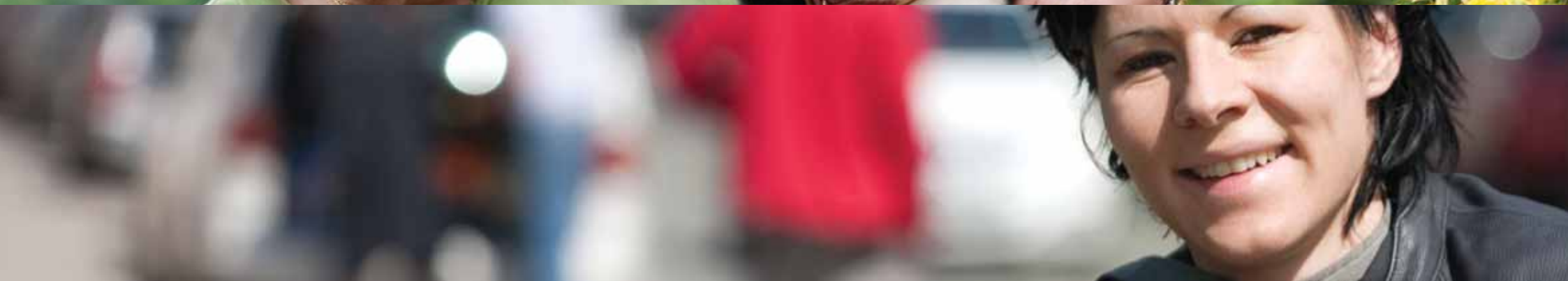
L I F E F L O W S



2009 ANNUAL REPORT OF THE SLOVENIAN BLOOD TRANSFUSION SERVICE

L I F E F L O W S

Turning points define the direction of our lives. Sometimes, they take us to the less pleasant conditions of injuries or diseases, and it depends on us alone how we face the challenge. We can give up, or we can discover hidden strengths inside us. If the disease which we first considered a curse is the initiator of this strength, it then becomes an ally in reforming old patterns into new ways of thinking, feeling and acting. We might see the disease in a new light, as a blessing that exists only to help us find the lost path to ourselves. At such times, the support of close relatives and friends, and the actions of those who recognise their mission in helping a fellow human mean a lot.

INTRODUCTION

This report of the Slovenian blood transfusion service is the sixth in succession. I am pleased that we are able to inform the Slovenian public about our work and achievements by means of this publication. I am also pleased that I have the opportunity to thank those who are indispensable to the functioning of the blood transfusion service.

First, I would like to thank the blood donors. I can truly say that blood donors are the first and the most important members in the blood supply chain. They - in cooperation with the Red Cross of Slovenia and its regional associations - help us provide an undisturbed blood supply. In the form of each blood unit, they donate parts of themselves, which effectively saves lives.

We should also not forget the voluntary non-related stem cell donors and donors of umbilical blood, who do not hesitate to donate them to save someone else's life or give someone a chance to live again.

Last year, after many years, we have exceeded the magic limit of 110 thousand donors, but even if the number is enviable, the most important is that all those who needed blood also received it.

I would also like to thank all the users of our services who responsibly, professionally and carefully perform blood transfusion therapy .

In conclusion, I would like to thank all the employees of the transfusion service, who by their professional work achieve high safety and quality standards and introduce innovations to provide safety for both recipients and donors. Also, because of this, transfusion is a highly safe method of treatment; indeed, it has never been safer than it is today.

Igor Velušček, Director of the BTCS

Aleš Blazetič

Marinka Bobnar

Mojca Ifko Pinosa

Tatjana Murkovič

Tom Sotlar

Milena Remic

Aljoša Ifko Pinosa

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2009 IN NUMBERS

97,546	blood collections
71,655	blood donors
12,677	new blood donors
1,182	blood donation sessions
198,307	prepared blood components
3,736	therapeutic services
more than 1.5 million	laboratory tests
14,466	registered bone marrow donors (3,354 new ones)
292	stored units of umbilical blood in the public bank (250 new ones)
2,708	telemedicine services

TRANSFUSION MEDICINE

Transfusion medicine is a medical profession with the mission of treating patients using blood products. We can simply say that transfusion medicine begins with blood donors - healthy individuals - and ends with patients receiving a blood component necessary for their treatment. The task of the profession is to do everything to protect the patient receiving blood, as well as the blood donor donating blood. As a medical profession, transfusion medicine deals with three closely associated fields providing patients with adequate and safe treatment using blood: blood supply, blood transfusion therapy (with blood products and cells), and laboratory tests.

ORGANISATION OF THE BLOOD TRANSFUSION SERVICE IN SLOVENIA

The transfusion service in Slovenia is comprised of the Blood Transfusion Centre of Slovenia (BTCS) with the associated Novo mesto, Trbovlje, Slovenj Gradec, Izola and Jesenice Departments of Transfusion Medicine; the Centre of Transfusion Medicine Maribor, with associated units in Ptuj and Murska Sobota; the Centre of Transfusion Medicine Celje and the Department of Transfusion Medicine of Nova Gorica Hospital.

The entire transfusion service performs the activity of blood collection, which means that they collect blood from blood donors.

The processing of blood into components is performed within the framework of the Blood Transfusion Centre of Slovenia in Ljubljana, the Centre of Transfusion Medicine Maribor and the Centre of Transfusion Medicine Celje.

The processed blood is returned to centres/units according to their needs and the plan.

Blood testing is performed within the framework of the Blood Transfusion Centre of Slovenia in Ljubljana and the Centre of Transfusion Medicine Maribor.

Number of registered blood donors, collections and deferrals by transfusion service in 2009

Transfusion service	No. of registrations	No. of collections	No. of deferrals
Celje	11,345	10,531	814
Izola	5,785	5,422	363
Jesenice	3,472	3,285	187
Maribor	14,726	13,222	1,504
Murska Sobota	4,765	4,389	376
Nova Gorica	3,661	3,446	215
Novo mesto	5,662	4,845	817
Ptuj	3,638	3,360	278
Slovenj Gradec	3,290	2,944	346
Trbovlje	1,322	1,263	59
BTCS Ljubljana	53,142	44,839	**8,303**
Slovenija	**110,808**	**97,546**	**13,262**

Aleš Blazetič

I was diagnosed with haemophilia when I was 16 months old. Fortunately for me, some months before, in the year of my birth, a cryoprecipitate, purified factor VIII was discovered, which was available for me from the very beginning. At first, it was only available in Ljubljana, but later I stored it at home in the freezer and injected it if I was injured.

A childhood disease prevented me from having many adventures, as I was not allowed to participate due to my condition, and I could not develop my great passion, cycling, to a degree that I would like to, since my joints injured from numerous bleedings did not allow it.

Even if it appears to be bad, everything is good for something. Living with a disease enabled me to develop a different perspective on the world, which otherwise people cannot achieve due to the lack of a particular experience. A part of this perspective is that human relations become an essential value. Extremes are smaller and the path itself becomes more important than the goal. Everyone has problems, so we should take a fellow person the way he or she is, and we should treat ourselves in the same way. I accept my disease as a part of me, but I am not its servant; and I do not feel sorry for myself. I am unique in the world, just as everyone else among us.

I am very grateful to the employees of the Blood Transfusion Centre in Ljubljana and its regional units, as their efforts helped patients a lot to achieve higher quality of life. This system has always been extremely well run, and we should thank those who established it and those who are now responsible for its quality operation. It is not like this in many parts of the world.

Marinka Bobnar

I have been living with diabetes for 40 years. At first, it was just a disturbance for me that prevented me from eating as many sweets as my peers, but the disease slowly progressed. When I was 30 years old, my kidneys failed. In the country, such topics were a taboo, no one spoke of them and I found it difficult to talk to my parents about the possibility that one of them would donate a kidney to me.

My mother was the donor, and I still appreciate her courage, as my father thought she would die because of the procedure. Of course, everything turned out fine and my new kidney served me well for the following 10 years. In the meantime, I gave birth to a son and I was one of the rare mothers with diabetes, hemodialysis and other conditions to have given birth to a healthy child.

After the donated kidney failed, I was on dialysis for 6 years, until I got another kidney from Germany by means of the Eurotransplant organisation's intervention, which has now served for more than 6 years.

My life experience has changed me a lot and taught me that health should be the first priority value. Modern medicine helps me to maintain my health at a level enabling me an active life. I greatly appreciate the existence of the Eurotransplant organisation, and I am also grateful to the hospital department where I was operated on, to the Department of Nephrology and the TX dispensary where I have my regular check-ups. I consider them as friends who treat me as a significant individual and who are always in a good mood, prepared to offer help or give advice, irrespective of the time or day. The disease can appear any time. Awareness that there are unselfish people ready to help by donating blood, organs, or say some warm words and provide compassion, alleviates the burden of my disease and enables me to feel safe despite it.

