

## 1. Airway Tumors

The airway can be affected by primary tracheobronchial tumors, primary tumors that are adjacent to and invade the airway, or cancers that metastasize to the airway.

Primary tracheal tumors are rare (0.1/100,000 people). They are often malignant and found at a locally advanced stage. The most common malignant tracheal tumors include adenoid cystic carcinoma, squamous cell carcinoma, carcinoid, and mucoepidermoid carcinomas. The most common benign airway tumor is a squamous papilloma, although pleomorphic adenomas and granular cell and benign cartilaginous tumors also occur.

### Symptoms and Signs

Patients often present with dyspnea, cough, wheezing, hemoptysis, and stridor. Hemoptysis may occur with a squamous cell carcinoma and can potentially lead to earlier diagnosis, whereas wheezing or stridor occurs more often with the adenoid cystic variant. Dysphagia and hoarseness can also be present initially and usually indicate advanced disease.

### Diagnosis

Symptoms of airway narrowing can herald life-threatening airway obstruction and require immediate hospitalization and evaluation with bronchoscopy. Bronchoscopy can both stabilize the airways and allow specimens to be obtained for diagnosis. If a cancer is found, more extensive testing for metastases is done.

### Prognosis

Prognosis depends on the histology. Squamous cell carcinomas tend to metastasize to regional lymph nodes and directly invade mediastinal structures, leading to high local and regional recurrence rates. Even with definitive surgical resection, the 5-yr survival is only 20 to 40%. Adenoid cystic carcinomas are typically indolent but tend to metastasize to the lungs and to spread perineurally, leading to high recurrence rates after resection. However, these patients have a higher 5-yr survival of 60 to 75% because of the slow rate of growth.

### Treatment

Primary airway tumors should be treated definitively with surgical resection if possible. Tracheal, laryngotracheal, or carinal resections are the most common procedures. Up to 50% of the length of the trachea can be safely resected with primary re-anastomosis. If a lung or thyroid cancer invades the airway, surgery is sometimes still feasible if assessment indicates sufficient tissue available for airway reconstruction. Adjuvant radiation therapy is recommended if adequate surgical margins cannot be obtained.

Most primary airway tumors are not resectable because of metastasis, locally advanced stage, or patient comorbidities. In cases of endoluminal tumors, a therapeutic bronchoscopy can mechanically core-out the tumor. Other techniques to eliminate obstruction include laser vaporization, photodynamic therapy, cryotherapy, and endobronchial brachytherapy. Tumors that compress the trachea are treated with airway stenting, radiation therapy, or both.

Source: <http://www.merck.com/mmpe/sec05/ch062/ch062c.html>

## 2. Antibiotics

### Selecting an Antibiotic

Each antibiotic is effective only against certain bacteria. In selecting an antibiotic to treat a person with an infection, doctors estimate which bacteria are likely to be the cause. For example, some infections are caused only by certain types of bacteria. If one antibiotic is predictably effective against all of these bacteria, further testing is not needed. If infections may be caused by many different types of bacteria or by bacteria that are not predictably susceptible to antibiotics, a laboratory is asked to identify the infecting bacteria from samples of blood, urine, or tissue taken from the person. The infecting bacteria are then tested for susceptibility to a variety of antibiotics. Results of these tests usually take a day or two and thus cannot guide the initial choice of antibiotic.

Antibiotics that are effective in the laboratory do not necessarily work in an infected person. The effectiveness of the treatment depends on how well the drug is absorbed into the bloodstream, how much of the drug reaches the sites of infection in the body, and how quickly the body eliminates the drug. These factors may vary from person to person, depending on other drugs being taken, other disorders present, and the person's age. In selecting an antibiotic, doctors also consider the nature and seriousness of the infection, the drug's possible side effects, the possibility of allergies or other serious reactions to the drug, and the cost of the drug.

### Antibiotic Resistance

Bacteria, like all living organisms, change over time in response to environmental challenges. Because of the widespread use and misuse of antibiotics, bacteria are constantly exposed to these drugs. Although many bacteria die when exposed to antibiotics, some develop resistance to the drugs' effects. For example *Staphylococcus aureus* was very sensitive to penicillin. But over time, strains of this bacteria developed an enzyme able to break down penicillin, making the drug ineffective. Researchers responded by developing a form of penicillin that the enzyme could not break down, but after a few years, the bacteria adapted and became resistant to this modified penicillin.

### Taking Antibiotics

For severe bacterial infections, antibiotics are usually first given by injection. When the infection is controlled, antibiotics can then be taken by mouth. For less severe infections, antibiotics can be given by mouth from the start.

Antibiotics need to be taken until the infecting bacteria are eliminated from the body, which may be days after the symptoms disappear. So people must take them for the entire time prescribed whether they have symptoms or not. Antibiotics are rarely given for fewer than 5 days. Stopping treatment too soon can result in a return of the infection or the development of antibiotic-resistant bacteria.

Antibiotics are sometimes used to prevent infections (called prophylaxis). Antibiotics may be given to people who have been exposed to a person with meningitis to prevent meningitis from developing. Some people with abnormal or artificial heart valves take antibiotics before dental and surgical procedures to prevent bacteria from infecting the damaged or artificial valves. Antibiotics may also be given to people who have a weakened immune system.

## Side Effects and Allergic Reactions

Common side effects of antibiotics include upset stomach, diarrhea, and, in women, vaginal yeast infections. Some side effects are more severe and, depending on the antibiotic, may impair the function of the kidneys, liver, bone marrow, or other organs. Blood tests are sometimes used to check for effects on kidney and other organ function.

Some people who take antibiotics develop colitis, an inflammation of the large intestine. This type of colitis results from a toxin produced by the bacteria *Clostridium*, which is resistant to many antibiotics and which grows in the intestines unchecked when other normal bacteria in the intestine are killed by the antibiotics. Antibiotics can also cause allergic reactions. Mild allergic reactions consist of an itchy rash or slight wheezing. Severe allergic reactions (anaphylaxis) can be life-threatening and usually include swelling of the throat, inability to breathe, and low blood pressure.

