



General anesthesia intubation necessary

This section has the following topics: Three phases General anaesthesia Regional anaesthesia Epidural anaesthesia you the drugs that make you lose consciousness, or he or she performs the nerve block that makes part of you numb (as in a spinal or an epidural). In some hospitals, you are taken into a smaller room adjacent to the Operating Room. This smaller room is known as the Anaesthetic Induction Room, as it is where the anaesthetic is 'induced' or started. In either case, you will have 'routine monitors' attached, which are used for virtually every patient. These include an ECG (electrocardiograph), a pulse oximeter probe, and a blood pressure cuff. In addition, in most cases an intravenous line is started, usually in a vein in the back of one of your hands or in a vein in your forearm. Middle or maintenance phase: The anaesthetist ensures that you remain anaesthe and/or gives you other drugs to reverse their effects, so that you regain consciousness or sensation. General anaesthetic or induce 'sleep' in one of three ways. Induction ("going off to sleep") Your anaesthetic or induce 'sleep' in one of three ways. called "gas induction": often used in children intravenous induction, you may have local anaesthetic cream applied to the skin over the vein used for the initial injection. The location of the vein depends on the anaesthetic's preference, the site of the operation, and the appearance of your veins. Often the veins on the back of the hand or forearm are used. The choice of hand depends on whether you are left- or right-handed, because having a bruise on the back of your dominant hand may cause discomfort afterwards. Also, if your intravenous line must remain in place for some time, you will find it easier to be able to do things, such as combing your hair or brushing your teeth, if your intravenous is not in the hand with which you normally do these things. Having wiped away the cream and applied some cleaning alcohol to the skin, your anaesthetist inserts a cannula or fine plastic tube into the vein. This is accompanied by a sensation varying between slight pain and a feeling of light pressure. In the absence of local anaesthetic cream, you feel a short sharp pain. The cannula is secured to the skin with tape and may be attached to an intravenous 'line' or long clear plastic tube connected to a bag of saline or similar fluid. This fluid may feel cold when it runs into the vein (usually in your arm). Your anaesthetist may then have you breathe oxygen from a mask. This process is known as preoxygenation. Your anaesthetist may also give you one or more drugs, before giving you the actual drug which makes you lose consciousness. For example, if you are scheduled to have your gallbladder removed, your anaesthetist might start by giving you an injection of a drug to relax you, and then a drug to decrease the chance of postoperative vomiting. You might also be given an injection of a potent painkiller (opiate or narcotic), such as fentanyl. This drug also helps minimise any marked rises in heart rate and blood pressure that can occur at a slightly later stage of the anaesthetic and operation. Sometimes anaesthetists give these additional drugs after you have lost consciousness. The anaesthetist then injects the induction drug through the cannula into your vein. This is the time when he or she may ask you to count (often backwards, from 100). Counting is a means of distracting you and also shows when the drug has achieved its effect. The induction drug works very quickly, especially in younger patients. It takes only the time for the blood carrying the drug to return from the arm to the brain. (Anaesthetists call this the 'arm-brain circulation time'.) In most people this time is about ten seconds, but it may be faster in children and slower in elderly or very ill patients. Inhalation (gas) induction This method is common in children but is also used in some adults. It involves having the anaesthetist or the patient hold a mask over thold a mask over the patient hold a mask over the patient hold a m consciousness occurs. Induction by mask usually takes longer than the intravenous method, and achievement of the appropriate depth of anaesthesia is often preceded by a period of restlessness. This is quite normal and the patient is already unconscious at this time. Then the anaesthetist has an assistant (nurse, technician or another anaesthetist) hold the mask and ensures that the patient is continuing to breathe well. The anaesthetic is similar, whether an intravenous or inhalation technique has been used. Not just a recipe How does your anaesthetist know how much to give you? Individuals vary in their requirements for anaesthetic drugs. The dose of the induction drug is generally given slowly to patients who are to have an elective operation. Your anaesthetist has calculated the expected dose you should need, from your weight, your age, your sex, and your state of health. However, as the drugs are injected, the dose of each is adjusted as necessary, according to the effects produced. This is known as titrating the drugs according to their effect. In an emergency it is sometimes necessary to give the drugs according to their effect. In an emergency it is sometimes necessary to give the drugs according to the effects