BLOOD SUPPLY

A particularity of the transfusion service is that it does not have an unlimited stock of blood and that the availability of blood depends on individuals' motivation to donate blood. The blood collection procedure is not entirely painless for the donor, but many people nevertheless decide to act in this unselfish way.

The fact that blood products cannot be completely replaced by artificial substitutes means that blood from blood donors and products made from it are unique medications. In order to provide safe blood for its citizens, each country has to have voluntary, unpaid blood donors who regularly donate blood. For each country, blood donors signify national wealth, since they donate an irreplaceable resource through mutual help enabling treatment and saving lives.

In Slovenia, we can be proud of our successful, long-term tradition of blood donation, which is sufficient for the self-provision of blood required by the patients. There has never been a case when a patient did not receive blood if they needed it.

Since 1953, the main organiser responsible for a sufficient number of blood donors has been the Red Cross of Slovenia. Today, this task is performed through a network of 56 regional associations of the Red Cross throughout Slovenia.

Number of performed collections of whole blood, plasmaphereses and thrombocytaphereses by transfusion service in 2009

Transfusion service	No. of whole blood collections	No. of performed plasmaphereses	No. of performed thrombocyta-phereses
Celje	10,531	0	0
Izola	5,785	0	0
Jesenice	3,285	0	0
Maribor	13,070	25	127
Murska Sobota	4,389	0	0
Nova Gorica	3,446	0	0
Novo mesto	4,765	0	0
Ptuj	3,360	0	0
Slovenj Gradec	2,915	0	0
Trbovlje	1,263	0	0
BTCS Ljubljana	42,581	717	1,248
Slovenija	**95,390**	**742**	**1,375**

Mojca Ifko Pinosa

Aljoša was born approximately three months premature. When he was born, he weighed 700 grams. He was treated and cared for in the Neonatal Intensive Care Unit at the Ljubljana Maternity Hospital. Despite some complications, he was making good progress. The first Monday in March, after more than two months in the Intensive Care Unit, he was transferred to the department to stay with me, where we were supposed to prepare to go home. In this week, his inguinal hernia was strangulated five times in succession. Strangulation causes such pain that the child cannot even cry. Surgery is a solution, but it was questionable due to his low body weight; at the time, Aljoša weighed 1700 g, and due to anaemia, which accompanies all premature babies after intensive treatment. On Friday, we had a message from the Department of Paediatric Surgery that he would go into surgery on Monday, despite the low weight. Only one problem remained – anaemia.

We were faced with a new challenge, waiting for suitable blood for Aljoša. He was supposed to receive a transfusion on Saturday evening. On Saturday morning, we were informed that there was still no suitable blood. Blood compatibility and quality requirements are particularly high for such high-risk babies. Waiting for the blood was very stressful. After dinner, when Aljoša was supposed to go back into intensive care to receive the transfusion, I was informed that the blood was still not ready. Around half past nine in the evening, the good news arrived; they had blood for Aljoša at the Intensive Care Department, and he was taken there to receive the transfusion. The operation was carried out successfully on Monday, and he was back in the maternity hospital 24 hours later. Today, Aljoša is a healthy and lively two-and-a-half-year-old.

I am pleased that Aljoša was born in the Ljubljana Maternity Hospital, where they work real miracles with extremely premature babies. Here, I would like to thank the employees of the High-risk Pregnancy Department and the Neonatal Intensive Care Unit of the Ljubljana Maternity Hospital and the Blood Transfusion Centre for all their care, professional work and personal support through that difficult life experience, and of course, Aljoša for having lived through all these obstacles and making me a proud mother.

BLOOD TRANSFUSION THERAPY

There is no adequate substitute for blood. Health- or life-threatening diseases and haemorrhages causing lack of blood and its components can be treated with transfusions. Blood can only be used as a medicine when appropriately collected and tested , adequately processed and given to the patient in an appropriate manner. Otherwise, blood can provoke dangerous conditions, disease or even the death of the recipient.

Transfusion is only justified and efficient when in the process of blood therapy the recipient is provided with the blood component he or she really needs, in such an amount and form to achieve the best possible effect. This can only be achieved by transfusing safe blood.

Blood products – blood components and medical products derived from blood are prepared from the collected whole blood of donors.

The collected whole blood unit is separated into its individual ingredients or blood components. This is performed by means of physical methods such as centrifugation, filtration and similar. This is how we obtain the same amount of cells, for example erythrocytes, in a smaller volume of a particular component than there are in a bag of whole blood. Therapy using blood components is more efficient and safer, since patients receive only the required blood ingredients.

Number of units prepared from whole blood by transfusion service in 2009

Transfusion service	No. of conc. erythrocyte units	No. of conc. platelet units	No. of fresh frozen plasma units
Celje	10,394	760	10,412
Izola	4,171	45	3,973
Maribor	20,809	2,791	20,733
BTCS Ljubljana	59,418	4,947	59,854
Slovenija	**94,792**	**8,543**	**94,972**

Number of issued blood components by transfusion service in 2009

Transfusion service	No. of conc. erythrocyte units	No. of conc. platelet units from whole blood	No. of conc. platelet units from thrombo-cytaphereses	No. of fresh frozen plasma units
Celje	8,028	329	1	2,394
Izola	5,339	81	0	564
Jesenice	2,304	0	38	610
Maribor	14,682	1,774	107	7,461
Murska Sobota	3,795	360	15	709
Nova Gorica	3,735	111	9	1,156
Novo mesto	3,736	429	0	1,140
Ptuj	1,966	32	0	954
Slovenj Gradec	2,275	49	0	396
Trbovlje	1,521	34	0	424
BTCS Ljubljana	39,674	3,985	2,051	15,485
Slovenija	**87,055**	**7,184**	**2,221**	**31,293**

EXAMPLES OF BLOOD TRANSFUSION THERAPY

The largest consumers of blood are patients with various haematological and/or oncological diseases. A lot of blood is also used for patients undergoing surgery and transplants, and for accident victims with more serious injuries. Examples of treatment using blood are presented below.

