Objectives

When you have completed this unit you should be able to:

- List both the common and dangerous upper respiratory tract conditions.
- Recognise these clinical conditions.
- Understand the causes of these conditions.
- Provide primary care management for these conditions.
- Refer children with these conditions appropriately.

Introduction

6-1 What is the upper respiratory tract?
The upper respiratory tract (URT) consists of:

- The nose, sinuses and adenoids
- The throat, pharynx and tonsils
- The middle ear and eustachian tubes

Therefore, the respiratory tract above the larynx is called the upper respiratory tract.

6-2 What is the lower respiratory tract?
The lower respiratory tract consists of:

- The larynx
- The trachea and large bronchi
- The small bronchi (bronchioles)
- The alveoli.

Therefore, the respiratory tract from the larynx down is called the lower respiratory tract.

Common Cold

6-3 What is a common cold?
The common cold (coryza or acute viral rhinitis) is an acute viral infection of the nasal passages. It is the commonest infection in childhood. The throat, middle ear and sinuses may also be involved. Many children have five or more common colds a year.

6-4 What is the cause of a common cold?
Usually a rhinovirus. However, many other viruses can also cause the common cold. Children get repeated common colds as immunity to one virus does not give protection against other viruses. The viruses causing the common cold are infectious and can be passed from person to person by sneezing and coughing (droplet spread). The virus is then inhaled and infects the lining of the nasal
passages. The virus can also be spread by hand to hand contact. One person coughs into their hand, and later hold hands with someone else who then rubs their nose. In this way the virus is spread from the nose of one person to another. The common cold is particularly frequent in young children who attend a crèche or play group, nursery school or school for the first time. Here children are exposed to viruses they have not met before. The patient is often infectious for a day or two before the signs and symptoms of a common cold appear.

**NOTE** As there are more than a hundred subtypes of rhinovirus, one child can repeatedly catch a common cold.

**6-5 What are the signs and symptoms of the common cold?**

- A blocked or runny nose
- Sneezing
- Watery eyes
- Mild fever
- Mild cough

Usually the common cold presents with a runny nose, nasal discharge and sneezing. The eyes become watery and a mild fever is common. Initially the nasal discharge is clear and watery but later becomes thicker and white or yellow. After a few days the nose becomes blocked and nasal breathing may be difficult, especially at night or while breastfeeding. Sleep is commonly interrupted. A mild cough is common and caused by mucous running down the back of the throat (post-nasal drip). The symptoms and signs of a common cold clear up in a week. Usually there are no complications of a common cold.

A very sore throat suggests pharyngitis or tonsillitis while high fever, muscle pains and feeling very unwell suggest influenza rather than a common cold.

A blocked nose with a green (purulent) discharge on one side in a generally well child suggests a foreign body.

**6-6 What are the complications of a common cold?**

The viral infection may spread to:

- The sinuses
- The middle ear
- The throat
- The lower respiratory tract, causing bronchitis, bronchiolitis or pneumonia

The viral infection may become complicated by a bacterial infection. Then the clear nasal discharge will become purulent (green).

The viral infection may also trigger an asthma attack in children who suffer from asthma.

Viral complications are most common in infants as they have an immature immune system with little resistance to many viruses.

**6-7 How can the common cold be prevented?**

There are no practical methods of avoiding the common cold other than trying to avoid contact with other people suffering from a common cold. It is best if children with a common cold be kept at home for a few days to recover and avoid infecting others.

**6-8 What is the management of a common cold?**

Usually no treatment is needed. Make sure the child drinks enough fluid. Frequent, small feeds are best. Appetite is often poor for a few days. Older children can blow their nose, but saline nose drops help to clear the nose in infants and young children. Keeping the room warm and raising the head with pillows may help at night. Paracetamol syrup will lower fever. Aspirin should not be used in children.

Decongestant nose drops for a few days or an oral decongestant (e.g. Actifed) are only practical to help a blocked nose in older children. Antibiotics are not indicated unless there is a secondary bacterial infection. Suspect a complication if the child develops a high fever, severe cough or breathes fast.
Antibiotics are not indicated for a common cold.

**ACUTE SINUSITIS**

6-9 What is acute sinusitis?

This is an infection of the lining of one or more of the air sinuses that develop around the nasal cavity in older children (especially the maxillary sinuses). Sinusitis is usually caused by a bacterial infection, which complicates a common cold. The common cold virus causes swelling of the mucus membranes lining the sinuses. As a result, mucous in the sinuses cannot drain normally and secondary bacterial infection starts a few days after the signs of the common cold.

