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## IAPB Briefing Paper

# Integrating eye health into school health programmes



International Agency for the Prevention of Blindness



The purpose of IAPB Briefing Papers is to inform IAPB members and others about important and emergent issues affecting VISION 2020: The Right to Sight.



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### Abstract:

Initiatives to improve the health of school children are expanding in coverage and scope, and it is important to integrate eye health into these initiatives. Information about common eye conditions which can affect primary school children and their younger siblings at home are outlined below, together with ideas of how schools programmes can address them.

### Approaches to improving the eye health of children through schools:

1. There are conditions which can affect primary school age children and where school programmes can play a role in prevention, or in detection and referral for treatment.

#### These conditions are:

- |                    |                      |
|--------------------|----------------------|
| a. allergies       | c. eye injuries      |
| b. red sticky eyes | d. refractive errors |

2. There are other conditions which also affect pre-school age children, where school going children can play a role in the community and in their families, by taking health messages and ideas about healthy behaviours back home, after they have been taught in schools.

#### These conditions are

- |                         |             |
|-------------------------|-------------|
| a. vitamin A deficiency | b. trachoma |
|-------------------------|-------------|

Teachers themselves may have eye problems, particularly difficulty in reading (presbyopia), which affects nearly everyone above the age of 40 years. Teachers may also have other eye conditions, such as glaucoma, which if detected early can be treated to prevent serious loss of vision.

## Allergic eye disease



*Severe allergic eye disease: affects both eyes*

Allergic eye disease can be easily confused with conjunctivitis: in both conditions the eyes appear red and watery. However, with allergic eye disease the eyes are very irritable and itchy, and the child rubs their eyes a great deal.

There are two forms of allergic eye disease: one is very mild and gets better on its own. This type of allergy is often associated with sneezing, marked watering of the eyes and a watery discharge from the nose. In this type of allergy there is often a specific plant or food which the child is allergic to, and so it may come and go.

The more severe form of allergic eye disease in children is called vernal catarrh. These children often have other allergies such as eczema, which affects the skin, or asthma, which is associated with wheezing. This condition is commoner during primary school age and tends to improve after puberty. The eyes may be red, sensitive to light and watery for months at a time. The white of the eye may appear lumpy, and the eyes can develop a brownish red colour.

It is not really possible to prevent these conditions. Children with the severe form of the disease can be treated with eye drops to reduce their symptoms and prevent visual loss.

### **What the child might complain of and what you might notice:**

In both forms of allergy you will notice that the child has red watery eyes which they rub a great deal and which are sensitive to light. In the severe form the symptoms may persist for a long time, and may even lead to loss of vision.

### **What can be done in schools:**

It is important that children with the severe form of the condition are identified and referred to an eye unit. Parents often purchase eyedrops from local pharmacies but if the drops contain steroids they can be very damaging to the eyes, leading to cataracts and glaucoma.

All children suspected of having the severe form of allergic eye disease should be referred to the nearest health facility. If they cannot manage the child he or she should be referred to the nearest health facility with eye services.

As with other forms of red eye, traditional remedies should not be used as they can damage the eyes.

## Red sticky eyes



*Bacterial conjunctivitis: both eyes are affected,  
with thick discharge*

The conjunctiva is the thin, transparent membrane that covers the front, white part of the eye and the under surface of the eyelids. Infection of this membrane is called conjunctivitis and it is the commonest cause of red, sticky eyes. The infection makes the blood vessels in the conjunctiva dilate, and so the eyes appear red, and the infection causes a discharge.

The commonest cause of conjunctivitis in children of primary school age is a viral infection. Both eyes are usually infected and become red and watery. The child may also have a sore throat and swollen glands in the neck. The infection does not usually cause any long term problems and gets better on its own in a few days. Sometimes there can be epidemics of viral conjunctivitis which sweep through communities. In West Africa this is called “Apollo” and sometimes it can cause more severe infection, leading to multiple small haemorrhages in the conjunctiva. This can be alarming, leading communities to resort to traditional remedies. These should always be avoided as they can cause extreme damage to the eye, leading to blindness.