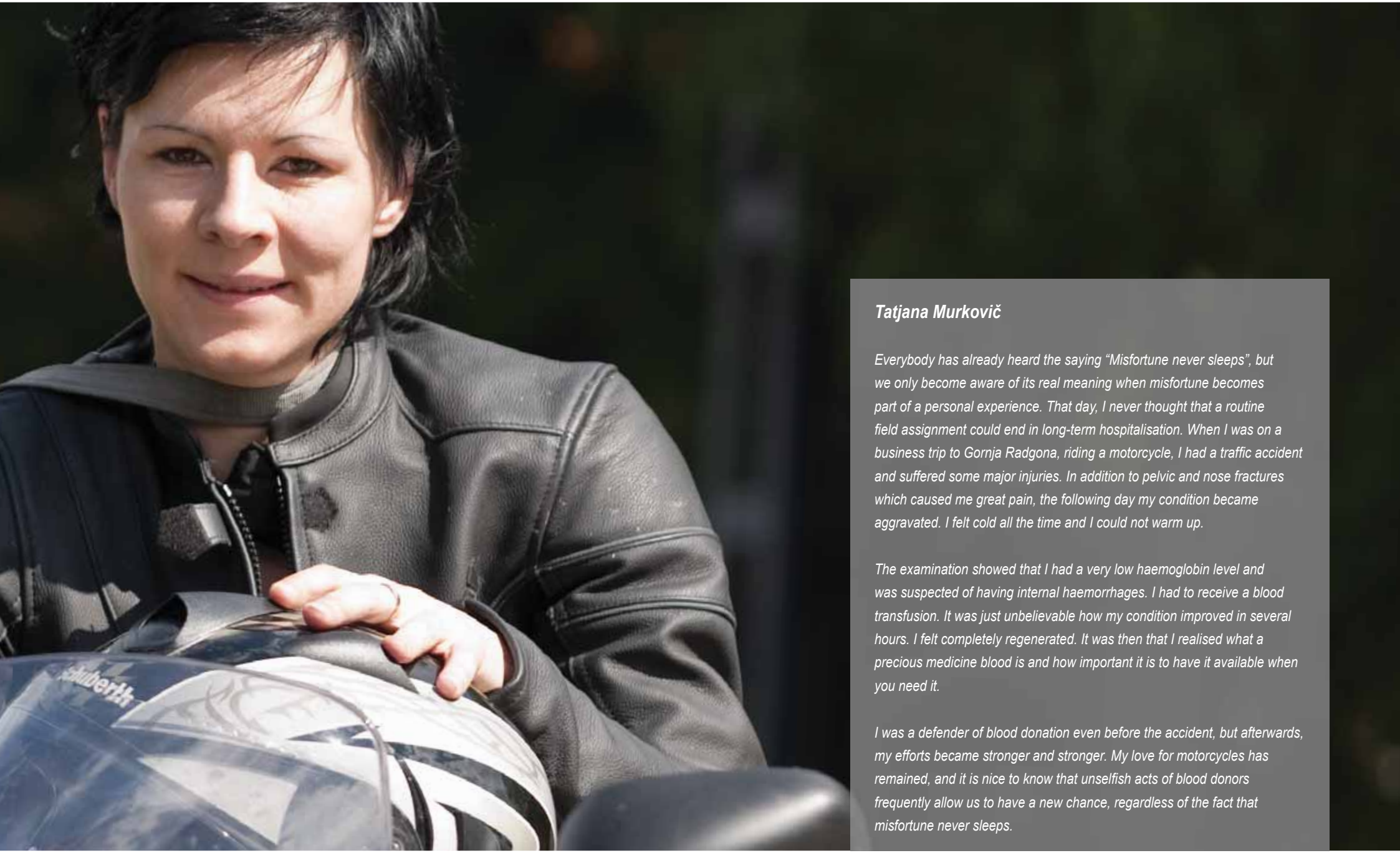
POLYTRAUMA

According to the definition, polytrauma is a condition where organs in two body cavities are injured, or a condition where there are injuries of two organ systems and one of them directly or indirectly threatens life. Such injuries frequently cause a state of shock. Treatment almost always requires the replacement of blood lost from circulation and tissues. Despite progress in the field of surgery, loss of blood and the associated need for transfusion in people injured so badly is still great. The transfusion of blood components is used to repair and maintain the oxyforming capacity of blood, and at the same time to maintain appropriate intravascular volume and repair disturbances in haemostasis. In polytraumatised patients, a so-called massive transfusion is almost unavoidable, . It means replacement of the patient's blood with concentrated erythrocytes within 24 hours, or the transfusion of 10 units in several hours. In addition to the loss of erythrocytes, which provide tissues with oxygen, such extensive injuries also cause disturbances in blood coagulation which are on one hand a result of a lack of platelets due to their dilution with platelet-free components (concentrated erythrocytes and fresh frozen plasma), and on the other hand a result of the dilution of other factors which in addition to platelets also participate in the coagulation process. Blood coagulation factors can be replaced either by fresh frozen plasma or by their concentrates derived by means of various technologies. The phenomenon of a polytraumatised patient is unplanned. The condition is urgent and requires rapid action, so a sufficient amount of suitable blood components should be provided in a short time. A polytraumatised patient might need a transfusion of up to 10 to 20 units of concentrated erythrocytes (even more in extreme cases), several units of fresh frozen plasma (or concentrates of blood coagulation factors) and platelet transfusion. The transfusion of blood components might be only a small part in the entire management of a polytraumatised patient, but it is the foundation of their urgent treatment.

KIDNEY TRANSPLANTATION

Dialysis enables patients to live with kidney failure. It is used to remove harmful substances and excess water from the body. All such patients are considerably limited in their ability to live normal lives. A transplanted kidney on the other hand enables them an almost complete return to normal everyday life. Kidney transplantations are the most common among organ transplantations and are the best way to treat patients with chronic kidney failure. It can be performed even before the final failure of the patient’s kidneys. In order to be successful, high tissue (HLA) compatibility is required. For the recipient, the transplanted kidney is a foreign body which the body tries to reject, so the recipient must always use immunosuppressive medicines. An adverse effect of these medicines is unfortunately decreased resistance to infections.

Regardless of the fact that the procedure takes approximately three hours, blood loss is usually small because of the advanced technique, and the transfusion of blood components is not always needed during surgery. Nevertheless, four units of filtrated concentrated erythrocytes are prepared for such a patient before the procedure. Upon the clinic’s request and considering the indications, CMV-negative units of concentrated erythrocytes are sometimes provided for patients. Finding CMV-negative units takes additional time, which in this case we can 'afford', in contrast to other solid organ transplantations.



Tatjana Murkovič

Everybody has already heard the saying "Misfortune never sleeps", but we only become aware of its real meaning when misfortune becomes part of a personal experience. That day, I never thought that a routine field assignment could end in long-term hospitalisation. When I was on a business trip to Gornja Radgona, riding a motorcycle, I had a traffic accident and suffered some major injuries. In addition to pelvic and nose fractures which caused me great pain, the following day my condition became aggravated. I felt cold all the time and I could not warm up.

The examination showed that I had a very low haemoglobin level and was suspected of having internal haemorrhages. I had to receive a blood transfusion. It was just unbelievable how my condition improved in several hours. I felt completely regenerated. It was then that I realised what a precious medicine blood is and how important it is to have it available when you need it.

I was a defender of blood donation even before the accident, but afterwards, my efforts became stronger and stronger. My love for motorcycles has remained, and it is nice to know that unselfish acts of blood donors frequently allow us to have a new chance, regardless of the fact that misfortune never sleeps.

LIVER TRANSPLANTATION

A liver transplantation is the only solution for patients with chronic or acute liver failure, since each final failure of this organ ends in the patient's death. Unfortunately, there is no substitute support for the transition period of waiting for the transplant, such as dialysis in the case of kidney failure or mechanical support using an artificial heart in advanced heart failure. For the patient, a timely liver transplantation means a return to normal life, of course accompanied by lifelong support from immunosuppressive medicines. Just as for other transplantations, a multidisciplinary approach involving numerous experts and their coordinated action are also essential here, since the liver must be transplanted within twelve hours of removal. Among other criteria influencing the choice of the liver recipient is blood group of the recipient and donor.

Liver transplantation is a lengthy and technically demanding procedure. An additional aggravating circumstance is the fact that the liver is an extremely well-circulated organ, and patients with chronic liver disease also suffer from portal hypertension, decreased concentration of plasma proteins, disturbed haemostasis (factors needed for normal blood coagulation and platelet stimulation do not form sufficiently in the defect liver). They also have enlarged spleen, where the already insufficient number of platelets are rapidly destroyed. In addition to reduced levels of blood coagulation factors and platelets, some patients suffer from increased fibrinolytic activity (increased degradation of the formed clots). Even if the need for blood in liver transplantations has been drastically reduced, all of the above contribute to the fact that liver transplantations require the highest number of blood components in the organ transplantation group. Before the liver transplantation, 20 units of suitable concentrated filtrated erythrocytes, 40 units of fresh frozen plasma and 3 units of concentrated platelets are prepared for the patient. Given the time limitation for liver transplantations and taking into account the amount of blood components needed in such a short time, patients on the waiting list are managed according to a special protocol in order to avoid complications in such an urgent preparation of suitable components.

For therapeutic services, we performed:	
2,272	autologous blood collections (autotransfusions)
1,284	therapeutic whole blood collections
136	autologous haematopoietic stem cell collections
14	allogenic haematopoietic stem cell collections
27	granulocytaphereses
3	therapeutic aphereses

Tom Sotlar

When I first felt a pain in the rib region, the doctors first thought of the usual injury at work and recommended that I rest. But the pains recurred, and it soon turned out that the issue was not so innocent. After a re-examination, I was immediately transferred to the Department of Haematology instead of going home. Diagnosis: a disseminated form of blood cancer called plasmacytoma.

The treatment required a transplant of haematopoietic stem cells. They were collected from me at the Blood Transfusion Centre. I did not need a donor, because autologous transplant is possible. Today, after more than ten years, I am in complete remission, healed to a degree such that the disease does not affect the quality of my life any more. I believe that without the great strides taken in recent years by modern medicine, this would not have been possible.

At the same time, I am aware that I supported the doctors' efforts from within, from an optimistic perspective that did not let the disease beat me down. I decided to live with the disease, I talked about it and I focused my reflections on health alone. I accumulated all my optimism and dedicated it to myself and to reinforcing ties with my family and friends. I realised which things matter to me, and I focussed all my energy on them, and I simultaneously removed the force of the disease by planning my future steps. Today, I am convinced that in such an approach lies the mastery of survival.

