AIRWAY INJURIES

1) The Nose
Causes: Bites (dog, cat, snake), RTA, stings (plants and insects), Foreign bodies.
Signs: Pain, swelling, nasal discharge, epistaxis (nose bleeds), change in shape.
a)Bites Always contaminated and much more serious if they penetrate into the RHINARIUM. (The nasal chambers). Snake bites cause problems because of the venom.
b) RTA Can be very serious if they involve major fractures, but changes can be subtle; look at the line of the nose from both top and side- is it symmetrical and in line? Can the mouth be easily opened? Is there a split in the mucous membrane of the palate? Do the teeth meet correctly? (No malocclusion)
Treatment for a) and b) Bites and RTA's can cause severe haemorrhage if they damage the turbinates. This is not usually life-threatening, which is just as well as first aid is very difficult due to the inaccessible blood vessels supplying the turbinates. Cold compresses help to close down local circulation, applied over the nose, but be careful not to press too hard if a fracture is suspected.
For snake bites: the adder is the only poisonous snake in Britain. Its bite can be fatal to small dogs, and may cause moderately severe illness with shock and collapse even in large dogs. Cold compresses slow the poison's absorption. Anti-venom may be available at the surgery. The bite is visible in the middle of the swelling.
c) Stings Cause swelling but in soft tissue. Mainly painful, outside the bony nasal chambers so do not cause respiratory problems, but facial swelling may be spectacular and very worrying to the owner. Treatment: First Aid is Cold compresses and analgesics. Antihistamines may be appropriate. Stings should be removed if they are visible, but remember that bee stings have a sac of poison at the end and should be removed from the point at which the sting penetrates the skin, not by grasping the whole sting.
d) Foreign bodies Usually grass seeds. Cause sneezing, eventually infection and haemorrhage. In cats, grass blades are a major nasal and pharyngeal foreign body. The cat swallows a blade of grass, but this only gets part way down the oesophagus, then reverses and comes back up and across the pharynx, above the soft palate into the back of the nose.
Treatment: First aid is to remove if easy and obvious, foreign bodies should be seen as soon as possible at surgery, as they quickly migrate into the deeper parts of the nose, where they may require extensive surgery to retrieve.

2/The Larynx
Causes Fights / Bites / Choke chains. - Cause crushing / penetrating injuries. and secondary airway compromise due to swelling or sub-

mucosal haemorrhage. Other laryngeal injuries include penetrating injuries from sticks, and foreign bodies lodged in the throat.
Signs: Expiratory / Inspiratory dyspnoea and noisy breathing (stertor), Cyanosis if very severe. Neurological damage- damage to the recurrent laryngeal nerve can occur as this is a relatively long and superficial nerve which runs along the neck and supplies the abductors of the vocal cords. Loss of function of this nerve prevents the animal from opening its airway when breathing. These conditions are usually surgical if severe, and may necessitate a tracheotomy.
Treatment: First Aid- Keep the patient calm, Oxygenate, possibly clip and prepare for tracheotomy in the ventral midline of the neck. The only way to control emergency laryngeal haemorrhage is to intubate then pack the larynx with swabs, which obviously needs a general anaesthetic. Laryngeal paralysis can be treated surgically. Foreign bodies- seen as choking , gagging and dyspnoea rather than coughing. The Heimlich manoeuvre may dislodge. (See Pharynx section) Stick injuries- need exploration under anaesthetic.

3/ The Trachea
Causes: RTA's and fights, causing ruptures or penetration injuries. In aged toy breeds a condition develops in which the rings of the trachea straighten out and tracheal collapse occurs. These animals may present as acute emergencies if they faint (the drinking straw effect on inspiration). Some patients (particularly cats) can be easily damaged by over-enthusiastic inflation of endotracheal tubes.
Signs: The trachea is both tough (due to the cartilage rings) and flexible (the rings are not complete, except in birds,but are joined by a ligament). This means that damage usually allows some air leakage, or internal tracheal swelling, but is not often fatal. Therefore, damage may be seen as: -Audible external air leaks. -Emphysema and subcutaneous air migrating upwards ("Balloon head"). -Pneumomediastinum, pneumothorax.
Treatment: Cover external leaks with an airtight dressing (plastic under a padded bandage dressing). Supply oxygen. Emphysema will resolve if the leak is stopped, but it may take some time (Days <--> weeks).

4) The Thorax
Causes: Injuries to the chest comprise fractures, penetrations and internal (blunt / bruising) damage. These are usually acquired via a road accident, or in small breeds and cats, via being mauled by another animal. Working dogs and greyhounds will impale themselves on barbed wire and pieces of forest.
Signs: Pain, dyspnoea, tachypnoea, coughing and haemorrhage. Deformity of the chest or unusual chest wall movement when breathing.
a)Fractures Fractures can affect the ribs and / or the sternum. These are very painful injuries, often far more painful than severe and can compromise breathing because of this. Painkillers may be used to relieve the dyspnoea, and classically morphine is regarded as one of the best for this purpose. If several ribs are fractured, a flail chest may develop and

the phenomenon of paradoxical respiration may be seen. This occurs when so many ribs are fractured that an area of chest loses its stability. Thus on inspiration, when the pressure in the thorax falls, the side of the chest is sucked in. (The chest normally expands out on inspiration) The reverse happens on expiration, and the flail segment bulges outwards.
Treatment: Fractured ribs heal if supported by intact ribs on either side due to the natural splinting effect. Pain relief is necessary. If dyspnoea is present, Oxygen is always useful. Flail chests rarely need surgical splinting, the bruising to the lung is far more dangerous,but a temporary dressing around the whole chest will prevent the outward movement of the flail segment during expiration.
b) Penetrations Penetrations always involve some loss of pressure to part or all of the chest. This is made worse if the penetration results in an open hole into the chest. The result is a lung collapse and pneumothorax. As air escapes, subcutaneous emphysema may develop but this in itself is not life threatening. Haemothorax may also develop if the penetrating object hits a blood vessel. (The vessels / nerves of the chest wall run just behind each rib.)
Treatment: Oxygen is essential as part of the lung will be collapsed in most cases. The animal must be rested to reduce oxygen demand. If a foreign body is protruding from the chest, DO NOT remove it. If necessary it can be cut shorter, and then dressed and padded to hold it in place, with an airtight seal being formed at the entry point using plastic,until full surgery can be undertaken. More damage may be done by pulling out a foreign body such as a stick as it is not usually easy to tell what length or shape the buried part is. Careful monitoring of the circulation and respiration is necessary as air or blood or both may be escaping into the chest internally. If there is an open hole in the chest wall, it must be covered to keep the chest airtight. Use a piece of plastic, as above, over the hole and then dress securely.
c) Blunt trauma A variety of problems can be caused by blunt trauma:- - Pneumothorax - escape of air from damaged lung into the chest - Haemothorax - blood loss into the chest -Chylothorax - rupture of the thoracic duct carrying chyle (lymph) -Ruptured diaphragm -Collapsed lung
Treatment: All the above result in loss of useful lung area so Oxygen therapy is appropriate and cage rest. Fluid therapy may also be necessary if there is haemorrhage, and this can be decided on the basis of serial monitoring of the pulse and circulation. It is important for nurses to become familiar with the use of a stethoscope and recognise the normal sounds to be heard in the chest.