Advise parents to bring their child to the doctor for treatment.

3.3.2 ***Ringworm***

What is it?

Ringworm is a superficial fungal infection of the skin, it can involve the scalp – Tinea capitis, the body – Tinea corporis, the feet – Tinea pedis (also called athletes foot) or the groin – Tinea cruris (Jock itch). How it looks depends on where it is. On the skin it presents as a roughly circular scaly itchy rash.

Sometimes there may be small blisters and even pus filled spots. It can involve the nails causing them to thicken and discolour. On the scalp it often starts as a small bump, gradually spreading outwards and associated with hair loss. On the feet there may be cracking between the toes.

What causes it?

Several different fungi can cause ringworm.

Who gets it?

Anyone can if they come in contact with the fungi, either by direct contact with an infected person or through contact with infectious skin flakes on clothing or in the environment. Scalp ringworm predominantly affects children 2 to 10 years of age.

How is it passed?

By direct contact or contact with infectious skin flakes shed into clothes or the environment. Sharing of items such as brushes, combs and nail scissors. Animals can develop ringworm and can pass it to humans.

How is it diagnosed?

Usually by looking at its typical appearance. A special lamp is sometimes used to help make the diagnosis. If necessary, skin scrapings can be examined under the microscopic to confirm the diagnosis.

How is it treated?

Both antifungal ointments and oral antifungal medicines are used to treat ringworm. The choice depends on the site of infection. Oral medicines are needed to treat scalp and nail infections.

Should children be excluded?

No, although children should be advised to visit the doctor and receive treatment as soon as it is noticed.

How to stop spread?

- Direct contact with skin rashes should be avoided.
- Discourage children from sharing brushes, combs etc.
- Advise parents to bring children with suspicious skin lesions to their doctor for evaluation.

3.3.3 ***Head Lice***

What are they?

Head lice are tiny (2-4mm) greyish white insects that live in the hair and feed by biting the scalp and sucking blood. The female lays shiny yellow eggs (nits) and glues them, one by one, to the individual hairs close to the scalp. Seven to 10 days later the nits hatch, eat voraciously and live approximately 20 to 30 days during which time the female can produce 250 to 300 eggs. The empty nits, now white in colour, remain firmly glued to the hair and as the hair grows are carried further from the scalp becoming more visible. As successive generation breed and hatch, nits can be seen at different points along the hair shaft. An estimate of the timing of first infection can be made by reckoning the distance between the scalp and the nits furthest from it.

Who gets them?

Anyone can pick up head lice, however infestation is most common among children as the head to head activities of children at play facilitate transmission. Head lice do not reflect standards of hygiene in the home or in the school. Head lice are just as willing to live in clean hair as an unclean head.

How are they passed?

Head lice are passed by direct head contact with lice simply walking from one head to the next. Lice may also be passed indirectly through the common use of brushes, combs, and hats.

How are they diagnosed?

Head scratching is usually the first sign that a child has head lice. By the time a child is consciously irritated by their presence, the lice will have been there for quite a while. It is better to check children's hair on a regular basis. This should be done, using a special fine-toothed comb (available from any chemist) and combing the hair carefully down onto a white towel or cloth. Adult lice can be removed in this way and will be seen as dark oval specks as they fall onto the towel. The hair should also be checked for the presence of nits, pearly grey specks smaller than a grain of castor sugar. These are most commonly found around the nape of the neck and behind the ears. They stick firmly to the hair. If you see a white speck on the hair shaft, gently place the hair between two fingers and slide the fingers down along it. Dandruff or dust will readily come away. Nits stick and can be felt as the fingers pass over them. If lice are found in one member of the family, quite likely all members are infected.

How are they treated?

A variety of effective preparations, shampoos and lotions, are available at the chemist. It is important that the instructions are accurately followed. **Shampoos kill the head lice but do not kill the eggs** and thus must be used repeatedly until all hatched nits are killed. The lotions, while messier to apply, have the benefit of killing the nits as well as the hatched lice. Massage the lotion into the hair, saturate well, and allow the hair dry naturally. Heat should not be applied as it can inactivate the lotions. The hair may be washed in the normal way after a specified time. Getting rid of the nits is difficult. A solution of vinegar and water applied to the hair helps loosen the nits, which can then be removed using a fine toothed nit removal comb.

Nits remaining in the hair after a treatment programme such as this should be dead. However to ensure that none have escaped, it is a good idea to wash the hair with one of the anti-head lice shampoos 7 to 10 days after the initial treatment.

Personal clothing, bed linens, and anything that might have become infested, should be washed in HOT water where possible. (The hot cycle of most washing machines is adequate). Brushes and combs should either be boiled for 10 minutes or soaked in a dilute bleach solution for 1 hour.

Problems can arise in eradicating head lice in a school, not because the preparations are ineffective but because infection passes, forward and back, between the children. Some preparations offer extended protection for a time after use, nonetheless it may still be necessary to designate a special head treatment weekend within a school and co-ordinate treatment of all children to bring an outbreak to an end. A spray is also available from chemists which sprayed on lice free hair repels infestation and may help keep heads lice free.

Should children be excluded?

If active head lice infestation is noted during school all possible head (and hair) contact between the affected child and other children should be avoided. At the end of the school day the parents should be notified and advised to treat the child before returning him/her to school.

When can children return?

As soon as they have been treated. It is impractical to require removal of all nits before return to school. If the lotions have been properly used the nits will be dead and should not pose a risk to others.

How to stop spread

- Notify any parents if nits are seen in the child's hair and advise them to treat the child before he/she returns to school. A sample letter of notification to parents is given in the Appendix III.
- Notify parents of all children if there has been a case in the school so that they might be vigilant in checking their own children.
- Discourage sharing of hats, brushes and combs.
- **If there is a persistent problem within a classroom/school, designate a special head**

treatment weekend and request that all parents treat their children that weekend.

3.3.4 ***Scabies***

What is it?

Scabies is a bumpy rash that is so intensely itchy that the associated scratching can actually break the skin. The itch is most intense between the fingers, at the wrists, the belt line, the underarms, the belly, the outer aspect of the feet and the buttocks. Except in young children, the face is not involved.

What causes it?

It is caused by the mite, Sarcoptes scabiei, which burrows under the skin to lay approximately 3 eggs per day. The itchiness or the rash is caused by the reaction of the host's body to the mite. This sensitisation takes several weeks to develop after an initial infection but occurs much more rapidly with subsequent infections, with symptoms developing as soon as 1 to 2 days after re-infection.

Who gets it?

Anyone can.

How is it passed?

From person to person by close personal contact. Skin scales from an infected person are infectious. Some children get a very heavy infestation and will have crusted and scratched skin lesions (so called Norwegian scabies). These children are highly contagious and even minimal contact with their skin can be enough for transmission. The mites can survive for about three days off the body and thus transmission through infected bedding or clothes can also occur.

How is it diagnosed?

Scabies can usually be recognised by looking for the typical rash and finding the small thread-like burrows of the mite. However, as vigorous scratching can obliterate these, examination of skin scrapings under the microscope may be necessary to confirm the diagnosis.

How is it treated?

A variety of scabicidal lotions and creams are available at the chemist. Application procedures vary depending on the product used. In general, they are applied at bedtime to the entire skin (excluding the head and face) and rinsed off the following morning. A second application 4 to 7 days later is recommended. As spread within households is common, some doctors will elect to treat all family members at the same time even if there are no symptoms.

Should children be excluded?

Parents of children with a suspicious rash should be advised to bring them to their doctor for evaluation, but do not need to be sent home in the middle of a schoolday.

When can children return?

A person with a definite infection can return to school as soon as they are treated.

How to stop spread?

- If a suspicious rash is noted on a child bring it to the parents' attention and advise them to consult their doctor.
- Notify parents if there is a case in the classroom so that they can check their children.
- All clothing and bedding which has been used by the infected person in the 72 hours prior to treatment should be washed in the HOT cycle of the washing machine.
- Items which cannot be readily washed (pillows, stuffed toys) should be stored in tightly closed plastic bags for four days before using again (when off the body the life cycle of the mite is less than four days, thus items stored in this way will be free of mites when taken out for use).

Conjunctivitis (Pink eye)

What is it?

Conjunctivitis is an infection of the conjunctiva, i.e. the transparent covering of the eye and lining of the eye-lids. With this infection the conjunctiva become pink and the eyes develop a discharge which makes them sticky and matted, particularly first thing in the morning. Older children may complain that their eyes are uncomfortable, gritty or even painful.

What causes it?

Many different germs including viruses and bacteria can cause conjunctivitis. There are many non-infectious causes of conjunctivitis, such as allergy.

Who gets it?

Anyone can.

How is it passed?

Children with sticky irritated eyes rub them frequently, contaminating their hands with the infectious secretions. From there it is readily spread among other children and even to the adults.

How is it diagnosed?

Conjunctivitis is diagnosed by looking at the eyes, however it can be impossible to tell by looking whether it is caused by bacteria or by a virus. To do this a swab is taken and examined for the presence of bacteria.

How is it treated?

While most cases of viral conjunctivitis need no specific treatment, antibiotic drops are used to treat bacterial conjunctivitis. In all cases, the eyes should be kept clean and free of discharge as this will decrease the likelihood of spread.

Should children be excluded?

Children with conjunctivitis with a pussy discharge should be excluded until they have been evaluated by a doctor and deemed fit for readmission. (Cases of bacterial conjunctivitis might be expected to be on treatment as this will shorten the duration of symptoms and decrease the likelihood of spread of infection).

When can children return?

Once they have been evaluated by their doctor and treatment (if necessary) commenced.

How to stop spread?

- Exclude children pending evaluation by their doctor and institution of treatment if necessary.
- Careful hand-washing after wiping or touching eyes or any other infectious secretions.
- Remind children to wash their hands after touching their eyes.