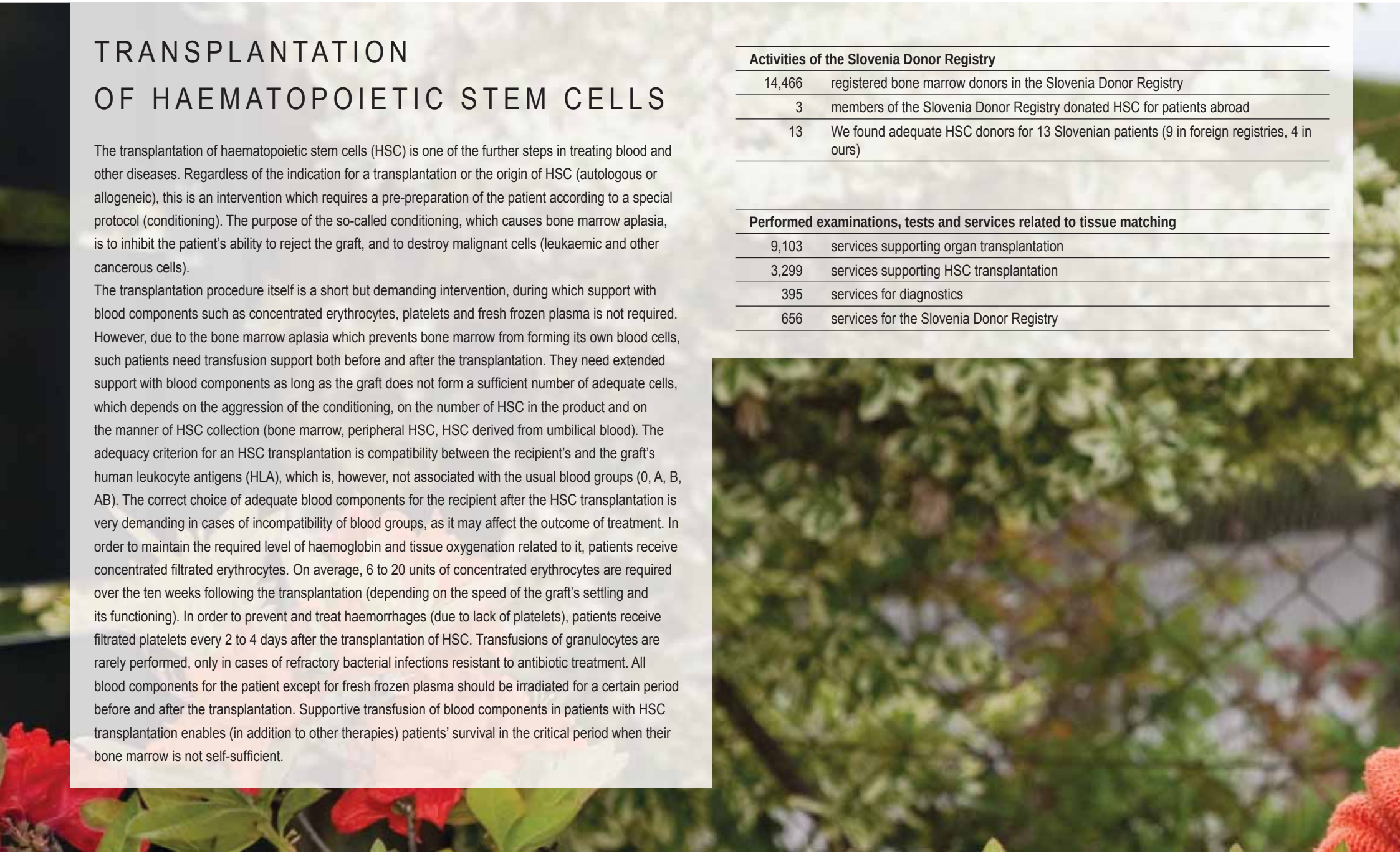
TRANSPLANTATION OF HAEMATOPOIETIC STEM CELLS

The transplantation of haematopoietic stem cells (HSC) is one of the further steps in treating blood and other diseases. Regardless of the indication for a transplantation or the origin of HSC (autologous or allogeneic), this is an intervention which requires a pre-preparation of the patient according to a special protocol (conditioning). The purpose of the so-called conditioning, which causes bone marrow aplasia, is to inhibit the patient's ability to reject the graft, and to destroy malignant cells (leukaemic and other cancerous cells).

The transplantation procedure itself is a short but demanding intervention, during which support with blood components such as concentrated erythrocytes, platelets and fresh frozen plasma is not required. However, due to the bone marrow aplasia which prevents bone marrow from forming its own blood cells, such patients need transfusion support both before and after the transplantation. They need extended support with blood components as long as the graft does not form a sufficient number of adequate cells, which depends on the aggression of the conditioning, on the number of HSC in the product and on the manner of HSC collection (bone marrow, peripheral HSC, HSC derived from umbilical blood). The adequacy criterion for an HSC transplantation is compatibility between the recipient's and the graft's human leukocyte antigens (HLA), which is, however, not associated with the usual blood groups (0, A, B, AB). The correct choice of adequate blood components for the recipient after the HSC transplantation is very demanding in cases of incompatibility of blood groups, as it may affect the outcome of treatment. In order to maintain the required level of haemoglobin and tissue oxygenation related to it, patients receive concentrated filtrated erythrocytes. On average, 6 to 20 units of concentrated erythrocytes are required over the ten weeks following the transplantation (depending on the speed of the graft's settling and its functioning). In order to prevent and treat haemorrhages (due to lack of platelets), patients receive filtrated platelets every 2 to 4 days after the transplantation of HSC. Transfusions of granulocytes are rarely performed, only in cases of refractory bacterial infections resistant to antibiotic treatment. All blood components for the patient except for fresh frozen plasma should be irradiated for a certain period before and after the transplantation. Supportive transfusion of blood components in patients with HSC transplantation enables (in addition to other therapies) patients' survival in the critical period when their bone marrow is not self-sufficient.

Activities of the Slovenia Donor Registry	
14,466	registered bone marrow donors in the Slovenia Donor Registry
3	members of the Slovenia Donor Registry donated HSC for patients abroad
13	We found adequate HSC donors for 13 Slovenian patients (9 in foreign registries, 4 in ours)

Performed examinations, tests and services related to tissue matching	
9,103	services supporting organ transplantation
3,299	services supporting HSC transplantation
395	services for diagnostics
656	services for the Slovenia Donor Registry



Milena Remic

The disease was diagnosed very late. Its insidiousness was reflected by the absence of all symptoms except for swelling of the legs. After the examination, my doctor referred to me the haematologic dispensary, where I was diagnosed with a form of blood cancer called chronic myeloid leukaemia. The disease was so advanced that medicines could not stop it any more. Bone marrow transplant was urgent, within a year.

Therefore, the Department of Haematology made contact with the Blood Transfusion Centre in order to find an adequate donor in the global registry of donors. The action was brisk. A donor was found extremely quickly and between the diagnosis and the transplant a record time of three months passed.

The transplant returned my hope for a new life. I am still being treated for the graft-versus-host disease, but I am nevertheless happy and grateful to the doctors and employees of the Tissue Typing Centre at the Blood Transfusion Centre in Ljubljana for such quick help - and for having saved my life.

I am also very grateful to my family, who helped me face the disease and who still stand beside me at every moment. My relatives helped me by not having had any doubts in me, and I sincerely believed them. People who had already beaten similar conditions were also my models.

The disease taught me that we can also live with uncertainty. It also taught me to better recognise the important things in life and not to be burdened by marginal, unimportant things. I am pleased to be able to use my experience to help other patients, since I can understand them better and I can more easily find a point of contact with them.

LABORATORY TESTS

SAFE BLOOD FOR THE PATIENT

In Slovenia, each collected blood unit is tested for the agents causing AIDS, hepatitis B and C and syphilis. Our testing methods are the most up-to-date, and are licensed according to the most strict international criteria and completely automated. The so-called diagnostic window is a barrier preventing perfect safety. This is the time which elapses between the occurrence of infection and the appearance of markers detected by a specific test.

One of the most recent and most important measures to achieve maximum safety in blood supply is the screening of collected blood units for transfusion using methods for direct viral detection (Nucleic Acid Techniques - NAT). NAT is used to detect the presence of viral nucleic acids in different biological samples. NAT is based on the amplification and detection of small quantities of genetic material, including viruses, if present.

The diagnostic window is significantly reduced by using such methods, as an infection can be detected considerably before indirect serologic infection markers appear. Blood tested using NAT is also safer, because the method is extremely sensitive and enables the detection of infections with a low viral load.

Detected infections in 2009 in the screening of collected blood units:	
12	hepatitis B positive units
2	hepatitis C positive units
0	HIV positive units (AIDS);
13	anti-Treponema Pallidum positive units (syphilis)

ADEQUATE BLOOD FOR THE PATIENT

Immunohaematologic tests allow for safe blood transfusion and haematopoietic tissue transplants, and prevent some adverse immunological phenomena after transfusion, transplant and during pregnancy.

Simply put, **immunohaematologic testing** of the so-called 'red cell type' consists of **pretransfusion** (patient's blood testing prior to receiving a blood component) and **prenatal tests**.

PRETRANSFUSION TESTS

In ideal circumstances, a patient receives blood identical to their own in all erythrocyte antigens. Due to the large number of these antigens and their possible combinations, we strive to transfuse blood units that match as closely as possible. Compatibility is examined for each unit with a **compatibility test**.

To provide safe and efficient treatment using erythrocytes, all antigens of immune significance should match completely.

Antigens of AB0 and RhD blood groups are thus determined for each collected blood unit. In the first two blood collections in every blood donor, other antigens of Rh (C, c, E, e) and Kell systems are also determined.