Acute sinusitis is uncommon in preschool children as their facial sinuses are not yet fully formed. Sinusitis is usually acute but can become chronic. Less commonly sinusitis may complicate allergy.

6-10 What are the symptoms and signs of sinusitis?

- A green (purulent) nasal discharge
- A feeling of fullness or pain over one or more of the sinuses (to the side and above the nose)
- Headache and tenderness over the infected sinus
- Post-nasal drip with a cough. Secretions drain from the sinuses when the child lies down. This irritates the throat and bronchi causing a cough, especially when the child lies down to sleep.

6-11 What is the treatment of sinusitis?

1. Oral antibiotics for 10 days. Amoxycillin is usually used
2. Paracetamol for pain and discomfort
3. Steam inhalation by breathing in warm, moist air in a warm shower or over a bowl of hot water. Do not use boiling water or steam as the child may be burned.
4. Nasal decongestant drops or spray

If the sinusitis does not disappear in 10 days or becomes recurrent, refer the patient to an ENT specialist/clinic. Repeated sinusitis suggests an allergy. Chronic sinusitis is not common in children.

**ALLERGIC RHINITIS**

6-12 What is allergic rhinitis?

Allergic rhinitis is an allergy of the lining (mucosa) of the nose and may present like a common cold. There are two forms of allergic rhinitis:

1. Seasonal allergic rhinitis (hay fever). This is only present during part of the year, e.g. spring and early summer.
2. Persistent allergic rhinitis. This occurs all year round.

6-13 What are the symptoms and signs of allergic rhinitis?

Both forms of allergic rhinitis present with:

- Repeated sneezing
- A blocked nose with a watery nasal discharge
- Red, swollen eyes (allergic conjunctivitis)

Seasonal rhinitis also has itching of the nose, eyes, ears and soft palate. Itching is uncommon in persistent rhinitis.

Children with persistent allergic rhinitis usually have a pale face with blue colouration of the lower eyelids. Due to upward rubbing of the nose they often have a crease at the base of the nose.

6-14 What is the cause of allergic rhinitis?

Usually pollens or fungal spores inhaled from the atmosphere in seasonal allergic rhinitis. Pets or house dust mite which are present all year usually cause persistent allergic rhinitis.
Commonly there is a family history of allergies (rhinitis, asthma and eczema).

6-15 What is the management of allergic rhinitis?

1. Try to identify and avoid any likely cause (allergens).
2. Use newer non-sedating oral antihistamine drugs (e.g. Zyrtec).
3. Avoid decongestant nose drops.
4. Steroid nasal spray is very effective, especially in persistent allergic rhinitis.

Note: Desensitisation is very effective if the allergic rhinitis is due to a single cause, e.g. grass pollen or house dust mite.

PHARYNGITIS AND TONSILLITIS

6-16 What is pharyngitis?

Infection and inflammation of the pharynx (throat). This is a common condition.

6-17 What are the causes of pharyngitis?

Usually a virus (about 90% of cases). Pharyngitis may also be caused by a bacteria such as Group A Streptococcus. It is not possible to clinically differentiate between a viral and streptococcal pharyngitis.

Note: Infectious mononucleosis due to infection with the Epstein-Barr virus may also cause a pharyngitis, often with a membrane. Diphtheria is a rare cause of membranous pharyngitis. Bacterial infection can be diagnosed if a throat swab is taken for culture.

6-18 What are the symptoms and signs of pharyngitis?

Pharyngitis presents with:

- A sore throat. This is the main symptom.
- Pain on swallowing. Young children may refuse to eat.
- Fever
- Enlarged, tender cervical lymph nodes
- Abdominal pain is common in young children
- Mild cough

The symptoms usually disappear within 5 days.

On examination the throat is very red (inflamed). The mucus membrane of the back of the throat appears swollen and granular.

Often it is difficult to differentiate between pharyngitis and a common cold as the symptoms overlap. However, a sore throat without a blocked or runny nose suggests a pharyngitis.

Note: A membrane on the pharyngeal mucosa suggests diphtheria. This is a rare infection as most children are immunised with DPT. Children with diphtheria are usually severely ill. Children with glandular fever may also have a membrane.

6-19 What are the complications of pharyngitis?

- Tonsillitis
- Spread of the infection to the middle ear or the lower respiratory tract (bronchitis, bronchiolitis or pneumonia)
- Streptococcal pharyngitis may cause acute glomerulonephritis and acute rheumatic fever.

