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What is this booklet about?

We wrote this booklet to help build mutual trust between the patient and anaesthetist, which helps to overcome any discomfort before anaesthesia. We would like to familiarise patients with everything that happens during anaesthesia they will require during an operation or diagnostic examination. Treatment has proven more successful in cases where the patient was well informed about the course of the treatment and treatment procedures, as well as when the patient was cooperating with the physician and other medical staff. Familiarizing the patient with the anaesthesia procedures and giving the patient a chance to meet the anaesthetist helps to dispel patient's fears and concerns regarding anaesthesia. It is also reassuring for patient's relatives and friends.

What is anaesthesia and who is an anaesthetist?

Anaesthesia is a physical state during which the patient feels no pain while a surgical procedure is underway. During the operation a patient can be either asleep (general anaesthesia) or awake and calm (regional anaesthesia).

At the same time, the patient's vital functions are being closely monitored and regulated in order for a surgeon to be able to perform the operation.

Anaesthetist is a medical specialist, who administers anaesthesia, treats patients...
whose life is at risk in the intensive care units, treats acute and chronic pain and participates in the care of severely injured patients.

**What are the roles of the anaesthetist and nurse regarding anaesthesia during your operation?**

The anaesthetist will ask you about your general health and about all current and past medical conditions. He/she will meet you before your operation and talk to you about different types of anaesthesia and then decide on the type to use during your surgical operation.

Anaesthetist keeps you safe during surgery and monitors and regulates normal body functions. He/she is helped by anaesthetic nurse.

During the course of anaesthesia, the anaesthetist induces sleep and prevents any pain using different medications. He/she also replaces lost body fluids, monitors, and if needed, also regulates vital organ functions. After the operation, he/she helps relieve postoperative pain.

The patient who underwent an extensive surgery or is in a poor general health condition is transferred to intensive care unit. The treatment there is continued by the anaesthetists, and the intensive medical care is provided by nurses.

Anaesthetist's field of work includes examining and any treatment of the respiratory system before the operation to prevent any possible respiratory complications following it.

This is called a respiratory therapy and is carried out by a respiratory therapist under the direction of the anaesthetist.

**Can you help decide on the best type of anaesthesia to be used during your procedure?**

Of course you can! An anaesthetist will consider your wishes as long as they are not in contradiction with the anaesthesiology standards and doctrine. You will never be forced into anaesthetic procedures against your will.

**What are the different types of anaesthesia?**

Anaesthesia can be either general, regional or local.

During general anaesthesia the patient is asleep, feels no pain and is not aware of the procedure.

But during local and regional anaesthesia only a part of the patient's body is anaesthetised and patient feels no pain in that part of the body.
What is general anaesthesia?

Doctors often refer to general anaesthesia as a form of sleep, because it makes all the processes taking place during the procedure more understandable. However, general anaesthesia is not an ordinary sleep, but a form of temporary unconsciousness, which is continuously, precisely and carefully monitored by an anaesthetist. We also call it »carefully monitored unconsciousness«.

A patient can be induced into general anaesthesia by an anaesthetist administering the anaesthetic intravenously or by inhaling a mixture of oxygen, air and volatile anaesthetics through a face mask. While breathing normally a patient inhales a volatile anaesthetic through a face mask and falls asleep in a few minutes.

However, with a deep inhalation technique a patient falls asleep immediately. Anaesthesia can be maintained by adding more anaesthetic intravenously or the patient inhales volatile anaesthetic through lungs. For longer operations, while the patient is already asleep, anaesthetist inserts a tube into the patient's trachea and administers gas mixture using an anaesthetic machine. After removal of the tube from the trachea at the end of operation and anaesthesia, the patient's throat can feel »scratchy«, but this feeling goes away soon. Every surgical procedure is painful and therefore the patient receives analgesics during every anaesthesia.
During some operations, the surgeon requires patient's muscles to be relaxed. Using medications, the anaesthetist blunts patient's reflexes and relaxes the patient's muscles, while the breathing is replaced by artificial breathing with a help of an anaesthetic machine.