Source: <http://www.merck.com/mmhe/sec17/ch192/ch192a.html>

### 3. Antidepressants

Antidepressants are medicines used to help people who have depression. Most people with depression get better with treatment that includes these medicines.

Chemicals in the brain called neurotransmitters are needed for normal brain function. Antidepressants help people with depression by making these natural chemicals more available to the brain. Antidepressants are usually taken every day. It can take up to a month to see the full results of taking an antidepressant. Sometimes different kinds or amounts (dosages) need to be tried to find one that works best for you. Antidepressants are typically taken for at least 6 to 12 months. In some cases, patients and their doctors may decide that antidepressants are needed for a longer time.

#### **What are the different kinds of antidepressants? What kinds of side-effects do they have?**

Antidepressants are put into groups based on which chemicals in the brain they affect. There are many different kinds of antidepressants, including:

**Selective serotonin reuptake inhibitors (SSRIs)** (citalopram, escitalopram, fluoxetine).

If a person has never tried an antidepressant before, SSRIs are usually the first kind of antidepressant medicine your doctor will recommend for you. These medicines tend to have fewer side-effects than other antidepressants. Some of the side-effects that can be caused by SSRIs include dry mouth, nausea, nervousness, insomnia, sexual problems and headache.

**Heterocyclics** (amitriptyline, desipramine, imipramine).

This type of antidepressant is effective, but used less often because the side-effects are often more extreme. Common side-effects caused by these medicines include dry mouth, blurred vision, constipation, difficulty urinating, worsening of glaucoma, impaired thinking and tiredness. These antidepressants can also affect a person's blood pressure and heart rate. They are not usually recommended for older patients, people with glaucoma or men with enlarged prostates.

**Serotonin and norepinephrine reuptake inhibitors (SNRIs)** (venlafaxine, duloxetine).

These medicines are sometimes chosen because they don't interfere with certain other medicines. Some common side-effects caused by these medicines include nausea, especially in the first two weeks, loss of appetite, anxiety and nervousness, headache, insomnia and tiredness. Dry mouth, constipation, weight loss, sexual problems, increased heart rate and increased cholesterol levels can also occur.

**Norepinephrine and dopamine reuptake inhibitors (NDRIs)** (bupropion).

This kind of medicine is sometimes recommended for people who also have attention-deficit hyperactivity disorder, cocaine dependence or want to quit smoking. You should not take this kind of medicine if you have a seizure disorder or bulimia. Some of the common side-effects in people taking NDRIs include agitation, nausea, headache, loss of appetite and insomnia. However, this is also the main type of antidepressant medication that has no sexual side-effects.

**Monamine oxidase inhibitors (MAOIs)**

MAOIs are used less commonly than the other antidepressants. They can have serious side-effects, including weakness, dizziness, headaches and trembling. You should not take an MAOI unless you clearly understand what medications and foods to avoid.

#### **Will antidepressants affect other medicines?**

Antidepressants can have an effect on many other medicines. If you're going to take an antidepressant, tell your doctor about all the other medicines you take, including over-the-counter medicines and herbal health products. Ask your doctor and pharmacist if any of your regular medicines can cause problems when combined with an antidepressant.

Source:

<http://familydoctor.org/online/famdocen/home/common/mentalhealth/treatment/012.html>

#### **4. Bronchiolitis**

Bronchiolitis is an infection that affects the lower respiratory tract of infants and children. It is most often caused by respiratory syncytial virus and parainfluenza 3 virus, although other viruses, such as influenza, other forms of parainfluenza, metapneumovirus, and adenoviruses, are sometimes involved. Rare causes include rhinoviruses, enteroviruses, measles virus, and the bacteria *Mycoplasma*. Infection with these viruses causes inflammation of the airways. The inflammation causes the airways to narrow, obstructing the flow of air into and out of the lungs.

##### **Incidence**

Bronchiolitis typically affects children younger than 24 months of age and is most common among infants younger than 6 months. During the first year of life, bronchiolitis affects about 11 of every 100 children, although during some epidemics a much higher proportion of infants are affected. Most cases occur between November and April, with a peak incidence during January and February. The infection may be more common among infants whose mothers smoke cigarettes, particularly those who smoked during pregnancy. The infection seems to be less common among breastfed infants. Parents and older siblings can be infected with the same virus, but for them the virus usually causes only a mild cold.

##### **Symptoms and Diagnosis**

Bronchiolitis starts with symptoms of a cold—runny nose, sneezing, mild fever, and some coughing. After several days, children develop difficulty breathing, with an increase in respiratory rate and a worsening cough. Usually children have a high-pitched sound on breathing out (wheezing). In most infants, the symptoms are mild. Even though infants may breathe somewhat rapidly and be very congested, they are alert, happy, and eating well. More severely affected infants breathe rapidly and shallowly, use a lot of their respiratory muscles to breathe, and have flaring of their nostrils. They seem fussy and anxious and can become dehydrated because of vomiting and difficulty with drinking. A fever usually is present but not always. Some children also develop an ear infection. Premature infants or infants younger than 2 months sometimes stop breathing temporarily. In very severe and unusual cases, the child may become blue around the mouth caused by a lack of oxygen.

A doctor bases the diagnosis on the symptoms and the physical examination. Sometimes the doctor swabs mucus from deep inside the nose to try to identify the virus in the laboratory. Other laboratory tests may be done, and sometimes a chest X-ray is needed.

## **Prognosis and Treatment**

Most children recover at home in 3 to 5 days. During the illness, frequent small feedings of clear fluids may be given. Wheezing and cough may continue for 2 to 4 weeks. Increasing difficulty in breathing, bluish skin discoloration, fatigue, and dehydration indicate that the child should be hospitalized. Children with congenital heart or lung disease or an impaired immune system may be hospitalized sooner and are far more likely to become quite ill from bronchiolitis. With proper care, the chance of developing serious consequences due to bronchiolitis is low, even for children who need to be hospitalized.