3.3.5 ***Cytomegalovirus (CMV) infection***

What is it?

Cytomegalovirus infection can assume a number of different guises. It can cause a sore throat and swollen glands, or give rise to a more generalised illness with fever, rash, fatigue, and even hepatitis (inflammation of the liver). In most cases CMV infection causes no symptoms. Although CMV infection is potentially lethal in people with a weakened immune system, in the otherwise healthy person CMV infection is trivial and resolves without any specific treatment. Most of us acquire CMV infection for the first time, the so called primary infection, during childhood or adolescence. CMV infection can pose a threat to pregnant women who acquire primary infection during pregnancy. The infection can cross the placenta and infect the unborn baby. The outcome for the infant varies, from an innocuous asymptomatic infection to a severe illness, resulting in deafness, mental retardation, and even death.

What causes it?

Cytomegalovirus (CMV) is a virus which is a member of the Herpes family of viruses. Other cousins within this family are Herpes Simplex Virus (which causes cold sores) and the chickenpox virus. All of these viruses, once acquired, remain in the system for life. The first encounter, the primary infection, is followed by the development of some immunity to the virus which acts to suppress it thereafter. The viruses do continue to live within our cells and given the right circumstances they can reactivate to produce disease.

Who gets it?

Virtually all of us will have had this infection by the time we die. Most of us will have acquired CMV during childhood or early adolescence. Young children, especially those in the toddler age group, who like to slobber over their toys as they pass them from one to the other, are most efficient at transmitting infection to each other. Household spread of CMV is also common.

How is it passed?

CMV is not a highly contagious disease. For spread, direct and repeated contact with infectious secretions is needed. The virus is present in saliva, urine and blood, so direct contact with these can result in infection. CMV can also be transmitted by sexual contact.

How is it diagnosed?

There are special tests that can be done on blood to see if someone is infected with CMV. The virus can also be grown from the urine, saliva and blood of people with active infection. Most cases are never diagnosed as they do not result in any symptoms and thus are not recognised.

How is treated?

In normally healthy people no treatment is needed. Special anti CMV drugs are available for use in people at high risk of serious infection.

Should children be excluded?

No.

How to stop spread?

- Good hand-washing practices virtually eliminates the risk of CMV transmission within the school setting.
- Pregnant women or women contemplating pregnancy should be very diligent about washing their hands after contact with body secretions, especially after contact with saliva, urine and blood. Women contemplating pregnancy should ask their doctor to check if they have ever had CMV infection. Primary infection (the form that can be a threat to an unborn child) can only be acquired by those who have not been previously infected.

3.3.6 ***Herpes simplex virus (HSV) infection***

What is it?

Herpes simplex virus (HSV) infections are ubiquitous. In general infections are characterised by painful blisters which tend to recur at the same site. There are two different types of this virus, HSV 1 and HSV 2. HSV1 is usually found in the mouth and HSV2 in the genital area, although they are not confined to these areas. HSV1 is the more common infection and frequently occurs in children.

Primary HSV1 can be asymptomatic or can cause a painful blistering condition of the lips and mouth, gingivostomatitis (inflammation of the gums and mouth). The affected child can be quite ill with high fever and in severe cases have difficulty with eating and drinking. It lasts about 5 to 7 days and resolves spontaneously. HSV1 usually recurs as cold sores, which recur at the same site. Other manifestations of infection with HSV1 include a herpetic whitlow, a blistering infection around the nail fold, herpetic keratitis – infection of the eye and rarely herpetic meningitis – a devastating meningitis associated with serious morbidity and mortality. HSV2 is the most common cause of genital herpes and causes recurrent painful blisters in the genital area. The presence of genital herpes in the pre-pubertal child must raise the suspicion

of child sexual abuse. Infants born to mothers with active genital herpes are at risk of acquiring infection which in its mildest form, may manifest as localised blistering of the skin, or can be so severe as to result in death.

What causes it?

Herpes simplex (HSV) is yet another member of the Herpes family of viruses.. There are six viruses in this family HSV1, HSV2, the Epstein-Barr virus (EBV) which causes infectious mononucleosis or glandular fever, the chickenpox virus and human herpes virus 6, the virus which causes roseola. All of them share the ability to persist in cells of the infected individual, long after the acute infection has resolved.

Who gets it?

Most of us acquire HSV1 at some stage in our lives. Anyone can acquire HSV2 if they are exposed to it.

How is it passed?

HSV is spread by direct contact with infectious secretions. The virus is present in the blisters during an acute episode and is shed in the saliva. For transmission, the infectious secretions must come in contact with either cut or abraded skin or mucus membranes (the linings of the mouth, eyes, rectum, and vagina).

How is it diagnosed?

The blisters are quite typical of the infection and most cases can be diagnosed by looking at them. The virus can be grown from the blister fluid if confirmation of the diagnosis is needed.

How is it treated?

A specific antiviral drug is available to treat HSV infection and is of benefit in the treatment of serious infections. Its role in the more trivial infections is less clear. The decision to initiate treatment depends on the clinical situation and must be decided by the treating doctor.

Should children be excluded?

Children with gingivostomatitis who are drooling should be excluded (most of these children will be too ill to attend). Exclusion of children with cold sores is not necessary.

When can children return?

When the lesions are crusted over.

How to stop spread?

- Wash hands.
- Staff with cold sores should keep them covered where possible and should avoid touching them with their hands.

3.4 Diseases spread through blood contact

3.4.1 ***Hepatitis B infection***

What is it?

Hepatitis B is a serious viral infection that affects the liver. Typical symptoms include loss of appetite, nausea, fatigue, malaise, jaundice (yellowing of the whites of eyes), joint pains and occasionally skin rashes. Thirty three to fifty percent of people who develop hepatitis B will have symptoms, in some these can persist for months. About 1% of those infected develop a rapidly progressive lethal infection. In many cases the initial infection is asymptomatic. Although most people get over their infection and develop immunity to it, some remain chronic carriers of the virus and can transmit the infection to others even at a time when they are not acutely ill. Carriers of hepatitis B are also at risk of developing irreversible liver damage, cirrhosis and liver cancer. Symptoms of acute infection usually develop 45 to 160 days after exposure.

What causes it?

It is caused by the hepatitis B virus. This virus has different structural components called antigens. By examining the pattern of antigens in the blood of an infected person and by examining the pattern of antibodies made by the body in response to the antigens, the stage of infection and how contagious the person is can be determined.

Who gets it?

Children born to infected mothers and individuals who have direct contact with infected secretions (e.g. primarily blood and genital contact) can become infected. The risk of infection is very high for drug users, their sexual partners, men who have sex with men, and anyone who has unprotected sex with an infected person. Hepatitis B is much more infectious that HIV.

How is it passed?

Contact with infected blood, sexual contact, and transmission from an infected mother to her infant, are the main ways that this infection is spread. Although the hepatitis virus has been found in almost all body secretions, only blood, genital fluid and saliva have been found to be infectious. For transmission to occur there must be contact between the infectious secretions and cut or abraded skin or mucous membranes. The main risk of infection is from the chronic carrier who does not look or feel ill but whose blood and body secretions are infectious to others. In general the levels of virus in saliva are low and the risk of transmission through contact with saliva is small. The main groups of people at risk of acquiring infection are drug users who share needles (the needles become contaminated with blood), people with multiple sex partners, and health care workers. Transmission to children and staff from carriers in schools has only rarely been documented.

How is it diagnosed?

A variety of blood tests are used to make the diagnosis.

How is it treated?

There is no specific treatment available. **It is a preventable disease.** There is a safe and effective vaccine available to prevent hepatitis B and this should be given to all at risk of infection. This vaccine can also be used to prevent transmission to infants born to infected mothers. Some countries recommend universal immunisation of all children against hepatitis B. However, in Ireland it is current policy to immunise only those individuals at high risk of infection. Infants born to hepatitis B infected mothers or into households where the risk of infection in high should be immunised.

Should children be excluded?

In general children with hepatitis B infection **do not need to be excluded** from the classroom. However the decision to admit or exclude a child must be individualised based on the age and behaviours of the child. Children who habitually bite or who have medical conditions that might facilitate transmission, such as bleeding eczema, may require a more supervised situation. In general hepatitis B poses little risk within the school setting and provided correct procedures for handling potentially infectious secretions are adopted hepatitis B carriers can be admitted to school or day care without restriction.

Staff who are acutely ill with hepatitis B should remain at home until they feel well and fever and jaundice are gone. Staff who are chronic carriers of hepatitis B who have open sores that cannot be covered should not attend until such sores are healed.

How to prevent spread?

- Follow normal procedures for the handling of all potentially infectious body fluids. **Blood and mucosal secretions should always be considered potentially infectious.** Good handwashing after contact with anyone's blood or secretions is the best preventive measure.
- If there are known hepatitis B carriers within the school strongly consider notifying the staff (while respecting the confidentiality of the child) and reminding them of the availability of hepatitis B vaccine.
- Consider notifying other parents of children within the same class (again respecting confidentiality of the child in question) and alerting them to the availability of hepatitis B vaccine.
- Do not permit sharing of personal items such as toothbrushes or other objects, which might be contaminated with blood or saliva.
- Clothing contaminated with blood from any child should be placed in a plastic bag and sent home with the child for appropriate cleaning.
- Use the bleach solution for cleaning surfaces contaminated with blood or saliva.
- Treat all blood spills as outlined above (page 22).
- If a specific exposure to hepatitis B is recognised, e.g. a staff member or child is bitten by a known carrier of hepatitis B, refer the exposed person to their doctor. Use of immunoglobulin and hepatitis vaccine immediately following exposure can be effective in preventing infection.
- If your school cares for many hepatitis B infected children, an immunisation programme for all non-immune personnel and children should be considered.

Remember: The precautions you take to prevent acquisition of hepatitis will also protect you against HIV. Hepatitis B is much more infectious than HIV. Hand-washing following exposure to blood or secretions is the most effective preventive measure.

