

Anaesthetics and pain management during and after your operation

Anaesthetics

Introduction

You will soon be having an operation in our hospital. To make sure you do not feel pain or are even aware of the operation, you will be given an anaesthetic before the operation. The term 'anaesthetics' is the collective name for all types of analgesia. The topic of anaesthetics may have already been discussed during the conversation with your doctor. The type of anaesthetic will be determined in the conversation with the anaesthesiologist or the nurse anaesthetist. This is also the time when you can ask any questions you might have about the anaesthetic. This leaflet contains important information for your operation. For example, that your operation will be cancelled if you have had something to eat or drink, because this means that your stomach will not be empty and the operation will have to be postponed.

Alcohol and smoking

Excessive consumption of alcohol has a negative effect on the anaesthetic.

You are advised to moderate your consumption in the two weeks before the operation. Do not drink any alcohol in the 12 hours immediately before the operation.

Smoking has a number of adverse effects on the functioning of your body. It is known that smokers have more complications after operations and anaesthesia. They also often experience more pain after an operation. If you stop smoking for a few weeks before the operation, your lung mucus will be less irritated. If you stop smoking for at least 12 hours before the operation, your blood will be better able to carry oxygen to the tissues and there will be less risk of problems with your blood circulation. Both of these factors are also important for wound healing.

Consultation with the anaesthesiologist and the nurse anaesthetist

The anaesthesiologist is a doctor who has specialised in anaesthesia, pain management and other types of care involved in the operation. An anaesthesiologist was previously called an anaesthetist. The nurse anaesthetist is a specially trained nurse who assists the anaesthesiologist in the operating theatre.

After your visit to the specialist, who informed you that you will have an operation, you will be asked to visit the pre-operative screening department [Vorbereidingsplein]. This pre-operative screening includes consultation hours with the nurse anaesthetist and the anaesthesiologist.

In order for us to have a clear picture of your health, it is important that you complete the health questionnaire accurately in advance.

There are two options:

- The nurse anaesthetist or the anaesthesiologist will have a conversation with you and form a picture of your health with the help of the questionnaire. You will then be informed about the type of anaesthetic that you can be given for your operation and agreements will be made about this.
- If, during the walk-in consultation, it is established that you have a major medical history or will undergo a major operation, further tests will be necessary. These could include blood tests, an ECG or a consultation with a different specialist, such as a cardiologist or lung specialist. The nurses in the pre-operative screening department will arrange the referrals. If necessary, they will make an appointment for you to see the anaesthesiologist after the results of the follow-up test are known.

Your health and/or the operation may be a reason, from a safety perspective, to perform the operation at one of the locations in Breda.

It may be that circumstances prevent you from getting to the pre-operative screening, for example because of an emergency admission. You will then see the anaesthesiologist on the nursing ward or in the operating theatre. It is not always a given that the anaesthesiologist or the nurse anaesthetist that you meet beforehand, will also be present during the operation. It could be their colleagues who are present, who, of course, are aware of all important issues and the agreements that have been made with you.

It may be that the anaesthesiologist who administers the anaesthetic uses a different type of anaesthetic than the one you agreed and/or preferred. The anaesthesiologist will only do this if there are serious reasons for this.

During the operation, the anaesthesiologist or nurse anaesthetist will be constantly at your side. They can adjust the anaesthetic at any time, they can adjust your breathing and circulation and administer medication to keep you 'asleep'.

Important! Preparing for the operation.

It is very important that you should be 'nil by mouth' during the operation. This reduces the risk of vomiting during and after the operation. 'Nil by mouth' means pre-operative fasting, i.e. not taking any substances orally. Being 'nil by mouth' is necessary for both general anaesthetic and local anaesthetic.

If you have something to eat or drink, the operation will be cancelled!

