

DETECTION OF TRANSFUSION TRANSMISSIBLE DISEASES IN THE PAST 10 YEARS IN THE REGIONAL CENTER FOR TRANSFUSION MEDICINE IN SHTIP

Kamcev, N., Velickova, N., Veresa, V., Milev, M.

*Faculty of medical science
University "Goce Delcev" Shtip
R. Macedonia*

ABSTRACT

Introduction: Providing safe blood transfusion and blood derivatives is of unique importance in contemporary medicine, taking into account that certain infections in the body are transmissible through the blood, its cell concentrates and plasma components. That is the reason why ascertainment of safe regulation for the way of taking the blood and its control is an important imperative and motive for preparation of this specialist's work. **Results:** With all-embracing statistical analysis we succeeded to detect the most often infections which potentially can be transmitted to another body. The entire elaboration of the results of this work shows the percentage presence of HBsAg (1,32%), anti-HCV (0,45%), anti-HIV (0,003%) and *Treponema pallidum* (0,10%) at blood donor population of the determined transfusion transmissible diseases so far, vulnerable groups of blood donors (age, sex, predisposition to certain infections), the degree and efficiency of serological diagnostics applied in Regional Center for transfusion medicine in Shtip in the past 10 years and the way of prevention and additional education of people for spreading of transfusion transmissible diseases. **Conclusion:** These results (previously noted) indicate the needs of continuous serological diagnosis and obligatory testing of every blood unit with ELISA tests with high sensitivity and specificity, as well as undertaking of appropriate preventive measures with which the consequences of higher number of transfusion transmissible diseases will be reduced.

Key words: transfusion, blood, serological, blood donors, detection, sensitivity, specificity.

Introduction: Blood transfusions is a liquid tissue transplantation or insertion of human biological material into the recipient organism needs to survive and play important biological functions. Due to increased demand and indications for transfusion of blood cell concentrates and plasma components and the possible transfer of more transfusion transmissible diseases have increased and the needs of providing safe blood transfusion. Safe blood is blood that does not contain viruses, parasites, bacteria, or drugs, alcohol, chemicals and other substances that can cause disease, danger or injury to the recipient. Especially the technological development of medical equipment along with improved screening techniques for the detection of markers for infectious diseases, significantly reduced the risk of hepatitis and retroviral infections. In transfusion and microbiological laboratories, universally present two types of tests: ELISA - Enzyme Linked Immunosorbent Assay and PCR - Polymerase Chain Reaction.

Purpose of the work:

The main purpose is detection of transfusion transmissible diseases in the past 10 years in the Regional Centre for Transfusion Medicine in Stip. Other aim of the research include determining:

- Percentage representation of all previously defined transfusion transmissible diseases;
- The most common risks of blood transfusions, which pose a potential danger for the spread of certain infections;
- The extent and effectiveness of serological detection applied in the Regional Centre for Transfusion Medicine in Stip, detection and prevention of progression of transfusion transmissible diseases;
- Measures for prevention and further education of blood donors, and staff working in transfusion services of transmissible diseases.

Material and methods: Institute for Transfusion Medicine in Shtip is responsible for efficient and continuous supply of blood cell concentrates and plasma products in our country, and next year it should focus its activities on raising levels of security and the introduction of quality system. The study included data on 28 926 blood donation during the period of 10 years (2002 to 2011 yr.). Analyzed blood donors are divided by age, sex, occupation and tested HBsAg, anti-HCV, anti-HIV antibodies and antibodies to Treponema Pallidum in the laboratory detection transfusion transmissible diseases in the Regional Centre for Transfusion Medicine in Stip. Blood samples were taken in dry, sterile tubes without anticoagulant, immediately after blood donation. Samples taken from the test are kept at a temperature of about +4 ° C, no more than 3 days.

Results are presented in tables and graphics.

Table No. 1 Review of realized blood donations in ITM – Regional Center Shtip in the period from 2002-2011, women, men, blood donors who donated blood for the first time and multiple blood donors positive on some transfusion transmissible diseases

Year of testing	Donations in total	Male	% male	female	% female	First time donators	%	First time donators positive on TTD	%
2002	1750	1330	76	420	24	405	23	16	3.95
2003	2304	1751	76	553	24	424	18	28	6.60
2004	2602	2164	83	438	17	529	20	20	6.42
2005	2340	1642	70	698	30	491	21	21	5.70
2006	2953	2287	77	666	23	583	20	20	3.43
2007	4002	3126	78	876	22	947	24	24	1.79
2008	2908	2160	74	748	26	737	25	25	1.49
2009	3204	2341	73	863	27	627	19	19	2.71
2010	3787	2843	75	911	25	965	25	25	1.76
2011	3076	2360	77	716	23	490	20	14	2.85
Total	28926	22004	76	6922	24	6198	21	202	3.25