3.4.2 ***Hepatitis C Infection***

Hepatitis C is another blood borne virus, which affects the liver, the significance of which has been increasingly realised over the past number of years.

Who gets it?

Same as for hepatitis B (see page 48).

How is it passed?

Same as for Hepatitis B (see page 48).

How is it diagnosed?

Blood tests are used to make the diagnosis.

How is it treated?

There is no specific treatment available.

Should children be excluded?

Same as for Hepatitis B (see page 49).

How to prevent spread?

- Follow normal procedures for the handling of all potentially infectious body fluids.
- Blood and mucosal secretions should always be considered potentially infectious.
- Good hand-washing after contact with anyone's blood or secretions is the best preventive measure.
- Do not permit sharing of personal items such as toothbrushes or other objects which might be contaminated with blood or saliva.
- Clothing contaminated with blood from any child should be placed in a plastic bag and sent home with the child for appropriate cleaning.
- Use the bleach solution for cleaning surfaces contaminated with blood or saliva.
- Treat all blood spills as outlined above (page 22).

3.4.3 ***HIV/AIDS infection***

What is it?

Human Immunodeficiency Virus (HIV) is the virus which causes the Acquired Immune Deficiency Syndrome (AIDS). Infection with this virus results in a gradual weakening of the immune system. As the immune system weakens, the infected person becomes less able to fight off infection. The infected person will eventually develop a variety of symptoms, some related to the virus itself and some related to the weakened immune system. Not all symptoms will appear in any one person. **All of the symptoms can be caused by things other than**

HIV. All of these symptoms are more often related to causes other than HIV infection. Experiencing one or more of these symptoms does not necessarily mean that you are infected. However, if you believe that you may have been exposed to the virus and if you develop any of these symptoms then you should consider going for testing.

In children the most common symptoms of HIV infection are:
- Swelling of the lymph glands (in the neck, underarm and groin)
- Enlargement of the liver and spleen
- Frequent bacterial and viral infections
- Development of rarer opportunistic infections (these are the infections which do not normally cause problems in a person with a healthy immune system but which act as opportunists, taking advantage of the weakened immune system, in someone with AIDS).
- Development delay or deterioration in cognitive function (this may show up as a falling off in school performance, inability to concentrate, poor memory and reduced learning capacity, or behavioural problems in the school-room).
- Poor growth and poor weight gain.

HIV is particularly dangerous because there is usually a lengthy period between becoming infected and developing symptoms. During this period the infected person looks and feels well but can pass the virus to others. In adults that time from infection to developing symptoms may be 7 to 10 years or more. In children the progression is generally more rapid, nonetheless there are children who acquired infection at birth who have remained relatively well into the early teenage years.

How is it passed?

The 3 recognised routes of HIV transmission are:
- **Sexual contact**
- **Blood contact**
- **Mother to infant transmission**

Sexual contact

On a global basis, heterosexual transmission is by far the most common route of spread of this virus. The virus is present in semen, cervical, and vaginal fluids and it passes during exchange of these fluids. Any form of sexual intercourse between an infected and uninfected person puts the uninfected person at risk of infection. Use of barriers to prevent infected secretions from entering the uninfected person can reduce this risk.
The condom has proved to be the most effective barrier in preventing the spread of sexually transmitted HIV. Its efficacy in preventing the spread of sexually transmitted HIV is enhanced by the simultaneous use of spermicides, which are also virucidal (i.e. they kill viruses).

Some sexual practices appear to carry a higher risk of transmitting infection than do others; anal intercourse is riskier than penile-vaginal intercourse, but the potential for transmission exists with any form of unprotected intercourse. Transmission may also occur if there is contact between the mouth and the genitals. No case of transmission through saliva has been doc-

umented.

Blood contact

As HIV lives in the blood, activities which put you directly in contact with the blood of an infected person are hazardous. Needle sharing during drug use is the most common way that HIV is spread in Ireland. The needle acts as transporter for the virus, allowing blood from an infected individual get access into the bloodstream of an uninfected person. **Becoming blood brothers is one activity, not uncommon among children, which should be actively discouraged as it carries the potential risk of transmission of blood borne infections.**

Historically, transfusion of contaminated blood products was an important route of transmission of HIV, however, introduction of routine blood screening has virtually reduced this risk to zero. Blood transfusion remains an important route of transmission in developing countries. In some countries, the high frequency of infection in the community, coupled with the lack of resources necessary for routine testing of donated blood, results in a blood supply that is frequently contaminated.

Mother to infant transmission

HIV can pass from mother to infant during pregnancy, at delivery and through breast feeding. A system of routine linked antenatal HIV testing, with consent from the mother, was introduced in antenatal clinics in Ireland in 1999. All infants born to HIV infected mothers are **HIV positive** at birth. **Not all infants born to HIV infected mothers are infected with the virus.** In Europe only 15 to 25% of infants born to infected mothers are infected. The concept of an infant who is **HIV positive** but **not infected** gives rise to a lot of confusion and merits explanation.

The HIV test detects antibodies (the body's reaction) to HIV in a person's blood. It is an indirect way of determining the presence of the virus. In adults these antibodies are only made in direct response to the virus and thus the presence of HIV antibodies indicates infection. All infants receive antibodies from their mothers towards the end of pregnancy. This is part of the natural protection given by mothers to their infants to help them through the first months of life. Any antibody test in a newborn is therefore a test of the mother's antibody status. As part of the protective package, all infants born to HIV infected mothers will receive maternal antibodies directed against the HIV virus, regardless of whether or not the virus actually infects the infant. Thus all infants born to HIV infected mothers will test HIV positive during the first months of life because of the presence of maternal antibodies. Maternal antibodies are gradually lost over the first 6 to 18 months of life and in uninfected infants the HIV test will turn negative as these antibodies are lost, usually by 18 months of age.

In the infected child, however, the presence of the virus in the infant continues to stimulate an antibody response (the infant now makes his/her own antibodies to HIV) and so the test remains positive, even beyond 18 months of age. Thus, for infants, unlike adults, having a positive HIV test does not necessarily indicate infection and the test does not accurately reflect the infection status until the infant is older than 18 months of age.

HIV is not spread by

- Hugging
- Kissing
- Shaking hands
- Sitting next to someone who is infected
- Sneezing
- Sharing restaurant facilities with infected people
- Swimming in public swimming pools
- Using public toilets
- Sharing a classroom with an infected person
- Insect bites.

HIV is not easily transmitted. The virus is not hardy and does not survive for long outside the body unless it is maintained in a favourable environment (it can survive in blood for considerable periods of time). The virus is destroyed by drying, heating and bleaching.

Who gets it?

Anyone can get HIV infection if they have sex with an infected person or come in direct contact with the blood (e.g. through needle-sharing) or genital secretions of an infected person. Health care workers who have direct contact with the blood of infected patients, either by a needle stick injury or mucous membrane contact with infected blood, have also become infected although the risk of infection after a needle stick injury is low (0.03%).

Children can get HIV infection if they are born to a HIV infected mother, if they received contaminated blood products, of if they are sexually abused by a HIV infected person.

How is it diagnosed?

Your doctor can take a small sample of blood (about a tea-spoon) and send it to the laboratory for testing.

How is it treated?

There is currently no cure for HIV infection, however, there are a number of treatments which aim to slow disease progression and to prevent the complications of this condition. Efforts are also being made to find a vaccine to prevent or retard infection.

Should children be excluded?

Children with HIV/AIDS should attend school in the normal way as long as their general health permits. The presence of HIV infection is not per se a reason for exclusion.

The attendance of children at school should be restricted if:

- A child has weeping or bleeding skin lesions which cannot be kept covered or controlled medically.

- A child is prone to biting of such severity that the bite would be accompanied by the actual transfer of blood from the biter to the bitten. This would require a blood source in the biter, e.g. if the biter had persistently bloody gums and mouth and that the skin of the bitten would actually be broken.
- A child who is at risk of being severely bitten by another child such that his/her skin would be broken.
- A child who develops bloody diarrhoea.

In most cases these restrictions would be of a temporary nature until the health and/or behaviour of the child permitted his/her return to class.

How to stop spread?

HIV does not spread within the school environment. To date there are no documented cases of transmission either within school or through casual contact within households. Provided normal procedures for the handling of potentially infectious bodily fluids are followed the presence of HIV infected children within the school constitutes no threat to other children or to their teachers. As the HIV infected child cannot be readily differentiated from the uninfected child, all schools should implement infection control policies on a universal basis. This ensures the protection of staff and children regardless of whether the HIV infected individual, pupil or staff member, is identified. As part of the effort to prevent the spread of HIV and other infection children must be taught the basic concepts of infection (germs), its spread (how germs get around) and infection control (the part we play in stopping the germs getting around). Specifically children must be taught about infectious hazards (blood is yuck!, we don't touch blood, needles are dangerous etc) and warned not to pick up discarded needles, syringes, condoms etc.

Pertinent issues

Confidentiality

Parents must be assured of absolute confidentiality regarding disclosure of sensitive health information. Staff members should feel equally comfortable with such disclosures to their school principal. In reality most parents are concerned at the repercussion from such disclosures; that their child might be treated differently, discriminated against, ostracised or even barred from school. They are also concerned that this type of information would filter out into the community leading to further discrimination and hostility. Thus it is absolutely essential that confidentially is guaranteed. Each school should have a policy regarding the disclosure of such information to the child's primary teachers on a need to know basis and with parental consent. While it is important the child's teachers do know if a child has an immune deficiency, in order to protect the child from other infections, this does not necessarily require release of a child's HIV status unless parental consent is given. Notifying parents of other children, or teachers not directly involved in the care of the child, about the presence of a known or suspected HIV infected child within the school is unnecessary and unwarranted.