*The operation will **not** go ahead, if you have not adhered to the pre-operative fasting instructions according to the guidelines listed in this leaflet. Failure to comply with these instructions may have serious consequences.*

The specialist, anaesthesiologist or nurse anaesthetist will discuss whether or not you can take your **medication**. You may not be allowed to take certain medicines, such as blood thinners and medications for diabetes, before your operation. See also the reverse of this leaflet. Usually, you are allowed to take other medicines at the usual time with a sip of water, even if you should have an empty stomach.

If in doubt, please ask at the pre-operative screening or contact the pre-operative screening by telephone.

If you are eligible for a flu jab, we advise you not to take this two days before and two days after the operation.

Pre-operative fasting means:

If your operation is in the morning:

If your operation is before 13:00, you are allowed to eat food until 24:00 hours (midnight) before the operation. You are allowed to drink clear fluids until 6:00 hours in the morning.

If your operation is in the afternoon:

If your operation is the first one in the afternoon, you are allowed to eat food until 24:00 hours (midnight) before the operation. You are allowed to drink clear fluids until 6:00 hours in the morning.

If your operation is the 2nd or subsequent operation in the afternoon, you are allowed to eat food until 24:00 hours (midnight). You are allowed to eat a light breakfast until 7:00 hours and clear fluids until 10:00 hours.

- A light breakfast: 1 or 2 crisp bread(s), possibly topped with a little bit of butter and jam and coffee or tea without milk.
- ALLOWED: Clear fluids such as coffee without milk, tea without milk, non-carbonated soft drinks, clear fruit juice without pulp (for example apple juice, grape juice), water and squash.
- NOT ALLOWED: Milk and milk products, porridge, thick fruit juice or fruit juice with pulp, tea or coffee with milk, fruity drink yoghurt, breakfast fluids, breakfast fruits, broth, etc.

Please note! Your operation will be cancelled if you do not have an empty stomach.

Other preparation:

- Take a shower or bath and brush your teeth: it is important that your skin and mouth are clean. It is important that hospital staff can work hygienically.
- Do not wear make-up: on the day of your admission, you are not allowed to wear make-up such as eye shadow, mascara, lipstick or nail polish. The anaesthesiologist also looks at the colour of your skin and nails to assess your well-being. For that reason, please do not wear artificial nails.
- Do not apply any lotion, cream, aftershave, etc.: in order to keep your skin really clean, you are not allowed to apply any lotion, cream or anything similar to your skin. You are also not allowed to wear any aftershave, perfume, etc.
- Do not wear jewellery and dentures: during the operation you cannot wear any jewellery. It is therefore best to keep these at home. Piercings, no matter where they are, must also be removed before an operation. You are not allowed to wear your dentures.
If your the operation is planned under local anaesthetic, you are allowed to wear your dentures and/or glasses. You may be allowed to bring a walkman or mp3 player with earplugs.
- Do not wear lenses: when you are under anaesthetic, you are not allowed to wear lenses because your eyes will become drier than normal. Therefore, bring your lenses case or wear your glasses. During the operation, you must also remove your glasses.
- Make sure you have painkillers at home: make sure that you have painkillers, such as Paracetamol or Ibuprofen at home to take after you are discharged. You could experience some post-operative pain.

Changes to your health

Your health may change between visiting the pre-operative screening and the day of the planned the operation. For example, if you have started having heart problems or have started using new or different medicines. It may also be possible that because of an illness or accident you are treated by a different specialist. Should your health change, it is important that you make this known during your pre-operative screening.

Sometimes, you may not have a choice and the operation will take place under general anaesthetic.

General or local anaesthetic

Introduction

You will shortly be undergoing a procedure in our hospital. This procedure requires a local or general anaesthetic. This leaflet gives you information about the different options and the pros and cons.

The different types of anaesthetic

There are several types of anaesthetic. The most well-known is *general anaesthetic*. This means that during the operation, you are kept in a deep sleep. A nurse anaesthetist, who stays with you during the entire operation, constantly observes body functions, such as your breathing and blood pressure, and, if necessary, makes adjustment under the supervision of the anaesthesiologist .