Grafic 1

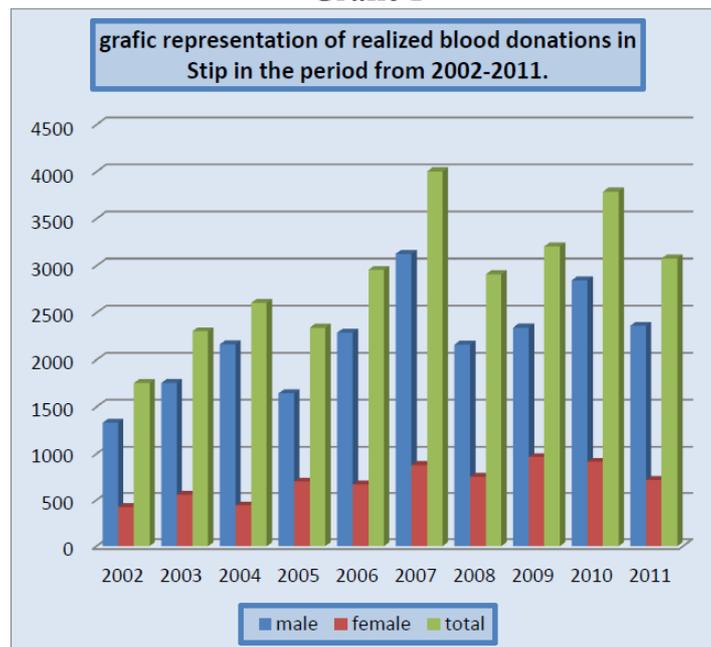


Table No. 2 Representation of HBsAg of the blood units in the period from 2002-2011

Year of testing	Total donations	HBsAg negative	HBsAg positive	% of positive donations	Less than 21		Less than 30		Less than 45		More than 45		First time positive	% positive donations for the first time
					m	f	m	f	m	f	m	f		
2002	1750	1725	25	1.44	5	4	2	2	11		1		10	0.57
2003	2304	2251	53	2.30	25	11	1	2	7	2	4	1	24	1.04
2004	2602	2546	56	2.15	24	6	7	1	10	1	5	2	22	0.84
2005	2340	2291	49	2.09	18	7	6	3	9	1	5		19	0.81
2006	2953	2917	36	1.21	15	5	5	1	5		3	2	16	0.54
2007	4002	3973	29	0.72	8	5	5	2	4		3	1	11	0.27
2008	2908	2879	29	0.99	9	6	6		4	2	1	1	10	0.34
2009	3204	3165	39	1.21	8	4	11	1	7	4	3	1	14	0.43
2010	3787	3752	35	0.92	7	5	7	4	9		3		13	0.34
2011	3076	3045	31	1.00	5	4	11	1	5	2	3		14	0.45
Total	28926	28544	382	1.32	124	57	62	17	71	12	31	8	153	0.52

