Autologous Stem Cell Collection

azdelta

Dear patient,

The doctor has already given you a detailed explanation of the need to collect autologous stem cells.

In this brochure, we would like to inform you about the course of this procedure.

First, we explain to you exactly what autologous stem cell collection is and how stem cells are mobilised into the bloodstream for collection using our specially designed apheresis devices.

We present a description of the course of the collection day: where to check in, the preliminary examinations, how the device works and the possible puncture sites. We also go over the potential problems and side effects.

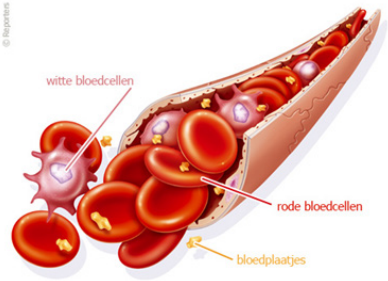
Some practical things can help you spend the day of the apheresis as comfortably as possible.

If you still have questions or are unsure after reading this brochure, please do not hesitate to contact your doctor, a nursing consultant, or the person in charge of the apheresis department. It is very important that you get a sufficiently clear answer to all your questions and can start the procedure calmly and confidently.

The doctors and staff of the Apheresis Unit of the Haematology Department.

1 What is autologous stem cell collection?

Within our bloodstream, we have different types of blood cells. Red blood cells play an essential role in oxygen transport; white blood cells help defend against infections and diseases; and platelets are needed for blood clotting. All these blood cells are produced in the bone marrow through blood-forming stem cells.



Stem cells are not normally found in our bloodstream but in the bone marrow. They are the "mother" cells from which all mature blood cells are formed.

You were already informed by the doctor about the need for autologous stem cell collection.

As mentioned, we find stem cells mainly in the **bone marrow** of most large bones. When we want to collect stem cells, they must first be separated from bone marrow. We call this stem cell mobilisation. Through the administration of **injections** containing growth factors, stem cells are released from bone marrow, and they can temporarily circulate in peripheral blood.





We administer the injections of growth factors just under the skin (subcutaneously) in the abdomen.

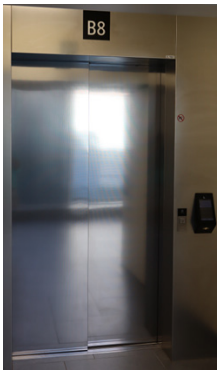
Once enough stem cells are present in the peripheral blood, they can be removed from the blood using a special machine.

2 How is stem cell collection done?

After growth factors have been administered for several days, you will be given an appointment to report to the haematology day unit. The haematology day unit is easiest to reach via the East (Oost) entrance. There, take lift B8 (the first lift on your left) and go to the second floor. The first unit you see is the haematology day unit.



Enter the hospital through the East (Oost) entrance





Take the first lift B8 on your left with the pictogram for the Oncology Day Unit/ IVF



The day unit is the first unit you reach (600-699)

We ask that you arrive by **7.45 a.m.** at the latest. Try to respect this time as much as possible. Through a blood draw, we will check whether there are enough stem cells in your peripheral blood. The sooner this blood sample can go to the lab, the sooner we will know whether the collection can go ahead or not. If you arrive later, this could cause major delays.

On the first day, we have to wait for the blood test result. That may take a while. Sometimes we do not know whether there are enough stem cells in your blood to start the collection until after 10 a.m.

If the collection can proceed, an apheresis nurse will pick you up from the day unit to go to the apheresis room together.



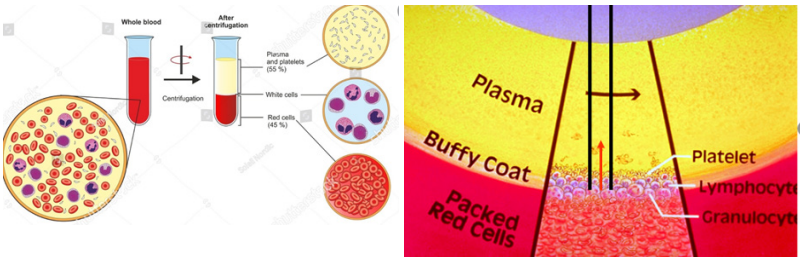
In the apheresis room, there are two beds. So it is possible for two stem cell collections to take place on one day, but this is rather rare. If you are being treated alone in the apheresis room that day, you may certainly have someone from your family visit you during the procedure. (We like to do the start-up calmly, and ask visitors to wait outside during that time.) If two patients are being treated, visits are not possible.

Before starting the collection, we check a few more things, such as height, weight, pulse rate, blood pressure, temperature, and your general health condition.

We collect stem cells using a special machine. We call this an apheresis machine. The different cells in the blood are separated from each other in that machine, and we can collect the cell layer containing the stem cells.



During the preparation for collection, the apheresis machine is loaded with a special set. We call this the collection set. Thus, no blood comes into direct contact with the apheresis machine. Blood is drawn through a needle in a larger blood vessel in the bend of the elbow and pumped into the collection set of the apheresis machine. There is a centrifuge in the apheresis unit. This is a kind of drum that spins at a certain speed, separating the different blood cells. That separation is done based on the weight of the different cells. The heavy red cells are pushed outwards, the lighter plasma and platelets stay more towards the inside, and the layer containing the white blood cells is in between.

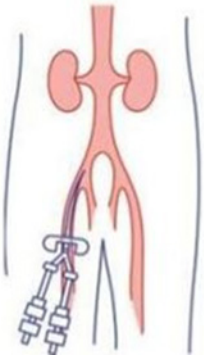


The weight of stem cells is similar to that of most white blood cells. So we will collect the white blood cell layer. That way, we also have the maximum number of stem cells included in the collection bag. The red blood cells, platelets and plasma we do not collect are returned via a second needle in the other arm. We thus need two peripheral needles for the collection.



The **infusion needle** is placed in the **bend of the elbow** because those blood vessels have a good diameter for smooth collection of blood to the machine. During the collection process, **you may not bend that arm**. For the return of blood, we try to place the needle in the forearm of your other arm. You are normally allowed to bend that arm, which allows for more freedom of movement of that arm.

Sometimes, collecting blood through the peripheral blood vessels in the arm is unsuccessful. Certain medical conditions may also preclude drawing blood from peripheral blood vessels. In this case, a larger catheter must be placed in the fold of the groin (inguinal fold). The placement of the catheter is done under local anaesthesia by an anaesthetist who comes to the apheresis room for this purpose.





The advantage of the **inguinal catheter** is that it allows more freedom of movement of the arms during collection, but the disadvantage is not being able to go home and having to stay in the hospital overnight if there are multiple collection days. We also ask you not to walk around or sit in the chair when the catheter is in place, and the leg should be bent as little as possible. Placement in the inguinal fold also slightly increases the risk of infection. Therefore, placement of a catheter in the arms is preferred. We only place an inguinal catheter in extreme situations, when placing it in the arms is unsuccessful. However, always keep in mind that there is a possibility that an inguinal catheter may need to be placed, and you will therefore have to stay in the hospital overnight.

The stem cell collection itself takes **between 5 and 6 hours**. This is because your total blood volume has to pass through the apheresis machine three times to remove the maximum amount of stem cells. With preparation and aftercare included, you can thus count on a full day.

Throughout the procedure, a specialised apheresis nurse will stay with you. Blood pressure and pulse checks are done every 15 minutes. In case of problems, a doctor is always available.

At the end of the collection, we take a sample of the stem cells to the lab. There, they count the number of stem cells collected. The attending doctor decides in advance how many stem cells are needed. It is sometimes possible to collect enough stem cells in a single day, but it is also common to need several consecutive days to collect enough cells.

The stem cells themselves are transferred in a special transport box to the UZ Gent stem cell bank under controlled conditions, where the cells are frozen.



Once we have succeeded in collecting enough stem cells, the procedure is over for you. If not, a new collection should be carried out the next day. Importantly, the growth factor injections should be continued until it is decided to stop collection procedures.

If there are still not enough stem cells in the peripheral blood on the first day, you will be allowed to go home, and you will be given further appointments for the administration of growth factors and a new appointment at the haematology day unit, or an admission will be scheduled for the administration of an additional injection of growth factors. That additional injection will be administered at midnight.

3 What problems might arise?

- Due to the administration of growth factor injections, you may experience **bone pain**. This bone pain is usually located in the lower back, the pelvis or the sternum. Some people also experience headaches. This is quite normal and is even seen as positive. This indicates good mobilisation of stem cells to the peripheral blood. When these symptoms develop, you may take paracetamol with or without codeine. (e.g. Dafalgan or Dafalgan codeine). Do avoid taking anti-inflammatories (Voltaren, Diclofenac, Indocid, Ibuprofen, Brufen, Neurofen, etc.). Before taking Dafalgan, it is recommended that you check your temperature first. Taking Dafalgan will suppress any fever. Also, look for this in the information leaflet you will be given when you start the growth factors.

- Sometimes, not enough stem cells can be collected through the administration of the standard growth factors. In such cases, we may administer an **additional injection of growth factors**, namely Plerixafor (Mozobil ®). Plerixafor is also administered just under the skin (subcutaneously) in the abdomen, but this is done 6 to 11 hours before stem cell collection. As a result, the difficult-to-release stem cells will now also be released into the bloodstream. That key injection will be given at midnight. In this case, you will thus have to stay in the hospital overnight. **Plerixafor may cause abdominal pain, nausea and diarrhoea** as additional side effects. Many people experience softer bowel movements or diarrhoea shortly after administration, but this is usually over by morning, so they are not inconvenienced during the collection procedure. Rare side effects of Plerixafor include lowered blood pressure or an allergic reaction with a skin rash and facial swelling.

- Sometimes, there may be some **fatigue** during preparation for the collection, during the collection and a few days afterwards. We advise you not to drive your own car home.

- When blood is collected through the peripheral blood vessels in the arm, the **puncture sites** may feel sensitive for a few days or a bruise may form.

- During collection, there may be **tingling** around the mouth or nose, in the fingers or toes. This is because we have to add an anticoagulant to the blood so that the blood does not clot during processing in the machine. The anticoagulation will lower the amount of calcium in the blood, which can cause that tingling. If you feel this, you should report it to the apheresis nurse immediately. The administration of extra calcium can resolve the problem and prevent real cramps from developing.

- The apheresis procedure may reduce the number of blood cells in your blood. Therefore, we always take a **blood sample** at the end of the procedure. Based on the result, the doctor will decide whether or not you should receive a red blood cell transfusion or a platelet transfusion.

- During stem cell collection, your **blood pressure** may be somewhat lower and/or higher than normal.

- Sometimes, even with several consecutive days, we may not be able to collect enough stem cells. In that case, another attempt can be made at a **later** time.

- In going over the **informed consent form**, a few more rare side effects that we rarely, if ever, see during stem cell collection will be discussed.

4 Some practical matters

- Once it is decided that you will undergo stem cell collection, the **blood vessels in the bend of the elbow should not be punctured anymore**. Help remind nurses and doctors of this.

- **Drink plenty** in the days before stem cell collection. That way, the filling of your peripheral blood vessels will be good. We recommend that you make sure to drink enough water in the 24 hours before stem cell collection.

- **Avoid** drinking **alcohol and coffee**, as they are diuretic. A cup of coffee in the morning is fine, but definitely don't overdo it.

- Be sure to have another **breakfast** the morning of the collection.

- Come to the day unit at the **agreed time** (7.45 a.m.) on the first day of collection so that everything can go smoothly.

- Wear **comfortable, warm clothing**. It is not very warm in the apheresis room. This is necessary for the quality of the stem cells. It is important that the sleeves are not too tight, though, so you can easily pull them up.

- Be prepared that **hospitalisation** may be necessary. This is in case peripheral collection is not possible and an inguinal catheter needs to be placed, or if Plerixafor is administered.

- If you are the only person having stem cell collection in the room, you may have **visitors** if you have arranged it with the apheresis nurse. If there are two people for collections that day, no visitors can be allowed.

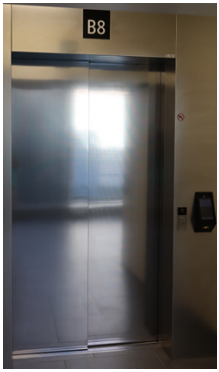
- If **more than one collection day** is needed, and you are allowed to go home between collections, we will remove

the needle from the bend in the elbow. We will leave the peripheral catheter in the forearm for blood return, which is a thin plastic catheter, if you agree to it. That catheter can be used the next day again, thus avoiding an extra puncture. Before leaving, the catheter is properly fixed and covered.

- If there are **several collection days**, **from day two onward, you do not need to check in** at the haematology day unit; you may come directly to the **apheresis room** at 7.45 a.m. You enter through the East entrance again and check in with your ID. Take lift B8 (the first lift on your left) to the second floor. Now you do not go into the day unit, but you continue walking until you reach the haematology ward. Once inside, go right until you reach a recessed area where there is also a toilet. The apheresis room is room 2.555. If you don't find it right away, you can always ask the nurses on the ward.



Entering through the East entrance





Take the first lift B8 on your left with the Oncology Day Hospital / IVF pictogram. Go to the second floor





Enter the Haematology Department (500-599), and immediately turn right in the corridor





Continue until you reach a recessed area where there is also a toilet. The apheresis room is in the recessed area (room 2.555)

5. Cost

For questions related to the cost, please contact the Invoicing Department at factuur@azdelta.be or by phone on number 051 23 76 66.

Notes

Contact information

Person responsible for quality regarding apheresis
Marleen Neyrinck
t 051 23 79 19
e marleen.neyrinck@azdelta.be

Haematology Transplant Coordinator
Evelyne Dewulfh
t 051 23 38 86
e evelyne.dewulf@azdelta.be

Haematology ward
t 051 23 75 74
Haematology Day unit
t 051 23 78 25

Physicians

Dr Dries Deeren
Dr Lien Deleu
Dr Caressa Meert
Dr Rutger Callens
Dr Jan Brijs

AZ Delta Deltalaan 1, 8800 Roeselare **t** 051 23 71 11 **e** info@azdelta.be **w** www.azdelta.be
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