In order to prevent the transmission and harmful action of unexpected erythrocyte antibodies from the donor plasma to the recipient, all units are tested with the indirect Coombs test for unexpected erythrocyte antibodies. If they are detected, the unit will not be used for transfusion.

PRENATAL TESTS

In each pregnant woman, AB0, RhD and Kell blood groups should be determined and indirect Coombs test should be performed. These tests are used to detect antibodies in the pregnant woman's blood which could pass through the placenta and cause haemolytical disease in the foetus and newborn baby.

Our task is to appropriately manage pregnant women with such antibodies and participate in treatment, if necessary. This means that we prepare blood for replacement during pregnancy (intrauterine transfusion) or after the baby is born (exchange transfusion).

In addition to the timely detection of erythrocyte antibodies during pregnancy, our assignment is also to prevent their formation during pregnancy or in potential transfusion. The anti-D antibody formation is prevented by a timely injection of Ig-antiD in the 28th week of pregnancy and after birth, upon termination of pregnancy, and in haemorrhages and intrauterine interventions during pregnancy. In transfusions, the formation of antibodies is prevented by always transfusing AB0, RhD and Kell-identical or compatible blood components.

For immunohaematologic tests for patients, we performed:	
133,317	compatibility tests
83,655	AB0 and RhD blood typing tests
55,075	indirect Coombs tests
12,767	direct Coombs tests
2,217	specifications of erythrocyte antibodies
6,191	tests preceding Ig anti-D injection
1,175	platelet tests
72	granulocyte tests
124	molecular biology tests

HAEMOVIGILANCE

The use of any medicinal product is associated with a risk of adverse reactions, and blood transfusion is no exception. Therefore, in addition to the many activities ensuring a high quality and safe blood supply, the transfusion service performs a haemovigilance system to monitor the adverse reactions of transfusion.

All data submitted within the framework of haemovigilance contribute to improving safety, explain the risks of adverse reactions in transfusion and explain how to reduce risks by implementing additional measures.

Number and type of reported adverse reactions in blood transfusions in Slovenia in 2009	
Haemolysis	0
Graft-versus-host reaction disease	0
Transfusion-related acute lung injury	2
Circulatory overload	15
Post-transfusion purpura	0
Allergy/anaphylaxis	70/3
Non-haemolytical febrile reaction	75
Bacterial infection	1
Viral infection	1
Hypotension	3
Dyspnea	1
Other	3
Total:	**174**

SCIENTIFIC AND RESEARCH PROJECTS

Scientific and research activity and development activity are extremely important to the BTCS, which is reflected in the fact that there are three groups in this field that meet the criteria and requirements of the Slovenian Research Agency (SRA) for managing national projects and conducting research activity:
311-01 Tissue Typing Centre; Head Assist. Prof. Matjaž Jeras, MS in Pharm. – 8 members;
311-02 Transfusion Medicine; Head Prof. Primož Rožman, MD – 21 members;
311-04 Biomedicine, Head Prof. Vladka Čurin Šerbec, BS in Chem. – 10 members.

INTERNATIONAL RESEARCH PROJECTS

Bilateral Slovenian–German project entitled 'System Biology Tools Development for Cell Therapy and Drug Development' (SYSTHER). Conducted within the National Institute of Biology (NIB) and the BTCS, duration: 1. 11. 2006 - 30. 10. 2011.

EUROPEAN PROJECTS FINANCED BY THE EUROPEAN UNION:

European Blood Inspection System, duration 2007 - 2010;
EU Optimal Use of Blood, duration 2007 - 2010;
HLA – NET (Cost), duration 2009 - 2013.

NATIONAL RESEARCH PROJECTS

More details on the national research projects which we manage or in which we participate are on the website (http://sicris.izum.si/).

Designation	Name of the programme/project	Duration (month, year)	
	Co-financed by the SRA		
	BTCS is the leading research org.		**Holder**
P3-0371	Human stem cells – advanced cell therapy	1. 2009 – 12. 2011	Assoc. Prof. Primož Rožman
J3-9612	Use of human stem cell for therapy	7. 2007 – 6. 2010	Assoc. Prof. Primož Rožman
L3-0206	Prions in human medicine: from structural studies to applications	2. 2008 – 1. 2011	Prof. Vladka Čurin Šerbec
L1-2402	Dendritic cells – stimulators and formators of cell immune responses	5. 2009 – 4. 2012	Assist. Prof. Matjaž Jeras
	BTCS is the participating research org.		**Holder at the BTCS**
P4-0176	Molecular biotechnology: from the dynamics of biological systems to applications	1. 2009 – 2. 2014	Prof. Vladka Čurin Šerbec
J3-9663	Genetic and morphologic background of chronic diseases in children and adolescents	1. 2007 – 12. 2009	Assist. Prof. Blanka Vidan Jeras
J3-0415	A new insight into human ovary function: human embryonic stem cells	2. 2008 – 1. 2011	Assoc. Prof. Primož Rožman
L3-0636	Preparation and evaluation of stabilised control blood for haemogram and differential white blood cell count for haematologic analysers	2. 2008 – 1. 2011	Dr. Dragoslav Domanovič
J3-0031	Dynamics of lysosomes and antigen presentation in astrocytes	2. 2008 – 1. 2011	Assist. Prof. Matjaž Jeras
J3-0133	Regulation of mobility of astrocytic secretory organels after membrane fusion	2. 2008 1. 2011	Assist. Prof. Matjaž Jeras
P-3-0343	Etiology, early detection and treatment of diseases in children and adolescents	1. 2009 12. 2011	Assist. Prof. Blanka Vidan Jeras
L4-2404	New generation vaccines against Helicobacter pylori	1. 2009 12. 2011	Prof. Vladka Čurin Šerbec

PUBLICATIONS

ARTICLES AND OTHER SCIENTIFIC AND PROFESSIONAL CONTRIBUTIONS

1.01 ORIGINAL SCIENTIFIC ARTICLES

ALIKADIC N, KOVAC D, KRASNA M, LINDIC J, SABOVIC M, TOMAZIC J, JERAS M, SMRKE D. Review of calciphylaxis and treatment of a severe case after kidney transplantation with iloprost in combination with hyperbaric oxygen and cultured autologous fibrin-based skin substitutes. Clin Transplant 2009; 23(6): 968-974. [PMID: 19712088]

AMBRUZOVA Z, MRAZEK F, RAIDA L, JINDRA P, VIDAN-JERAS B, FABER E, PRETNAR J, INDRAK K, PETREK M. Association of IL6 and CCL2 gene polymorphisms with the outcome of allogeneic haematopoietic stem cell transplantation. Bone Marrow Transplant 2009; 44(4): 227-235. [PMID: 19234509]

BIERLING, P., BUX, J., CURTIS, B., MAČEK, Marjeta. Recommendations of the ISBT Working party on granulocyte immunobiology for leucocyte antibody screening in the investigation and prevention of antibody-mediated transfusion-related acute lung injury. Vox Sang., 2009, letn. 96, št. 3, str. 266-269, doi: 10.1111/j.1423-0410.2008.01144.x. [COBISS.SI-ID 25794777]

COLJA VENTURINI, Anja, BRESJANAC, Mara, VRANAC, Tanja, KOREN, Simon, NARAT, Mojca, POPOVIĆ, Mara, ČURIN-ŠERBEC, Vladka. Anti-idiotypic antibodies : a new approach in prion research. BMC Immunol, 2009, vol. 10, article 16, on line. http://www.biomedcentral.com/1471-2172/10/16, doi: 10.1186/1471-2172-10-16. [COBISS.SI-ID 2440072]

GABRIJEL, Mateja, BERGANT, Martina, KREFT, Marko, JERAS, Matjaž, ZOREC, Robert. Fused late endocytic compartments and immunostimulatory capacity of dendritic-tumor cell hybridomas. J Membr Biol, 2009, letn. 229, št. 1, str. 11-18, doi: 10.1007/s00232-009-9171-7. [COBISS.SI-ID 25624281]

GHIELMETTI, Mascia, VRANAC, Tanja, ČURIN-ŠERBEC, Vladka. Prion protein peptides as vaccines. Mini rev. med. chem., 2009, letn. 9, št. 4, str. 470-480. [COBISS.SI-ID 25501145]

GREGORC, Cvetka. Reševanje konfliktov: medicinske sestre, zdravniki = Conflict management styles of nurses and physicians. Obzornik zdravstvene nege. Letn. 43, št. 3 (2009), str. 155-162. COBISS.SI-ID 26451161

KANDA J, ICHINOHE T, MATSUO K, BENJAMIN RJ, KLUMPP TR, ROZMAN P, BLUMBERG N, MEHTA J, SOHN SK, UCHIYAMA T. Impact of ABO mismatching on the outcomes of allogeneic related and unrelated blood and marrow stem cell transplantations for hematologic malignancies: IPD-based meta-analysis of cohort studies. Transfusion 2009; 49(4): 624-635. [PMID: 19170998]