Local anaesthetic temporarily numbs a part of the body, for example, an arm, leg, eye (plexus or nerve block) or the lower half of the body (spinal lumbar puncture). Local anaesthetic is sometimes used as the only anaesthetic during the operation. In that case, you can either stay awake during the operation or be given a slight sedative that wears off quickly after the operation. In other cases, local anaesthetic is used in addition to general anaesthetic with the aim of reducing pain during and after the operation. This happens for example during shoulder and elbow operations, knee replacements and large abdominal or lung operations.

What type of anaesthetic is most suitable for you depends on the operation, your age and your health. Any preference you might have can be discussed with the anaesthesiologist or nurse anaesthetist. They will take this into account as much as possible, however, certain operations can only be performed under general anaesthetic. Please mention issues that you believe are important for the anaesthesia during the consultation with the anaesthesiologist or nurse anaesthetist. This could be, for example, removable dental elements, pre-existing neurological disorders or blood-clotting disorders.

General anaesthetic

Before being administered the sedative for a general anaesthetic, you will be connected to monitoring equipment. This allows the anaesthesiologist to check all your body functions during the operation. Electrodes will be placed on your chest to measure your heart rate and a clip placed on your finger to check the oxygen level in your blood. Blood pressure is measured by means of a strap around the arm. At the same time, an infusion will be attached to your hand or arm. The anaesthetics are injected through this infusion. This may feel cold or painful. You will then fall into a deep sleep within a minute. When you are asleep, (depending on the type of operation), a tube will be inserted in the mouth-cavity or trachea. If necessary for the operation, it is also possible that a bladder catheter, gastric tube (via the nose) and/or infusion in the neck will be inserted. When the operation is finished, the sedatives are stopped and you will be woken up.

Local anaesthetic

Local anaesthetic means that the area of your body that will be operated on will be temporarily numbed. Our hospital uses the following methods:

- Spinal lumbar puncture

Spinal anaesthetic is used to numb the body below the navel for a few hours. Using a very thin needle, a small amount of local anaesthetic is injected between 2 vertebrae, in the space in which the spinal fluid circulates. The effect is almost instantly noticeable: the legs will feel warm and tingling and become heavy. During the operation, you can either stay awake or be given a light, short-acting sedative.

- Epidural lumbar puncture

In our hospital, epidural anaesthetic is mainly used for pain management during and after lung and abdominal operations. Epidural anaesthetic is the most effective method of pain relief for these procedures.

In addition, the epidural lumbar puncture has a few other benefits: a faster recovery of bowel function, less risk of pneumonia and less nausea and drowsiness after the operation. However, it is difficult to prove if epidural anaesthetic results in a quicker recovery after the operation than only general anaesthetic.

With an epidural anaesthetic, a thin tube (epidural catheter) is inserted through a needle between 2 vertebrae, in the fat tissue that surrounds the spinal cord. A local anaesthetic is administered through this tube. The effect is slowly noticeable: depending on the location of the catheter, the chest or abdomen becomes hot and numb. During the operation, you will also be given a general anaesthetic. After the operation, a pump with local anaesthetic is connected to the epidural catheter. This allows the pain management to continue for a few days (usually 48 hours).

- Bier block anaesthetic

Bier block anaesthetic is an intravenous regional anaesthetic. Bier block anaesthetic can be used in short operations (less than 45 min.) to the hand, forearm or elbow. After an infusion has been inserted, the blood is massaged from the arm by means of a rubber bandage. In order to prevent blood returning to the arm, a strap is inflated around the upper arm. A local sedative will then be injected via the infusion. This will make the arm feel warm, tingling and numb within 10 minutes. When the operation is finished, but never earlier than 30 minutes after the injection, the strap around the upper arm is removed. During the procedure, the arm can start to feel uncomfortable.

- Plexus or nerve block

With this technique, a limb is anaesthetised by temporarily blocking a nerve or bundle of nerves (plexus). An echo device is used to see where the nerves are situated. After numbing the skin, the required nerve is located using a needle that emits small electric impulses. You will notice this because you will feel little shocks in the muscles of the arm or leg.