Most children can be treated at home with fluids and comfort measures. In the hospital, oxygen levels are monitored with a sensor attached to a finger or toe, and oxygen is given by an oxygen tent or face mask. A ventilator may be needed to assist breathing. Fluids are given by vein if the child cannot drink adequately. Antibiotics are not helpful.

*Source:*[http://www.merckmanuals.com/home/childrens\\_health\\_issues/respiratory\\_disorders\\_in\\_children/bronchiolitis.html?qt=mycoplasma%20infections&alt=sh](http://www.merckmanuals.com/home/childrens_health_issues/respiratory_disorders_in_children/bronchiolitis.html?qt=mycoplasma%20infections&alt=sh)

## 5. Bronchoscopy

Bronchoscopy is introduction of an endoscope into the airways. Flexible fiberoptic bronchoscopy has replaced rigid bronchoscopy for virtually all diagnostic and most therapeutic indications. Rigid bronchoscopy is now used only when a wider aperture and channels are required for better visualization and instrumentation. Examples include active vigorous pulmonary hemorrhage, in which the rigid bronchoscope can better identify the bleeding source and, with its larger suction channel, can better suction blood and prevent asphyxiation; aspirated foreign bodies in young children; and obstructive endobronchial lesions that require stent placement. Nearly all flexible bronchoscopes are color video-compatible, facilitating airway visualization and documentation of findings.

Diagnostically, flexible fiberoptic bronchoscopy allows for direct airway visualization down to and including subsegmental bronchi; sampling of respiratory secretions and cells via bronchial washings, brushings, and lavage of peripheral airways and alveoli; and biopsy of endobronchial, parenchymal, and mediastinal structures. Therapeutic uses include suctioning of retained secretions.

Absolute contraindications include untreatable life-threatening arrhythmia, inability to adequately oxygenate the patient during the procedure, and acute respiratory failure with hypercapnia (unless the patient is endotracheally intubated and ventilated). Relative contraindications include an uncooperative patient, high-grade tracheal obstruction, and uncorrectable coagulopathy. Transbronchial biopsy should be performed with caution in patients with uremia, superior vena cava obstruction, or pulmonary hypertension because of increased risk of bleeding and pneumothorax. Inspection of the airways is safe in these patients, however.

Bronchoscopy should be performed only by a pulmonologist or trained surgeon in a monitored setting, typically a bronchoscopy suite, operating room, or ICU (for ventilated patients).

The patient should receive nothing by mouth for at least 4 h before bronchoscopy and have IV access, intermittent BP monitoring, continuous pulse oximetry, and cardiac monitoring; supplemental O<sub>2</sub> should be available. Premedication with atropine 0.01 mg/kg IM or IV to decrease secretions and vagal tone is common, although this practice has been questioned in recent studies. Short-acting benzodiazepines, opioids, or both may be given to patients before the procedure to decrease anxiety, discomfort, and cough.

The pharynx and vocal cords are anesthetized with nebulized or aerosolized (1 or 2%) lidocaine (maximum, 250 to 300 mg for a 70-kg patient). The bronchoscope is lubricated with lidocaine jelly and passed through the nostril or through the mouth with an oral airway or bite block. After inspection of the nasopharynx and larynx, the scope is passed through the vocal cords during inspiration and into the trachea and upper airways.

Several ancillary procedures can be performed as needed with or without fluoroscopic guidance. In bronchial washing, saline is sprayed in and aspirated from the airways. In bronchial brushing, a brush is advanced through the bronchoscope and used to abrade suspicious lesions to obtain cells. In bronchoalveolar lavage, 50 to 200 ml of sterile saline is infused into the distal bronchoalveolar tree. Patients are typically observed 2 to 4 h after the procedure on supplemental O<sub>2</sub>. Return of a gag reflex and maintenance of O<sub>2</sub> saturation off O<sub>2</sub> are the two primary indices of recovery. Standard practice is to obtain an expiratory posteroanterior chest x-ray after transbronchial lung biopsy to exclude pneumothorax.

Serious complications are uncommon; minor bleeding from a biopsy site and fever occur in 10 to 15%. Premedication can cause oversedation with respiratory depression, hypotension, and

cardiac arrhythmias. Rarely, topical anesthesia causes laryngospasm, bronchospasm, seizures, or cardiac arrhythmias or arrest. Bronchoscopy itself may cause minor laryngeal edema or injury with hoarseness, hypoxemia in patients with compromised gas exchange, arrhythmias and, very rarely, transmission of infection from suboptimally sterilized equipment. Transbronchial biopsy can cause pneumothorax (2 to 5%) and significant hemorrhage (1 to 1.5%). Mortality is 1 to 4/10,000 patients. The elderly and others with serious comorbidities (severe COPD, coronary artery disease, pneumonia with hypoxemia, advanced neoplasia, mental dysfunction) are at greatest risk. Transbronchial biopsy increases mortality to 12/10,000 patients but can preclude the need for thoracotomy.

Source: <http://www.merck.com/mmpe/sec05/ch047/ch047d.html>

## 6. Bursitis

### What is bursitis?

A bursa is a closed, fluid-filled sac that functions as a gliding surface to *reduce friction* between tissues of the body. *When a bursa becomes inflamed, the condition is known as bursitis.* Most commonly, *bursitis is caused by local soft-tissue trauma or strain injury, and there is no infection (aseptic bursitis).* On rare occasions, particularly when the immune system is suppressed, the bursa can become infected with bacteria. This condition is called septic bursitis.

### What is knee bursitis?

The knee joint is surrounded by three major bursae. At the tip of the knee, over the kneecap bone, is the prepatellar bursa. This bursa can become inflamed (prepatellar bursitis) from direct trauma to the front of the knee. This commonly occurs when maintaining a prolonged kneeling position. It has been referred to as 'housemaid's knee,' 'roofer's knee,' and 'carpet layer's knee,' based on the patient's associated occupational histories.

### Causes

Bursitis of the knee can occur when the bursa fills with blood from injury and overuse, such as from athletic competition. Bursitis can also occur from rheumatoid arthritis and from deposits of crystals, as seen in patients with *gouty arthritis* and *pseudogout*. The prepatellar bursa can also become infected with bacteria (septic bursitis). When this happens, fever may be present. This type of infection usually occurs from breaks in the overlying skin or puncture wounds. The bacterium involved in septic bursitis of the knee is usually *Staphylococcus*, which is normally present on the skin.

### Symptoms and signs

Bursitis can lead to varying degrees of swelling, warmth, tenderness, and redness in the overlying area of the knee. As compared with knee joint inflammation (arthritis), it is usually only mildly painful. It is frequently associated with increased pain when kneeling and can cause stiffness and pain with walking. Also, in contrast to problems within the knee joint, the range of motion of the knee is frequently preserved.

### Treatment

The treatment of any bursitis depends on whether or not it involves infection. Aseptic prepatellar bursitis can be treated with ice compresses, rest, and anti-inflammatory and pain medications. Occasionally, it requires aspiration of the bursa fluid. This procedure involves removal of the fluid with a needle and syringe under sterile conditions and can be performed in the doctor's office. Noninfectious knee bursitis can also be treated with an injection of cortisone medication into the swollen bursa.

Septic bursitis requires even further evaluation and treatment. The bursal fluid can be examined in the laboratory to identify the microbes causing the infection. It requires antibiotic therapy, often intravenously. Repeated aspiration of the inflamed fluid may be required. Surgical drainage and removal of the infected bursa sac (bursectomy) may also be necessary.

A second bursa of the knee is located just *under the kneecap beneath the large tendon* that attaches the muscles in front of the thigh and the kneecap to the prominent bone in front of the

lower leg. This bursa is called the *infrapatellar bursa*, and when inflamed, the condition is called *infrapatellar bursitis*. It is commonly seen with inflammation of the adjacent tendon as a result of a jumping injury, *hence the name 'jumper's knee.'* This condition is generally treated with ice, rest, and oral anti-inflammatory and/or pain medicines.

A third bursa of the knee is called the 'anserine bursa.' It is located on the lower inner side of the knee. This bursa most commonly becomes inflamed in middle-aged women. This condition is referred to as anserine bursitis. Anserine bursitis is particularly common in those who are *obese*. These patients can notice pain in the inner knee while climbing or descending stairs. Anserine bursitis is generally treated with ice, rest, and oral anti-inflammatory and/or pain medicines, although cortisone injections are also given.

[http://www.medicinenet.com/knee\\_bursitis/article.htm#what\\_is\\_bursitis](http://www.medicinenet.com/knee_bursitis/article.htm#what_is_bursitis)

## 7. Cushing's Syndrome

Cushing's syndrome usually results from a tumor that causes the adrenal glands to produce excessive corticosteroids.

The adrenal glands may overproduce corticosteroids because of a problem in the adrenal glands or because of too much stimulation from the pituitary gland. An abnormality in the pituitary gland, such as a tumor, can cause the pituitary to produce large amounts of corticotrophin. Tumors outside the pituitary gland, such as small-cell lung cancer, can produce corticotrophin as well. Corticotrophin may also be produced by a tumor called a carcinoid, which may occur almost anywhere in the body.

Sometimes a noncancerous tumor (adenoma) develops in the adrenal glands, which causes them to overproduce corticosteroids. Adrenal adenomas are extremely common. Half of all people have them by the age of 70. Only a small fraction of adenomas produce excess hormone, however. Cancerous tumors of the adrenal glands are very rare.

Cushing's syndrome can also develop in people who must take large doses of corticosteroids because of a serious medical condition. Those who must take large doses have the same symptoms as those who produce too much of the hormone. The symptoms can occasionally occur even if the corticosteroids are inhaled, as for asthma, or are used topically for a skin condition.

### Symptoms

Corticosteroids alter the amount and distribution of body fat. Excessive fat develops throughout the torso and may be particularly noticeable at the top of the back. A person with Cushing's syndrome usually has a large, round face (moon face). The arms and legs are usually slender in proportion to the thickened trunk. Muscles lose their bulk, leading to weakness. The skin becomes thin, bruises easily, and heals poorly when bruised or cut. Purple streaks that look like stretch marks may develop over the abdomen. People with Cushing's syndrome tend to tire easily.

High corticosteroid levels over time raise the blood pressure, weaken bones (osteoporosis), and diminish resistance to infections. The risk of developing kidney stones and diabetes is increased, and mental disturbances, including depression and hallucinations, may occur. Women usually have an irregular menstrual cycle. Children with Cushing's syndrome grow slowly and remain short.

### Diagnosis

When doctors suspect Cushing's syndrome, they measure the level of cortisol, the main corticosteroid hormone, in the blood. Normally, cortisol levels are high in the morning and lower late in the day. In people who have Cushing's syndrome, cortisol levels are very high throughout the day.

If the cortisol levels are high, doctors may recommend a dexamethasone suppression test. Dexamethasone suppresses the pituitary gland and should lead to suppression of cortisol secretion by the adrenal glands. If Cushing's syndrome is caused by too much pituitary

stimulation, the level of cortisol will fall to some extent, although not as much as in people who do not have Cushing's syndrome.

Imaging tests may be needed to determine the exact cause, including a computed tomography (CT) or magnetic resonance imaging (MRI) scan of the pituitary or adrenal glands and a chest x-ray or CT scan of the lungs. However, these tests may occasionally fail to find the tumor. When overproduction of corticotrophin is thought to be the cause, blood samples may be taken from the veins that drain the pituitary to see if that is the source.

#### Treatment

Treatment depends on whether the problem is in the adrenal glands, the pituitary gland, or elsewhere. Surgery or radiation therapy may be needed to remove or destroy a pituitary tumor. Tumors of the adrenal gland (usually adenomas) can often be removed surgically. Both adrenal glands may have to be removed if these treatments are not effective or if no tumor is present. People who have both adrenal glands removed, and many people who have part of their adrenal glands removed, must take corticosteroids for life. Tumors outside the pituitary and adrenal glands that secrete excess hormones are usually surgically removed. Certain drugs, such as metyrapone or ketoconazole, can lower cortisol levels and can be used while awaiting more definitive treatment such as surgery.

Source: <http://www.merck.com/mmhe/sec13/ch164/ch164c.html>

## 8. Infectious Conjunctivitis

Infectious conjunctivitis is inflammation of the conjunctiva usually caused by viruses or bacteria. A variety of microorganisms may infect the conjunctiva (the membrane that lines the eyelid and covers the white of the eye). The most common organisms are viral, particularly those from the group known as adenoviruses. Bacterial infections are less frequent.

Both viral and bacterial conjunctivitis are quite contagious, easily passing from one person to another, or from a person's infected eye to the uninfected eye. Fungal infections are rare and occur mainly in people who use corticosteroid eye drops for a long time or have eye injuries involving organic matter, such as plants or dirt. Newborns are particularly susceptible to eye infections, which they acquire from organisms in the mother's birth canal.

Severe infections may scar the conjunctiva, causing abnormalities in the tear film. Sometimes, severe conjunctival infections spread to the cornea (the clear layer in front of the iris and pupil).

### Symptoms

When infected, the conjunctiva becomes pink from dilated blood vessels, and a discharge appears in the eye. Often the discharge causes the person's eyes to stick shut, particularly overnight. This discharge may also cause the vision to blur. Vision improves when the discharge is blinked away. If the cornea is infected, vision also blurs but does not improve with blinking. Sometimes the eye feels irritated, and bright light may cause discomfort. Very rarely, severe infections that have scarred the conjunctiva lead to long-term vision difficulties.

Viral conjunctivitis differs from bacterial conjunctivitis in the following ways:

- Eye discharge tends to be watery in viral conjunctivitis and thicker white or yellow in bacterial conjunctivitis.
- An upper respiratory infection increases the likelihood of a viral cause.
- A lymph node in front of the ear may be swollen and painful in viral conjunctivitis but is usually not in bacterial conjunctivitis.

These factors, however, cannot always accurately differentiate viral conjunctivitis from bacterial conjunctivitis.

## **Diagnosis**

Doctors diagnose infectious conjunctivitis by its symptoms and appearance. The eye is usually closely examined with a slit lamp (an instrument that enables a doctor to examine the eye under high magnification). Samples of infected secretions may be sent to a laboratory to identify the infecting organism by a culture.

## **Prognosis and Treatment**

Most people with infectious conjunctivitis eventually get better without treatment. However, some infections, particularly those caused by some bacteria, may last a long time if not treated.

If discharge accumulates on the eyelid, people should gently wash the eyelid (with the eye closed) with tap water and a clean washcloth. Warm or cool compresses sometimes soothe the feeling of irritation. Because infectious (bacterial or viral) conjunctivitis is highly contagious, people should wash their hands before and after cleaning the eye or applying drugs. Also, a person should be careful not to touch the infected eye and then touch the other eye.

Antibiotics are helpful only in bacterial conjunctivitis. However, because it is difficult to distinguish between bacterial and viral infections, doctors sometimes prescribe antibiotics for everyone with conjunctivitis. Antibiotic eye drops or ointments, which are effective against many types of bacteria, are used for 7 to 10 days. Drops are usually effective, but ointments are sometimes used because they last longer. However, ointments can blur vision.

Source:[http://www.merckmanuals.com/home/eye\\_disorders/conjunctival\\_and\\_scleral\\_disorders/infectious\\_conjunctivitis.html?qt=infectious%20conjunctivitis&alt=sh](http://www.merckmanuals.com/home/eye_disorders/conjunctival_and_scleral_disorders/infectious_conjunctivitis.html?qt=infectious%20conjunctivitis&alt=sh)

## 9. Ischemic Optic Neuropathy

Ischemic optic neuropathy is damage of the optic nerve caused by a blockage of its blood supply.

- Blockage can occur with or without inflammation of the arteries (typically in association with a disorder called temporal arteritis).
- Vision may suddenly deteriorate.
- People with temporal arteritis may have pain when combing their hair and when chewing, generalized muscle aches and pains, fatigue, or a combination.
- Blood tests and sometimes removal of a piece of the artery (biopsy) are done to diagnose temporal arteritis.
- Temporal arteritis is treated with corticosteroids.

### Causes

Blockage of the blood supply to the part of the optic nerve within the eye can lead to impaired function of optic nerve cells. Two types can occur: nonarteritic and arteritic.

Nonarteritic ischemic optic neuropathy usually occurs in people older than 50. Risk factors include high blood pressure, diabetes, and atherosclerosis. Rarely, it occurs in younger people with severe migraines. Arteritic ischemic optic neuropathy usually occurs in people older than 70. The blood supply to the optic nerve is blocked due to inflammation of the arteries (arteritis), most notably temporal arteritis.

### Symptoms

Loss of vision may be rapid (over minutes, hours, or sometimes days). Depending on the cause, vision may be impaired in one or both eyes. Vision in the involved eye or eyes can range from almost normal to complete blindness. A small area of vision loss at the center of the visual field slowly enlarges and can progress to complete blindness. People with temporal arteritis tend to be older, and their loss of vision tends to be more severe. They may have pain when they chew, muscle aches and pains, and pain when they comb their hair.

About 40% of people with nonarteritic ischemic optic neuropathy spontaneously improve over time. In this condition, repeated episodes in the same eye are extremely rare. Involvement of the other eye is estimated to occur in about 20% of affected people over the next 5 years.

In people with arteritic ischemic optic neuropathy caused by temporal arteritis, loss of vision in the other eye occurs in 25 to 50% of people within days to weeks if treatment is not started.

### Diagnosis

Diagnosis involves examination of the back of the eyes with a viewing instrument (ophthalmoscope). Determining the cause involves determining whether the person has any of the disorders known to be risk factors.

If temporal arteritis is suspected as a cause, blood tests and removal and examination of a temporal artery tissue sample under a microscope (biopsy) may be done to confirm the diagnosis. If a person has no symptoms of temporal arteritis, magnetic resonance imaging (MRI) or computed tomography (CT) of the brain may be done to make sure the optic nerve is not being compressed by a tumor.

## Treatment

In people with nonarteritic ischemic optic neuropathy, treatment involves controlling blood pressure, diabetes, and other factors that affect the blood supply to the optic nerve. In people with arteritic ischemic optic neuropathy caused by temporal arteritis, high doses of corticosteroids are given to prevent loss of vision in the other eye.

Source: <http://www.merck.com/mmhe/sec20/ch235/ch235d.html>

## **10. Spinal cord disorders**

Causes of spinal cord disorders include injuries, infections, a blocked blood supply, and compression by a fractured bone or a tumor.

Typically, muscles are weak or paralyzed, sensation is abnormal or lost, and controlling bladder and bowel function may be difficult.

Doctors base the diagnosis on symptoms and results of a physical examination and imaging tests, such as magnetic resonance imaging (MRI).

The condition causing the spinal cord disorder is corrected if possible.

Often, rehabilitation is needed to recover as much function as possible.

The spinal cord is the main pathway of communication between the brain and the rest of the body. It is a long, fragile, tube-like structure that extends downward from the base of the brain. The cord is protected by the back bones (vertebrae) of the spine (spinal column). The vertebrae are separated and cushioned by disks made of cartilage.

### **Causes**

Some spinal cord disorders originate outside the cord. They include injuries, most infections, blockage of the blood supply, and compression. The spinal cord may be compressed by bone (which may result from cervical spondylosis or a fracture), an accumulation of blood (hematoma), a tumor, a localized collection of pus (abscess), or a ruptured or herniated disk.

Less commonly, spinal cord disorders originate in the cord. They include fluid-filled cavities (syrinxes), inflammation (as occurs in acute transverse myelitis), tumors, abscesses, bleeding (hemorrhage), infection with the human immunodeficiency virus (HIV), multiple sclerosis, and syphilis.

### **Symptoms**

Because of the way the spinal cord functions and is organized, damage to the cord often produces specific patterns of symptoms based on where the damage occurred. The following may occur in various patterns:

Weakness

Loss of sensation (such as the ability to feel a light touch, pain, temperature, or vibration)

Changes in reflexes

Loss of bladder control (urinary incontinence)

Loss of bowel control (fecal incontinence)

Erectile dysfunction

Paralysis

Back pain

### **Diagnosis**

Often, doctors can recognize a spinal cord disorder based on its characteristic pattern of symptoms. Doctors always do a physical examination, which provides clues to the diagnosis. An imaging test is done to confirm the diagnosis and determine the cause.

Magnetic resonance imaging (MRI) is the most accurate imaging test for spinal cord disorders. MRI shows the spinal cord, as well as abnormalities in the soft tissues around the cord (such as abscesses, hematomas, tumors, and ruptured disks) and in bone (such as tumors, fractures, and cervical spondylosis). If MRI is not available, myelography with computed tomography (CT) is used. For myelography, a radiopaque dye is injected into the fluid around the spinal cord, and x-rays are taken. It is not as accurate or as safe as MRI.

### **Treatment**

If symptoms of spinal cord dysfunction (such as paralysis or loss of sensation) suddenly occur, people should see a doctor immediately. Sometimes doing so can prevent permanent nerve damage or paralysis. If possible, the cause is treated or corrected. However, such treatment is often impossible or unsuccessful.

*Source:* [http://www.merckmanuals.com/home/brain\\_spinal\\_cord\\_and\\_nerve\\_disorders/spinal\\_cord\\_disorders/overview\\_of\\_spinal\\_cord\\_disorders.html](http://www.merckmanuals.com/home/brain_spinal_cord_and_nerve_disorders/spinal_cord_disorders/overview_of_spinal_cord_disorders.html)

## 11. Treatments and Therapies for Anxiety Disorders

1. Anxiety disorders are generally treated with psychotherapy, medication, or both. Psychotherapy or “talk therapy” can help people with anxiety disorders. To be effective, psychotherapy must be directed at the person’s specific anxieties and tailored to his or her needs. A typical “side effect” of psychotherapy is temporary discomfort involved with thinking about confronting feared situations. Cognitive behavioral therapy is a type of psychotherapy that can help people with anxiety disorders. It teaches a person different ways of thinking, behaving, and reacting to anxiety-producing and fearful situations. Cognitive behavioral therapy can also help people learn and practice social skills, which is vital for treating social anxiety disorder.

2. Two specific stand-alone components of cognitive behavioral therapy used to treat social anxiety disorder are cognitive therapy and exposure therapy. Cognitive therapy focuses on identifying, challenging, and then neutralizing unhelpful thoughts underlying anxiety disorders. Exposure therapy focuses on confronting the fears underlying an anxiety disorder in order to help people engage in activities they have been avoiding. Exposure therapy is used along with relaxation exercises and/or imagery. One study, called a meta-analysis because it pulls together all of the previous studies and calculates the statistical magnitude of the combined effects, found that cognitive therapy was superior to exposure therapy for treating social anxiety disorder. CBT may be conducted individually or with a group of people who have similar problems. Group therapy is particularly effective for social anxiety disorder. Often “homework” is assigned for participants to complete between sessions.

3. Stress management techniques and meditation can help people with anxiety disorders calm themselves and may enhance the effects of therapy. While there is evidence that aerobic exercise has a calming effect, the quality of the studies is not strong enough to support its use as treatment. Since caffeine, certain illicit drugs, and even some over-the-counter cold medications can aggravate the symptoms of anxiety disorders, avoiding them should be considered. Check with your physician or pharmacist before taking any additional medications. The family can be important in the recovery of a person with an anxiety disorder. Ideally, the family should be supportive but not help perpetuate their loved one’s symptoms.

4. Medication does not cure anxiety disorders but often relieves symptoms. Medication can only be prescribed by a medical doctor (such as a psychiatrist or a primary care provider), but a few states allow psychologists to prescribe psychiatric medications. Medications are sometimes used as the initial treatment of an anxiety disorder, or are used only if there is insufficient response to a course of psychotherapy. In research studies, it is common for patients treated with a combination of psychotherapy and medication to have better outcomes than those treated with only one or the other. The most common classes of medications used to combat anxiety disorders are antidepressants, anti-anxiety drugs, and beta-blockers. Be aware that some medications are effective only if they are taken regularly and that symptoms may recur if the medication is stopped.

*<http://www.nimh.nih.gov/health/topics/anxiety-disorders/index.shtml>*

## **12. What is anemia?**

Anemia is a condition in which the amount of hemoglobin in the blood, or the number of red blood cells, is reduced to below-normal levels. Hemoglobin is an iron-containing protein found in red blood cells that aids the transport of oxygen from the lungs to the body tissues. This means that if you are anemic, your body is less able to transport oxygen. Two common types of anemia: iron deficiency anemia, which is caused by a lack of iron, and pernicious anemia, which is caused by faulty absorption of vitamin B<sub>12</sub>. Iron deficiency anemia is the most common type and occurs most often in women between the ages of 15 and 44 years and in both men and women over the age of 75 years.

### **What are the symptoms of anemia?**

Anemia can cause symptoms of fatigue, lethargy, breathlessness on exertion, dizziness, palpitations, and headache. Your doctor may examine your eyelids, which can lose their normal color, and your lips, tongue or skin, which may look pale. Some people will not have any symptoms.

### **What causes anemia?**

The most common cause of iron deficiency anemia is blood loss. The blood loss may be gradual, such as in a woman having heavy periods, or sudden, as a result of severe bleeding (eg, in a patient with a perforated stomach ulcer or during childbirth). Anemia may also be caused if red blood cells are broken down too quickly. This can happen in conditions such as sickle-cell anemia, malaria, or kidney failure. Your body may be unable to produce enough red blood cells if your diet does not contain enough iron, vitamin B<sub>12</sub> or folic acid. Pregnant women, children, and premature infants all need supplemental iron. It is also more difficult for the body to absorb iron from vegetables than from meat, so vegetarians need to ensure that they have sufficient quantities of iron in their diet. Another cause of pernicious anemia is a lack of intrinsic factor, a protein that occurs naturally in the body. It is secreted by glands in the stomach and is necessary for the absorption of vitamin B<sub>12</sub>.

### **How is anemia treated?**

Treatment will depend on the type and cause of the anemia. For iron deficiency anemia, iron tablets will be prescribed for a period of months, initially to correct the deficiency and then to replenish the body's stores of the mineral. Sometimes the tablets can cause side effects such as constipation or, alternately, diarrhea; they can also darken stools. If oral supplements are not sufficient or if iron stores need to be replenished rapidly, your doctor may give you an iron injection. If there is a lack of the intrinsic factor necessary for B<sub>12</sub> absorption, vitamin B<sub>12</sub> injections may be prescribed.

## **Self-help measures**

If the anemia is due to a deficiency in your diet, you must try to increase your intake of that element:

- Vitamin B<sub>12</sub> is found in meat, fish, eggs, and milk.
- Iron is found in liver, meat, green vegetables, enriched flour, eggs, and milk.
- Folic acid (another B vitamin vital to the formation of red blood cells) is found in green vegetables (lightly cooked) especially broccoli and spinach, and in liver and kidneys.
- Take your iron tablets with orange juice to aid absorption.
- Keep your iron tablets away from children; iron tablets can be fatal to children and often look similar to candy.
- If you are vegetarian, try to find other sources of vitamin B<sub>12</sub> such as eggs and milk; some breakfast cereals have added vitamin B<sub>12</sub>, and soy milk and yeast extracts are also a good alternative to supplements.

Source: <http://www.empr.com/anemia-patient-information-fact-sheet/article/250205/1/>

### 13. Wilms' tumor

*Wilms' tumor is an embryonal cancer of the kidney composed of blastemal, stromal, and epithelial elements. Genetic abnormalities have been implicated in the pathogenesis, but familial inheritance accounts for only 1 to 2% of cases. Diagnosis is by ultrasonography and abdominal CT and is confirmed by biopsy. Treatment may include surgical resection, chemotherapy, and radiation therapy.*

Wilms' tumor usually manifests in children younger than 5 years but occasionally in older children and rarely in adults. Wilms' tumor accounts for about 6% of cancers in children younger than 15 years. Bilateral synchronous tumors occur in about 5% of patients; bilateral disease is more common among very young children, especially girls.

#### **Symptoms and Signs**

The most frequent finding is a painless, palpable abdominal mass. Less frequent findings include abdominal pain, hematuria, fever, anorexia, nausea, and vomiting. Hematuria (occurring in 15 to 20%) indicates invasion of the collecting system. Hypertension may occur if compression of the renal pedicle or renal parenchyma causes ischemia.