Bacteria can also cause conjunctivitis: the discharge is thicker and yellower and can affect only one eye. It can occur after a foreign body has entered the eye, following mild injury, or as a consequence of using a traditional remedy which has introduced infection.

### **What the child might complain of and what you might notice:**

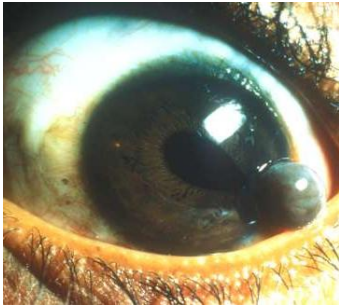
Sore, watering eyes that may be sensitive to light; eyelids may be stuck together in the mornings.

### **What can be done in schools:**

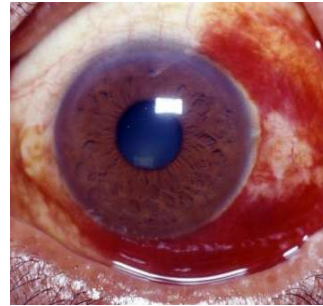
1. *Teach children about conjunctivitis so they understand what causes it, and the dangers of using traditional remedies, or even eye drops prescribed for someone else or bought from local pharmacies.*

2. Make sure that there are supplies of tetracycline eye ointment in the school which can be used 3 times a day to infected eyes. The ointment is inserted by gently pulling down the lower lid, and instilling the ointment inside the lower lid. Tetracycline eye ointment will treat bacterial infection and will help to make the eyes more comfortable in viral conjunctivitis. If after 2-3 days the eyes are still very red, or the symptoms are getting worse then the child should be referred to the nearest health facility. If the child complains of marked pain then the child should be referred as he or she may have a more severe disease.
3. If there is an epidemic of conjunctivitis in the community and children in the school become infected the options are to try and reduce the spread of infection by asking those children not to come into school until they are better, or closing the school until the epidemic passes.

## Eye injuries



*Misshapen pupil as a result of a full thickness injury to the cornea*



*Bleeding under the conjunctiva after blunt injury*

The eyes can be injured in a variety of ways: through blunt injury – from balls, fists or sticks. Sharp objects can also injure the eye, often giving more severe injuries e.g. from sharp pointed objects such as pencils, or from pangas, knives etc. These injuries fortunately usually only affect one eye. Chemicals can also cause injury to the eyes, as can the use of some traditional practices which entail putting plant material, seeds or infusions into the eye. Injuries from these causes often affect both eyes.

Injuries often take place in the home, during play or while undertaking sport. Serious injuries are unlikely to occur during school hours, particularly in primary school where children are not exposed to hazardous substances as part of their curriculum. However, children may come to school with a history of injury, and it is important that the right action is taken.

### **What the child might complain of and what you might notice:**

Depending on the cause of the injury, the child may or may not complain, or explain what is wrong. If you suspect injury because of bruising around the eye try to find out what happened.

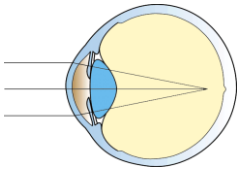
Assess the severity of the injury, by asking whether the child can still see normally in the affected eye(s); is the pupil round, black and in the centre of the eye or is it misshapen (as in the image above). If the injury appears to be severe, put a pad on the eye and refer the child to the nearest eye clinic.

### **What can be done in schools:**

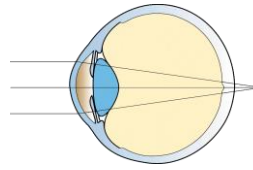
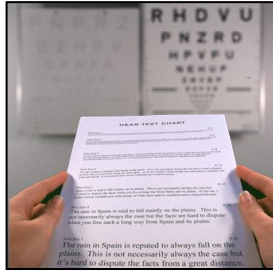
- Teach children how to avoid injuring their eyes, by being careful when using sharp objects e.g. not running when carrying a pencil pointing upwards

- Teach children that they should never use eye drops prescribed from someone else in their own eyes
- Teach children about the potential harm of traditional eye remedies that involve putting anything in the eyes. Even infusions or plant material can introduce infection which can make the condition worse
- Have a “first aid kit for eyes”, which would include a sterile eye pad and sticking tape which can be used to cover the eye while the child is travelling to the eye clinic if they have a serious injury.

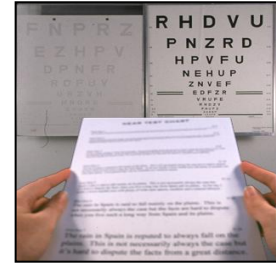
## Refractive errors



*Myopia: near vision clear,  
distance vision blurred*



*Hyperopia: distance vision  
clearer than near*



Refractive errors lead to vision that is out of focus and blurred. There are three main types of refractive error:

- Myopia, or short sightedness. In this condition the vision is clear for near objects but the vision is out of focus and blurred for distance vision.
- Hyperopia, or long sightedness: This condition is the opposite of myopia. The vision is clearer for distance vision than for near vision
- Astigmatism: In this condition the front of the eye (the cornea) is not perfectly curved and is slightly misshapen. This means that the vision is equally blurred for distance as for near viewing.

None of these types of refractive error are common in children aged 6-10 years, particularly in Africa. Studies show that myopia starts around puberty and tends to increase over the next few years, so that by the time children are 15 years of age, the number of children affected, and the severity of the myopia, is much greater than among primary school children.

### **What the child might complain of:**

Children with blurred vision usually do not complain because things being out of focus is normal for them. Children with even quite severe refractive errors do not know that other children can see better than they can and so they do not complain. Children with hyperopia may complain of headaches.

### **What you might notice:**

Myopia: there are several things you may notice. The child may narrow their eyes when they are looking at objects in the distance (e.g. the blackboard), or you may notice them copying from the book of the child sitting next to them even though everything has been written on the blackboard because they cannot see it. Another thing you may notice is that



when they are reading they hold the book abnormally close to their eyes. There is nothing specific that you will notice with children with hyperopia or astigmatism.

## **What can be done in schools:**

### **Include refractive error in the school curriculum.**

Before taking any action in school it is important to find out where the nearest eye clinic is with staff and facilities for assessing the type and degree of refractive error and prescribing/providing the correct spectacles. It is also important that they are able to access spectacles of high quality, with frames that are comfortable and which children will be happy to wear, and which are affordable. If there is an eye hospital or eye department who children from the school could be referred to then the following are options.

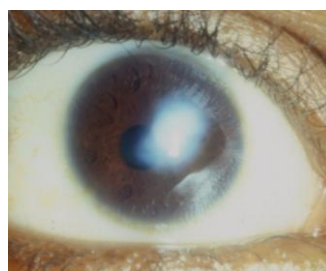
1. Children whom the teachers think have a problem seeing can be referred to the eye hospital for assessment.
2. If there is a school nurse, ensure a visual acuity chart is available and the nurse knows how to measure visual acuity in each eye. The nurse can test the vision and refer children with visual problems.
3. Teachers could test the vision of all children each year using the 6/12 row of letters, testing each eye separately. If the child cannot see at least 4 of the 5 letters in one or both eyes they should be referred for assessment.

In many communities there are misconceptions about children wearing spectacles, with common beliefs being “they weaken the eyes” or “the eyes will become lazy”. These things are not true – all spectacles do is refocus the light so that the vision is no longer blurred. If a child does need spectacles, parents as well as the child need to be encouraged to ensure they are worn.

## Vitamin A deficiency



*Bitots spot*



*Scarring of the cornea*

Vitamin A deficiency matters as it is an important cause of mortality in preschool age children as well as a cause of blindness. All developing countries now include vitamin A supplementation as part of immunization programmes, and the condition is coming under control. However, school health programmes have a vitally important role to play in educating and demonstrating to children how vitamin A deficiency can be prevented.

Vitamin A is found in all the yellow, red and orange fruits and vegetables. It is also found in dairy products, liver and egg yolk. It is vital for growth and the immune system and helps to keep the tissues that line all our organs healthy, including the lining of the eye, the conjunctiva. When children are ill they need to eat more vitamin A rich foods rather than less, and this is particularly true during measles infection.

### **Children are more vulnerable to vitamin A deficiency than adults as**

- they are growing and so need more
- if they develop diarrhoea they cannot absorb the vitamin A
- if they develop a fever they metabolise the vitamin A more quickly
- they are not always given the most nutritious foods which are reserved for men

### **What the child might complain of:**

- Vitamin A is important for night vision, and the child may complain of “night blindness”

### **What you may notice:**

- Some older children with vitamin A deficiency develop white, foamy deposits on the outer part of the eye, as shown above. These are called Bitot's spots.

- The vast majority of children who are vitamin A deficient have no complaints, and there is nothing to observe. This is why there are big public health programmes for control

## **What can be done in schools:**

### **Children can be taught the following:**

- the importance to health of a diet rich in vitamin A
- locally available sources of vitamin A rich foods
- not to overcook these foods as this reduces the vitamin A content
- not to dry these foods in sunlight (e.g. mangos) as this reduces the vitamin A content
- when children are sick they need more vitamin A rich foods, not less
- diarrhoea reduces the body's ability to absorb vitamin A, so preventing diarrhoea through hand washing and water and sanitation is very important

### **The following can be demonstrated in schools:**

- Home gardening to demonstrate how these foods can be grown, even on relatively small plots of land e.g. squashes can be planted next to buildings and the plant encouraged to grow along the roof
- How to prepare a vitamin A rich meal.
- Personal hygiene
- The importance of clean drinking water and using latrines to prevent diarrhoea

## Trachoma:



Trachoma is an eye disease which is the commonest cause of blindness due to infection. Repeated episodes of infection throughout childhood increase the risk of blindness in adult life. Blindness occurs as a consequence of scarring under the upper eyelid which then becomes distorted, turning inwards so the lashes rub against the eye. The inturning eyelashes, as well as being very painful, lead to scarring of the cornea (the front of the eye) and loss of vision which cannot be reversed. Trachoma occurs in poor, dry communities, often affecting a high percentage of children. Blindness is more common in women because they have more contact with children, who harbour the infection.

The infection spreads from child to child by fingers, clothing, bed sheets and “eye seeking” flies. The nasal and eye discharge of children with trachoma is full of the organism which causes the disease. Dirty faces therefore help to spread the disease.

**The accepted strategy for control of trachoma is the SAFE strategy:**

**S**urgery to correct the in-turned upper eye lid among adults: this can be done by nurses or allied health professionals, and surgery can be done in the community

**A**ntibiotics: in communities with high levels of infection, one annual treatment with the medicine azithromycin is highly effective at treating the infection. You can find out whether and when these activities are happening in your community and ensure children in the school know about this and are encouraged to take the medication. They can take this information home so that the rest of the family is treated.

**F**ace washing and hand washing help to reduce the spread of infection from child to child (and to mothers)

**E**nvironmental cleanliness, including better sanitation, helps reduce sites where eye seeking flies can breed.

### **What the child might complain of:**

The symptoms of trachoma in childhood are not very severe and the child may not complain of anything. Indeed, to have sore, watering eyes may be “normal” for them and their family. However, they still need to be treated.

### **What you might notice:**

The child has slightly red, watering eyes. The upper eyelids may be a bit swollen. Their eyes may be a bit sensitive to light.

### **What can be done in schools:**

- Include trachoma in the school curriculum so that children know what causes it and how they can help their families and communities to control it.
- Personal hygiene: face and hand washing, with daily inspection of hands and faces
- Water storage: demonstrate ways in which water can be collected and safely stored in their homes and community
- Making a little water go a long way: set up “leaky tins” for children to use throughout the day, so they learn how to maximise the use of what little water is available. The water used in face and hand washing can also be used in the kitchen garden so that it is not wasted.

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