Note: A Group A beta haemolytic Streptococcal infection of the pharynx is an important cause of acute glomerulonephritis and rheumatic fever, especially in poor communities. The clinical diagnosis of a Streptococcal pharyngitis can be difficult without a bacterial culture.
**6-20 What is the management of pharyngitis?**

1. Make sure that the child has an adequate fluid intake.
2. Paracetamol syrup for pain and fever.
3. Antibiotics are not indicated unless there is severe pharyngitis (very sore throat) without signs of a common cold. Oral penicillin, amoxycillin or erythromycin for 5 days is usually preferred.

**6-21 What is tonsillitis?**

If a child with enlarged tonsils gets pharyngitis, the tonsils also become inflamed. This is called tonsillitis. Tonsillitis is usually seen in children between the age of 2 and 10 years. It may be caused by either a viral or bacterial (Streptococcal) infection.

**6-22 What are the signs of tonsillitis?**

The same as pharyngitis. However, both tonsils are swollen and red. There may be yellow spots (follicles) or an exudate (yellow mucoid covering) on the tonsils. With very swollen and inflamed tonsils, the airway may become narrow.

The tonsils normally grow and enlarge in young infants as part of the development of their immune system. Normally the size of the tonsils decreases by 10 years of age. Tonsillitis is more common in children with large tonsils. However, many children have enlarged tonsils without repeated attacks of tonsillitis.

Usually tonsillitis recovers within a week. However, tonsillitis may become recurrent or chronic.

**6-23 What is the management of tonsillitis?**

1. Paracetamol syrup for pain and fever
2. Penicillin, amoxycillin or erythromycin for 10 days

The indications for tonsillectomy are:

- Repeated severe tonsillitis
- Tonsillar abscess
- Severe airway obstruction

Unless there is severe airway obstruction, enlarged tonsils alone is usually not an indication for tonsillectomy.

Tonsillectomy for repeated attacks of tonsillitis remains controversial. While occasional tonsillitis is not an indication for tonsillectomy, it has been suggested that more than 5 attacks of tonsillitis per year is a reasonable indication for tonsillectomy.

**6-24 What are the signs and management of enlarged adenoids?**

Adenoids are situated at the back of the nose and cannot be seen without special instruments. They enlarge up to the age of about 7 years and then spontaneously become smaller. Enlarged adenoids may obstruct the nasal airway. This causes snoring, frequent waking at night, mouth breathing, nasal speech, and chronic secretory otitis media. Poor sleep may affect schooling. Mild enlargement of the adenoids requires no treatment but adenoidectomy (removing the adenoids) is indicated for signs of severe upper airway obstruction, especially snoring and sleep apnoea (stopping breathing during sleep).

**Note** Large adenoids can be diagnosed on a lateral X-ray of the neck. Sleep apnoea due to enlarged adenoids is an important condition, as it causes nocturnal hypoxia, and must be urgently treated by adenoidectomy.

**Snoring and sleep apnoea are important reasons for adenoidectomy.**

**OTITIS MEDIA**

**6-25 What is otitis media?**

It is an infection and inflammation of the middle ear. Usually otitis media is acute but it can become chronic. Otitis media is more common in bottle-fed infants, especially with
‘bottle-propping’, when milk can run into the eustachian tube (the narrow tube connecting the middle ear to the pharynx).

Acute otitis media is caused by viruses and bacteria that reach the middle ear from the pharynx via the eustachian tube. The important bacteria are Pneumococcus, Haemophilus, Moroxella and Streptococcus. With a common cold, swelling of the mucosa may block the eustachian tube and cause a build up of fluid in the middle ear where bacteria can thrive.

6-26 What are the symptoms and signs of acute otitis media?

This is a common infection in children, especially children under 5 years of age. Acute otitis media presents with:

- Sudden onset of severe pain in the ear (earache). Infants become irritable, cry and may pull at the affected ear.
- Fever, often above 39 °C.
- On examination, the eardrum is red and bulges with loss of the normal light reflex. The pain is not made worse if the pinna (external ear) is pulled.
- The eardrum may perforate (rupture) resulting in pus pouring into the external ear canal (otorrhoea). The pain is often relieved when the drum bursts.
- Otitis media often presents a few days after the onset of a common cold or pharyngitis.

6-27 What is the management of acute otitis media?

1. Paracetamol for pain and fever.
2. Oral antibiotics for 10 days. Usually amoxycillin is used.
3. If there is no decrease in pain and no drop in fever after 24 hours of antibiotics, the child should be referred to an ENT (ear, nose and throat) clinic.
4. Follow up to make sure that the otitis media has fully recovered.
5. Ear drops and oral decongestants do not help.