Anaesthetist will provide you with appropriate doses of active ingredients required for your planned operation: anaesthetic, analgesic and muscle relaxant - not too much and not too little.

Because the required depth of anaesthesia changes during a surgical procedure the anaesthetist will adjust the depth by adding different doses of active ingredients. Due to modern active ingredients which are currently being used, patients wake up soon after the surgery and feel well. Sedation while the patient is conscious is an anaesthetic procedure used during certain examination procedures or operations. The patient receives a sedative and analgesic. During the procedure, the patient feels sleepy, but still responds sensibly to the instructions or touch and feels no pain. The anaesthetist monitors the patient during the procedure.
What happens when a patient receives local or regional anaesthesia?

There are several types of regional anaesthesia being used, and therefore it is recommended to talk to the anaesthetist about which method will be used during your operation. A local anaesthetic can be administered directly into the region where the operation will take place (local anaesthesia) and in some cases it is injected close to large nerves or nerve plexuses, which innervate the operating field (regional anaesthesia).

When anaesthetist determines that the epidural or subarachnoid (spinal) anaesthesia is the most suitable for the patient, he/she injects local anaesthetic and/or a mixture of other active ingredients into the spinal canal. The anaesthetic engulfs the nerves, which extend from the spinal cord and innervate the operating area. During such types of anaesthesia, the patient is sitting or lying with arched back to facilitate the procedure.

After the anaesthetic has been administered into the operating region, the whole region becomes numb. The patient can feel the operating region, but feels no pain. After the operation, the effects of the local anaesthetic wear off gradually and normal sensation returns into the region.

For some operations a combination of general and regional anaesthesia is used. Together with the regional anaesthesia, the anaesthetist sometimes also injects sedatives or substances to make the patient feel drowsy or sleepy.
What does premedication mean?

In the evening and/or morning before operation you might receive a sedative and if needed, also an analgesic. This is called premedication.

Some premedication drugs calm you down, others numb your pain. If you received premedication, you will probably not remember the events from the period immediately before the anaesthesia.

Children get premedication in the form of a syrup or suppository and adults in the form of tablets or injections. After receiving premedication, you should not try to stand up or walk by yourself. You will be wheeled into the operating room.

What does monitoring mean?

During general or regional anaesthesia, the anaesthetist monitors vital body functions. This is called monitoring. The scope of monitoring depends upon the state of your health and the complexity of the operation. This means that a patient with a difficult disease requires more extensive monitoring. During every anaesthesia the heart rate, heart activity (ECG), blood pressure, body temperature, the level of oxygen in the body, the speed and depth of breathing and the depth of anaesthesia are continuously monitored. You will be connected to all the monitoring devices prior to having anaesthesia administered or during anaesthesia.
None of the monitoring techniques are painful. For extensive or complex operations very precise and highly technologically developed monitoring techniques are being used.

Why is operation sometimes postponed on a recommendation of the anaesthetist?

To ensure a safe anaesthesia, it is important that you are in the best possible physical and mental condition.

Sometimes the anaesthetist determines a certain health condition in the patient that could significantly effect the course of anaesthesia. In this case, the surgery has to be postponed until the health issue is resolved or the patient's condition improves. You will get an explanation why the anaesthesia and surgery were delayed in due course.

When will you meet your anaesthetist?

In Ljubljana UMC, there is a preoperative anaesthesiology outpatient clinic, where you will be examined by an anaesthetist. After talking to the anaesthetist, you will be asked to sign a written consent form for anaesthesia. For under-age children or persons who require a guardian, the consent form will be signed by the parents or guardians. For short outpatient clinic surgical procedures, the anaesthetist will examine and talk to you immediately before the operation.