When the correct location is found, a sedative is injected locally, leaving the arm or leg totally or partially numb for a longer period of time. Sometimes, a small tube (plexus catheter) is left in place, which allows the injection to be repeated.

For painful operations, such as shoulder operations and knee replacements, this is the most effective form of pain relief. There is also evidence that recovery is faster and that the functioning of the joint is better than after general anaesthetic, because you can exercise better.

With operations on the forefoot, hand, forearm, or elbow, it is possible to stay awake during the operation. Shoulder operations usually require general anaesthetic and knee replacements

require general anaesthetic or spinal anaesthetic.

If you have the operation as an outpatient and the anaesthetic is still effective when you are discharged, you must take special precautions. See page 'Back home'.

Complications

Modern anaesthesia is very safe. However, as with any medical procedure, complications can also occur with anaesthesia. Although we take the utmost care, we cannot always prevent complications. Serious complications with lasting consequences are very rare. With local anaesthetic, the possible complications must be weighed against the listed benefits.

The most common complications are summarised in the tables below. Serious and/or permanent complications are so rare that it is difficult to quantify them in a number. This table indicates whether a complication occurs regularly, sometimes, rarely, very rarely or extremely rarely.

GENERAL ANAESTHETIC

Complications	How often does it happen?*	Comments
Nausea or vomiting	Regularly	Often easily treated with medication via infusion
Throat pain	Regularly	
Shivering after the operation	Regularly	
Slight damage or irritation tongue or lips	Regularly	
Damage to teeth	Rarely	Partially dependant on existing abnormalities of the teeth
Slight irritation of eye/cornea	Rarely	
Neurological damage during general anaesthetic	Rarely	
Confusion after the operation	Rarely to regularly	Depending on age and (mental) health
Being awake or feeling pain during the operation	Very rarely	
Severe allergic reaction	Very rarely	
Death by general anaesthetic	Very rarely	

SPINAL/EPIDURAL LUMBAR PUNCTURE

Complication	How often does it happen?*	Comments
Back pain, irritation or bruise at the puncture site	Regularly	Usually a spontaneous recovery within a few days
Tingling sensation in the buttocks and legs during the first 1-2 days after spinal anaesthetic	Regularly	Generally, a spontaneous recovery within a few days
Significant drop in blood pressure	Regularly	Easily treated with medication via infusion
Nausea and vomiting	Regularly	Easily treated with medication via infusion
Difficulty in urinating or inability	Regularly	Sometimes (temporary) bladder catheter is necessary
Insufficient/incomplete pain relief with epidural	Regularly	If necessary, switch to a different type of pain relief
Itching	Regularly	
Insufficient spinal anaesthetic	Sometimes	In that case, general anaesthetic is necessary
Headache	Sometimes	
Cardiac arrest	Rarely	
Temporary nerve damage	Rarely to very rarely	
Permanent nerve damage	Very rarely	
Epileptic seizure	Very rarely	
Meningitis	Very rarely	
Abscess in spinal canal	Very rarely	
Bleeding in the spinal canal	Extremely rarely	
Paralysis of the legs, death	Extremely rarely	

PLEXUS/NERVE BLOCK

Complication	How often does it occur?*	Comments
Irritation or bruise at the puncture site	Regularly	Generally, a spontaneous recovery within a few days
Insufficient anaesthetic for the operation	Sometimes	In that case, light sedation or general anaesthetic is necessary
Insufficient pain relief after the operation	Sometimes	In that case, a different type of pain relief is needed
Temporary reduced nerve function	Sometimes	Generally, recovery within days to 6 weeks, sometimes 1 years
Epileptic seizure	Rarely	
Collapsed lung	Rarely	Only in a few types of nerve block of the upper limbs
Permanent nerve damage	Very rarely	
Cardiac arrest	Very rarely	