With correct treatment, perforation of the eardrum should heal within 2 weeks. Failure or incorrect treatment may lead to chronic suppurative or secretory otitis media.

**NOTE** In older children, acute otitis media will often recover without antibiotics. If severe otitis media does not respond to antibiotics, surgical drainage of the middle ear may be required. Children under 2 years should always be given antibiotics.

6-28 What is chronic suppurative otitis media?

Chronic suppurative otitis media is diagnosed if pus has been draining from a perforation in the eardrum for more than 2 weeks. The hole in the eardrum is now unlikely to heal on its own. Complications of chronic suppurative otitis media include destruction of the bones in the middle ear leading to conductive deafness, mastoiditis and bacterial meningitis or brain abscess.

It is very important to prevent chronic suppurative otitis media by the correct management of children with acute otitis media. Always be alert for signs of mastoiditis (swelling and tenderness over the bone behind the ear), especially in older children. Mastoiditis (infection of the mastoid bone) is a dangerous condition which needs urgent referral to hospital for antibiotics and possible surgical drainage.

6-29 What is the management of chronic suppurative otitis media?

The aim is to treat the infection and keep the ear dry so that the perforation in the eardrum can heal:
1. Oral antibiotics, usually amoxycillin or cotrimoxazole for 10 days.
2. Clean the external canal at least twice a day with a cotton bud to keep it dry. Using a cotton wick to dry the external canal is very useful (wicking).
3. Avoid swimming or showering.
4. Ear drops are of little help.

Refer to an ENT specialist/clinic if the ear continues to drain after 2 weeks of treatment, if the condition recurs or if you suspect a complication.

6-30 What is chronic secretory otitis media?

Chronic secretory otitis media or ‘glue ear’ is a common and important cause of deafness in young children. Chronic infection in the middle ear and enlarged adenoids can lead to obstruction of the eustachian tube with the collection of a thick, sticky effusion in the middle ear. This results in the eardrum being sucked inwards due to the absorption of the air in the middle ear. The thick fluid prevents the bones in the middle ear from vibrating normally. This interferes with normal hearing. Chronic secretory otitis media can delay speech development and result in learning difficulties at school. On examination, the eardrum is dull and retracted. Either one or both ears may be affected. Pain is uncommon. Chronic secretory otitis media is uncommon over the age of 10 years as the eustachian tube becomes wider with improved drainage of the middle ear with increasing age.

6-31 What is the management of chronic secretory otitis media?

1. A 10 day course of oral antibiotic to clear any remaining infection.
2. If there is no improvement after 3 months, refer the child to an ENT specialist.

Note: An audiogram to assess for hearing loss is important, especially if the hearing is abnormal in both ears. An ENT specialist may insert a grommet (small plastic tube) into the eardrum to allow the fluid to drain. With correct treatment normal hearing returns.

6-32 What is otitis externa?

Otitis externa is an infection of the external ear canal (not a true upper respiratory tract infection). It may be caused by a viral, bacterial or fungal infection, a complication of a skin condition (e.g. eczema) or a foreign body. Otitis externa may complicate chronic suppurative otitis externa as the draining pus irritates the skin of the external canal.

- With mild otitis externa the ear is itchy but the external canal appears normal.
- With moderate otitis externa the ear is painful with a purulent, smelly discharge. The pain is worse if the pinna (external ear) is pulled. On examination the external canal is red and contains debris. Partial obstruction of the external ear canal may cause mild deafness.
- With severe otitis externa the ear is very painful with deafness due to complete obstruction of the canal. On examination the external canal is red and swollen.

A boil in the external canal or mumps may also present with earache.

6-33 What is the treatment of otitis externa?

1. Mild and moderate otitis external can be treated locally with ear drops for 10 days. Combined steroid and antibiotic drops give the best results (e.g. Sofradex). Any debris should be removed with a cotton bud or syringing (water at body temperature) before instilling the ear drops. Locacorten-Vioform drops can also be used. The infection is usually cured by one week. Oral antibiotics are usually not needed. Swimming and showering should be
upper respiratory tract infections

avoided to keep the canal dry. Recurrence is common.
2. With severe otitis externa the canal should be packed with a cotton wick soaked in ichthammol and glycerine to reduce the swelling. Then the infection can be treated as above.
3. A boil in the external canal can be very painful and should be treated with oral flucloxacillin.