3.5 Vaccine preventable diseases (those not mentioned elsewhere)

There are a number of infections for which effective vaccines are available. Some, e.g. diphtheria, are now rarities and this reduction in incidence is directly attributable to the availability of an effective vaccine and the successful implementation of vaccination programmes. Others, e.g. measles, remain common despite the availability of an effective vaccine because people have been lax about bringing children for vaccination or have concerns about the vaccine.

Schools could play a major role in ensuring the effective implementation of vaccine programmes. If schools were to mandate completion of a primary immunisations series (such as that recommended by the Department of Health and Children) prior to school entry, a much higher percentage of children would be protected from these infections. Vaccines currently available and universally recommended include those against diphtheria, tetanus and whooping cough, polio, meningococcal C, Hib and measles, mumps and rubella (the MMR) (Table 2 – page 15). Vaccines against hepatitis A and B are available and recommended for those at high risk of infection.

Schools could play a further role in disease prevention and in stopping the spread of infection by recommending, if not mandating, that all staff have documented evidence of immunisation against diphtheria, tetanus, mumps, rubella and polio. Evidence of immunity to hepatitis A and, in some situations, to hepatitis B is also desirable.

3.6 Specific vaccine preventable diseases

3.6.1 ***Diphtheria***

What is it?

Diphtheria is a very serious bacterial infection, which affects the nose and throat. It can cause swelling so severe that breathing is blocked. The bacteria also produces a toxin (poison) that damages the heart and the nervous system.

Who gets it and how?

Only people who are not immune get diphtheria. Immunity follows either natural infection or immunisation. Diphtheria spreads from person to person through direct contact with infectious secretions, e.g. nasal and mouth secretions.

How is it diagnosed?

Swabs of the nose and throat can be taken and cultured for diphtheria.

How is it treated?

This is a potentially lethal infection and all patients should be hospitalised immediately. Treatment involves giving an antitoxin, to combat the effects of the toxin, and an antibiotic to get rid of the bacteria. Some people(carriers) can carry this bacteria in their nose and throats without developing symptoms of disease. All carriers should be treated with antibiotics.
Should children be excluded?

All patients and carriers should be excluded.

When can children return?

When they have received appropriate treatment and at least two cultures of their nose and throat have been negative for diphtheria.

How to stop spread?

Immunisation with diphtheria vaccine is the only effective control strategy and is part of the primary immunisation series recommended for all children (Table 2 – page 15).
If a case should occur in your school, notify the local community health services so that contacts of the infected person can be traced and antibiotics and/or vaccine given as appropriate.

3.6.2 ***Tetanus***

What is it?

Tetanus (lockjaw) is a serious nervous system disorder caused by the production of a toxin (poison) by the tetanus bacteria, *Clostridium tetani.* These bacteria live in the soil, in human and in animal intestines. They can enter the body through contaminated wounds or cuts and produce a potent toxin that damages the nervous system. Symptoms include severe generalised muscle spasms, paralysis and even death. These spasms frequently affect the jaw muscles making it difficult for the affected person to open their mouths, hence the name 'Lockjaw'. Tetanus usually develops 3 days to 3 weeks after infection.

Who gets it?

Anyone who does not have immunity and gets a cut or wound which becomes contaminated can develop tetanus. Cuts most likely to get infected are deep puncture type injuries especially if they are contaminated with soil and dirt.

How is it diagnosed?

In most cases tetanus is diagnosed based on the clinical picture.

How is it treated?

All wounds should be adequately cleansed and antibiotics given to eradicate the bacteria. A special antibody preparation, tetanus immunoglobulin, is also available to combat the effects of the toxin and in some cases an antitoxin is used.

How to stop spread?

Tetanus is not a contagious disease, thus infection control precautions aimed at stopping the spread of infection from person to person are not necessary. The risk of tetanus is reduced by cleaning all cuts and wounds well with soap and water and can be entirely prevented by immunisation. Tetanus vaccine is also part of the primary immunisation series recommended for all children (Table 2-page 15), however people can become infected with these bacteria at any age and it is important that adequate immunity is maintained.

3.6.3 ***Whooping cough***

What is it?

Whooping Cough (Pertussis) is a respiratory bacterial infection caused by the bacteria *Bordetella pertussis.* It can be a very serious infection in young infants and in children with lung or heart problems or other chronic illness. It usually begins as a mild chesty cold that progresses to severe paroxysms of cough. Typically recognised by the characteristic whoop that follows coughing spasms, complications include pneumonia, seizures and even brain damage. The illness tends to be less severe when it develops in an older child or adult. Disease typically develops 7 to 10 days after exposure and affected individuals are contagious for up to three weeks after symptom onset.

Who gets it?

Any non-immune individual is susceptible to infection. Immunity follows natural infection and immunisation.

How do they get it?

Whooping Cough is spread by close contact through aerosol droplets from the respiratory tract. The severe coughing spasms help spread the germs around.

How is it diagnosed?

Whooping Cough is usually diagnosed based on the clinical picture. The diagnosis can be confirmed by culturing the organism from respiratory secretions; however the organism is fastidious and can be difficult to grow in the laboratory. A blood count can be helpful in supporting the diagnosis.

How is it treated?

Antibiotics do not significantly alter the course of established infection, however, they do shorten the period of contagion and thus are recommended for all cases. Given early in the course, before the coughing paroxysms are established, they may improve symptoms and shorten the overall course of infection.

Should children be excluded?

- Symptomatic children with cough should be excluded until they have completed a five day course of antibiotics (Erythromycin) and are well enough to attend school.
- Non-immune children who are exposed should be carefully observed over the subsequent 14 days and excluded if coughing spasms develop.

When can children return?

Upon completion of a five day course of Erythromycin (the antibiotic of choice for this infection).

How to stop spread

- Immunisation of all children less than 7 years of age is key to preventing the spread of Whooping Cough. Whooping cough vaccine is part of the primary immunisation schedule

recommended for all children (Table 2 – page 15). Concerns were expressed that the Whooping Cough component of the 3 in 1 vaccine caused chronic brain damage.

The vaccine in use now is the acellular pertussis vaccine which causes less side effects. Booster immunisations include Diphteria, Tetanus and acellular Pertussis. The acellular Pertussis is added to the booster programme as it is a safe vaccine causing less local reaction and is given both for the protection of the child and to increase the immunity in the community.

3.6.4 ***Polio***

What is it?

Polio is a viral illness that ranges in severity from a mild flu like illness to meningitis, paralysis and even death. The World Health Organisation is committed to the global eradication of polio. Polio is now given by injection (IPV). Previously when polio virus was present in the population it was given by mouth so that immunity would take place quicker.

Who gets it?

Anyone who is not immune can get polio. The fact that there have been no recent cases of polio is directly attributable to improved sanitation standards and the efficacy of immunisation strategies. If either of these were to break down there would be a rapid rebound in the incidence of polio cases.

How do they get it?

Polio is one of a family of Enteroviruses, so called because they enter the system through the enteric system, the gut. The virus is present in respiratory secretions and in the stool and spread is through contact with infected secretions or infected stool.

How is it diagnosed?

The virus can be grown in the laboratory from infected body secretions (throat swab or stool sample), however, in most cases the diagnosis is made when the typical symptoms develop.

How is it treated?

There is no specific treatment for Polio and it is definitely a situation where prevention is the best cure.

Should children be excluded?

Yes. Exclusion is only warranted during the acute illness. Children or adults with chronic sequelae of polio do not need to be excluded.

When can children return?

People with polio should be excluded for 1 week after onset of symptoms or until the temperature has returned to normal.

How to stop spread?

Universal immunisation.

3.6.5 ***Measles***

What is it?

Measles should be as uncommon as polio or diphtheria. Effective vaccines are available. However, disappointing uptake of this vaccine has resulted in a situation where measles is a common illness, all too well known within the Irish school system.

It is a viral illness that typically begins as a cold with fever, runny nose and chestiness. After 1 to 2 days the typical reddish-brown measles rash appears beginning around the head and neck, and spreading over the rest of the body. It is a blotchy rash with the reddened areas often becoming confluent rather that remaining as discrete spots.

The whites of the eyes (the conjunctiva) are usually reddened and irritated and the infected child is miserable. Although well nourished and basically healthy children can be expected to recover from measles, complications including bronchitis, pneumonia, ear infection and even encephalitis (inflammation of the brain) can develop. Survivors of encephalitis can be permanently brain damaged. Subacute sclerosing panencephalitis (SSPE), is an ultimately lethal degeneration of the brain that becomes evident 7 to 10 years after the acute illness and is due to persistent measles infection within the brain. In severely malnourished children and in those with weakened immune systems measles is frequently lethal with death usually due to pneumonia or encephalitis. Symptoms develop 8 to 12 days after exposure and children with measles are infectious for 3 to 5 days before and up to 4 days after the rash appears.

Who gets it?

Non-immune children who are exposed to an infected person will catch measles. Most unimmunised adults will have had measles in childhood and be immune, thus most new cases occur in young children who have not yet reached the recommended age for immunisation or in older children who have not attended for immunisation.

How do they get it?

Measles is spread through infected droplets or through contact with infected nose and mouth secretions.

How is it diagnosed?

The rash is quite characteristic and readily recognised. During the first day the diagnosis can be confirmed by looking inside the mouth for the presence of greyish white spots on the gums. These so called ‘Koplicks spots’ only develop in measles.

How is it treated?

There is no specific treatment for measles.

Should children be excluded?

Yes.

When can children return?

On the fifth day after the appearance of the rash.

How to stop spread?