BIER BLOCK ANAESTHETIC

Complications	How often does it happen?*	Comments
Epileptic seizure	Rarely	

*

- *Regularly: 1 in 10 or more often*
- *Sometimes: 1 in 10 to 1 in 100*
- *Rarely: 1 in 1000 to 1 in 10,000*
- *Very rarely: 1 in 10,000 to 1 in 100,000*
- *Extremely rarely: 1 in 100,000 to 1 in 250,000*

After the operation

The recovery room

After the operation you will be taken to the recovery room. Specialised nurses ensure that you will come round quietly from the operation. You are connected to the monitoring equipment here as well. It is possible, that you will have a tube through your nose in order to give you extra oxygen, but that is a normal procedure.

Back to the ward

As soon as you are sufficiently awake and your general condition is stable and the pain is under control, you will go back to the ward. You may still feel drowsy and occasionally nod off. That is quite normal.

When the anaesthetic wears off, you might feel pain in the surgical area. You may also become nauseous. You can ask the nurse for some pain relief or something for the nausea.

Are you allowed to go home the same day?

- Please make sure that you are picked up (you are not allowed to drive yourself).
- It is better if you are not home alone on the first night.
- Take it easy during the first 24 hours after the operation.

Post-Operative Pain Service (POP)

During your admission in hospital, there is a Post-Operative Pain Service (POP). The POP Service aims to combat pain as much as possible after the operation. You can read here how you yourself can help to reduce pain.

Research has shown that good pain management after the operation promotes patient recovery. It appears that patients are less tired and have more energy to recover. The heart and lungs function better and the bowel function is affected positively. This increases your strength, both physically and mentally.

Pain after the operation

Pain is considered to be a sign of tissue damage. After the operation, pain is inevitable, but we do everything we can to alleviate this. As mentioned, good pain relief has many advantages. After the operation you will benefit from improved sleeping, eating and drinking, and recovery is often quicker.

Important

You should not wait to let someone know you are experiencing the onset of pain or unacceptable pain. The longer you wait, the harder it will be to combat the pain. It is also important to tell the nurse or doctor whether the painkillers are helping or indeed not helping. Appropriate measures can then be taken.

Pain measurement

You are the one who can indicate how much pain you have. Therefore, we will ask you several times per day to give the pain a number. The number '0' means that you have no pain and '10' is

the worst pain you can imagine. It is precisely because pain differs per person, it is important that you indicate this properly. When you are resting, the pain could be acceptable, but at other times, the pain might be unacceptable when you are breathing deeply, coughing or moving. Please let us know this as well. This way, you are giving us the information needed to further improve your pain relief. You will receive more information about pain measurement during the admission interview.

Pain relief before the operation (pre-medication)

Every the operation has a schedule for pain relief. According to this schedule, even before the operation you will be given Movicox® or Diclofenac either in tablet form or as a suppository and/or Paracetamol and sometimes Gabapetine.

Pain relief after the operation

You will be prescribed Movicox® or Diclofenac and/or Paracetamol and sometimes Gabapetine at regular intervals. These medicines form the basic pain relief. The anaesthesiologist determines the way in which you receive additional pain relief on top of the basic pain relief.

Additional pain relief

You can receive additional pain relief in a number of ways. Some types of additional pain relief can lead to dizziness when getting out of bed or decreased muscle strength in the anaesthetised limbs. That is why, when you have additional pain relief, you should always ask a nurse to help you get out of bed, for example for going to the toilet.

- **Injection**

The nurse will give you an injection with Dipidolor®, a strong painkiller. You may sometimes feel dizzy and/or nauseous. The nurse can give you something for any possible nausea.

- **Via a special pump**

A special pump will be connected to the infusion drip that, for the purpose of the operation, has been attached to your hand or forearm. This infusion pump contains a solution containing morphine. You can operate the administration button of the infusion pump manually when the pain increases or becomes unacceptable. This system is very patient-friendly, because you can manage your own pain relief. You don't need to worry about giving yourself too much pain relief. Sometimes, an infusion pump with Ketamine will be connected. You do not have to operate this pump yourself.