**EPIGLOTTITIS**

6-34 What is the epiglottis?
The epiglottis is positioned at the opening of the larynx to prevent the inhalation of fluids and solids when swallowing. It lies at the meeting point of the upper and lower respiratory tract.

6-35 What is epiglottitis?
An acute infection of the epiglottis, is usually caused by *Haemophilus influenzae*. The epiglottis becomes very swollen and may obstruct the airway. This is a rare but very serious condition which may rapidly cause death unless correctly diagnosed and rapidly treated. Children with acute epiglottitis also have a *Haemophilus influenzae* septicaemia. Acute epiglottitis due to *Haemophilus influenzae* can be prevented by Hib immunisation of all children. Do not confuse *Haemophilus influenzae* (a bacteria) with the influenza virus.

**Acute epiglottitis is an extremely serious condition which can be prevented with Hib immunisation.**

6-36 How is acute epiglottitis recognised?
It usually occurs in children between two and 5 years of age. The onset is sudden with:
- High fever. These children appear very sick and may be shocked due to the septicaemia.
- Drooling. They have a very sore throat and are unable to swallow or even open their mouth. This is a very important sign. They usually are unable to speak, cry, cough or drink.
- They have progressive airway obstruction. Characteristically, the children sit up, leaning forward with the neck extended to keep the airway open.
- Changing their body position or trying to examine the throat may cause total airway obstruction.

**Acute epiglottitis is the one upper respiratory tract condition that can present with respiratory distress due to airways narrowing.**

6-37 How must acute epiglottitis be managed?
1. Allow the child to adopt a position that he prefers to keep the airway open.
2. Move the child urgently to a facility where intubation or tracheotomy under general anaesthetic is possible. Thereafter, intensive care is needed to make sure the artificial airway remains open.
3. Intravenous chloramphenicol or cefotaxime to treat the epiglottitis and septicaemia.

With the correct antibiotics, the swelling of the epiglottis decreases and the child can usually be extubated after 48 hours.

**Acute epiglottitis is a medical emergency.**

**INFLUENZA**

6-38 What is influenza?
Influenza, or ‘flu,’ is a common upper respiratory tract infection caused by the influenza virus. However, many other viruses can present with similar symptoms and signs of a ‘flu-like’ illness. Influenza usually occurs in epidemics. These may be very serious and
cause many deaths. Like the common cold, the influenza virus is spread by coughing, sneezing and direct hand-to-hand contact. Influenza usually presents 1 to 3 days after infection.

**NOTE** As it is difficult to clinically tell whether a patient is infected with the influenza virus or another virus, such as rhinovirus, it is better to speak of a flu-like illness unless there is a proven epidemic of influenza infections at the time.

**6-39 What are the symptoms and signs of influenza?**

The onset is usually sudden, with:

- Fever
- A blocked nose and sore throat
- Tiredness, weakness and a general feeling of being unwell
- Headache
- Muscle ache
- Cough

The symptoms are worse for the first 5 days and usually recover by 10 days. Complications of influenza include otitis media, bronchitis and pneumonia. Children may develop convulsions caused by the high fever (pyrexial fits).

**6-40 What is the management of influenza?**

Influenza can be prevented by a recent influenza immunisation (especially if given just before the winter months).

1. Bed rest.
2. Make sure the child has an adequate amount to drink.
3. Paracetamol for fever, headache and muscle pains.
4. Antibiotics are only indicated if a secondary bacterial infection is suspected, e.g. pneumonia.

**NOTE** As the influenza virus continually changes, one can have repeated attacks of influenza. It is also important to have immunisation which covers the virus that is current that year. Immunisation is particularly important in children with chronic lung disease, e.g. asthma and cystic fibrosis.

**6-41 How can acute respiratory conditions be prevented?**

A number of important steps can be taken to both prevent and reduce the severity of acute upper and lower respiratory tract infections:

- Reduce environmental smoke. The source may be active or passive cigarette smoking or the smoke of indoor fires in poorly ventilated homes.
- Immunise against measles, diphtheria, whooping cough and *Haemophilus influenzae* in all children. Also immunise selected children with influenza and pneumococcal vaccines.
- Decrease overcrowding in homes and schools. This will lessen the exposure to many acute respiratory tract infections.
- Promote breastfeeding as exclusive breastfeeding, prevents and reduces the severity of respiratory infections.
- Give vitamin A as a depot injection or as an oral supplement.
- Improve the nutritional status of all children.
- Educate the public, especially parents, to recognise the signs of severe respiratory tract conditions so that these children can be given early, correct management.