A special clip is attached to the patient’s finger to continuously monitor heart rate and breathing efficiency. On the image you can also see the part of the needle inside the artery (with a red stopcock) used for monitoring blood pressure and for taking blood samples for testing.
Why does the anaesthetist need the information about the condition of your health?

The anaesthesia is individually adjusted to the condition of the patient's health as well as to the surgery requirements. Therefore, the anaesthetist requires information about your past and current diseases (diabetes, asthma, heart, lung, liver or kidney disease, etc.), the medications you are taking, medication and food allergies you might have and about any potential lifestyle risk factors (smoking, alcohol use, drug use, excessive consumption of prescription medication). If you are taking several kinds of medications and do not remember their names, bring the medications with you. The anaesthetist is also interested in whether you or your relatives ever received anaesthesia before, and how you responded to it.

Why are you not allowed to eat of drink before your operation?

If there is any amount of food or drink in your stomach before you receive the anaesthesia, it can induce vomiting under anaesthesia. The anaesthetics inhibit regular body reflexes that would normally prevent any food from entering into the trachea or lungs during vomiting. Pulmonary aspiration of the stomach content can cause postoperative pneumonia or even more severe complications.

Rules for a planned surgery of an adult or for caesarean section are the following:

1. Patient is allowed to drink a clear liquid up to two hours before any procedure under general or regional anaesthesia.
2. Patient is not allowed to eat any solid food six hours before the operation.
3. An adult patient is allowed to drink 150 millilitres of water with medication up to one hour prior to anaesthesia.
4. Chewing gum and tobacco must not be used two hours before anaesthesia.

Rules for a planned surgery of a child are the following:

1. A child can drink water or unsweetened tea in small sips up to two hours before surgery.
2. Breast-feeding should be stopped four hours before anaesthesia. The same rule applies for any milk preparations for newborns.
3. Children are not allowed to eat solid food six hours before the operation. The same rule applies for consumption of cow’s milk or powdered milk.
4. A child is allowed to drink a few sips of water with medication up to one hour prior to anaesthesia.
5. Chewing gum has to be removed from the mouth no later than two hours before anaesthesia.
These guidelines do not apply for the patients with a known or expected delayed gastric emptying (diabetes, diseases of the upper gastrointestinal tract, etc.) or with an obstruction of the intestines.

During emergency operations the anaesthesiologist uses a special technique which can prevent stomach content from entering into trachea or lungs.

In recent years drinking special carbohydrate drinks two hours before the operation has been shown as beneficial. In some clinical departments the doctor will prescribe such a drink after talking to you.

**How soon after your operation are you allowed to eat and drink again?**

If your doctor does not recommend otherwise and you are not feeling nauseous and are not vomiting, you can start to drink clear liquids right after you wake up from anaesthesia. Start by taking small sips (children 5-10 ml/kg of body weight) and drink in intervals. If you start feeling nauseous you can try to drink again after 30-60 minutes. Once you are able to swallow normally, are not feeling nauseous and are not vomiting you can start eating easily digestible food.

**Why do you have to remove your contact lenses, glasses, dentures and jewellery before anaesthesia?**

During anaesthesia, the anaesthesiologist will put a mask on your face which is used for supplying oxygen and anaesthetic gases when necessary.

Your glasses could get in the way and your contact lenses might be damaged in the procedure. You should also remove any nail polish form your finger and toe nails since the level of oxygen in your blood can be estimated by the colour of your nails.

During your anaesthesia-induced deep sleep, the anaesthesiologist ensures your breathing is normal. Your dentures might impede this procedure and therefore it is compulsory to remove all partial or complete dentures prior to anaesthesia.

During anaesthesia for major surgeries and magnetic resonance imaging (MRI), the patients are required to remove any jewellery and watches, because they could interfere with the examination.

**Is anaesthesia a safe procedure?**

Anaesthesia is a safe procedure when conducted in accordance with the modern medical doctrine. Sometimes anaesthesia involves a certain amount of risk, which is rather low according to the world statistics.
Anaesthesia carries a higher risk for patients who are in a poor medical condition than for young or otherwise healthy patients. Talk to your anaesthetist if you or your family are concerned about your risks in regards to anaesthesia.