KRAŠNA, Metka, TELEBAK, Tanja, DOMANOVIČ, Dragoslav. Analysis of cord blood units donated to the Slovenian cord blood bank = Analiza popkovnične krvi, darovane v slovensko banko popkovnične krvi. Zdrav Vestn (Tisk. izd.). [Tiskana izd.], 2009, letn. 78, št. 9, str. 451-455. [COBISS.SI-ID 26095833]

MALICEV E, KREGAR-VELIKONJA N, BARLIC A, ALIBEGOVIĆ A, DROBNIC M. Comparison of articular and auricular cartilage as a cell source for the autologous chondrocyte implantation. J ORTHOP Res 2009; 27(7):943-948. [PMID: 19105230]

ŠVAJGER, Urban, OBERMAJER, Nataša, JERAS, Matjaž. Dendritic cells treated with resveratrol during differentiation from monocytesgain substantial tolerogenic properties upon activation. Immunology (Oxf.), 2009, vol. , no. , str. http://www3.interscience.wiley.com/journal/123191679/abstract, doi: 10.1111/j.1365-2567.2009.03205.x. [COBISS.SI-ID 2729841]

VIRANT-KLUN, Irma, ROŽMAN, Primož, CVJETIČANIN, Branko, VRTAČNIK-BOKAL, Eda, NOVAKOVIĆ, Srdjan, RÜLICKE, Thomas, DOVČ, Peter, MEDEN-VRTOVEC, Helena. Parthenogenetic embryo-like structures in the human ovarian surface epithelium cell culture in postmenopausal women with no naturally present follicles and oocytes. Stem cells dev., 2009, vol. 18, no. 1, str. 137-149. [COBISS.SI-ID 714875]

1.02 REVIEW SCIENTIFIC ARTICLES

ŠVAJGER, Urban, JERAS, Matjaž. Celična terapija z regulatornimi limfociti T - celice kot zdravila = Cell therapy using regulatory T cells - cells playing the role of drugs. Farm. vestn., 2009, letn. 60, št. 3, str. 143-149. [COBISS.SI-ID 23351079]

1.03 SHORT SCIENTIFIC CONTRIBUTIONS

VOGRIN, Matjaž, ROŽMAN, Primož, HAŠPL, Miroslav. Concerns about the effects of platelet concentrate. Arthroscopy, Sep. 2009, vol. 25, no. 9, str. 941-942, doi: 10.1016/j.arthro.2009.03.013. [COBISS.SI-ID 3430463]

1.06 PUBLISHED SCIENTIFIC CONTRIBUTIONS AT CONFERENCES (INVITED LECTURES)

KNEŽEVIĆ, Miomir. Razvojna pot podjetja BIA in njegov vpliv na dogajanja na biotehnološkem področju v Sloveniji v zadnjih 20 letih = The development of the company BIA and the influence it has on the happenings in the biotechnological field in Slovenia over the last 20 years. V: RASPOR, Peter (ur.). Posvetovanje Pomen biotehnologije in mikrobiologije za prihodnost, 2. in 3. december 2009, Ljubljana. BIA in biotehnologija na slovenski biotehnološki poti, (Pomen biotehnologije in mikrobiologije za prihodnost, 07). Ljubljana: Biotehniška fakulteta, Oddelek za živilstvo, Katedra za biotehnologijo, mikrobiologijo in varnost živil: BIA, 2009, str. 7-12. [COBISS.SI-ID 3726200]

1.08 PUBLISHED SCIENTIFIC CONTRIBUTIONS AT CONFERENCES

BRESKVAR, Marko, BRICL, Irena, ROŽMAN, Primož, MEŽA, Marko, TASIČ, Jurij F. Telemedicina v transfuzijski službi = Telemedicine in the blood transfusion service. V: OREL, Mojca (ur.). Nova vizija tehnologij prihodnosti : [zbornik celotnih prispevkov]. Ljubljana: Evropska hiša, 2009, str. 152-164. http://www.infokomteh.com/Admin/Docs/Zbornik%20celotnih%20prispevkov%20mednarodne%20konference%20InfoKomTeh%202009%203.pdf. [COBISS.SI-ID 26146009]

Gregorc, Cvetka. Ovire medpoklicnega sodelovanja zdravstvenih delavcev = Barriers in interprofessional collaboration of health care workers. V: New trends in contemporary nursing – promoting research, education, and multisector. Visoka šola za zdravstveno nego, 2009. Str. 193-204.COBISS.SI-ID 26333145

Gregorc, Cvetka. Vpliv konfliktov na počutje zdravstvenih delavcev = Influence of conflicts on the wellbeing o[!] health care workers. V: New trends in contemporary nursing – promoting research, education, and multisector. Visoka šola za zdravstveno nego, 2009. Str. 303-314.COBISS.SI-ID 26333401

Gregorc, Cvetka, Pagon, Milan. Dojemanje in upravljanje konfliktov v zdravstvu = Perception and management of conflicts in health care. V: Nove tehnologije, novi izzivi [Elektronski vir]. Kranj, Moderna organizacija, 2009. Str. 495-504. COBISS.SI-ID 26333657

Gregorc, Cvetka. Sodelovanje in konflikti v delovnem okolju medicinskih sester = Collaboration and conflict within nursing work environments. V: Medicinske sestre in babice - znanje je naša moč [Elektronski vir]. Zveza strokovnih društev medicinskih sester, babic in zdravstvenih tehnikov Slovenije, 2009. Str.333E [1-9]. COBISS.SI-ID 26334169

JUNKAR, Ita, CVELBAR, Uroš, VESEL, Alenka, MOZETIČ, Miran, KRAŠNA, Marjan, DOMANOVIČ, Dragoslav. Plasma treatment of PET vascular grafts for improved biocompatibility. V: CVELBAR, Uroš (ur.), MOZETIČ, Miran (ur.). 2nd International Conference on Advanced Plasma Technologies (iCAPT-II) & 1st International Plasma Nanoscience Symposium (iPlasmaNanoSym-I), September29th - October 2nd 2009, Piran, Slovenia. Conference proceedings. Ljubljana: Slovenian Society for Vacuum Technique: = DVTS - Društvo za vakuumsko tehniko Slovenije, 2009, str. 157-160. [COBISS.SI-ID 22989095]

VIRANT-KLUN, Irma, VOGLER, Andrej, ŠINKOVEC, Jasna, HREN, Matjaž, GRUDEN, Kristina, MALIČEV, Elvira, MEDEN-VRTOVEC, Helena. Ovarijska neplodnost, matične celice in oogeneza in vitro = Ovarian infertility, stem cells and oogenesis in vitro. V: 4. Kongres ginekologov in porodničarjev Slovenije z mednarodno udeležbo, Portorož, 11. do 13. november 2009, (Zdravniški Vestnik, Letn. 78, Suppl 1). Ljubljana: Slovensko zdravniško društvo, 2009, str. I-57 - I-61. http://szd.si/user_files/vsebina/Zdravniski_Vestnik/2009/Suplement/057-061.pdf. [COBISS.SI-ID 26260185]

ŽLEBNIK, Stanislava, MIHELIČ ZAJEC, Andreja. Spanje in počitek zaposlenih v zdravstveno negi na Zavodu Republike Slovenije za transfuzijsko medicine = Sleep and rest of the nursing care employees of the Blood Transfusion Centre of Republic of Slovenia.V: Medicinske sestre in babice - znanje je naša moč [Elektronski vir] Zveza strokovnih društev medicinskih sester, babic in zdravstvenih tehnikov Slovenije, 2009. Str.333B [1-13]. COBISS.SI-ID 3698027

1.09 PUBLISHED PROFESSIONAL CONTRIBUTIONS AT CONFERENCES

DOVČ, Zdenka. Učinkovita komunikacija na delovnem mestu. V: Preobremenjenost, konflikti in stres na delovnem mestu / [urednica Marjana BOŽJAK]. Ljubljana. Zbornica zdravstvene nege,2009. zbornik predavanj, Bled, 17. in 18. april 2009. COBISS.SI-ID 26335193

ĐORĐEVIĆ, Suzana.Kakovost delovnega življenja medicinskih sester na Zavodu RS za transfuzijsko medicino v Ljubljani. V: Preobremenjenost, konflikti in stres na delovnem mestu / [urednica Marjana BOŽJAK]. Ljubljana, Zbornica zdravstvene nege Slovenije.Str. 30-35 COBISS.SI-ID 26335449