**CASE STUDY 1**

A 4-year-old child is taken to a family doctor. The mother says he has had a blocked nose, is eating poorly and sleeping badly for the past 2 days. On examination he has a mild fever and is generally unwell. There are no signs of pneumonia or otitis media. He attends a crèche where a number of children have been sick.

1. **What is the most likely diagnosis?**
   A common cold

2. **What is the probable cause?**
   A rhinovirus
3. What is the likely source of the infection?
Other children at the crèche. Many children have at least 5 common colds a year.

4. Should this child be given an antibiotic?
No. There is no indication that the child has a bacterial infection.

5. What management is needed?
Paracetamol for fever. Make sure he has enough to drink. Keeping the room warm and raising to head of the bed may reduce nasal obstruction at night. Most colds get better in a few days. Nose drops, other than saline drops, and oral decongestants are usually not helpful in young children.

6. What is the likely diagnosis if a child is partially deaf after a common cold?
Secretory otitis media, with a collection of fluid behind the ear drum.

CASE STUDY 2

A 5-year-old boy presents with fever and a very sore throat. On examination his tonsils are enlarged and swollen. The mother reports that this is the second sore throat he has had in 6 months and asks that his tonsils be removed.

1. What is your diagnosis?
Acute tonsillitis.

2. What is the cause?
Probably a viral or bacterial infection. However, as there is no history of a common cold, the tonsillitis may be due to a bacterial (Streptococcal) infection.

3. Should the child be given a course of antibiotics?
It is very difficult clinically to differentiate between a viral and bacterial infection of the pharynx and tonsils. Therefore, many doctors would give an antibiotic.

4. What are the serious complications of a bacterial pharyngitis or tonsillitis?
Acute glomerulonephritis and acute rheumatic fever. Tonsillitis can also result in a tonsillar abscess.

5. Should his tonsils be removed?
Probably not. The indications for tonsillectomy are severe airway obstruction, tonsillar abscess and repeated tonsillitis (more than 5 attacks a year).

6. What should you think of if a child with a very sore throat has difficulty swallowing and appears severely ill?
Acute epiglottitis. They have a high fever, often drool and keep their head in a fixed position. This is an acute emergency as they may totally obstruct their airway.

7. What treatment is needed?
Emergency referral for intubation or tracheotomy under general anaesthetic. Allow the child to hold his head in any position that he prefers. Start intravenous antibiotics.

CASE STUDY 3

Following a runny nose for 3 days, a young infant develops a high fever and severe pain in one ear. The next day the child seems better and pus is seen in the external canal of that ear.

1. Why did the child have severe earache?
Due to acute otitis media.

2. Why did the pain suddenly improve?
The ear drum ruptured.
3. Why did this child develop acute otitis media?

As a complication of a common cold. Bacteria can reach the middle ear via the eustachian tube. Blockage of the eustachian tube during a common cold causes an ideal environment for bacteria to grow in the middle ear.

4. What treatment should the child have been given?

A course of antibiotics. This probably would have avoided the ruptured ear drum.

5. What will happen to the hole in the child’s eardrum?

With antibiotic treatment it should heal within 2 weeks. If not, the child must be referred. If the hole in the ear drum does not heal, the child will have chronic suppurative otitis media. This may lead to deafness with destruction of the bones in the middle ear.

6. What dangerous complication may follow chronic suppurative otitis media?

Mastoiditis. This presents with tenderness over the mastoid bone behind the ear. Mastoiditis is dangerous as it may result in a brain abscess or bacterial meningitis.

CASE STUDY 4

A 10-year-old child has been ill for 4 days with a high temperature, headache, blocked nose and muscle pains. His younger brother had a similar illness the week before.

1. What do you think is the problem?

Influenza.

2. What is the cause?

The influenza virus.

3. Why is this not a common cold?

Because the child has a high fever, headache and muscle pains.

4. How is the illness spread?

By coughing and sneezing (droplet spread). It may also be spread by hand to hand contact. One person coughs into their hand, and later hold hands with someone else who then rubs their nose. In this way the virus is spread from the nose of one person to another. The influenza virus almost certainly was spread from the younger brother.

5. What is the correct treatment of influenza?

Bed rest, plenty of fluids and paracetamol. Usually an antibiotic is not needed unless a complication develops such as pneumonia.

6. Can influenza be prevented?

Influenza immunisation in autumn greatly reduces the risk of infection.

7. What complications may young children have with a high fever due to an upper respiratory tract infection?

Febrile convulsions (pyrexial fits).