*Gift of Life* presentation script

**Slide 1**

Hello everybody. Thank you for coming to the presentation. For those of you who don’t know me already, my name is…..I’m here today to tell you about one of the most fascinating gifts that a person can offer to a complete stranger - the gift of life😊 The medical part of the presentation was prepared by MD Grzegorz Hensler, an expert from DKMS Foundation. You’ll learn a lot about blood issues and I’ll talk you through the process of bone marrow and blood stem cells donation which offers the chance at life to some blood cancer patients. By the end of the talk you’ll have a solid overview of how we can help one another when someone ends up in dire straits.

**Slide 2**

The presentation is divided into 6 parts, the last one is fully interactive and gives you a chance to improve your language skills, so there is added value to the medical experience and some fun, too. Feel free to interrupt me and ask questions during the presentation/ If you have any questions, please ask them at the end of the medical part of the presentation.

**Slide 4**

Bone marrow is a liquid tissue located mostly in long and flat bones such as femur, pelvis, vertebral column (but in fact it is present in all bones, at least at birth). Bone marrow serves as a factory that produces all cells of blood. The process of blood production is called hematopoiesis. The silent hero of hematopoiesis is the hematopoietic stem cell – a mother cell that has some incredible features. It is a very hard working cell and it can do anything - we say it is totipotent. It means that this cell can create/produce any cell of our body. Of course, in the environment of bone marrow it means that stem cells can produce any kind of blood cell that is needed.

**Glossary:**

bone marrow - szpik kostny tissue – tkanka bone – kość femur – kość udowa pelvis – miednica (anat.)

vertebral column – kręgosłup birth – narodziny cell – komórka blood – krew hematopoiesis – hematopoeza = produkcja krwi

hematopoietic stem cel - krwiotwórcza komórka macierzysta

**Slide 6**

There are different cells that make up peripheral blood (the blood that circulates in our blood vessels). They all have different functions. Red blood cells (erythrocytes) transport oxygen from lungs to other organs, tissues and cells. They are disc-like in shape, which makes it easier for them to exchange gases and travel through small vessels. They live about 100-120 days. White blood cells (leucocytes) are the soldiers that protect our body from intruders – bacteria, viruses, protozoa, parasites. There are different types of white blood cells, and each kind has a specific role to play. For example, neutrophils mostly fight bacteria and fungi. Lymphocytes fight viruses, cancer cells and other intruders. Platelets are small cells that repair damaged tissues and stop bleeding. They are necessary to form a clot that stops bleeding. They live about 14 days. The numbers below reflect how many cells are produced each day by our bone marrow.

**Glossary:**

lung – płuco organ – narząd vessel – naczynie white blood cells – krwinki białe leucocytes – leukocyty

bacteria – bakerie virus – wirus protozoa – pierwotniaki parasite – pasożyt neutrophil – neutrofil fungus (plural fungi) – grzyb

lymphocyte – limfocyt platelet – płytka thrombocyte – trombocyt bleeding - krwawienie clot – skrzep

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With each cell division (and you have just seen how many times stem cells divide each day) a cell needs to re-write the whole genetic information that it carries. An entirely new copy of DNA is needed for the new cell. With so much work to be done, it is just a matter of time when a stem cell makes a mistake in our genetic code. Our body has a mechanism of detection and repair of such errors. But every now and then even this mechanism can fail and a mutant is created.

**Glossary:**

cell division – podział komórkowy to divide – dzielić się genetic information – informacja genetyczna detection – wykrywanie

mutant – mutant

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If this mutant is not detected by our immune system, and it has features that give an advantage, such as fast growth, high rate of division, immortality, ability to avoid the signals of our body, the mutant will divide (=proliferate) and create an army of mutants. Now that’s when we have a problem. This army of mutants may became a cancer. A group of cells with an error in the DNA may also cause a non-malignant = benign (non-cancer) disease of the blood.

**Glossary:**

immune system – układ odpornościowy high rate of division - wysoki współczynnik podziałów immortality – nieśmiertelność

proliferate – mnożyć się cancer – rak, nowotwór non-malignat – niezłośliwe benign - łagodny

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There are many different types of blood cancers. You may have heard names such as the ones mentioned here, but what you need to know is that these are usually GROUPS of diseases – there are many kinds of leukemias (for example an acute lymphoblastic leukemia) or lymphomas, with different course of disease, treatment and prognosis.

**Glossary:**

disease – choroba leucemia – białaczka lymphoma – chłoniak polycythemia vera – czerwienica prawdziwa

essential thrombocytemia – nadpłytkowość samoistna multiple myeloma - szpiczak mnogi

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There are blood diseases that are congenital (inborn errors) or acquired during life that may also require bone marrow transplantation. The diseases may be errors in the structure and/or function of hemoglobin (the protein that red blood cells use to transport oxygen), malfunction of white blood cells leading to immunodeficiency (meaning that the immune system does not work correctly and our body cannot protect itself from infections) and many other diseases.

**Glossary:**

congenital – inborn - wrodzony immunodeficiency – niedobór odporności

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There are different ways we can fight blood cancers:

* Chemical weapon – chemotherapy. We use classical, traditional chemotherapy as well as very modern, targeted therapies
* Radiation weapon – radiotherapy
* Biological weapon – very modern biological therapies used to target cancer cells

**Glossary:**

chemotherapy – chemioterapia targeted therapies – terapie celowane radiotherapy – radioterapia

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Bone marrow transplantation is very aggressive treatment that may combine all of the above-mentioned therapies. We may compare it to a nuke bomb or napalm bombing. The idea is to completely destroy the sick bone marrow and the immune system of the patient and to replace it with a new, healthy one, of a donor.

**Glossary:**

bone marrow transplantation – przeszczepienie szpiku kostnego treatment - leczenie a donor – dawca

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We use this highly aggressive treatment mostly for different blood cancers: acute leukemias or aggressive lymphomas. Only 10% of bone marrow transplantations are performed for non-malignant diseases.

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A donor is not just ANY person. The key is to find the donor that would be compatible with the patient. In bone marrow transplantation we do not pay attention to different skin colors, nationalities, religion or even blood group. The most important issue here is the genetical tissue compatibility.

**Glossary:**

indication – wskazanie compatible – zgodny blood group – grupa krwi

genetical tissue compatibility – zgodność genetyczna tkanek

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It is the identical HLA that makes donors and patients compatible. HLA is a part of our immune system. It is a group of proteins located on the cell membranes that may be used by the immune system (mostly lymphocytes) as passports that differentiate ‘our’ cells from intruders. The cells with an identical HLA are considered ‘ours’, while those with a different HLA are identified as ‘intruders’ and will be attacked and killed.

**Glossary:**

protein – białko cell membrane – błona komórkowa

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In bone marrow transplantation we genetically identify (we use the term ‘*type*’) 5 different HLA markers that come in two copies (so 10 in total), as we all have 2 sets of genes – one from our mother and one from our father. That’s why a perfect match occurs when the donor and the recipient are 10/10 identical. The best donor is an HLA- identical sibling. The probability of having an HLA-identical sibling is 25%. If a patient does not have a family donor, we need to find an identical match among unrelated donors. Due to a huge number of HLA combinations it is like looking for a needle in a haystack.

**Glossary:**

to type – typizować, oznaczać recipient – biorca sibling – rodzeństwo HLA-identical sibling – rodzeństwo zgodne w układzie HLA

unrelated donor – dawca niespokrewniony

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After you register as a potential bone marrow donor your anonymous data is stored in the World Bone Marrow Donor Registry for all patients in need of a transplant. If you are a potential match for a patient, your donor center will contact you by phone and/or email to perform the first phase of the procedure called confirmatory typing. The coordinator will confirm your will to donate, update your contact details and perform a preliminary medical interview. We will schedule a blood draw in a laboratory in your neighborhood. Your blood will be tested for infectious diseases markers and will be used to type the HLA again to be 100% sure you ARE the perfect match.

**Glossary:**

to register – zarejestrować się a potential donor – dawca potencjalny anonymous – anonimowy

anonymous data – anonimowe dane confirmatory typing - typizacja potwierdzająca to confirm – potwierdzić

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Then, you will have an appointment with the physician responsible for your qualification who will supervise the process of donation. You will have to travel to one of the collection centers (hospitals) that is allowed to perform bone marrow collections and is contracted by your donor center. You will talk to the physician who will once again explain the process in details, you will have a medical examination, multiple blood tests, a chest X-ray, an abdominal ultrasound and an ECG. This way we will know that the procedure is safe for you. If everything is OK, you will be allowed/qualified to donate.

**Glossary:**

to donate - oddawać, ofiarować to uptade – uaktualnić preliminary – wstępny medical interview – wywiad medyczny

blood draw – pobranie krwi to schedule - umówić, ustalić termin infectious diseases markers – markery chorób zakaźnych

an appointment – wizyta physician – lekarz responsible for – odpowiedzialny za qualification – kwalifikwacja

to supervise – nadzorować collection center – ośrodek pobierający medical examination – badanie lekarskie

blood test – badanie krwi chest X-ray – prześwietlenie płuc abdominal ultrasound – USG jamy brzusznej ECK – EKG

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There are two ways you can donate hematopoietic stem cells. They can be collected from peripheral blood (90% of donations), or the bone marrow is harvested from the iliac crest (10% of donations).

**Glossary:**

peripheral blood – krew obwodowa bone marrow harvesting – pobranie szpiku kostnego

iliac crest – grzebień talerza kości biodrowej

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In general, there are no or very few stem cells in our blood. In order to increase their number we use the substance called G-CSF. It controls the number of white cells. For 5 days the donor receives subcutaneous injections (self-administered) with G-CSF that stimulates their bone marrow – it starts to produce an increased number of white blood cells and stem cells leave bone marrow cavities and find their way to the blood. The process is called ‘mobilization’.

G-CSF may cause flu-like symptoms (muscle/bone pain, headaches, fatigue).

**Glossary:**

subcutaneus injection – zastrzyk podskórny self-administered – podawany samodzielnie bone marrow cavity - jama szpikowa

mobilization – mobilizacja flu-like symptoms – objawy grypopodobne muscle pain – ból mięśni

bone pain – ból kości headache – ból głowy fatigue – zmęczenie

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To separate hematopoietic stem cells from blood we use a very intelligent centrifuge.

**Glossary:**

to separate – oddzielać centrifuge – wirówka

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The process of separating stem cells from other blood cells is called apheresis. The centrifuge uses sterile, single-use kits to collect/harvest the life giving cells. The whole process is continuously monitored by a powerful computer and, of course, well-trained medical staff. Other blood components return to the donor, so there is no excessive blood loss.

**Glossary:**

apheresis – afereza single-use = disposable - jednorazowy sterile – sterylny kit - zestaw

to harvest – zbierać blood components – składniki krwi excessive – nadmierny blood loss - utrata krwi

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The collection is not painful at all. The only inconvenience is that it is necessary to insert a venous access (a so-called venflon) to two veins on the forearms of the donor. So the hero must not be afraid of needles and the sight of blood and needs to be patient - the apheresis takes about 4 hours. We use one vein to collect blood and direct it to the separator and the other one to return blood components other than stem cells to the donor.

**Glossary:**

inconvenience – niedogodność venous access – dojście dożylne vein – żyła forearm – przedramię

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Meanwhile, you may watch the blood being pumped through the machine, count the drops of saline that hang above you, or you can just relax, read a book or watch a couple of episodes of your favourite series. In most cases (90%) we collect enough cells during one day. Sometimes the donor needs to come back to the clinic the next day for another session of apheresis. He/she spends the night at a hotel.

**Glossary:**

saline – sól fizjologiczna (kroplówka)

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This bag contains the precious haemopoietic stem cells and donor’s plasma. It truly is a life-saving gift.

**Slide 29**

Bone marrow collection is a surgery performed in an operation room/surgery theatre. We use sterile single-use tools so there is no risk of transmission of an infectious diseases such as hepatitis B or C. The procedure requires general anesthesia. An anesthetist stays on guard of the donor’s safety.

**Glossary:**

surgery – zabieg chirurgiczny operation room = OR= surgery theatre = sala operacyjna

transmission of infectious diseases – przeniesienie chorób zakaźnych hepatitis B – zapalenie wątroby typu B

general anesthesia - znieczulenie ogólne anesthetist – anestezjolog

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Doctors make a small (5mm) incision above the part of the pelvis called a posterior superior iliac spine and insert a biopsy needle in the bone to aspirate bone marrow. It takes 45 to 60 minutes to collect a sufficient volume of bone marrow with the precious hematopoietic stem cells. The volume collected is always safe for the donor. Thanks to the anesthesia the procedure is painless.

**Glossary:**

incision – nacięcie posterior superior iliac spine – kolec biodrowy tylny górny biopsy needle – igła punkcyjna

to aspirate – zaaspirowąć, pobrać (zwykle płyn) painless – bezbolesny

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As we collect a mixture of bone marrow and blood, this product looks a little bit different, resembling blood.

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The incisions are so small that we do not need stiches. They heal within a week. After the bone marrow donation, donors may feel weak and experience mild discomfort in the collection sites. These symptoms may last for 1-2 weeks.

**Glossary:**

stiches – szwy a collection site – miejsce pobrania

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The idea of hemopoietic stem cell donation is global. Because of the complexity of HLA types it is very hard to find a perfect match so it all only makes sense when we join forces globally. Donors from all around the globe donate cells to save their genetic twins regardless of their location. You always donate the cells in the country you live in, and the product is then transported to the Patient in need who might be from Poland or any place in the world. It’s one of the most humane procedures that unites the vulnerable with the great-hearted.

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Donors are monitored for 10 years after donation. The process is called ‘Follow up’. Thanks to data collection, we can be certain that the procedure of bone marrow is safe for the donors.

That’s the end of the medical part of the presentation, but before we move on to the language challenge, let’s check if you remember some basic facts about blood issues and blood stem cells donation.

data collection – gromadzenie danych challenge - wyzwanie

**Slide 35**

Here are five questions based on the content of my talk. Consult your friends for 2-4 minutes and then share your answers with us. \*\*\*The answers can be found in the script of the presentation.

**Slide 36**

Thank you very much for your attention, let’s have some fun with truly challenging and interesting medical words and real tongue twisters😊

**Slide 37 - 42**

Vocabulary and pronunciation challenge. Make sure that you really say the words out loud.

**Slide 43**

Thank you for your attention😊