- If there is a case of measles within the school -
  - Notify all parents and advise them to bring any child who has not received at least one dose of MMR vaccine after 12-15 months of age for immediate immunisation. Prompt immunisation within 72 hours following exposure can provide protection.
  - Children at special risk of complications (e.g. children with immune deficiency or cancer) should be referred to their doctor to receive immunoglobulin, which can ameliorate the course of the infection.
  - Children with no documentary evidence of immunisation and who refuse immunisation should be excluded from school until 2 weeks after the onset of rash in the last case of measles.
  - If measles occurs where there are young infants at risk of exposure (e.g. in a daycare or pre-school), all infants older than 6 months of age should receive measles vaccine. Children who receive vaccine between 6 and 12-15 months of age must receive a second dose of vaccine after 12-15 months of age to ensure protection.
- Measles is spread through the respiratory route and by direct contact with infected secretion, thus normal precautions to prevent spread of infection transmitted in these ways should be enforced (see Page10). Measles is one of the most contagious of the childhood illnesses and the real way to prevent spread is to ensure that all children attending the school are immunised.

3.6.6 ***Mumps***

What is it?

Mumps is a viral infection. Typical symptoms include fever, headache, and swelling of cheeks caused by inflammation of the salivary glands. Meningitis (inflammation of the lining of the brain) can develop but usually resolves without problems. More rarely encephalitis (inflammation of the brain itself) and deafness can occur. In adolescent and adult males mumps can cause inflammation of the testicles (orchitis), but contrary to popular belief it is not a frequent cause of infertility. Mumps in early pregnancy is associated with an increased risk of miscarriage. Children are infectious for up to 7 days before the typical cheek swelling becomes obvious and remain infectious for up to 9 days after symptoms develop. Symptoms can develop from 12 to 25 days after exposure.

Who gets it?

Anyone who is not immune can catch mumps. Immunity follows natural infection and immunisation. Most unimmunised adults will have had mumps in childhood and be immune, thus most new cases occur in unimmunised children.

Mumps – how do they get it?

The mumps virus is found in saliva, respiratory tract secretions and in the urine. Most spread is via direct contact with droplets generated by sneezing and coughing.

Mumps – how is it diagnosed?

By recognition of the characteristic swelling of the salivary glands. The swelling commonly involves the cheek, under the chin and is often most noticeable at the angle of the jaw.

In about 33% of cases swelling does not develop and the infection may go unrecognised. The virus can be grown in the laboratory from infected secretions and blood tests can be used to confirm infection.

How is it treated?

There is no specific treatment for mumps.

Should children be excluded?

Yes.

When can children return?

Nine days after symptom onset.

How to stop spread?

- Immunise. If there is a case in the school notify parents and advise them to bring their children for immunisation. Unlike measles, immunisation following exposure will not protect from that exposure but it will protect from the second round of cases that can be expected if there is a significant number of unimmunised children in the school.
- Exclude children who refuse immunisation until 25 days after the last child with mumps develops the characteristic cheek/jaw swelling.
- Exclude children with acute infection until 9 days after onset of the cheek/jaw swelling.

3.6.7 ***Rubella (German measles)***

What is it?

Rubella is a viral infection which is relatively innocuous in childhood. Indeed, in up to 50% of cases the symptoms are so mild as to go unrecognised. It is important because it can cause severe congenital abnormalities and brain damage in infants of non-immune women who become infected during pregnancy. In childhood it causes a mild flu like illness, mild swelling of the glands, particularly those at the back of the neck and a fine pinkish red rash. Immunity follows natural infection and immunisation.

Who gets it?

Anyone who is not immune can catch Rubella. Immunity follows natural infection and immunisation. Many unimmunised adults will have had Rubella in childhood and be immune, however the consequences for the non-immune woman who contracts Rubella during pregnancy

are so severe that every effort must be made to ensure universal immunity prior to adulthood. The rationale for immunising all children and not confining immunisation to female children is to decrease the overall amount of Rubella within the community and thus lessening the risk of infection, even for unimmunised adults.

How is it spread?

Spread is via the respiratory route through direct contact with infectious droplets.

How is it diagnosed?

Often diagnosed when the characteristic rash is recognised, the diagnosis can be confirmed by a blood test.

How is it treated?

There is no treatment for Rubella and symptoms resolve over a few days.

Should children be excluded?

Children with recognised Rubella should be excluded.

When can children return?

Seven days after the appearance of the rash.

How to stop spread?

- Immunisation is the key and it is critical if cases of congenital Rubella are to be prevented.
- All female staff should know whether or not they are immune to Rubella. A simple blood test can tell if someone is susceptible to infection. Do not rely on memory to determine this, as there are several viral illnesses which can mimic Rubella.
- Exclude anyone with Rubella until 7 days after onset of the rash.

3.6.8 Additional Diseases: Vaccine Preventable

Additional diseases which could be included in this section on vaccine preventable diseases but which have been fully discussed within their relevant sections include Haemophulus influenza type b (Hib) disease (page 36), Meningococcal C disease (page 36), Hepatitis A (page 28) and Hepatitis B (page 48). A vaccine against chickenpox is under investigation.

4 Appendix I: List of useful contacts

Department of Education & Science Cornamaddy Athlone Co Westmeath Tel: 090 6483600	Department of Health & Children Hawkins House Dublin 2 Tel: 01 6354000
Health Protection Surveillance Centre (formerly National Disease Surveillance Centre) 25-27 Middle Gardiner Street Dublin 1 Tel: 01 8765300	Food Safety Authority of Ireland (FSAI) Abbey Court Lower Abbey Street Dublin 1 Tel: 01 8171300
Safefood 7 East gate Ave Eastgate, Little Island Cork Tel: 021 2304100	Health Service Executive Public Health Department of your local Community Services Contact details will be listed in the State Directory section of the Phone Book

5 Appendix II: Useful Websites

List of useful websites

Department of Education & Science	www.education.ie
Department of Health & Children	www.doh.ie
Health Protection Surveillance Centre (formerly National Disease Surveillance Centre)	www.ndsc.ie
Food Safety Authority of Ireland	www.fsai.ie
Food Safety Promotion Board	www.safefoodonline.ie
UK Public Health Laboratory Services	www.phls.co.uk
Centre for Disease Disease Control and Prevention (USA)	www.cdc.gov.com
World Health Organisation	www.who.int
Health Services Executive	www.hse.ie

6 Appendix III: Sample letters to parents and guardians

This section contains a standard letter that can be sent to parents and guardians of children where the school has been informed of a case of one of the following conditions;

- Bacterial Meningitis
- Chickenpox
- Head Lice/Nits
- Measles
- Mumps
- Ringworm
- Rubella (German measles)
- Scabies
- Scarlet Fever
- Strep Throat (Strep tonsillitis)
- Threadworms
- Viral Meningitis
- Whooping Cough (Pertussis)

The standard letter and the specific details of the condition and advice for parents can be photocopied.

6.1 Standard letter to parents

< Date >

Dear Parent or Guardian

There has been a case of <condition name> in your child's classroom and your child may have been exposed. Attached to this letter is important information about <condition name> and what you should do if your child develops any of the symptoms of <condition name>

Please read it carefully.

If you have any concerns or think your child may be affected please contact your doctor.

Sincerely

_____

6.2 Bacterial Meningitis

There has been a case of **Bacterial Meningitis** in your child's classroom and your child may have been exposed.

What is Meningitis?

Meningitis is an infection of the delicate linings that cover the brain and of the fluid in these linings. There are 2 types of meningitis:

- **Bacterial meningitis** is very serious and can be life threatening. It is caused by a number of different bacteria and needs urgent medical attention.
- Viral meningitis is caused by one of three viruses and will get better by itself.

The symptoms for both types of meningitis are the same.

What causes Bacterial Meningitis?

Meningitis is usually caused by one of three bacteria; Haemophilus influenza (Hib), pneumococcus, and meningococcus. There are a number of different meningoccocus bacteria. Each of these bacteria can also cause other serious infections such as septicaemia (blood poisoning), pneumonia and septic arthritis. If your child has been in close personal contact or shared breathing space with someone who gets meningitis caused by bacteria your child is at risk of getting meningitis.

When your child was a baby he/she should have been vaccinated against 2 of the bacteria that cause meningitis – Hib and Meningitis C.

What are the symptoms of Bacterial Meningitis?

It is very difficult for anyone other than a doctor to decide which type of meningitis a child or adult has. The first symptoms are the same for both types of meningitis. Symptoms often develop quickly and may include:

- High temperature
- Chills – shivering with a high temperature
- Severe headache
- Vomiting
- It hurts to move the head or neck
- The person may complain that light is hurting their eyes

With Bacterial Meningitis a rash can develop anywhere on the body. If your child develops a rash contact your doctor immediately.

What should I do now?

- Let your doctor know your child has been in contact with meningitis.
- If your child gets any illness with a high temperature over the next 3 weeks, bring them to your doctor. Remind your doctor that there was meningitis in the school.

If your child develops any of the symptoms of meningitis, at any time, contact your doctor immediately. If you cannot contact your doctor quickly, bring your child to the nearest Casualty department (A&E).

If your child has been in close contact with a child with Bacterial Meningitis the Doctor may recommend that he/she take an antibiotic called Rifampicin. Rifampicin will reduce your child's risk of infection. Children under 5 years of age who have not had the Hib vaccine and have been in close contact with a case of Hib meningitis may need to take Rifampicin.

Your doctor and local health clinic will be able to answer any further questions that you might have about Meningitis.

6.3 Chickenpox

There has been a case of Chickenpox in your child's classroom and your child may have been exposed. If your child has not had Chickenpox before it is quite likely that he/she will catch it.

What is Chickenpox?

Chickenpox is a common childhood illness. A high temperature and cold symptoms are often the first signs of illness, followed by the appearance of the typical rash. The rash starts as small pink bumps, around the neck, ears, back and stomach. The bumps will develop a little water blister, which will turn yellow and oozy and then crusty as it dries. The rash spreads across the whole body including the lower arms and legs. Some people will only have a few spots others could be covered with them.