GREGORC, Cvetka. Postopki ob transfuziji krvnih komponent. V: Strokovni seminar Urgentni pacient - usklajenost dela in sodelovanje, Radenci, 15. in 16. oktober 2009. Ljubljana, Zbornica zdravstvene in babiške nege Slovenije 2009. Str. 119-120. COBISS.SI-ID 26281689

GREGORC, Cvetka: Kako medicinske sestre, zaposleni v laboratorijih in zdravniki rešujejo konflikte? V: Preobremenjenost, konflikti in stres na delovnem mestu / [urednica Marjana BOŽJAK]. - V Ljubljani, 2009. Zbornik predavanj, Bled, 17. in 18. april 2009. Str. 47-54. COBISS.SI-ID 26336473

KOVAČIČ TONEJC, Ana Marija, PRTENJAK, Sonja. Naročanje in razpošiljanje krvnih component. V: Strokovni seminar Urgentni pacient - usklajenost dela in sodelovanje, Radenci, 15. in 16. oktober 2009. Ljubljana, Zbornica zdravstvene in babiške nege Slovenije 2009 COBISS.SI-ID 26278617

VRTOVEC, Bojan, SEVER, Matjaž, LEŽAIČ, Luka, DOMANOVIČ, Dragoslav, POGLAJEN, Gregor, ČERNELČ, Peter. Zdravljenje srčnega popuščanja s presaditvijo matičnih celic. V: KRIŽMAN, Igor (ur.). Zbornik predavanj. Ljubljana: Združenje internistov SZD, 2009, str. 229-231. [COBISS.SI-ID 26333913]

ŽLEBNIK, Stanislava. Spanje in počitek zaposlenih v zdravstveni negi na Zavodu RS za transfuzijsko medicine. V: Preobremenjenost, konflikti in stres na delovnem mestu / [urednica Marjana BOŽJAK]. - V Ljubljani, 2009. Zbornik predavanj, Bled, 17. in 18. april 2009. Str. 36-41. COBISS.SI-ID 26335705

1.12 PUBLISHED ABSTRACTS OF SCIENTIFIC CONTRIBUTIONS AT CONFERENCES

BRESKVAR, Marko, BRICL, Irena, ROŽMAN, Primož, MEŽA, Marko, TASIČ, Jurij F. Telemedicina v transfuzijski službi = Telemedicine in the blood transfusion service. V: OREL, Mojca (ur.). Nova vizija tehnologij prihodnosti. Ljubljana: Evropska hiša, 2009, str. 42. [COBISS.SI-ID 26145241]

DOVČ, Tadeja, TOPLAK, Nataša, CIRMAN, Tina, KOVAČ, Minka, ROŽMAN, Primož. Improvement of non-invasive prenatal diagnostic for determination of fetal RHDgenotype from maternal plasma. V: GOLIČNIK, Marko (ur.), BAVEC, Aljoša (ur.). Joint Congress of the Slovenian Biochemical Society and the Genetic Society of Slovenia with International Participation, Otočec, September 20-23, 2009. Book of abstracts. Ljubljana: Slovenian Biochemical Society: Genetic Society of Slovenia, 2009, str. 198. [COBISS.SI-ID 2101583]

DOVČ, Tadeja, TOPLAK, Nataša, CIRMAN, Tina, KOVAČ, Minka, ROŽMAN, Primož. Additional step in detection of free fetal DNA from maternal plasma to improve non-invasive prenatal diagnostic. V: PFAFFL, Michael W. (ur.). 4th International qPCR Symposium: Industrial Exhibition & TATAA application workshop, 9 - 13th March 2009, Freising-Weihenstephan, Germany. qPCR 2009 event : proceedings : main topics: diagnostics & molecular markers. Freising: Technical Univesity Munich, 2009, str. 70. [COBISS.SI-ID 2102351]

DOVČ, Tadeja, TOPLAK, Nataša, KOVAČ, Minka, ROŽMAN, Primož. Additional preamplification step for early determination of fetal RHD from maternal plasma. V: 6th International Conference on Circulating Nucleic Acids in Plasma and Serum, Hong Kong, 9-11 November 2009. Program & abstracts. [Hong Kong: s.n., 2009], str. 55. [COBISS.SI-ID 26263001]

DROBNIČ, Matej, RADOSAVLJEVIČ, Damjan, MALIČEV, Elvira, KREGAR-VELIKONJA, Nevenka, BARLIČ, Ariana. Cartilage biopsy from the lesion margin as a cell source for the autologous chodrocyte cultivation. V: ICRS 2009 : main programme and abstract book. Zurich: ICRS Executive Office, 2009, str. 185. [COBISS.SI-ID 25786841]

FRÖHLICH, Mirjam, GRAYSON, WL, MAROLT, Darja, GIMBLE, JM, KREGAR-VELIKONJA, Nevenka, VUNJAK-NOVAKOVIC, Gordana. Bone grafts engineered from adipose-derived stem cells in perfusion bioreactor culture. V: 55th Annual Meeting of the Orthopaedic Research Society, Las Vegas, NV, February 22-25, 2009. Transactions. [S. l.]: Ortopaedic Research Society, 2009, str. 126. [COBISS.SI-ID 25823193]

HREN, Matjaž, HERMAN, Ana, GRUDEN, Kristina, KNEŽEVIĆ, Miomir, RAVNIKAR, Maja, ROŽMAN, Primož. Application of Systems Biology to Clinical Trials. V: German symposium on systems biology 2009 : May 12-15, 2009, Heidelberg Convention Center (Stadhalle). [Heidelberg: Alliance on systems biology], 2009, str. 68. [COBISS.SI-ID 25881305]

HREN, Matjaž, HERMAN, Ana, KNEŽEVIĆ, Miomir, RAVNIKAR, Maja, ROŽMAN, Primož, MOTALN, Helena, PETEK, Marko, KRALJ, Petra, MOZETIČ, Igor, LAVRAČ, Nada, PODPEČAN, Vid, SCHUCHHARDT, Johannes, BAUER, Chris, SCHICHOR, Cristian, OR-GUIL, Michal, SELBIG, Joachim, LAH TURNŠEK, Tamara, GRUDEN, Kristina. Development of cell-based therapies using systems biology tools. V: GOLIČNIK, Marko (ur.), BAVEC, Aljoša (ur.). Joint Congress of the Slovenian Biochemical Society and the Genetic Society of Slovenia with International Participation, Otočec, September 20-23, 2009. Book of abstracts. Ljubljana: Slovenian Biochemical Society: Genetic Society of Slovenia, 2009, str. 100. [COBISS.SI-ID 26037977]

JUNKAR, Ita, VESEL, Alenka, CVELBAR, Uroš, MOZETIČ, Miran, KRAŠNA, Metka, DOMANOVIČ, Dragoslav. Plasma surface modification of vascular grafts : [invited talk]. V: KOVAČ, Janez (ur.), MOZETIČ, Miran (ur.). 16th International Scientific Meeting on Vacuum Science and Technique, Bohinj, 4-5th June 2009. Book of abstracts. Ljubljana: Slovenian Society for Vacuum Technique, 2009, str. 21. [COBISS.SI-ID 22694951]

LOKAR, Lidija, URLEP-ŠALINOVIĆ, Veronika, BIZJAK, Bojana, MAJCEN-VIVOD, Božislava, MARAČIĆ, Irena, KAVAŠ, Erika. Inherited thrombophilia in patients with thrombembolic disease. Abstracts on CD-ROM [Elektronski vir] / XXII. Congress [of the] The International Society on Thrombosis and Haemostasis [and] 55th Annual Meeting of the Scientific and Standardization Committee of the ISTH, Boston, July 11-16, 2009. - [S. l.] : International Society on Thrombosis and Haemostasis, cop. 2009. - Journal of Thrombosis and Haemostasis; Vol. 7, suppl. 2, ISSN 1538-7933. - Vol. 7, suppl. 2. (2009), abstr. PP-WE-308.COBISS.SI-ID 3391295

LOKAR, Lidija, URLEP-ŠALINOVIĆ, Veronika, BIZJAK, Bojana, MAJCEN-VIVOD, Božislava, MARAČIĆ, Irena, KAVAŠ, Erik. Thrombophilia in children. V: Abstracts on CD-ROM [Elektronski vir] / XXII. Congress [of the] The International Society on Thrombosis and Haemostasis [and] 55th Annual Meeting of the Scientific and Standardization Committee of the ISTH, Boston, July 11-16, 2009. Journal of Thrombosis and Haemostasis; Vol. 7, suppl. 2, ISSN 1538-7933. - Vol. 7, suppl. 2 (2009), abstr. PP-MO-453. COBISS.SI-ID 3391551

PRTENJAK, Sonja, STANIŠIĆ, Slavica, NAGODE, Zvone. Zračenje krvnih komponenata. V: Zbornik rezimea / XXII seminar anestezista, reanimatora i transfuzista Srbije, Vrnjačka Banja, 3-17. maja 2009. Beograd, 2009. Str. 87-88. COBISS.SI-ID: 25666777