- **Via an epidural catheter or plexus catheter**

If you were given an epidural catheter or plexus catheter in an operating theatre, a pump with local anaesthetic will be connected or you will receive an injection every two hours with this anaesthetic. In general, this will continue for up to 48 hours after the operation, or until you are discharged, if this is earlier.

It is possible for catheters to move slightly after a while, thereby possibly reducing the effect. In that case, it may be necessary to remove the catheter and to start a different type of pain relief.

How long is the pain relief?

For two days after the operation, pain relief is controlled by the POP-team. If you still need pain relief afterwards, it will be controlled by your attending physician.

Outpatient procedures

You will receive Movicox® or Diclofenac and/or Paracetamol (tablet or suppository) before the operation. After the operation, pain relief will consist of Movicox® or Diclofenac and/or

Paracetamol and, if necessary, as additional pain relief, an injection with Dipidolor®. You will receive instructions and/or a prescription for pain killers to take at home.

Back home

It will be perfectly normal for you not to feel fully fit for a while after the operation. That is not only due to the anaesthetic, but also due to the major event that constitutes the operation. Your body has to recover from this and that takes time.

Women who use the contraceptive pill should be aware that the pill is not effective during the month in which the operation took place. Once you start a new strip, the pill will be effective again.

If you have had a plexus or nerve block, it may be that an arm, hand, leg or foot is still feeling numb or partially numb. This means you have less pain, but the signal function of pain is also switched off. Therefore, as long as the anaesthetic is still working, you must stay away from potential harmful situations, such as heat sources (heating, open fire, cooker) or machines or household appliances in which a limb may get caught. In case of a nerve block of the leg or foot, temporary muscle weakness can also occur. It is therefore sensible to walk only with the assistance of another person until your muscle strength has fully returned.

Questions about the various types of anaesthetic

If, after reading this leaflet, you still have questions about the various types of anaesthetic, please discuss them with the anaesthesiologist or nurse anaesthetist. You can also contact pre-operative screening. Pre-operative screening can be reached on telephone number: (076) 595 30 35

We recommend that you read this leaflet again before you are admitted. The reverse as well.

Questions (or changes) about the admission date

For questions about your admission to all locations, you can contact us by telephone from Monday to Friday between 8:30 and 16:30 hours:

General Surgery/Maxillofacial Surgery	(076) 595 30 83
Orthopaedics / Pain management / Neurosurgery	(076) 595 30 84
Urology / Plastic Surgery/ Ophthalmology	(076) 595 10 83
Gynaecology / ENT / Dentistry	(076) 595 10 84

Finally

Your comments about pain management during and after the operation are very important to us. The anaesthetic team can use your comments to improve the quality of pain management and to match the needs of the patient even better. You can submit your comments by email on anesthesie@amphia.nl or by telephone on Mondays to Thursdays from 8:00 to 16:30 hours and on Fridays from 8:00 to 12:00 hours via the number (076) 595 44 71 or (076) 595 15 63.

Please note! For urgent medical matters, please contact your GP or attending specialist, who can then contact the attending anaesthesiologist, if necessary.

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Summary

Type of anaesthetic

- General anaesthetic	- Lumbar puncture (spinal) <ul style="list-style-type: none"> o with sedation o without sedation
- Lumbar puncture (epidural)	- Anaesthetic arm/hand/shoulder (plexus/bier block)
- Anaesthetic leg (plexus)	- Local anaesthetics

Medicine use

Whether or not to stop taking blood thinners is as agreed with your treating doctor/surgeon.

Diabetes medication:

- do not take diabetic tablets on the morning of the operation.
- inject EH insulin on the morning of the operation.

Other medication:

- continue all your other medication on the morning of the operation.
- except

Please note:	- Do not eat and drink, according to the guidelines mentioned earlier in this leaflet.
	- Limit your alcohol intake and stop smoking in accordance with the guidelines mentioned earlier in this leaflet.

Space for your questions and/or comments:
