

Intensive Care

Informed Consent - Engels

Informed Consent – Consent to ICU Tests, Treatments and Examinations

What is informed consent?

The term 'informed consent' means precisely what it describes. According to the [Dutch] Medical Treatment Agreement Act (*Wet op de Geneeskundige Behandelingsovereenkomst, WGBO*), patients can only consent to medical treatment after being properly and fully informed about their condition (diagnosis) and the potential treatment.

This entails explaining the significance of the proposed treatment and whether there are any alternatives. It also means discussing the treatment's advantages and disadvantages as well as the consequences of electing not to have it. The main risks of the treatment are also discussed. Once the patient has received all the necessary information, he/she may or may not consent to the treatment. In the event that we're not able to properly discuss all of this directly with the patient, a legal representative will be brought in.

Legal Representative and Contact Person

The intensivist informs the patient, whenever possible, about his/her medical condition, as well as the loved ones. This information covers the diagnosis, examinations, treatments and short- and/or long-term expectations. Legally, only the doctor has a treatment relationship with the patient. Patients on the Intensive Care Unit (ICU) cannot always participate in conversations or make important decisions about their treatment. We're not legally allowed, however, to provide everyone with information about the patient. Therefore, when you or your loved one is admitted, we make agreements on who'll function as the family's contact person.

If you or your loved one are unable to properly process all the information about a treatment and therefore cannot provide consent, the patient's legal representative will speak with the doctor on the patient's behalf. This can be the same person as the contact person, but does not have to be.

If you or your loved one are unable to make decisions regarding treatment, the legal representative will help you think about them. Naturally, you'll be extensively informed in advance.

Standard Components of ICU Care

The medical care and nursing provided on the ICU ranges from relatively simple to highly complex. This care ranges from monitoring vital functions, such as the patient's breathing, blood pressure and heart rate to taking over the individual's vital functions, such as ventilation, renal replacement therapy, etcetera.

The standard care offered on the ICU comprises several different treatments.

It's not always possible to explain the advantages, disadvantages and risks of each treatment every time this is necessary. That's why the most important components of standard ICU care are explained in this leaflet. If you have any questions after reading the following information, please do not hesitate to ask.

Standard ICU treatments include:

1. A peripheral intravenous (IV) drip
2. An arterial line
3. A bladder catheter
4. A gastric tube
5. A central line
6. Administration of antibiotics
7. Administration of vasoactive medications
8. Administration of blood products (transfusions)
9. Administration of other medications
10. Anaesthesia & sedation
11. Intubation
12. Ventilation
13. Blood samples for testing
14. Patient transport for testing, treatments and examinations
15. Other diagnostics
 - a. ECG, Chest X-ray, Ultrasound, CT Scan, MRI Scan
 - b. Echocardiography (Transoesophageal echocardiography, TEE)
 - c. Bronchoscopy, Gastroscopy, Coloscopy
16. Interventions
 - a. Drainage, Punctures
 - b. Chest drain
17. Restraint Measures
18. ICU File Formation and Providing Other Practitioners with Patient Information.

Usually, you or your loved one will not require every standard ICU treatment. However, if permission (informed consent) is requested for treatment on the ICU, this refers to the total package of treatments as described above. You or your loved one have the right to refuse certain treatments (e.g. blood transfusions).

In addition to the standard ICU treatments, there are several additional treatments that, if necessary, will be discussed in detail with you or your loved ones and for which informed consent will be requested.

Supplementary treatments on the ICU may comprise:

1. Renal function replacement therapy (dialysis)
2. Tracheotomy
3. ERCP
4. PCI
5. Angiography, thrombolysis, coiling
6. Another operation

Explanation About Standard ICU Treatments

1. Peripheral Intravenous IV Drip

What is it?

This entails the insertion of a small plastic needle into a vein, usually located in the underarm.

For what purpose?

Medication or fluids can be administered via an intravenous drip. Even if you already have, or your loved one has, a central line (explanation to follow), it may be necessary to insert a peripheral IV drip. This may be because the patient needs a lot of medication that cannot be administered simultaneously via the same IV.

What are the risks?

Inserting a peripheral IV drip is not associated with serious complications. Over time, the blood vessel in which the intravenous drip is placed can become inflamed. This inflammation is grounds for removing the intravenous drip. Furthermore, an intravenous drip, even if it's correctly placed in the vein from the start, may begin to leak later on.

If this happens, the fluids and medication can then get underneath the patient's skin. In which case, the intravenous drip will be removed.

2. Arterial Line

What is it?

This entails the insertion of a small plastic needle into an artery. An arterial line can be inserted in several locations, with the inside of the wrist being the most common. Other options include the arteries located in the upper arm and the groin.

For what purpose?

An arterial line has two important functions. Placing the line means that the blood pressure can always be measured. It also allows medical staff to closely monitor how certain medications are affecting the patient's blood pressure and to make adjustments, if necessary. We're quickly alerted if the patient's blood pressure either drops or rises dangerously.

Blood can easily be collected via the arterial line. Small amounts of blood are often collected from ICU patients to determine levels (e.g., the sugar level). Without an arterial line, a patients would have to undergo a lot of needle jabs.

What are the risks?

Happily, complications from an arterial line are very rare. When they do occur, however, they're treatable. Possible complications include infection, bleeding or bruising and, very rarely, circulatory problems in the part of the body to which the artery goes.

Nerve damage can occur because the body's nerves are often close to the arteries. A puncture may cause the artery with a weakened wall to bulge (i.e. a pseudo-aneurysm).

The advantages of an arterial line nearly always outweigh the possible disadvantages. An arterial line is necessary in ventilated patients or in patients who are receiving vasoactive medication (explanation to follow).

3. Bladder Catheter

What is it?

The catheter has flexible tubing that is inserted into the bladder via the urethra.

For what purpose?

The bladder catheter drains urine from the bladder. This is partly for practical reasons. Because ICU patients have intravenous (IV) drips and are connected to a monitor, they cannot get to the toilet. Furthermore, not all patients can indicate when they have to urinate. It's also important to keep track of how much a patient urinates per hour. The amount of urine per hour says something about the blood flow of important organs (in this case, the kidneys).

What are the risks?

A bladder catheter is inserted through the urethra, and this process usually takes place without any issues. It can be difficult to insert the catheter in men who have an enlarged prostate. Bleeding can occur when the bladder catheter is being inserted and, after a few days, the patient has a higher risk of cystitis. The long-term usage of a bladder catheter can cause urethral strictures.

4. Gastric Tube

What is it?

Gastric tubes are usually inserted through the nose, sometimes through the mouth, and down the oesophagus into the stomach.

For what purpose?

The gastric tube allows us to drip-feed (a liquid form of nutrition) the patient. This is especially important for ventilated patients, who are unable to eat or drink normally due to their breathing tube.

However, in cases of swallowing difficulties or severe weakness, for example, non-ventilated patients are often fed via a gastric tube. Beyond nourishment, medication can also be administered via the gastric tube. A tube may also be inserted into the stomach to drain the gastric juices and intestinal fluids if the intestines are not functioning properly. Because it's vital that all patients, but especially critically ill patients, are fed properly, a gastric tube is usually a necessity.

What are the risks?

Gastric tube placement is a fairly simple procedure. The tube is inserted via the patient's nasal cavity, which can cause a nose bleed. Another risk is the accidental insertion of the tube into the trachea. Before initiating tube feeding, medical staff always verify that the tube is positioned correctly.

5. Central Line

What is it?

A central line, which is like an intravenous (IV) drip, only much longer, has multiple connections and is inserted into a major vein. The doctor inserts the patient's central line under sterile conditions.

A central line can be inserted into a vein located either in the neck, just below the clavicle, or in the groin. Before inserting the needle tip into the vein, the blood vessel can be imaged using ultrasound.

For what purpose?

The main reason for placing a central line is to administer certain medications that cannot be dispensed via a typical intravenous drip. Even if patients cannot be fed via their gastrointestinal tract, a central line is required to administer special nutrition that way.

Apart from providing medication or nourishment, the central line can also be used to measure the heart's functions. We use this information to adjust the patient's treatment, if necessary.

What are the risks?

Complications arising from central line insertion are rare. The main risks include bleeding, a collapsed lung (during the insertion) or an infection.

Bleeding may occur if the artery is punctured instead of the vein. The major veins run close to major arteries in the sites mentioned above.

When inserting a central line below the clavicle, there is a risk of the needle tip hitting the lung. This can cause a collapsed lung (i.e. pneumothorax).

We re-examine every day whether the central line is still necessary. As soon as the situation allows, the line will be removed.

6. Administering Antibiotics

What is it?

Administering medication to fight pathogenic bacteria.

For what purpose?

Infections are important conditions on the ICU. Many patients are admitted to the ICU with a pre-existing infection, such as a severe lung or a urinary tract infection. Even patients who are admitted without an infection may develop one later, such as a central line infection.

When it's not clear which bacteria is sickening the patient, but the individual clearly has a serious infection (sepsis), the staff will administer a course of antibiotics that works on many different kinds of bacteria.

What are the risks?

Antibiotics carry the risk of an allergic reaction. This is also known as a 'hypersensitive' reaction. Patients who have a hypersensitive reaction will often develop bumps and/or a red skin rash. They may also develop low blood pressure. In more severe cases, the patient's tongue and lips may swell, as well as the mucous membranes in the mouth. If a patient is not ventilated with a tube (explanation to follow), this individual may become short of breath. Before antibiotics are administered, patients are always asked whether they've ever had an allergic reaction to antibiotics.

With the prolonged usage of antibiotics, certain bacteria may become insensitive to them (i.e. develop a resistance). That's why the antibiotic regimen is carefully monitored on a daily basis. Antibiotics are stopped as soon as it this is appropriate.

7. Administering Vasoactive Medications

What is it?

Administering strong medications to improve the patient's blood pressure and/or heart functioning.

For what purpose?

Critically ill patients often have circulatory disorders. Their blood pressure and heart rate may be very high or low, but also their heart may not be able to pump sufficient blood and oxygen. Strong medications are often necessary to stabilise the patient's heart rate and blood pressure. This strong medication is also known as 'vasoactive medication'.

Patients who are being treated with these medications have an arterial line to closely monitor their blood pressure and a central line to always be able to administer the medication.

What are the risks?

There are not many other risks associated with the administration of vasoactive substances, other than that they impact a person's heart rate and blood pressure. Due to a technical malfunction or a mechanical issue (e.g. the central line suddenly stops working) staff may stop administering the vasoactive medication. This may cause the patient to develop dangerously low blood pressure within a short amount of time.

Allergic reactions are rare.

8. Administering Blood Products (Blood Transfusions)

What is it?

A blood transfusion refers to the administration of blood or blood products.

For what purpose?

The most well-known blood products include red blood cells (erythrocytes), which are necessary for transporting oxygen; as well as plasma, which mainly contains (clotting) proteins. Platelets (thrombocytes) are also regularly administered, which also play a role in blood clotting.

What are the risks?

The administration of donor blood or blood products comes with a risk of a so-called 'transfusion reaction', which is the body's reaction to foreign proteins. That's why it's important to test patients in advance for their blood group and potential antibodies. Nevertheless, a mild to a severe reaction may occur.

Of course, we don't give blood products to patients who have clearly indicated (with an advance care directive) that they do not want this.

More information about blood transfusions can be found in the 'Blood Transfusion' leaflet.

9. Administering Other Medications

What is it?

Aside from vasoactive medication and antibiotics, ICU patients receive various other kinds of medications.

For what purpose?

Frequently used medication on our unit includes painkillers, sleeping pills, anti-thrombotic agents and agents that regulate blood pressure. Many ventilated patients receive inhaled medication (nebulisations), and many patients who are artificially fed (tube feeding through the stomach or feeding through the blood vessel) need insulin to maintain blood sugar at the desired level.

What are the risks?

It's important that we're aware of any allergies or hypersensitive reactions the patient may have. In addition to medications, we'd also like to know whether patients are hypersensitive to other things like nutrients, plasters or X-ray contrast agents.

10. Anaesthesia & Sedation

What is it?

Anaesthesia (anaesthetic) is an artificially induced unconsciousness, which starts soon after administering medications via the intravenous drip. People who are under anaesthesia do not experience what is happening to themselves or around them.

Sedation is a kind of artificial sleep, which is not as deep as anaesthesia. There is both light sedation and deep sedation.

With light sedation, the patient receives sleeping medication, but he/she can still be awakened by a sound or a light touch. With deep sedation, a stronger stimulus is required to provoke a response in the patient.

For what purpose?

Some procedures or treatments on the ICU require placing a patient under anaesthesia, such as for intubation (explanation to follow).

The reasons for sedating patients are to prevent patients from experiencing discomfort or anxiety and to better ventilate patients with severely diseased lungs.

Mild sedation can also be used in case of agitation and acute confusion. See also the section on 'Restraint Measures'.

What are the risks?

Because seriously ill patients only have limited reserves left, sleep medication can cause them to develop low blood pressure.

Low blood pressure is the main side effect of anaesthesia. We're always prepared for this on the ICU.

The main disadvantages of deep sedation are the more frequent occurrence of delirium (for more information, see the 'Acute Confusion and/or Delirium' leaflet), a longer hospital stay on the ICU and a reduced ability to cough, thus, a higher risk of developing (another) lung infection.

We understand that patient's can find treatment on the ICU very stressful, but we also know that sedation that goes on for too long or that is too deep can also be harmful. Therefore, we try to sedate patients as little as possible. For every patient, we're constantly weighing up what is best for the patient at that moment.

11. Intubation

What is it?

Intubation refers to the process of inserting the breathing tube. A breathing tube is also referred to simply as a 'tube'.

For what purpose?

This breathing tube is necessary to perform invasive ventilation on a patient. The term 'invasive' means that you have to insert something (in this case, the tube) into the body. A breathing tube is usually inserted through the mouth into the trachea. At the end of the tube is an inflated balloon to prevent any leakage of the air that the ventilator blows into the lungs.

The breathing tube is located between the vocal cords; therefore, a patient who has a tube is not able to talk.

In order to insert a breathing tube, the patient has to be placed under an anaesthetic (see the section on anaesthesia), unless the patient is already unconscious or in a coma.

What are the risks?

Inserting a breathing tube is not risk-free, but it is necessary if a patient has to be ventilated. The main risks include damage to the throat, vocal cords as well as the trachea and teeth.

There is also a risk of choking, due to stomach contents ending up in the lungs. This is also known as 'aspiration' and is why patients who will be intubated for a planned operation must be fasting.

If a lot of stomach contents end up in the lungs, this can impair the patient's breathing so much that he or she dies from this. If the intubation procedure fails (e.g. if the entrance to the trachea is not visible) and the patient cannot be ventilated, this could lead to a lack of oxygen and even death.

Serious complications from intubation, however, are rare. Every intubation (also in an emergency) is carefully prepared and performed by experienced doctors.

12. Ventilation

What is it?

The term 'ventilation' means that the patient is connected to a device: the ventilator. This device either supports a patient's breathing or takes it over completely. There are two forms: non-invasive ventilation via a face mask and invasive ventilation via a tube in the throat.

Non-Invasive Ventilation

With non-invasive ventilation (NIV or mask ventilation), a mask is put on the patient. Here, air is blown in by the ventilator, which enters the patient's lungs through the nose and mouth. For this to work properly, the mask must fit the face snugly.

The patients will feel that both inhalation and exhalation are happening with a certain pressure.

Some patients struggle to get used to the mask and its pressure; for others it can feel like a relief. (For more information, see the 'Non-invasive Ventilation (NIV)' leaflet.

Invasive Ventilation

With invasive ventilation, the patient has a tube placed into his/her throat, which is passed through the mouth past the vocal cords and into the trachea. This causes the ventilator to blow in air. This may be for support, but it may also require the machine to take over the breathing entirely.

For what purpose?

The primary function of respiration is to take in oxygen and to exhale carbon dioxide. If the patient has difficulty breathing and/or his/her blood levels are not good, the doctor may decide to (temporarily) support the individual's breathing. This may be necessary for patients who have a lung disease. But it may also be necessary for patients whose heart (suddenly) stops functioning properly (heart failure). If a patient has a serious infection with low blood pressure (shock), ventilation is often chosen because it saves the patient a great deal of energy. If possible for the patient, this will be done via non-invasive ventilation.

There's another group of patients who may be ventilated: those who are undergoing an operation. During the operation, they're placed into such a deep sleep that they can no longer breathe on their own. That's why they're given a tube in their throat (intubation) and are ventilated. After such an operation, patients are often woken up in the operating room itself or in the recovery room.

For major operations, we may elect to have patients wake up at a later time. These patients enter the ICU already on a ventilator. We wake them up as soon as possible, and they can often get off the ventilator fairly quickly.

What are the risks?

Non-Invasive Ventilation

With non-invasive ventilation (mask ventilation), pressure marks can develop on a patient's face due to the tightness of the mask. People can also choke more easily, causing stomach contents to enter their airways and lungs. This is called aspirating. We work closely with these patients to reduce the risks of this happening.

Invasive Ventilation

How a ventilator breathes air into a patient's lungs is very different from how we breathe normally. It can be quite taxing for the patient's lungs. The lungs can become stiff due to long-term or heavy stress, which makes it increasingly difficult to ventilate the patient. The ventilation may also cause a collapsed lung (i.e. pneumothorax). Furthermore, a patient may develop another lung infection (pneumonia).

In special cases, ventilated patients with very seriously ill lungs may have to lie on their abdomen for periods of time. This position enables the lungs to better absorb oxygen. While in this prone position, patients are brought into an even deeper sleep and, once turned back into a supine position, the patient's face may be swollen and he/she may have pressure marks on their upper body and legs.

The Weaning Process

If the patient's situation improves, he/she will be able to breathe once more independently. The machine-aided breathing will be progressively phased out. We call this process 'weaning' (coming off of ventilation). The time that this process takes differs by patient. The longer the period of ventilation, the longer it takes to come off of it. Once the patient is breathing completely independently and is fully awake, his/her breathing tube will be removed. The patient may be slightly hoarse afterwards. This is due to the breathing tube irritating the vocal cords, and it usually heals within a few days. In exceptional cases, the hoarseness will last longer. For more information, see the 'Ventilation' leaflet.

13. Blood Draws for Testing

What is it?

This entails collecting blood via an arterial line (a line inserted into an artery) or via a needle jab (puncture)

For what purpose?

Blood tests are often necessary for the ICU to provide effective treatment. We may want to measure the ventilated patient's blood oxygen and carbon dioxide levels on a regular basis. If we give a patient insulin, we have to determine the blood sugar level several times each day.

What are the risks?

The risk of complications is low. Regular blood sampling via the arterial line entails a small risk of infection of the arterial line (i.e. the line in the artery). Having blood drawn via a needle may cause bleeding and/or bruising.

14. Patient Transport for Testing, Treatments and Examinations

What is it?

Moving a patient outside the ICU for necessary testing, examination or treatment.

For what purpose?

Not all necessary tests, examinations and/or treatments can be carried out on the ICU.

Therefore, patients may have to be taken to another department, such as to the X-ray Department for a CT scan.

Of course, patients should still receive supportive treatment as much as possible while being transported. This certainly applies to ventilation and the administration of certain medications.

There are also treatment components that need to be temporarily interrupted, such as renal function replacement therapy. A special transport module has been built for ventilated patients that contains a monitor, a respirator and infusion pumps.

What are the risks?

The main risks are dysregulating the patient's condition and technical issues, such as failure of a central line or a ventilation tube, or mechanical problems with the devices supporting the patient. Taking various precautions, however, minimise these risks.

During transport of a ventilated ICU patient outside the ICU, an IC nurse and an ICU doctor/assistant are always present.

15. Other Diagnostics

a. ECG, Chest X-ray, Ultrasound, CT Scan, MRI Scan

What is it?

Taking X-rays of the heart and lungs, an ultrasound of the heart, lungs and abdominal organs, recording a heart film and taking a CT scan or an MRI scan.

For what purpose?

We regularly perform these examinations as a control. For example, after placing a breathing tube, we take heart and lung X-rays to see whether the tube is working properly.

We also perform these examinations to carry out additional diagnostics. This means that we attempt, using these examinations, to find out what is wrong with the patient.

What are the risks?

If the patient is brought to another department for a test or an examination (e.g. a CT scan), then there are risks as described in the section 'Transport for Testing, Treatments and Examinations'.

The risks are minimal for the other tests and examinations. Taking an X-ray exposes the patient to harmful radiation, but the amount of radiation required for an individual image is so small that there's no risk involved.

There are also no risks to recording a heart film or performing an ultrasound.

For more information, see the 'Taking X-rays' or 'Electrocardiogram' leaflet.

b. Transoesophageal Echocardiography (TEE)

What is it?

This is an ultrasound examination where the doctor passes a probe through the oesophagus and stomach in order to take an ultrasound of the patient's heart.

For what purpose?

It may be necessary to examine the heart of a seriously ill patient. This allows us to determine whether the heart's working properly or if there's damage due to insufficient oxygen. It's also possible to see whether one of the heart valves is infected (i.e. endocarditis).

Usually, we first try this externally through the chest wall. This is a standard way to take a heart ultrasound.

It's often quite difficult, however, to perform an ultrasound exam on ICU patients. Sometimes, we're not able to image the heart at all. In which case, the only way to examine the heart is to take an ultrasound by passing a probe through the oesophagus.

What are the risks?

The risks are not as high as one might expect. The examination is comparable to a gastroscopy (explanation to follow). Serious complications from a TEE are extremely rare. These concern damage to the mucous membrane in the mouth, throat or oesophagus. For more information, see the 'TEE Outpatient Clinic' leaflet.

c. Bronchoscopy, Gastroscopy, Coloscopy

Bronchoscopy

What is it?

For this examination, a pulmonologist inserts a thin, flexible tube into the airways through the mouth or nose or, in the case of a ventilated patient, through the tube. This tube contains both a light and a camera.

For what purpose?

This examination is performed to view the inside of the airways. This allows the doctor to get a clear impression of the structure of the mucous membrane. Any inflammation and abnormalities can also be observed. The doctor may remove pieces of mucous membrane for examination (biopsy). In addition, a rinse may also be performed. The flushing liquid that is collected can be subsequently examined for the presence of bacteria or fungi.

What are the risks?

The risks mainly depend on how sick the patient is. In a seriously ill patient, a bronchoscopy, especially if flushing is also used, can lead to further deterioration of the lung function and the shortness of breath can worsen. This can become so severe that it becomes necessary to ventilate the patient.

Very rare complications include mechanical damage to the airways (airway trauma), a collapsed lung (pneumothorax), bleeding or a new infection.

This examination causes few complications in patients who are not seriously ill. Hoarseness, coughing or a sore throat or nose may occur. These complaints almost always resolve on their own. For more information, see the 'Bronchoscopy' leaflet.

Gastroscopy and Coloscopy

What is it?

These are tests in which the gastroenterologist examines the inside of the digestive system through a tube that has a light and a camera (endoscope).

For what purpose?

Gastroscopy

During a gastroscopy (a stomach examination), a flexible tube (endoscope) is inserted through the mouth and the oesophagus. This allows the gastroenterologist to examine the mucous membrane and, if necessary, take a sample for further testing. He or she can also stop any bleeding, if necessary.

Coloscopy

During a colonoscopy (an intestinal examination), a flexible tube is inserted through the anus. This allows the gastroenterologist to examine the mucous membrane and, if necessary, take a sample for further testing. To prepare for the examination, the patient takes laxatives to clean his/her intestine.

What are the risks?

These examinations are often performed in the hospital. The risk of complications is very minor.

There is a small risk of bleeding or of a hole in the intestine, stomach or oesophagus (i.e. a perforation).

If this hole is quite large or causing issues, the surgeon may need to perform surgery to close it. But this is very rare.

For more information, see the 'Gastroscopy' or 'Coloscopy' leaflet.

16. Interventions

a. Drainage, Punctures

What is it?

A jab (puncture) entails the doctor inserting a needle into, for example, the chest or abdominal cavity.

This procedure is guided by a CT scan or ultrasound, to obtain a clear image before performing the puncture.

For what purpose?

This needle puncture may be necessary to remove fluid from the body for examination (e.g. for a culture in case of an abscess) or to leave behind a small tube for draining fluid. We refer to this as 'drainage'.

What are the risks?

The risks are minor. The greatest risk is bleeding. A needle puncture into the chest cavity entails a minor risk of a collapsed lung (pneumothorax).

For more information, see the 'Punctures...' leaflet.

b. Chest drain

What is it?

A chest drain is a flexible tube that is inserted into the chest cavity (thorax).

For what purpose?

Normally, the pulmonary membranes are situated against each other. However, fluid (pleural effusion) or air can accumulate here (collapsed lung, aka pneumothorax). A drain can remove this fluid, which makes it easier for the patient to breathe.

What are the risks?

The complications of a chest drain include bleeding, an infection, nerve damage and a collapsed lung.

The insertion of a chest drain is discussed with the patient or legal representative in advance. In some urgent cases, unfortunately, there is no time for consultation. In which case, the doctor must take immediate action.

Patients who've had a lung operation may enter the ICU with a chest drain for observation, so as to prevent blood, air and fluid from entering their chest cavity.

17. Restraint Measures

What is it?

Restraint measures involve restricting the patient's ability to move. The most common form of restriction is fixation, which entails securing the patient's arms and legs. We use restraint devices like wrist and ankle straps, bed rails, waist straps for in-bed fixation, a nursing blanket (a kind of sleeping bag) and stripping gloves.

Another intervention that restricts free movement is (light) sedation, which can be administered in cases of agitation and acute confusion. (See 'Anaesthesia & Sedation')

For what purpose?

At VieCuri, restraint measures are carried out to protect patients if their illness places them at risk of mental and/or bodily harm or if they pose a threat to others. It can also be a necessity if it's the only way possible to carry out a necessary medical treatment. We prefer not to have to implement them.

It's not uncommon for ICU patients to be restless and/or confused. This agitation and confusion differs in severity and often stems from a delirium. For more information, see the 'Acute Confusion - Delirium' leaflet

We first attempt to treat the delirium and agitation through attention, establishing a good daily rhythm, improving the patient's condition and possibly through medication, but sometimes that's not possible or it does not work quickly enough. In their confusion, patients run the risk of pulling on their intravenous (IV) drips, tubes, a bladder catheter, the breathing tube or the central line. These, in turn, may provoke life-threatening situations.

To protect patients from themselves, it's sometimes necessary to immediately secure their hands, feet and/or the entire patient, even though they have a right to their personal freedom.

In practice, however, we cannot always consult the patient or the legal representative in advance. This can only be discussed with the legal representative at a later time. We make every effort to limit the period of fixation as much as possible. The necessity of the fixation is reassessed during each new shift.

What are the risks?

Despite our attempts to protect patients from themselves, patients may hurt themselves on the materials used to secure them. In rare cases, patients may become so agitated that they become entangled in the restraint materials, seriously damaging themselves.

The risk of this is higher if the patient is not monitored all the time, which is not the case on the ICU. Guidelines have been created to ensure that these risks are almost non-existent.

For more information, see the 'Restraint Measures' leaflet.

18. ICU File Formation and Providing Other Practitioners with Patient Information

What is it?

The medical data are recorded in the patient's electronic file. Medical records are kept for several reasons, including to ensure the best possible continuity of care.

For what purpose?

As a patient, you or your loved one will often interface with several care providers. In which case, sharing patient data between care providers is not only desirable, but often necessary. We operate on the assumption that you're happy to share important data with the relevant care providers.

An IC discharge letter is sent to the GP or co-practitioners as soon as you or your loved one are discharged from the ICU.

Various medical data are also included, anonymously, in evaluations to improve the quality of the care. Some data are also used anonymously in the annual report and in scientific case note reviews.

Supplementary Treatments on the ICU

The previous section explained the treatments required by most ICU patients. There are other treatments, however, that are not standard care on the ICU. If necessary, we will discuss these treatments in detail with the patient and/or loved ones.

1. Renal Function Replacement Therapy

What is it?

Dialysis treatment that temporarily takes over the functioning of the kidneys.

For what purpose?

Illness can manifest anywhere in the body of a severely ill patient.

Kidneys are very sensitive to this and may (temporarily) not function adequately.

Kidneys regulate the amount of fluid in our body and excrete waste products through urine.

If the kidneys are not functioning properly (kidney failure, kidney insufficiency), these functions will have to be take over by the dialysis machine.

Dialysis may also be necessary in case of poisoning due to a specific substance that has to be filtered out of the blood quickly.

On the ICU, this is done via a form of continuous dialysis: CVVH (Continuous Veno-Venous Haemofiltration). This requires inserting a large intravenous drip into a central blood vessel (see the section on central lines).

A machine runs the blood through a filter (artificial kidney), which enables the removal of waste products and fluid from the blood.

What are the risks?

Placing the special central line, the line for dialysis, does carry risk. It is a thicker line than the regular central line, which means any bleeding to arise may be more severe.

There are also risks to using the dialysis machine.

Blood may be lost to the machine as the dialysis filter clots over time. In this case, the machine will not always successfully return all the blood in the system to the patient. This may necessitate a one-time blood transfusion.

The use of anticoagulants also entails risk. Blood outside of the blood vessels may begin clotting, which would then cause the dialysis machine to stop working. Patients must take an anticoagulant to facilitate their dialysis. We use a drug (citrate) that prevents the blood in the machine from clotting. Sometimes, this drug causes issues for the patient, especially if the individual's liver is not working properly.

If this is the case, we will use other blood thinners.

The disadvantage of this is that the other blood thinner also enters the patient (and not just the machine), and therefore can cause (potentially serious) bleeding. This is rare, however.

2. Tracheotomy

What is it?

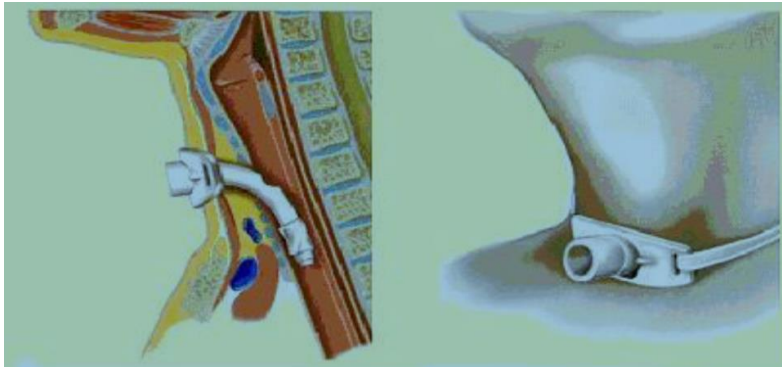
A tracheostoma is an opening in the trachea through which a cannula (pipe) can be inserted. This allows the patient to breathe on his/her own, as well as be ventilated by a machine. This cannula replaces the breathing tube, which is usually inserted through the mouth.

Inserting a tracheostomy cannula is a minor surgical procedure and can be performed in the ICU or in the OR (operating room). The patient is placed under general anaesthesia and does not notice the procedure at all.

A tracheostomy;

on the inside

on the outside



For what purpose?

The main reason to perform a tracheostomy is for long-term ventilation, which requires that a patient be slowly and gradually weaned off of the ventilator. Other reasons include a prolonged very low level of consciousness (coma) or severe muscle weakness in or swelling of the neck, which makes it impossible or unsafe to remove the normal breathing tube (extubation).

For patients, a tracheostomy cannula is more convenient than a breathing tube through the mouth. The other advantages are that someone with a cannula does not have to be ventilated all the time and with a cannula. Over time and under certain conditions, the patient can also talk and drink something. It's also easier to care for the oral cavity.

What are the risks?

The possible complications of this procedure have to do with the anaesthesia or the operation itself. Bleeding can occur, and there's also a minor risk that air will get underneath the skin. Over the long term, a scar can form in the trachea (windpipe). For more information, see the 'Tracheostoma' leaflet.

3. ERCP

What is it?

This procedure entails an examination of the bile ducts. ERCP stands for 'Endoscopic Retrograde Cholangio-Pancreatography'.

For what purpose?

The gastroenterologist utilises a special endoscope, a tube with a camera and a light on the front, to pass through the mouth, oesophagus and stomach to the beginning of the small intestine. That is where the exit to the bile ducts is located. The gastroenterologist then makes a small incision here so that any gallstones can come out. He or she then wipes the bile ducts clean with the help of a special kind of iron wire.

The gastroenterologist can also inject a special liquid (i.e. a contrast agent), which allows him or her to see whether there are any more gallstones in the way.

What are the risks?

As with exploratory examinations of the stomach and intestines, there is a minor risk of bleeding or of a hole in the oesophagus, stomach wall or small intestine (perforation). But these are rare.

A rare but bothersome complication of an ERCP is that the pancreas can become inflamed. This is called 'pancreatitis'. Pancreatitis usually resolves within a few days, but it can very rarely take a serious course.

For more information, see the 'ERCP Under Deep Sedation' leaflet.

4. PCI, Percutaneous Angioplasty

What is it?

PCI stands for 'Percutaneous Coronary Intervention', it's also known as a percutaneous angioplasty. During a PCI, the doctor inserts a thin wire (catheter) through the artery in the wrist or groin to the stricture of the coronary arteries (the blood vessels surrounding the heart). The blood vessel is then stretched by inflating a balloon.

After this, the blood can flow normally again so that the heart once more receives sufficient oxygen. If possible, a stent (similar to a ballpoint pen spring) is also placed to support the vessel wall. This reduces the risk that a new stricture will develop.

For what purpose?

A PCI has to be performed in case of chest pain caused by one or more constricted coronary arteries, such as in case of a heart attack. In order to limit the damage, the heart muscle must receive enough oxygen again as quickly as possible. This can be accomplished by removing the blockage in the coronary artery.

What are the risks?

Usually, there are no issues when performing a PCI. Possible complications include bleeding or bruising at the insertion opening in the wrist or the groin.

The contrast fluid, a plaster or medication may provoke a hypersensitive reaction in a patient.

There's a chance that a cardiac arrhythmia may occur during the course of treatment, which can be resolved quickly in almost all cases.

In very rare cases, a new blood clot forms that could cause a heart attack or a cerebral infarction. Damage to the coronary artery wall and/or a very serious deterioration of the heart function is extremely rare. In that case, cardiac support and/or emergency surgery in a cardiac surgical centre will be necessary. For more information, see the 'FFR Measurement/Angioplasty' leaflet.

5. Angiography, Thrombolysis, Coiling

What is it?

This entails an X-ray examination of the blood vessels. Using a special intravenous drip, the doctor (an interventional radiologist) injects a vein or artery with a fluid (i.e. a contrast agent) to make the blood vessels more visible during the X-ray examination.

For what purpose?

This examination allows us to identify anything we may have overlooked or whether something is wrong with the blood vessels, such as a stricture (narrowing), a blockage or a dilation (i.e. an aneurysm). The doctor can then try to remedy any issue that has been detected. In case of a blockage, the doctor will attempt to reopen the blood vessel by suctioning out the clot and dissolving it (i.e. thrombolysis). If bleeding occurs near the vessel, the doctor may try to stop it by injecting a substance or by closing the vessel (i.e. coiling).

What are the risks?

X-ray examinations require a significant amount of contrast fluid. Large quantities of this contrast agent can be harmful for the kidneys. Sometimes, kidneys function worse after this examination. However, this poor functioning is often only temporary.

The contrast agent contains iodine, which can provoke an allergic reaction in some people. If medical staff members are informed in advance of a patient's iodine allergy, they will not administer it.

The patient may also bleed during the examination. Bleeding typically responds well to treatment. Sometimes, however, the bleeding occurs in a difficult location and, in rare cases, the patient will need an operation to stop it.

For more information, see the 'Angiography/Angioplasty' leaflet.

6. Operation

What is it?

This means that the patient must be operated on (again).

For what purpose?

The reasons for undergoing an additional operation vary. Most operations are necessary because of the patient's underlying condition. Sometimes, however, a new operation is required due to complications arising from a previous procedure. Medical professionals always consider whether there's another, less invasive way to improve the patient's condition. The fact that an (additional) operation is needed means that the medical team, the ICU doctors and the operation team (surgeons, urologists, ENT doctors or gynaecologists) have decided that this is the only way to resolve an issue.

The ICU doctor, often together with the surgeon, provides a lengthy explanation to the patient and his/her family members about why the operation's necessary.

What are the risks?

The risks are contingent on several factors. The two main factors include how sick the patient is when the operation's performed and the kind of operation being carried out. Frequently, ICU patients who need to undergo an additional operation are either very ill or have a medical history of multiple issues. As a result, the risk of additional problems is often high.

The doctor will discuss this and the expected prognosis (forecast) with you at length.

Leaflets

We have separate leaflets available for many treatments and examinations, which we also refer to in this leaflet.

These are available for download from **Fout! De hyperlinkverwijzing is ongeldig..**

The leaflet you want may not be available in your desired language. If you have any questions or would like additional explanation, do not hesitate to ask your nurse to engage the services of an interpreter.

Questions

If you have any questions after reading this leaflet, please discuss them with the nurses or the attending specialist.

Access to Intensive Care

Venlo Location Intensive Care

Route Number 87	<i>via the K Towers lift, 2nd floor</i>
Unit 1, beds 1 – 8	☎ +31 (0) 77 320 57 86
Unit 2, beds 9 – 16	☎ +31 (0) 77 320 57 85
Unit 3, beds 17 – 24	☎ +31 (0) 77 320 57 90

You/your loved one are/is in room: _____

VieCuri Medisch Centrum

Locatie Venlo

Tegelseweg 210
5912 BL Venlo
☎ (077) 320 55 55

Locatie Venray

Merseloseweg 130
5801 CE Venray
☎ (0478) 52 22 22

Meer informatie www.viecuri.nl

Bekijk uw medische gegevens op www.mijnviecuri.nl