#### **Diagnosis**

- Abdominal ultrasonography and CT
- Biopsy

Abdominal ultrasonography determines whether the mass is cystic or solid and whether the renal vein or vena cava is involved. Abdominal CT is needed to determine the extent of the tumor and check for spread to regional lymph nodes, the contralateral kidney, or liver. The diagnosis is confirmed by biopsy of the mass. Renal arteriography, vena cavography, retrograde urography, or excretory urography is seldom required. Chest CT is recommended to detect metastatic pulmonary involvement at initial diagnosis.

#### **Prognosis**

Prognosis depends on

- Histology (favorable or unfavorable)
- Stage at diagnosis
- Patient's age (younger is better)

The outcome for children with Wilms' tumor is excellent. Cure rates for lower-stage disease (localized to the kidney) range from 85% to 95%. Even children with more advanced disease fare well; cure rates range from 60% (unfavorable histology) to 90% (favorable histology).

The cancer may recur, typically within 2 years of diagnosis. Cure is possible in children with recurrent cancer. Outcome after recurrence is better for children who present initially with lower-stage disease, whose tumors recur at a site that has not been irradiated, who relapse more than 1 year after presentation, and who receive less intensive treatment initially.

**Treatment**

- Surgery and chemotherapy
- Sometimes radiation therapy

The National Wilms' Tumor Study Group has established staging criteria and guidelines for treatment. Prompt surgical exploration of potentially resectable lesions is indicated, with examination of the contralateral kidney. If the cancer is unilateral and limited to the kidney or if extension is minimal, complete resection by nephrectomy is done, followed by treatment with vincristine and actinomycin D. If a unilateral cancer has spread extensively or if the disease is bilateral, chemotherapy with actinomycin D and vincristine, with or without radiation therapy, is used. Children with more advanced disease also receive doxorubicin. Other frequently used drugs include cyclophosphamide, ifosfamide, and etoposide.

Children with very large nonresectable tumors or bilateral tumors are candidates for chemotherapy followed by reevaluation and possibly resection.

[http://www.merckmanuals.com/professional/pediatrics/pediatric\\_cancers/wilms\\_tumor.html](http://www.merckmanuals.com/professional/pediatrics/pediatric_cancers/wilms_tumor.html)

## 14. Zika Virus: Implications for Public Health (excerpt)

The ongoing Zika virus (ZIKV) pandemic represents an emergency for general populations, especially pregnant women, blood transfusion recipients, and immunosuppressed patients. Now, with the virus knocking at the doors of North America and Europe, we attempt here to summarize the implications for public health and the barriers we have against contagion.

### FUNDAMENTAL VIROLOGY

ZIKV is an enveloped single-stranded, positive-polarity RNA virus belonging to the family of Flaviviridae, genus Flavivirus. It is antigenically closely related to other arboviruses of the family, and is grouped into 3 genotypes: East Africa, West Africa, and Asia.

### EPIDEMIOLOGY

After West Nile virus (WNV), dengue virus (DENV), and Chikungunya virus (CHKV), ZIKV is the most recent arthropod-borne virus emerged with pandemic potential. ZIKV strain MR766 was first isolated in 1947 from a Rhesus monkey from the Zika forest (Uganda). In 1954, the first 3 human cases were reported during an epidemic of jaundice in eastern Nigeria. In 2007–2008, ZIKV epidemics occurred in the island of Yap (Micronesia), Gabon, and Senegal. Major epidemics broke out in French Polynesia in October 2013, New Caledonia, and Easter Island in 2014, leading to imported cases worldwide. The pandemic exploded at the end of 2014, and as of March 2016 the virus is circulating in 26 countries. Brazil, where an estimated 1.5 million cases have occurred, heads the roster of affected countries, followed by Colombia (>25 000 suspected cases) and Cape Verde (>7,000 suspected cases). Introduction of ZIKV into South America has been tentatively linked to Asian tourists attending the soccer 2014 World Cup in Brazil. Airport connections and traveller volumes from Brazil mostly expose the United States, Argentina, Chile, Italy, Portugal, France, China, and Angola. Scheduled international mass gatherings in 2016 could exacerbate the spread of ZIKV. In Brazil, on 5–21 August, >1 million visitors are expected to go to the summer Olympics followed by the Paralympic Games on 7–18 September. Saudi Arabia expects to host >7 million pilgrims from >180 countries for the Umrah, between June and September, and the Hajj pilgrimage on 8–13 September. On 1 February 2016 the World Health Organization (WHO), according to International Health Regulations, declared that ZIKV “constitutes a public health emergency of international concern”.

### TRANSMISSION

The first isolation of ZIKV from mosquito samples was made in 1948 from *Aedes africanus* in the Zika forest. In 1956, 2 other strains were isolated from the same mosquito species, but these investigators and many others following them neglected other mosquito species. *Aedes aegypti* was considered the sole vector for the outbreaks prior to 2007, when *Aedes albopictus* was added. Other *Aedes* species have been reported as competent vectors of ZIKV, which might explain the extensive variation of the viral envelope protein.

Diallo and colleagues surveyed mosquitoes from different environments from Senegal and detected by reverse transcription polymerase chain reaction (RT-PCR) the presence of ZIKV in 10 species from the genus *Aedes*, and *Mansonia uniformis*, *Anopheles coustani*, and *Culex perfuscus*. These mosquito species probably contribute to the zoonotic cycle of ZIKV transmission. Unfortunately, the variety of species and rapidly increasing presence of these vectors worldwide could fuel the current epidemic in urban areas. However, the simple detection of a virus in a mosquito sample does not incriminate it as a vector.

In addition to transmission with blood-sucking insects of the *Aedes* species, numerous reports indicate perinatal, sexual, and transfusion transmission. Brazilian officers recently confirmed 2 cases of transfusion-transmitted ZIKV: The first recipient remained symptomatic, while the second died from other causes. Infectious ZIKV particles have been reported in breast milk, but evidence of transmission via breastfeeding remains poor. There is also evidence of perinatal transmission.

*<http://cid.oxfordjournals.org/content/early/2016/05/19/cid.ciw210.full.pdf+html>*