



# GETTING AHEAD

Dr Chris King puts respiratory problems and Barotrauma under the microscope.



Medical problems affecting the ear, nose and throat are probably the commonest affecting pilots. Most, such as coughs and colds, are self-limiting and can be treated with simple remedies and over-the-counter medicines.

If the pilot is suffering any 'constitutional symptoms' such as headache, shivering, fever, muscle aches or earache or sinus pain he/she should not fly and be treated in the appropriate manner, and medical advice sought if necessary.

Remember that sneezing can propel viral particles over a large area and at great speed and infect others. It is important that one's nose is covered with tissues whilst sneezing, the tissue discarded safely and the hands washed thoroughly, and antiseptic gel used regularly.

## Side effects

Remember also that many of the over-the-counter remedies contain 'pseudoephedrine' (Sudafed) as a decongestant, and antihistamines, which can cause side effects including sedation, all of which are disallowed by the CAA. Check on the label if these remedies contain any such substances if you are flying. If in doubt, consult your AME.

The safest remedy would be paracetamol, plus the old-fashioned steamy inhalations with menthol or Friar's Balsam together with a simple linctus and plenty of fluids plus rest.

The big problem for flight crew is if nasal congestion affects the Eustachian tube. This is the tube that runs from the back of the throat to the middle ear and is the means by which the body can equalise the air pressure either side of the eardrum, both at ground level and in the climb and descent.

The problem in the aviation environment is that on ascent and descent there is work for the Eustachian tube to do to equalise the ambient air pressure either side of the eardrum. The function of the Eustachian tube can be checked with either the 'Valsalva manoeuvre' – holding nose closed with fingers and mouth closed and breathe out maximally (as if straining at stool)

and you should feel the air pressure equalising. An alternative is the 'Frenzel manoeuvre', (named after a Second World War German fighter pilot who trained dive bomber pilots to test their Eustachian tubes), by closing the mouth, nostrils and epiglottis and compressing the air in the mouth with the action of the muscles in the mouth and tongue. The third method is the 'Toynbee

it is usually red and retracted inwards and occasionally fluid is visible in the middle ear. There may also be a perforation of the eardrum visible.

Treatment is usually with antibiotics, a decongestant and nasal steroid spray. The same sort of policy can be implemented with sinus pain with similar reasons for occurrence and similar treatment.

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manoeuvre' where the pressure is raised by swallowing whilst the mouth is closed and the nose occluded.

## Middle ear pressure

The air pressure can normally be equalised by swallowing, drinking or sucking boiled sweets.

On ascent, gas in the middle ear expands and vents through the Eustachian tube and clears quite easily with the ears 'popping'.

The problem is different on the descent in that the ambient pressure rises relative to the middle ear pressure and this cannot be equalised as easily.

This problem is exacerbated if there is congestion in the nasal passages with a cold, sinus problems, or medical conditions such as nasal polyps.

Barotrauma presents with increasing pain on the descent with an inability to equalise the pressure in the middle ear by any of the methods above. There is likely to be a reduction in hearing and in severe cases the eardrum can perforate. If this does occur, the pain disappears as the pressure either side of the eardrum is then equalised.

If these symptoms occur, medical help should be sought, preferably from a doctor with aviation or diving experience (the same problem occurring on the descent in diving). If diving, be aware that there should be a delay in flying, especially if diving at depth.

## Perforation

On looking at an eardrum suffering from barotrauma with an otoscope,

The pilot should be grounded until the eardrum has healed and satisfactory function of the Eustachian tube has returned as demonstrated by the manoeuvres listed before.

The outlook with treatment is good. Thus, if a pilot has any minor respiratory infection, he/she should always check the function of the Eustachian tubes prior to flying. If there is any doubt, consult your AME for advice and if you already have sinus pain or earache do not fly. ■



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