Symptoms usually develop 8 to 21 days after exposure. The infected person can spread infection for up to 3 days before the rash appears and until the last pox is crusted and dry. Anyone who has had Chickenpox will not get it again.

Why should I be concerned about Chickenpox?

Chickenpox is usually a mild illness for most children although complications can sometimes develop. Chickenpox can be much more serious for anyone with a weakened immune system and for adults. Adults are more likely to develop complications from Chickenpox. Chickenpox infection in women who are in the early stages of pregnancy can result in congenital abnormalities in the infant.

If your child has a weakened immune system, please contact your Doctor to say that he/she may have been exposed to Chickenpox. There is an antibody preparation (VZIG) that can be given to prevent illness, but it must be given within 72 hours of exposure, so contact your Doctor promptly.

What should I do if I think my child has Chickenpox?

Arrange for your doctor to see the child and confirm the diagnosis. Do not bring the child to the surgery as this will just spread the infection further. Do not use Aspirin or any products that contain aspirin to control a high temperature. This has been associated with the development of a rare but serious disease called Reye's syndrome. Paracetemol can be used to control a high temperature.

- If your child is normally healthy, Chickenpox will probably be a mild illness and no specific precautions are necessary.
- If your child has a weakend immune system contact your doctor immediately. There is a medication called Acyclovir that may shorten the illness.
- If you or anyone in your family has a weakened immune system (for example from cancer or an organ transplant) contact your doctor immediately.

Can my child stay in school?

If your child develops Chickenpox they should not attend school until all the spots have crusted over. Children with spots that are crusted and dried can safely attend school as they are no longer infectious.

Your doctor and local health clinic will be able to answer any further questions that you might have about Chickenpox.

6.4 Head Lice

There has been a case of Head Lice in your child's classroom and your child may have been exposed. Head Lice can spread rapidly within a school unless all affected children are treated promptly. If all affected children are not treated quickly then other children that have already been treated could pick Head Lice up again.

What are Head Lice?

They are tiny greyish white insects that live in the hair and feed on the scalp. The female lays the eggs (the nits) on the hair close to the scalp. 7 to 10 days later the nits hatch and live for 20 to 30 days. The female can produce 250 to 300 eggs. The empty nits are white in colour. They remain firmly glued to the hair and become more obvious as the hair grows.

How could my child get Head Lice?

Anyone can pick up Head Lice. They are most common among children as they often put heads together during play allowing the lice walk from one head to the next. Lice can also be passed indirectly by using someone else's hairbrush, combs or hats. Head lice do not reflect standards of hygiene in the home or in the school. They are just as willing to live in clean or dirty hair.

How will I know if my child has Head Lice?

Head scratching is usually the first sign that a child has head lice. By the time a child begins scratching their head the lice have been there for quite a while. It is better to check your child's hair regularly.

You can do this using a special fine-toothed comb (available from any chemist). You should comb the hair carefully down onto a white towel or cloth. Adult lice can be removed in this way and will be seen as dark oval specks as they fall onto the towel. The hair should also be checked for the presence of nits, these are pearly grey specks smaller than a grain of caster sugar. They are most commonly found around the nape of the neck and behind the ears. They stick firmly to the hair. If you see a white speck on the hair shaft, gently place the hair between two fingers and slide the fingers down along it. Dandruff or dust will come away easily. Nits stick and can be felt as the fingers pass over them.

What should I do if I find lice or nits?

There are a number effective preparations, shampoos and lotions available at the chemist. It is important that the instructions are followed carefully.
Shampoos kill the head lice but do not kill the eggs and must be used repeatedly until all hatched nits are killed. Lotions will kill the nits and hatched lice if they are used correctly. Nits remaining in the hair after a treatment such as this should be dead. You can ensure that none have escaped by washing the hair with one of the anti-head lice shampoos 7 to 10 days after the initial treatment. Getting rid of the nits is difficult, a solution of vinegar and water applied to the hair helps loosen the nits which can then be removed using a fine-toothed nit removal comb.

Personal clothing, bed linens, and anything that might have become infested, should be washed in HOT water where possible. (The hot cycle of most washing machines is adequate). Brushes and combs should either be boiled for 10 minutes or soaked in a dilute bleach solution for 1 hour. As head lice pass rapidly from one family member to another it is a good idea to treat the whole family at the same time.

Your doctor or chemist will be able to answer any further questions that you might have about head lice and the available lotions and shampoos.

6.5 Measles

There has been a case of Measles in your child's classroom and your child may have been exposed. If your child has had Measles or has received the Measles vaccine (part of the MMR vaccine), the chance of him/her developing Measles is extremely low. If your child has not had Measles and has not been vaccinated then it is quite possible that he/she will develop Measles.

What is Measles?

Measles is a viral illness that begins with a runny nose, chestiness and high temperature. After 1 to 2 days a reddish-brown measles rash appears. It begins around the head and neck and spreads over the rest of the body. It is a blotchy rash with the reddened areas often joining together so that large areas of skin look red. The whites of the eyes are usually reddened and irritated and the child is miserable. Symptoms develop about 8 to 12 days after exposure to an infectious person. The child with Measles is infectious for 3 to 5 days before and for up to 4 days after the rash appears.

Why should I be concerned about Measles?

Most healthy children get over Measles without any problems. Some develop complications such as ear infections or pneumonia. More rarely, a child with measles can develop an acute brain inflammation (encephalitis) that can lead to permanent brain damage. A very small number of children develop a lethal brain degeneration that only becomes evident 7 to 10 years after the acute illness.

What should I do now?

If your child is normally healthy and has been vaccinated against Measles there is no need to worry.

If your child has not been vaccinated, bring them for vaccination immediately. This will not guarantee that they will not catch Measles this time, but it will protect them from future exposures.

If your child has any weakness of their immune system (has had cancer or other immune related problems) let your doctor know immediately that he/she has been exposed to Measles.

What should I do if I think my child has Measles?

Contact your doctor and arrange for him/her to see the child and confirm the diagnosis. Ask the doctor to see your child at home; do not bring the child to the surgery, as this will just spread the infection further.

Can my child stay in school?

Most children with Measles are too sick to attend school. Even if your child does not seem too ill, it is important that they stay at home until at least 5 days after the rash appears. This will stop the infection spreading to other children

How can I prevent Measles spreading in the family?

Anyone who has not had Measles or has not received the measles vaccine should go to the doctor to discuss vaccination.

Your doctor and local health clinic will be able to answer any further question that you might have about Measles and the Measles vaccine.

6.6 Mumps

There has been a case of Mumps in your child's classroom and your child may have been exposed. If your child has had Mumps or has received the Mumps vaccine (part of the MMR vaccine) the chance of him/her developing Mumps is extremely low. If your child has not had Mumps and has not been vaccinated, then it is quite possible that he/she might get Mumps.

What is Mumps?

Mumps is a viral infection. Symptoms include high temperature, headache, and swelling of cheek and jaw. Children are infectious for up to 7 days before the cheek swelling appears and remain infectious for 9 days after symptoms develop. Symptoms can develop from 12 to 35 days after exposure.

Why should I be concerned about Mumps?

Most healthy children get over Mumps with no problems. There are, however, a number of complications that can happen with Mumps. Meningitis (inflammation of the covering of the brain) can occur but usually passes without problems. More rarely encephalitis (inflammation of the brain itself) and deafness can occur. In teenage boys and men Mumps can cause inflammation of the testicles (orchitis). Contrary to popular belief Mumps is not a frequent cause of infertility. Mumps in early pregnancy is associated with an increased risk of miscarriage.

What should I do now?

If your child has either received the Mumps vaccine or has had Mumps there is no need for concern. If your child has not received the vaccine and has not had mumps, then you should bring them to the doctor for vaccination. The vaccine will not protect them if they have been exposed this time, but it will protect them in the future.

What should I do if I think my child has Mumps?

If your child develops swelling of the cheeks and jaw line bring them to your doctor for examination. Your doctor will be able to tell you if it is Mumps and will advise you what to do. There is no specific treatment for Mumps.

Can my child stay in school?

To prevent spread of Mumps to others, your child must stay at home for 9 days after the symptoms develop.

How can I stop Mumps spreading in the family?

Anyone who has not had Mumps or received the Mumps vaccine should go to the doctor to discuss vaccination.

Your doctor and local health clinic will be able to answer any further questions that you might have about mumps and the mumps vaccine.

6.7 Ringworm

There has been a case of Ringworm in your child's classroom and your child may have been exposed.

What is Ringworm?

Ringworm is a fungal infection of the skin that can affect different parts of the body. The way it looks depends on the part of the body that is affected. On the skin it is a roughly circular scaly itchy rash. Sometimes there may be small blisters and even pus filled spots. If it has affected the nails it causes them to thicken and discolour. On the scalp it often starts as a small bump, gradually spreading outwards and can lead to patches of hair loss. On the feet there may be cracking between the toes.

What should I do now?

Ringworm spreads through skin contact or through contact with infectious skin flakes shed into clothes or the environment. It can easily spread within a school. It is important that you check your child's skin and hair for the presence of any suspicious areas.

What should I do if I think my child has Ringworm?

If you see any suspicious areas on your child's skin or scalp, bring the child to your doctor. Your doctor will be able to decide whether or not it is Ringworm. Once the diagnosis is made treatment can be given.

Can my child stay in school?

Yes. To prevent the spread of infection to others it is important that he/she receives appropriate treatment.

Your doctor and local health clinic will be able to answer any further questions that you might have about Ringworm.

6.8 Rubella (German measles)

There has been a case of Rubella in your child's classroom and your child may have been exposed. If your child received the Rubella vaccine (part of the MMR), the chance of him/her developing Rubella is extremely low. If your child has not been vaccinated then it is quite possible that he/she might get Rubella.

What is Rubella?

Rubella is a mild viral illness that is not particularly serious for children. It causes a mild flu like illness with some swelling of the glands, particularly those at the back of the neck and a fine pinkish red rash. Adults can also develop painful joints (arthritis).

Why should I be concerned about Rubella?

If a pregnant woman develops Rubella the unborn baby may also be infected. Rubella infection in the unborn can cause severe mental retardation, eye defects, deafness, hearing problems and a wide variety of other congenital abnormalities.

Who can get Rubella?

Anyone who is not immune to it and who has contact with someone with Rubella can get Rubella. People who have either received Rubella vaccine (part of the MMR) or who have had Rubella are immune. A simple blood test can tell whether or not you are immune to it. Many viral illnesses have the same symptoms and can be mistaken for Rubella. You should not consider yourself immune unless you have had the blood test or been vaccinated.

What should I do now?

If you and your child have received Rubella vaccine or you have been tested and know that you are immune, there is no need for concern. If your child has not received the vaccine and has not had Rubella, bring them to your doctor for vaccination. The vaccine will not protect them if they have been exposed this time, but it will protect them in the future.

If you are pregnant or likely to become pregnant, please contact your doctor and find out if you are immune to Rubella. If you are not immune (and are not pregnant), then contact your doctor and arrange to get the vaccine.

What should I do if I think my child has Rubella?

If your child develops flu, with a fine red rash and swelling of the glands behind the ears, arrange for your doctor to see the child. Your doctor will be able to tell you if it is Rubella and will advise you what to do. If you suspect Rubella, do not bring the child into a crowded surgery waiting room, as this may only spread the infection further. There is no treatment for Rubella and symptoms resolve over a few days.

Can my child stay in school?

Children with Rubella must stay at home until at least 7 days after the appearance of the rash.

Your doctor and local health clinic will be able to answer any further questions that you might have about rubella and the rubella vaccine.

6.9 Scabies

There has been a case of Scabies in your child's classroom and your child may have been exposed. We are bringing this to your attention because Scabies can spread rapidly within a school unless all affected children are treated quickly.

What is Scabies?

Scabies is an extremely itchy rash caused by the presence of a tiny mite, Scarcoptes Scabiei. This mite burrows under the skin to lay its eggs. The rash is caused by the body's reaction to the mite and the scratching that occurs.

How could my child get Scabies?

Anyone can get Scabies. The mite passes from person to person through skin contact. Children playing together are especially likely to pass it from one to the other. The mites can also survive for about three days off the body. This means that they can be passed on through infected bedding or clothes. Scabies can quickly spread among family members.

How will I know if my child has Scabies?

If your child develops an itchy rash bring the child to your doctor. The doctor may be able to tell just by looking at the rash if it is scabies or may examine some skin scales under the microscope to make the diagnosis.

What should I do if my child has Scabies?

There are several different lotions and creams that kill mites available at the chemist. It is important to follow the instructions that come with the lotion carefully. It is a good idea to treat all family members at the same time even if there are no symptoms.

All clothing and bedding which has been used by the infected person in the 3 days before treatment should be washed in the HOT cycle of the washing machine. Items which cannot be easily washed, like pillows or stuffed toys, should be stored in tightly closed plastic bags for four days before using again. The mite cannot survive off the body for more than four days so the pillows or stuffed toys will be free of mites when taken out after 4 days

Your doctor or chemist will be able to answer any further question that you might have concerning scabies and the preparations available to treat it.

6.10 Scarlet Fever

There has been a case of Scarlet Fever in your child's classroom and your child may have been exposed. We are bringing this to your attention because occasionally if a child develops Scarlet Fever and is not promptly treated, complications can happen.

What is Scarlet Fever?

Scarlet Fever is a scattered red rash and high temperature caused by the group A streptococcus bacteria. Occasionally these bacteria can cause kidney or heart complications. Prompt treatment with an antibiotic usually prevents these complications. Treatment will also prevent spread to others.

What are the symptoms of Scarlet Fever?

A scattered red rash that is often most marked in the creases of the joints and over the stomach. It usually blanches (goes white) when pressed on. The skin may feel rough to the touch, sometimes described as feeling like sandpaper. Someone with Scarlet Fever will have evidence of a Streptococcus infection somewhere, usually in the throat or sometimes on the skin.

What should I do if I think my child has it?

If your child develops any of these symptoms bring him/her to your doctor for examination. Tell the doctor that another child in school has Scarlet Fever.

If my child has Scarlet Fever what should I do then?

The doctor will prescribe an antibiotic for your child. It is important that the child takes the full course of medicine. The child can return to school when they have finished 1 full day of the antibiotic. This will prevent the spread of infection to others.

Can other members of the family get it?

Yes.

What can I do to prevent the spread infection in the family?

Streptoccocus bacteria is spread through contact with nose and mouth secretions so:

- Wash hands thoroughly after wiping nose.
- Wash hands thoroughly before preparing or eating food.
- Wash dishes well in hot soapy water.
- Do not share cups, straws, spoons, eating utensils etc.
- Do not share toothbrushes.

Your doctor will be able to answer any further questions that you might have concerning Scarlet Fever or other Streptococcus infections.

6.11 Strep throat (strep tonsillitis)

There has been a case of Strep throat in your child's classroom and your child may have been exposed. We are bringing this to your attention because untreated infections can sometimes lead to complications

What is strep throat?

It is a sore throat caused by the group A streptococcus bacteria. Occasionally it can cause kidney or heart complications. Prompt treatment with an antibiotic usually prevents these complications. Treatment will also prevent it spreading to others.

What are the symptoms of Strep throat?

The symptoms can include:

- A very sore throat (like swallowing barbed wire)
- A high temperature
- Chills – shaking with a high temperature
- Swollen and tender neck glands
- Headache and stomachache may also happen.

What should I do if I think my child has it?

If your child develops any of these symptoms bring him/her to your doctor for examination. Tell the doctor that another child in school has strep throat. A simple throat swab can tell if your child needs treatment.

If my child has Strep throat what should I do then?

The doctor will prescribe an antibiotic for your child. It is important that the child takes the full course of medicine.

Can my child go to school?

The child can return to school when they have finished 1 full day of the antibiotic. This is necessary to prevent the spread of infection to others.

Can other members of the family get it?

Yes.

What can I do to prevent the spread of strep throat?

Streptococcus bacteria is spread through the contact with nose and mouth secretions. To reduce the risk of infection:

- Wash hands thoroughly after wiping nose.
- Wash hands thoroughly before preparing or eating food.
- Wash dishes well in hot soapy water.
- Do not share cups, straws, spoons, eating utensils etc.
- Do not share toothbrushes.

Your doctor will be able to answer any further questions that you might have concerning Strep throat or other streptococcus infections.

6.12 Threadworms

There has been a case of Threadworms in your child's classroom and your child may have been exposed. We are bringing this to your attention because Threadworms can spread rapidly among children unless all affected children are treated quickly.

What are Threadworms?

The Threadworm is a common parasite, which at some time will cause infection in almost every child.

How could my child get Threadworms?

Anyone can become infected with Threadworms. Threadworms live in the intestine. The adult female worm leaves the intestine at night to lay her eggs on the skin surrounding the anus. Irritated by the presence of the eggs children scratch their bottoms, picking up the eggs onto their hands in the process. These eggs are then carried to the mouth, swallowed, and once in the intestine they can hatch and mature into the adult worm.

Eggs are easily passed on to other people in the same way, by touching someone else's food or putting fingers into someone else's mouth. The eggs can survive for up to 2 weeks and can be transferred by bedding and clothes.

What should I do if my child has Threadworms?

There are a number of treatments available for Threadworms and some are available without prescription. Threadworms are easily passed on to other members of a family so it is a good idea to treat all family members at the same time even if there are no symptoms. The treatment should be repeated after two weeks to make sure it has worked. After treatment all bedding and underwear should be washed in the hot cycle in the washing machine to destroy any eggs.

Your doctor or chemist will be able to answer any further questions that you might have about worms and the preparations available to treat them.

6.13 Viral Meningitis

There has been a case of Viral Meningitis in your child's classroom and your child may have been exposed.

What is Viral Meningitis?

Meningitis is an infection of the delicate linings that cover the brain and of the fluid in these linings. There are 2 types of meningitis:

- **Bacterial meningitis** is very serious and can be life threatening. It is caused by a number of different bacteria and needs urgent medical attention.
- **Viral meningitis** is caused by one of three viruses and will get better by itself.

The symptoms for both types of meningitis are the same.

What causes Viral Meningitis?

A number of different viruses can cause Viral Meningitis. Most of the commonly involved viruses reach their peak activity during the summer so infection is more common during the warmer months

Although the early symptoms are similar, Viral Meningitis is different to the much more serious and potentially lethal bacterial meningitis. Children and adults with Viral Meningitis can be quite ill but they will get better without any specific treatment.

What are the symptoms of Viral Meningitis?

It is very difficult for anyone other than a doctor to decide which type of meningitis a child or adult has. The first symptoms are the same for both types of meningitis. Symptoms often develop quickly and may include:

- High temperature,
- Chills – shivering with a high temperature,
- Severe headache,
- Vomiting,
- It hurts to move the head or neck,
- The person may complain that light is hurting their eyes.

Many cases of Viral Meningitis are accompanied by a fine pink rash over the body. This may cause confusion, as it can resemble the rash found in the much more serious Bacterial Meningitis.

What should I do now?

Because it can be very difficult to distinguish between Viral Meningitis and the more serious Bacterial Meningitis, all children with symptoms of Meningitis need to be seen by a doctor immediately. Let your doctor know that the child has been in contact with a case of Viral Meningitis.

What should I do if I suspect Meningitis in my child?

If your child develops any of the symptoms of meningitis, at any time, contact your doc-

tor immediately. If you cannot contact your doctor quickly, bring your child to the nearest Casualty department (A&E).

Your doctor and local health clinic will be able to answer any further questions that you might have about Viral Meningitis.

6.14 Whooping cough (Pertussis)

There has been a case of Whooping Cough in your child's classroom and your child may have been exposed. If your child has not been vaccinated against it or not had Whooping Cough, then it is possible that he/she will get it.

What is Whooping Cough (Pertussis)?

Whooping Cough is a lung infection that can be very serious in young infants and in children with lung or heart problems or other chronic illness. The illness tends to be less severe when it develops in an older child or adult. It usually begins as a mild chesty cold which develops into a severe cough. It is recognised by the whoop that follows coughing spasms. These spasms help to spread the germs around. There are a number of possible complications including, pneumonia, seizures and even brain damage. The illness normally develops 7 to 10 days after exposure. The person will be contagious for up to three weeks after the symptoms develop.

What should I do now?

If you have any children in the house who have not received the full series of vaccines, contact your doctor or local health clinic to discuss vaccinations. Watch older children and adults for symptoms which usually develop about 1 week after exposure. Taking the antibiotic Erythomycin as soon as symptoms start can shorten the illness. This will also help stop the illness from spreading to other people

What should I do if I think my child has Whooping Cough?

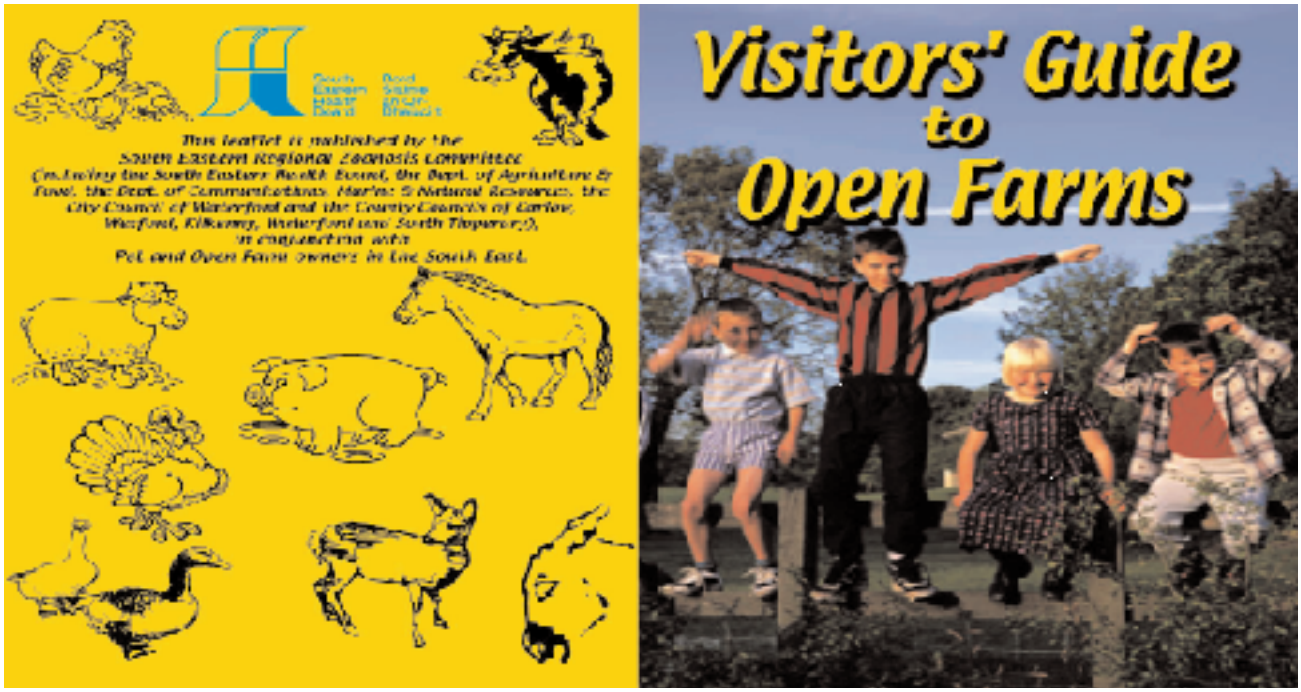
Arrange for your Doctor to see the child and confirm the diagnosis. Do not bring the child to the crowded surgery waiting room, as this will just spread the infection further.

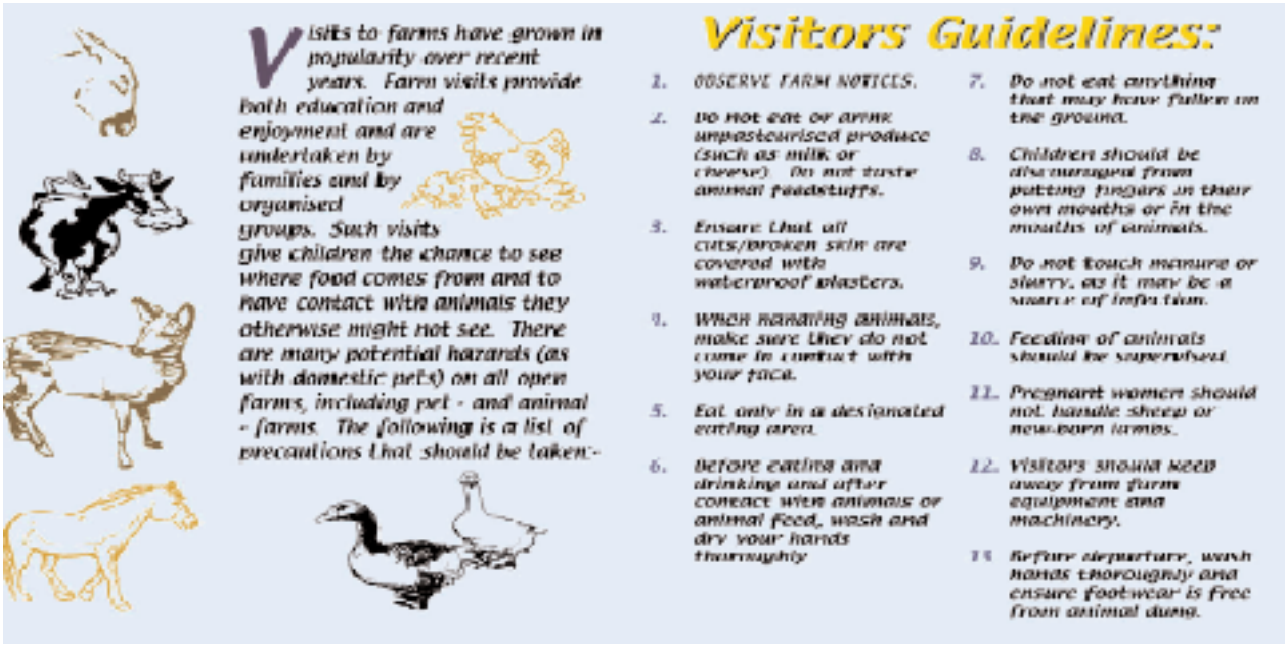
Can my child stay in school?

Many children with Whooping Cough are too sick to attend school and are more comfortable at home. Children with Whooping Cough should stay at home until they have finished a five day course of antibiotics and are well enough to attend school.

Your doctor and local health clinic will be able to answer any further questions that you might have about Whooping Cough and Whooping Cough vaccine.

7 Appendix IV: Visitors Guide to Open Farms





8 Appendix V: Hand-washing Guidelines

Hand-washing prevents infection.

The hands are considered to be one of the main routes of spread of germs. Some activities expose people to germs or the opportunity to spread them. Good hand-washing by you and your family will help to stop the spread of germs.

Always wash your hands thoroughly:

- Before preparing food or bottles or feeding children.
- Before eating.
- After handling raw meat or vegetables.
- After coughing, sneezing or using a handkerchief.
- After using the toilet, assisting a child at the toilet or changing a baby's nappy.
- After handling pets, pet cages or other pet objects.
- When hands are visibly dirty.

Cover cuts and sores on hands with a waterproof dressing when working in the kitchen and change the dressing when it is soiled or wet.

How to wash hands:

- Use warm running water in an unstoppered sink. Use bar or liquid soap. It is not necessary to use antibacterial soap.
- Wet hands thoroughly and apply soap. Smooth evenly over hands. Be sure to include between fingers, tops of fingers, back and palms of hands.
- Rub hands together vigorously to get a soapy lather and continue rubbing for at least 15 seconds (ideally 30 seconds).
- Rinse hands under warm running water.
- Dry hands using a clean towel. Wet towels can spread germs and they should be changed frequently. It is advisable if possible, that a person with diarrhoea and vomiting use a paper towel for drying hands in the bathroom after using the toilet.
- Taps are handled by soiled fingers and therefore should be cleaned frequently. If a paper towel is used to dry hands, it can be then used to turn off the tap. Discard the paper towel into a plastic bag in the refuse bin.
- When assisting your child in hand-washing, either hold the child (if an infant) or stand the child on a safety step at a height at which the child's hands can hang freely under the running water. Assist the child to wash hands as described above and then wash your own hands.

Cleaning of toilet when a person has diarrhoea and vomiting:

- Clean the toilet seat and flush handle frequently with warm water and household detergent and dry afterwards. Use paper towels and discard them into a plastic bag in the refuse bin.
- Wash your hands afterwards.

Toys:

- Wash toys with warm water and detergent if your child has diarrhoea and vomiting.

Guidelines reproduced courtesy of the former South Eastern Health Board.

Palm to Palm.

Right palm over back of left hand
& vice versa.

Interlace fingers of right hand
over left & vice versa.

Rotational rubbing, backwards & forwards
with clasped fingers of right hand in left
palm. Change hands & repeat.

Rotational rubbing of right thumb
clasped in left palm, change
hands & repeat.

Grasp left wrist with right hand
and work cleanser into skin,
then vice versa.

Rub hands and wrists for 30 seconds, then rinse and dry thoroughly.