produced. bed next to you? Every anaesthetic given is a very individual thing and each anaesthetic depends on the patient to whom it is given. The doses of drugs that you are given are calculated according to your weight, age and state of health; the operation or examination for which it is given; and even the anaesthetist who gives them. There is no fixed recipe. What happens once you are asleep? After the induction drug has caused you to lose consciousness, your anaesthetic gases) to ensure that you remain unconscious. If these other anaesthetic gases) to ensure that you remain unconsciousness, your anaesthetic gases) to ensure that you remain unconsciousness in a few minutes, after the induction drug had worn off. Breathing during anaesthesia Once you are unconscious, your anaesthetist will take over the management of your breathing, while attending to any changes in your mouth and nose, ensuring that you are breathing clearly and without snoring; or holding the mask and breathing for you by squeezing a bag attached to the breathing circuit; or inserting a breathing the mask, and then usually through a plastic airway. There are several types of airway, each of which is a different size, depending on your age and size. The presence of an airway helps to ensure that your breathing is adequate and, in the case of an endotracheal (breathing) tube, that acid from your stomach does not pass into your lungs. Muscle relaxation To help manage your breathing is adequate and, in the case of an endotracheal (breathing) tube, that acid from your stomach does not pass into your lungs. relaxant, to relax or weaken your throat and abdominal muscles. Muscle relaxants have two major useful effects. They make it easier for your anaesthetist to insert a breathing (endotracheal) tube through your mouth or, on occasion, through your m relaxants, your anaesthetist would have to give higher doses of other drugs to weaken the muscles of your mouth and throat, to make insertion, without causing any damage to muscle fibres. Indeed, it is difficult for a surgeon to operate inside your abdomen if the muscles are not relaxed. The same applies to other operations, such as those on the hip or in the chest, but not for those on the skin or the body surface. If you have been given a muscle relaxant, all of your muscles will be relaxed or weakened, including the muscles that help with breathing. In that case, your anaesthetist 'breathes for you'. This is usually done with a ventilator, which pushes gas around the anaesthetic circuit and into your lungs. Ventilation may also be done by hand, with your anaesthetist squeezing a bag attached to the anaesthetic circuit. centimetres in length and one centimetre in diameter and is curved to fit over the back of the tongue. An oral airway is most often used for minor operations, such as those on a limb, particularly if the duration of the procedure is to be short. The laryngeal mask for cases for that would previously have had an oral airway and for cases that may have required an endotracheal tube. The endotracheal tube is long enough to reach from just outside your mouth or nose and down to just below your vocal cords. The decision to use an endotracheal tube is determined by your condition, the operation to be performed, and the position in which you are placed during the operation. Usually, an endotracheal tube is used if the surgeon is to operate on the brain, the head and neck region, the chest, the abdomen, or the pelvis. Although the anaesthetic is started while you are lying on your back, your surgeon may need you to be in a different position for the operation. For example, if you are to have an operation on your back, the Operating Room team will turn you over onto your stomach after you are unconscious and an endotracheal tube has been inserted. An airway is placed in your mouth after you become unconscious; on rare occasions an endotracheal tube must be inserted before any drugs are given and you are still conscious. This is known as 'awake intubation' and is only likely if you have a tumour or severe obstruction in your throat, and decreases any gagging or coughing as the tube is inserted. Your anaesthetist will explain the process beforehand. If your anaesthetist has chosen to use a laryngeal mask or endotracheal tube, it is connected to the circuit after it has been inserted. Your anaesthetist controls and monitors the flow and concentration of gases that enter and leave the circuit and your body, so that you receive the appropriate amount of anaesthetist has inserted an endotracheal tube into your trachea (windpipe), you breathe carbon dioxide out through the tube. (Carbon dioxide is the gas produced by the body as it uses oxygen to generate energy. Carbon dioxide is then excreted from the body through the lungs.) Carbon dioxide in the endotracheal tube. The presence of carbon dioxide in the endotracheal tube suggests that the tube is in your trachea. There are other methods to help confirm the correct position of the tube, but they are less accurate than the carbon dioxide monitor. Your anaesthetist might also use a stethoscope to listen for the sounds of air moving in and out of your chest and carefully observe how your chest moves up and down with each breath, noting whether or not this movement. is symmetrical, which usually occurs when the tube is in the trachea. Your anaesthetist might also listen to your chest to ensure that the tracheal tube has not been placed too far down into one lung. This is known as an endobronchial intubation and is sometimes done on purpose. If the surgeon wants to operate on the left lung, then the tube is intentionally placed into the right lung. Induction of anaesthesia in children Anaesthesia is very safe by world standards, and this also applies to anaesthesia is often different, influenced by the age of the child and the degree of anxiety or fear experienced by the child and their parents. Many children become anxious when they come to hospital or interact with health professionals in other settings. Many are particularly anxious around surgery and the induction of anaesthesia, which is not surprising - their daily routine has been altered, they are in a new environment surrounded by unfamiliar people and they may be asked to do things that they don't want to do. Parents and children alike are often anxious at the thought of being separated from each other. The role of your child's anaesthetist is to keep your child comfortable and safe, in a way that causes the least possible amount of anxiety. Some children will be prescribed a sedative premedication before the induction, some an inhalational induction, some an inhalational induction, some an intravenous induction, some an inhalational induction of both. Your role as a parent is very important. Before the procedure, it is helpful if you understand what is happening and are able to explain the procedure to your child in a positive, age appropriate manner. You can be an enormous help during induction, reassuring or distracting your child and helping them to co-operate at important moments. Your child's anaesthetist will describe the process to you and let you know how and what you can do to help. Sometimes your anaesthetist might prefer that you not be present at induction, such as emergency surgery where your child is at risk of vomiting, or other situations where your anaesthetist's primary concern. Part of your preparation includes recognising that you may be anxious, or that there are particular situations that you would find distressing. Anaesthetised children look different to sleeping children. This can be challenging for the parent - especially during an inhalational induction, when it is normal for the child to move around, breathe rapidly and appear to snore. Not everyone is comfortable with the idea of being present at induction, and you should not feel pressured to be involved. Your child's care will be no less professional. Less than six months It is uncommon for parents of infants less than six months It is or her undivided attention to the child, without needing to attend to a parent at the same time. You can help by: Understanding why you are unlikely to be invited in for induction. Six months, most children become increasingly anxious when separated from their parents, and so a parent is often encouraged to be present at induction. Small children often cry when they wake up at the end of the procedure, but it may be difficult to know if it is because they are hungry, dizzy or uncomfortable. Your child's recovery nurse will usually invite you into the recovery nurse will usually invite you and emergence from anaesthesia. Pre-school children If their parent is nearby, many children in this age group interact happily with health professionals. At induction, some will be very fearful, and some will be very fearful, and some will be enchanted by stories and games, some will be very fearful, and some will be enchanted by stories and games. children appear disoriented and distressed on emergence from anaesthesia. You can help by: Working as a team with your anaesthetist to reassure your child. Primary school aged children Many children in this age group are excited about what is going to happen and afraid of being in pain. Ideally the procedure should be explained truthfully, but without using potentially frightening words such as 'needle' and 'pain'. If explained appropriately, intravenous induction can work very well in this age group. You can help by: Talking to your child about what is going to happen and why, listening to his or her concerns, and explaining what will happen in a reassuring manner. Teenagers Many children and young adults in this age group fear loss of control and death, but are uncomfortable talking about their fears. It is important to ensure that they understand why the procedure is happening, reassure them about their fears. It is important to ensure that they understand why the procedure is happening. explain that they can be in control of their pain management after the operation. Many teenagers prefer that their parents are not present at induction of general anaesthesia Your anaesthetist might modify the induction of anaesthesia by using a technique known as a rapid sequence induction. This is a crucial technique in patients who must undergo an emergency operation and who have a full stomach, either because they have just eaten or because their stomachs take longer than normal to empty (as a result of pain, drugs, or other conditions). In a rapid sequence induction, you are given 100 per cent oxygen to breathe from a mask placed firmly over your mouth and nose for three to four minutes. This process is known as preoxygenation and replaces the nitrogen in your lungs (the most common gas in the air) with oxygen. As a result, the store of oxygen in your body is markedly increased and there is less chance of lack of oxygen (hypoxia). Next your anaesthetist calculates the dose of each drug is calculated on the basis of your weight and your general condition. Your anaesthetist then injects the two drugs rapidly through the intravenous cannula and you quickly lose consciousness. This minimises any risk of your going through a stage during the loss of consciousness when you struggle or vomit. As you lose consciousness, your anaesthetist instructs an assistant to apply firm pressure to the front of your neck. The assistant normally stands on your right and uses the first three fingers of the right hand to apply the pressure. (You might feel the assistant's fingers lightly touching your neck as you lose consciousness.) The specific part where the pressure is applied, called your cricoid cartilage, is a ring of cartilage that forms part of your trachea. Pressure on the cricoid cartilage (cricoid pressure) seals off the oesophagus and reduces the possibility of stomach contents flowing from the oesophagus into the back of the throat and then down into the lungs. Maintenance of anaesthesia ("keeping you asleep") During the maintenance phase of the anaesthetic, your anaesthetist keeps you in a state of unconsciousness, using a mixture of inhaled (inhalational) and intravenous (injected) drugs. The inhalational agents are administered through the breathing circuit. They include nitrous oxide and the 'volatile' anaesthetic agents are commonly used in proportions between 0.5 and 4 per cent, although this varies according to the agent and the desired effect. They are powerful drugs and are used to keep you unconscious, as well as helping to control pain and to relax muscles. These drugs can also have side effects, such as low blood pressure, changes in heart rhythm, and difficulties with breathing. Nitrous oxide (N2O) or ('laughing gas') is used in many general anaesthetics, in a mixture with oxygen of around 70 per cent nitrous oxide and 30 per cent oxygen. At that concentration the nitrous oxide does, however, provide a means of giving other stronger anaesthetic gases through the breathing system. Air, enriched with extra oxygen, is sometimes used when nitrous oxide is less desirable, such as during anaesthesia in the elderly, for some brain surgery, and in some tiny premature infants. During most anaesthetics, oxygen is added so that the usual proportion given to the patient is about 30 per cent. This extra oxygen provides some safety margin over the normal 21 per cent in room air. The critical aspect of anaesthesia care is to ensure that you continue to receive adequate oxygen, which is necessary for preservation of life and the functioning of organs. Your anaesthetist may choose to give you other drugs through the intravenous line. Depending on the drug, your anaesthetist may do this to increase the depth of the anaesthetic (how unconscious you are). Drugs are also given to perform the procedure), your anaesthetist may give you further doses of the muscle relaxant drug given at the time of induction, or a different drugs may be given in separate or discrete doses (sometimes your anaesthetist will not use any inhalation anaesthetics at all. When all anaesthetic drugs are given intravenously, it is referred to as Total Intravenous Anaesthesia, or TIVA. These drugs are usually given by carefully controlled infusion. Emergence or regaining consciousness. During this phase your anaesthetic is emergence ("waking up") The third phase of the general anaesthetic is emergence or regaining consciousness. During this phase your anaesthetic is emergence ("waking up") The third phase of the general anaesthetic agents (except the oxygen) and also stops any intravenous anaesthetic drugs. You gradually regain consciousness returns, your anaesthetist usually needs to reverse the effects of the muscle relaxants, with the injection of two more drugs. As consciousness and able to breathe without any help from the anaesthetist, the breathing tube is removed. By carefully calculating the right amounts of each drug, your anaesthetist can ensure that you are completely unconscious during the operation, but awake and pain-free at the end of the procedure. Regional anaesthetist, the term 'regional' refers to the fact that only part of the body is anaesthetised. In some parts of the world, ' regional anaesthetise' may be known as ' local anaesthetise' may be known as ' local anaesthetise'. The term 'nerve block' means that the transmission of impulses in the nerve or nerves from the area of the operation is blocked by the injection of local anaesthetic drugs around the nerve (s). You will feel numb or 'frozen' in the area of the block. Local anaesthetics can be administered around the nerves in the spinal cord, either as a spinal or as an epidural anaesthetic. Local anaesthetics can also be injected close to other nerves, such as those in the arms or legs. Because these nerves tend to be in the body's extremities, these nerve blocks may be called peripheral nerve blocks. Local anaesthetics may also be used to numb certain internal membranes such as the lining of the mouth or throat, or the urethra for examination of the bladder. The choice of which particular block to use is based in part on the anaesthetist's experience and the potential for the bladder. that occur with nerve blocks are related to the needle and to the agent injected. The needle can cause damage to nerves and to other neighbouring structures. For example, a block of the major group of nerves to the arm, when performed at a site just above the collarbone ('supraclavicular approach to the brachial plexus') is associated with a 1 or 2 per cent risk of damage to the lung (pneumothorax). This is because of the nerves are close to the outer lining of the lung. Injection of local anaesthetic agents can cause side-effects because of allergic reactions, or because of misplacement of the needle. either of these blood vessels. This results in a sudden increase in the concentration of local anaesthetic in the bloodstream, which can cause convulsions and resuscitation equipment are available. This equipment includes oxygen, a means of delivering the oxygen to the lungs, suction apparatus (in case of vomiting), and items for tracheal intubation. It is vital to have properly trained assistance available. There are different types of local anaesthetics that act for different lengths of time. By choosing various drugs, your anaesthetist can tailor the length of your anaesthetist to give you one or more injections of local anaesthetist, without having to re-insert the needle. This is known as giving a 'top-up'. Testing the block Your anaesthetist then checks to see how well the block has worked, by touching your skin with an ice cube or an alcohol swab. If the block has worked, you cannot feel 'cold' when touched. Some anaesthetists use a very fine sterile needle and ask you if the needle feels 'sharp' (where the area supplied by the nerve is not blocked) or 'blunt (where the nerve is blocked). What will you feel? The aim of any nerve block is to stop you feeling any pain. However, it is important to remember that you might feel touch, pressure, or vibration, and this is considered normal for certain blocks using certain drugs. Most anaesthetists like to remind their patients that they may feel 'something' but are very unlikely to feel pain. If the block does not work, there are several options: The block can be repeated. If the area of sensation is small, the surgeon might be able to inject a small amount of local anaesthetic into the area of sensation is small, the surgeon might be able to inject a small amount of local anaesthetic into the area of sensation is small. or a small amount of an injected opiate or narcotic. A general anaesthetic may be given instead. Finally, in some patients, it is better to cancel the procedure and try again another day. During the sterile drapes or sheets that separate you from where the surgeon is working. These drapes also prevent you from seeing what is being done. Your anaesthetist continues to monitor how you feel in general, and your vital signs (blood pressure, heart rate, and oxygen saturation). During the course of the procedure, depending on how you are feeling, your anaesthetist might choose to give you an intravenous injection of a sedative, to relax you. You will feel drowsy and might even drift off into what seems like a light sleep. At the end of the operating Room. When you are transferred to the recovery room, you feel relaxed, free of pain and quite awake. Spinal anaesthesia The most common types of nerve blocks are spinals and epidurals. The spinal cord is surrounded by fluid within a tough fibrous envelope called the dura, but still within the hollow spinal canal of the backbone. Spinal anaesthetics are useful for surgical procedures involving the legs and lower abdomen. Typical surgical procedures include caesarean section, vaginal hysterectomy, operations on the prostate, repair of a fractured hip, and arthroscopic examination of the knee. There are a few reasons why you might not be suitable for a spinal anaesthetic. It might be your choice not to have a spinal. The other major reasons have to do with an increased pressure around the brain (from a tumour, a build-up of spinal fluid, or the presence of a blood clot) and problems with poor blood clotting. All of these are extremely rare. If you have a spinal anaesthetic, your anaesthetic, your anaesthetist first attaches various monitors (ECG, blood pressure cuff, pulse oximeter), and starts an intravenous line. You are then positioned, either lying on one side or sitting up on the edge of the Operating Room table or trolley. If you are lying down, you are asked to curl up into a ball, with your knees drawn up to your chin (or as high as possible). If you are sitting up, you lean over a pillow placed on a small table. In either case, a nurse or the anaesthetist's assistant helps you to get into position and to remain as still as possible). If you are sitting up, you lean over a pillow placed on a small table. In either case, a nurse or the anaesthetist's assistant helps your anaesthetist feels the bones of your back to choose the level to insert the spinal needle. The site most often chosen is about 4-5 centimetres below your waist and right in the middle ('midline'). After this, your anaesthetist scrubs up, and puts on sterile gloves and often a sterile gloves and often a sterile gloves and right in the middle of your back, using antiseptic solution (which is usually cold), the anaesthetist covers the surrounding skin with sterile cloths. The next step is insertion of the needle, during which it is extremely important for you to hold as still as possible. Your anaesthetist first gives you a small injection of some local anaesthetic into the area where the spinal needle will be inserted. This injection might feel like a small bee-sting. Then the specially designed spinal needle is inserted into the epidural space and through the covering over the spinal canal. This is a sack-like structure containing the cerebrospinal fluid, nerve roots, and the spinal cord. Local anaesthetics (and sometimes a painkiller) are injected into the spinal fluid through the needle, which is then removed. After the needle is removed, it is safe for you to move a little bit. If you are sitting up, your anaesthetist has you lie down after about 30 seconds. If you were lying down, you continue to lie in that position, although you could straighten your legs and your neck. The local anaesthetic solution disperses in the spinal fluid and blocks the nerves. Over the next few minutes you develop profound numbness and weakness in the lower half of your body (or one side more than the other if the spinal was inserted when you were lying on one side). The major immediate complications of spinal anaesthetics include nerve damage from the needle, a decrease in blood pressure and heart rate, and failure of the injection to produce an adequate level of anaesthesia. The chance of the block not working is about one per cent or less, depending on how frequently your anaesthetist performs spinal blocks. The long-term complications of spinal anaesthesia include a 1 per cent chance of severe headache is unusual in that it comes on when a patient sits or stands up and is completely resolved by lying down. (The medical term for this phenomenon is 'posturally dependent headache'.) Specific treatment may be needed for the headache. One extremely rare complication of spinal anaesthesia includes compression of the anaesthetic or other agents on the nerve roots. A slightly more common complaint is irritation of a nerve root (radicular irritation syndrome). With this problem, patients report burning pain in the legs. The pain comes on a few days after having a spinal with certain local anaesthetic drugs. Fortunately, the pain goes away without any treatment. Epidural anaesthesia Like spinal anaesthesia, epidural anaesthesia can be used for operations on the legs and the lower part of the abdomen. Epidurals can also be inserted to help with pain management, either after an operation or during labour. The spinal cord is surrounded by fluid within a tough fibrous envelope called the 'dura'. With a spinal, the drug is injected into the fluid. With an epidural, the drug is placed outside the dura, but still within the hollow spinal canal of the backbone. The technique of insertion of the epidural anaesthesia. However, the needle is stopped in the epidural anaesthesia is performed using a larger needle through which a fine plastic tube (catheter) can be threaded into the epidural space. This tube is similar to fine cooked spaghetti and it is not always possible to determine where the tip of the catheter ends up. Occasionally a patient complains of a brief, shock-like sensation as the catheter is being threaded through the needle and into the back. Most anaesthetists warn their patients that this might happen and remind them not to move until the needle is removed. The catheter is then taped up the back and secured to the hospital gown. A filter is attached to the catheter - in case the fluid to be injected contains tiny particles of glass from the drug ampoules, and to keep bacteria out. Epidural analgesia is provided instead of epidural analgesia is provided instead of epidural analgesia is that analgesia is weaker concentrations of local anaesthetic. An opiate or narcotic may also be injected into the epidural to increase pain relief. Epidurals differ from spinals in that a much larger dose of local anaesthetic is required for an epidural to increase pain relief. and are then known as thoracic epidurals. These are particularly useful for the relief of postoperative pain after operations on the chest (thoracic surgery). In addition, the anaesthetist may use the pain relief from the epidural anaesthetist may use the pain relief from the epidural to reduce the amount of general anaesthetist may use the pain relief from the epidural to reduce the amount of general anaesthetic needed during the operation. include a decrease in blood pressure, and seizures from the accidental intravenous injection of local anaesthetic agents. In addition, effects similar to spinal anaesthetic agents. In addition, effects similar to spinal anaesthetic agents. anaesthesia include a less than 1 per cent chance of the block failing to work, and a similar chance of having a post-dural puncture headache. Also possible is damage to a nerve root from the epidural needle or catheter. In extremely rare cases, an epidural blood clot (haematoma) or abscess may occur, resulting in weakness of the legs and in loss of bowel and bladder control. Other nerve blocks Other parts or regions of the body can also be anaesthetised ('frozen') - for example, for operations on the eye can be performed under retrobulbar or peribulbar block. These blocks involve injecting local anaesthetic around the eyeball, so that the eye is pain-free and unable to move. This kind of block is used for many operations on the eye, including cataract extraction with lens insertion and repair of defects on the retina (back of the eye). Some cataract extraction with lens insertion and repair of defects on the retina (back of the eye). have been applied to the surface of the eye. For surgery on the arm it is possible to provide satisfactory anaesthesia by blocking the major group of nerves (brachial nerve plexus) that supplies the shoulder and arm. A block may be performed at one of a number of different sites, including: in the neck (interscalene) above the collar bone (supraclavicular) below the collar bone (infraclavicular) and in the armpit (axillary) For surgery on the leg it is possible to provide satisfactory anaesthesia by blocking the major group of nerves (sciatic nerve or femoral nerve) that supplies the hip, leg and foot. A block may be performed at one of a number of sites, including: in the groin (inguinal) under the buttocks at the back of the knee (popliteal fossa) and at the ankle The intravenous technique, or Bier's block, can be used for operations on the leg. With this technique, a special tourniquet with two cuffs is wrapped around the arm or leg to be anaesthetised. An intravenous cannula is inserted into a vein in the hand or foot, but no intravenous line is attached. The anaesthetist then lifts up the arm or leg and wraps a tight rubber bandage is removed. The arm or leg is lowered and local anaesthetic is injected through the intravenous cannula. After at least five minutes, the lower tourniquet cuff is released. This sequence ensures that the patient does not feel any pain from the tourniquet, which must remain inflated for at least 45 minutes. If the tourniquet is released prematurely, there would be an increased chance that the local anaesthetic will rush through the patient's blood vessels to the heart and brain. The effect on the brain might be to cause seizures or loss of consciousness. Local anaesthesia sometimes refers to the administration of local anaesthetic drugs under the skin (or subcutaneously). In this technique, the local anaesthetic does not act on a specific nerve, but on a number of small nerves close to the area of skin or tissue where they provide sensation. When scheduled this way on the Operating Room schedule, this technique implies that the surgeon will give the drugs without any involvement of an anaesthetist. Monitored (or anaesthetist, anaesthetist provide care to patients having surgical procedures under local anaesthetist, anaesthetist provide intravenous or inhaled anaesthetic agents for additional sedation or pain relief. In the past, this type of care was often termed stand-by (because the anaesthetist was standing by, ready to intervene if necessary). This approach to patient care is now commonly referred to as 'monitored anaesthetist is caring for the patient, the surgeon is able to focus on the operation, rather than having attention divided between the surgical field and the condition of the patient. For example, should a patient become distressed during the course of the operation, or suffer a complication from the procedure or the local anaesthetic, the anaesthetic provides necessary comfort or resuscitation and the surgeon can continue (if appropriate) with the procedure. One operation occasionally performed under 'local by surgeon' (or monitoring your anaesthetic, your anaesthetic care) is that of cataract extraction. Keeping a record While monitoring your anaesthetic, your anaesthetic care) is that of cataract extraction. Keeping a record While monitoring your anaesthetic care) is that of cataract extraction. Keeping a record while monitoring your anaesthetic care) is that of cataract extraction. and oxygen saturation. Your anaesthetist also records the time, dose, and route of all drugs and fluids that you are given. A record may also be made of routine and special monitors and equipment, as well as any anaesthetic techniques. As well, your anaesthetic techniques. As well as any anaesthetic techniques are given. when your surgeon made the first incision or other important actions. Exactly what your anaesthetist records will partly reflects local custom. For example, in Canada the Guidelines to the Practice of Anesthesia describe the minimum amount of information that should be recorded. Similar guidelines exist in Australia, New Zealand, and other countries. These guidelines state that every patient undergoing general, regional or monitored anaesthesia care should have his or her blood pressure and heart rate measured and recorded at least every five minutes. There is one important exception to this statement, which is contained in the phrase 'unless clinically impractical'. This phrase applies if your condition is very unstable and your anaesthetist is working hard to save your life - for example, giving you life-saving drugs and intravenous fluids. In that case, your anaesthetist might not be able to record after the crisis is over and your condition has stabilised

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