**Who is responsible for replacing liquids, blood and blood products?**

During operation the anaesthetist replaces lost body fluids and blood and keeps the body temperature at a normal level.

During major surgical procedures or because of extensive wounds, the patient might require replacement of lost blood. Anaesthetist takes into account blood transfusion standards set under the current doctrine. Before certain operations (orthopaedic operations) the patient’s blood is collected and stored at the transfusion station until the surgery. The patient receives this blood during surgery (autotransfusion). During some major operations, a special machine is used for collecting patient’s lost blood and returning it cleaned back to the patient.

If you will require blood transfusion from a blood donor or blood products, you should know that all blood is carefully screened for HIV virus and other possible infections (hepatitis B and C) and that it is prepared and stored in accordance with the modern procedures.

**How does the patient wake up?**

The anaesthetist ensures that post-operation waking is pleasant and painless. Different medications and procedures are used to prevent pain. You will actively participate in pain treatment. In addition, all the procedures will be explained to you.

**Will the patient on the surgical ward experience a lot of pain following the procedure?**

At Ljubljana UMC a special anaesthetic unit takes care and treats any postoperative pain. Pain treatment is carried out by the anaesthetist and the nurse together with the department physician and department nurses.

Anaesthetists ensure that only minor postoperative pain is experienced in the first days after the surgery. On the department you will receive different analgesics intravenously either through drip infusion or using a special pump or through a catheter inserted into your spinal canal.

You will determine your pain level using a pain scale with the help of the department nurses. If the pain proves to be severe, you will receive additional doses of analgesics.

The treatment of postoperative pain is an active process you actively take part in and there is no need for you to experience pain.
Where does the patient wake up following the operation?

Patient might wake up already in the operating room right after the anaesthesia and operation or in a room for direct postoperative recovery. During the process of waking up the patient is monitored by anaesthetist and anaesthetic nurse.

Anaesthetist will ensure that the state of sleep will last for a suitable time period in accordance with the complexity of the operation. You might not remember the period around the time you woke up.

However, after the surgery you might also wake up at the department for intensive care. If your surgical procedure was extensive or your medical condition requires intensive postoperative treatment with machines for artificial breathing or for assisting the heart or other organs, you will be transferred to the department for intensive care. There you will be treated by anaesthesiology intensivists and cared by nurses and other health professionals. They will closely monitor your vital functions day and night and implement intensive therapeutic procedures. At the department for intensive care your relatives will get current information on the state of your health and will even be able to pay you short visits.
How does the patient feel upon waking up?

This depends upon the type of medications the patient received during anaesthesia and the type of surgical procedure. After operation you might feel cold, because your body cools down during longer surgeries. Upon waking up you might feel some pain or discomfort. In rare cases patients experience dry mouth, sore throat, nausea or they even vomit. Those sensations can result from anaesthesia, the type of operation or the patient's specific response. Any discomfort can be alleviated with medications.

Can a patient participate in a teaching process or a clinical trial during anaesthesia?

Individual anaesthetic procedures have a wide medical significance and applicability and health professionals have to learn how to use them. Therefore most anaesthetists train medical students, nurses and trainee doctors. This type of training is carried out in every hospital.

Sometimes anaesthetists also conduct clinical research. If they would like you to participate in the research you will be asked for your consent. Your decision will be fully respected. Even if you decline participation you will be treated with equal care.

However, if you will wish to participate in the research project, all the procedures will be carefully explained to you and a great care will be taken to ensure your safety. You will confirm your participation in the research with a special consent form. You can cancel your participation at any time.

How soon after receiving anaesthesia and having operation can the patient be discharged and return home?