PRTENJAK, Sonja, STANIŠIĆ, Slavica, NUNAR PERKO, Andreja, MUSAR, Blanka. Prikupljanje, zamrzavanje i transfuzija perifernih matičnih ćelija. V: Zbornik rezimea / XXII seminar anestezista,reanimatora i transfuzista Srbije, Vrnjačka Banja, 3-17. maja 2009. Beograd, 2009.Str. 114-115. COBISS.SI-ID 25667033

ŠKRLJ, Nives, ČURIN-ŠERBEC, Vladka, DOLINAR, Marko. Preparation of recombinant antibody fragments that specifically recognize the pathological isoform of the prion protein. V: 21st IUBMB and 12th FAOBMB International Congress of Biochemistry and Molecular Biology, August 2-7, 2009, Shanghai, China. Biomolecules for quality of life : abstracts. [S. l.: s. n.], 2009, str. 173. [COBISS.SI-ID 30663429]

URLEP-ŠALINOVIĆ, Veronika, PAJK, Janja, LOKAR, Lidija, BIZJAK, Bojana, MAJCEN-VIVOD, Božislava, MARAČIĆ, Irena, KAVAŠ, Erika. The use of blood components at University clinical center Maribor and General hospital Celje in the period 1998-2007. Vox Sanguinis. - ISSN 0042-9007. - Vol. 96, suppl. 1 (Apr. 2009), Str. 202-203. COBISS.SI-ID 3271743

URLEP-ŠALINOVIĆ, Veronika, PAJK, Janja, LOKAR, Lidija, BIZJAK, Bojana, MAJCEN-VIVOD, Božislava, MARAČIĆ, Irena, KAVAŠ, Erika. The use of albumin and immunoglobulin at University clinical center Maribor and General hospital Celje. Vox Sanguinis. - ISSN 0042-9007. - Vol.96, suppl. 1 (Apr. 2009), Str. 240-241. COBISS.SI-ID 3271999

ŽERJAVIČ, Katja, ZAGRADIŠNIK, Boris, LOKAR, Lidija, KOKALJ-VOKAČ, Nadja. An acquired JAK2 V617F mutation in patients with hypercoaguloability disorder.
V: Book of abstracts / Joint Congress of the Slovenian Biochemical Society and the Genetic Society of Slovenia with International Participation, Otočec, September 20-23, 2009. – Ljubljana, 2009. Str. 154.COBISS.SI-ID 3402047

ŽERJAVIČ, Katja, ZAGRADIŠNIK, Boris, LOKAR, Lidija, KOKALJ-VOKAČ, Nadja. An acquired JAK2 V617F mutation in patients with hypercoaguloability disorder. Paediatria Croatica. Supplement. – ISSN 1330-724X. - Vol. 53, suppl. 2 (2009), str. 79.8th Balkan meeting on human genetics, Cavtat-Dubrovnik, Croatia, May 14-17, 2009. COBISS.SI-ID 3305791

1.13 PUBLISHED ABSTRACTS OF PROFESSIONAL CONTRIBUTIONS AT CONFERENCES

GREGORC, Cvetka: Varnost transfuzije krvnih komponent. V: Varnost in neželeni dogodki v zdravstveni negi / [urednica Marjana BOŽJAK]. 20. Strokovni sestanek, Podčetrtek, 2. in 3. oktober 2009. Str. 43-45. COBISS.SI-ID 26334937

KOVAČIČ TONEJC, Ana Marija, PRTENJAK, Sonja. Varno in kakovostno shranjevanje in razpošiljanje krvnih component. V : Varnost in neželeni dogodki v zdravstveni negi/ [urednica Marjana BOŽJAK]. 20. strokovni sestanek, Podčetrtek, 2. in 3. oktober 2009. Str. 41-42. COBISS.SI-ID 26334681

1.17 INDIVIDUAL PROFESSIONAL PAPERS OR CHAPTERS IN MOGOGRAPH PUBLICATIONS

VIDAN-JERAS, Blanka. Tkivna skladnost, senzibilizacija in navzkrižni preizkus. V: ARNOL, Miha (ur.), KANDUS, Aljoša (ur.), BREN, Andrej (ur.), BUTUROVIĆ-PONIKVAR, Jadranka (ur.). Presaditev ledvic. 1. dopolnjena izd. Ljubljana: Klinični oddelek za nefrologijo, Interna klinika, Univerzitetni klinični center, 2009, str. 75-82. [COBISS.SI-ID 25906393]

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Medical Director: Assoc. Prof. Primož ROŽMAN, MD, Transf. Medicine Spec.

Director of the Blood Supply Department: Dragoslav DOMANOVIĆ, MD, PhD, Transf. Medicine Spec.

- Head of the Centre for Donor Selection and Blood Collection: Polonca Mali, MD, Transf. Medicine Spec.
- Head of the Blood Processing Centre: Marko Cukjati, MD, MS, Transf. Medicine Spec.
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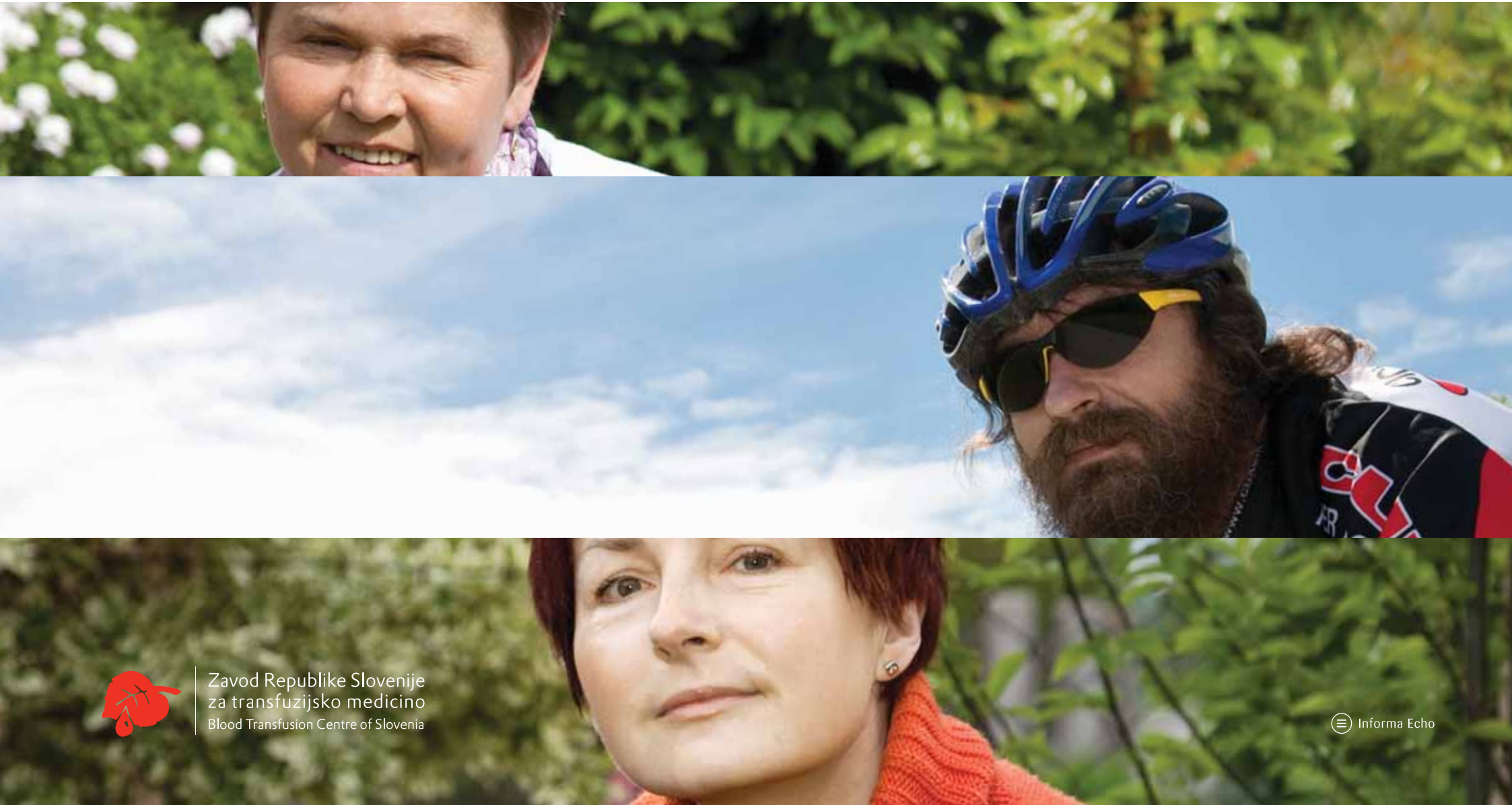

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