Following short outpatient clinic anaesthesia and surgical procedures you are able to go home two to four hours after the procedure accompanied by an adult. You are not allowed to drive a car or operate machinery, make any important or legal decisions, sign legal documents or drink alcohol for at least 24 hours following the anaesthesia. Even if you are feeling well, your reflexes and perception are slowed down. It is recommended to rest and consume light drinks and foods. Babies and small children can have a sweetened tea shortly after the surgery but they should not have puréed foods for at least two hours.

Due to the modern anaesthesia and operation techniques the patients are able to be released into home care soon after the surgery and only return for the follow-up examinations. Patients at home of course require a help of a responsible adult person and have to follow any instructions given by the doctor.
How can a patient contribute to a safer anaesthesia?

- You can improve your physical condition before surgery with exercise. A daily walk might prove beneficial.
- Stop smoking at least six weeks before the surgery.
- Limit alcohol intake.
- Until the time of the surgery take any medications you regularly take for any health condition you might have, however be sure to inform your anaesthetist and surgeon about them.
- If you are taking aspirin or any other blood thinning medicines, it is extremely important to inform your surgeon and anaesthetist who will advise you on when to stop taking them.
- Comprehensively inform your anaesthetist and surgeon about any diseases and disorders you might have.

Possible complications

The planned anaesthesia is safe and is conducted in accordance with the modern professional guidelines. Nevertheless, complications might occasionally occur and are usually mild. They very rarely cause a permanent damage or even death of a patient. They might occur due to the patient's poor health and due to emergency and complexity of the surgical procedure. Complications are more common among smokers, overweight patients, patients with diabetes, heart and lung disease and other serious chronic diseases. In addition, the complications also occur more frequently among patients who recently recovered from a cold or flu or have not properly fasted before the procedure.

Certain complications can also arise from the operation and procedures relating thereto and are not directly related to anaesthesia, such as complications in relation to the position of the patient during surgery.

Possible complications are:

- In general anaesthesia and sedation: nausea, vomiting, agitation upon waking up, headache, dizziness, trembling, visual disturbances, corneal damage, disturbance of consciousness, even coma, epilepsy seizures, dry and sore throat, muscle pain, bruising on the insertion point of the venal channel, leakage of fluid and medicines at the
vein, dental injuries or tooth extraction, injured lips, vocal cords or trachea, drop in blood oxygen saturation, fluctuations in blood pressure and pulse, heart rhythm disorders, worsening of angina pectoralis or heart attack, cardiac arrest, heavy breathing, asthma attack, inhaling stomach contents into the lungs, respiratory tract infections, allergic reactions of all degrees on all the active substances or latex, a dangerous rise in body temperature, prolonged duration of effect of anaesthetics and medicines that cause muscle laxity even after anaesthesia stops working, awareness of events that occurred during the operation, sleep disturbances and transient altered behaviour patterns.

- **In regional/local anaesthesia:**
  failed or partially successful nerve blockage, haemorrhage or infection at the injection site, headache, problems with urination, itching, backache, nerve injury with consequent tingling sensation or paralysis of a certain part of the body, haemorrhage or abscess around the spinal cord with consequent paralysis of lower limbs, inflammation of the meninges, damage to nearby structures (e.g. blood vessels, lungs), allergic reactions of all degrees on all the active substances or latex, heart rhythm disorders, drop in blood pressure, tinnitus, visual disturbances, tongue numbness, speech disorder, convulsions, coma, cardiac arrest.

- **During administration of anaesthesia to pregnant mothers** complications might affect the mother or the foetus.

- **In cases requiring transfusion of blood or blood derivatives** during a surgical procedure, complications connected with blood transfusion might occur: rash, itching, heavy breathing, chills, fever, breakdown of red blood cells, lung injury, infection with hepatitis B or C or HIV virus.

**Conclusion**

We are aware that we might not have answered all the questions you might have in this booklet. If you have any further questions regarding anaesthesia, please talk to your anaesthetist and ask for further explanations. The medical staff will help you get in touch with your anaesthetist.
Your safety is in our hands.