Grafic 2

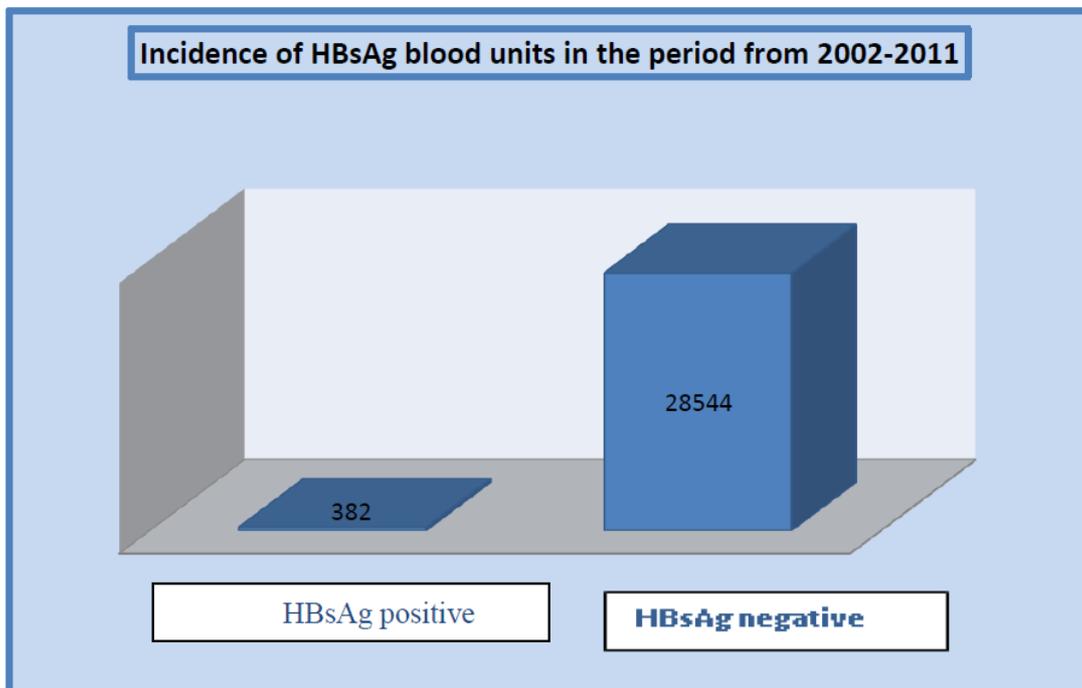
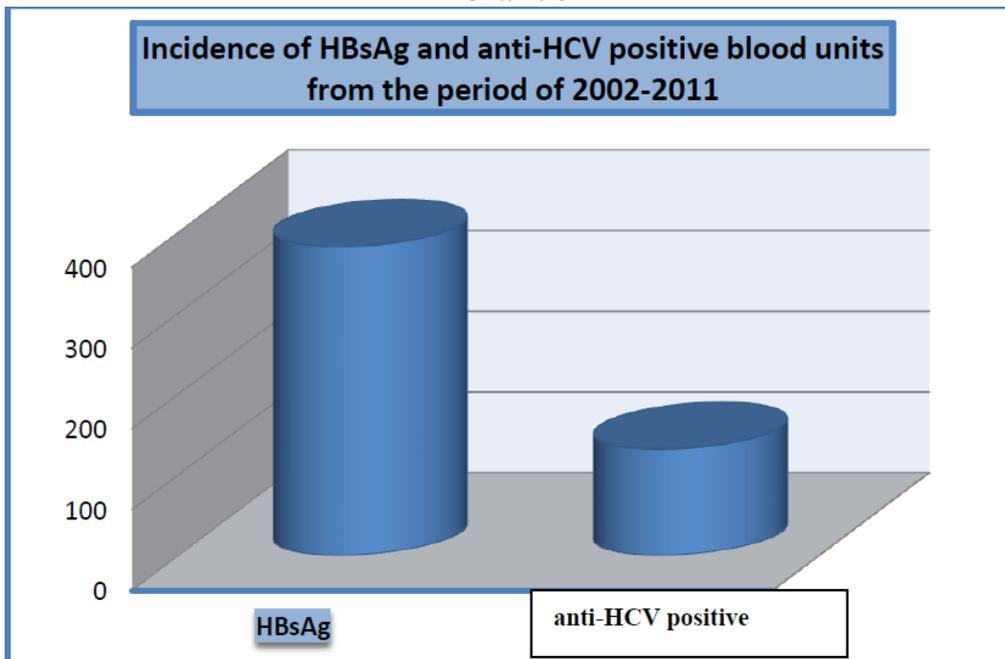


Table No. 3 Incidence of HBsAg and anti-HCV positive blood units at blood donors who donated blood for the first time and multiple blood donors in the period from 2002-2011

Year of testing (2002-2011)	Number of examined people	HBsAg		Anti-HCV antibodies	
		Positive donors		Positive donors	
		number	%	number	%
First time donors	6198	153	2.46	47	0.75
Multiple blood donors	22728	229	1.00	84	0.36
Total	28926	382	1.32	131	0.45

Grafic 3



Conclusion:

The presence of HBsAg positive blood units in BMI - Regional Center Stip (2002-2011) was (1.32%), anti-HCV is (0.45%), the anti-HIV is (0.003%) and antibodies Treponema Pallidum is (0.006%), and from 2005 to 2011 at the level of the Republic. Macedonia is the presence of HBsAg (0.54%), anti-HCV is (0.19%), the anti-HIV is (0.06%) and antibodies to Treponema Pallidum is (0.09%). From the displayed results may be seen the difference in the presence of HBsAg and anti-HCV in blood donation population in RC for Transfusion Medicine in Stip. Made a comparison of descriptive representation in percentil positive blood donors and blood donors for the first time blood donors and family. After receiving the positive result of blood donors anti-HIV antibodies, he was again summoned, and while it was found that a man, aged 24 years, a period which was serving a prison sentence in Prison "Prison", which probably in those conditions was infected. We have reliable information about it. Donor has developed a clinical picture of disease. A positive result is

confirmed in BMI - Skopje Chemiluminescent Microparticle Immunoassay (CMIA) method (immunological testing of microparticles in two steps) for the qualitative determination of antibodies to HIV p24 and antibodies to human immunodeficiency virus type 1 or type 2 (HIV-1 / HIV-2) in human serum or plasma apparatus Abbott Diagnostics ARCHITECT 2000th. The risk of posttransfusion transmission is directly associated with the use of blood and blood products from blood donors who donate blood for the first time, it can be seen from the results of our research. The selection of blood donors is the first step towards reducing the risk of transmission of infectious agents through blood and blood products, but depends on whether you set the right questions and whether donors received honest and true answers. It takes off the blood donors at high risk for transmission of postransfusion infections, blood donors who have had jaundice, donors who have had surgery or received blood in the last 6 months or tattooed in that period or had risky sexual behavior. In our study, donors who donate blood for the first time in many high school and students and represent the greatest danger of transfusion transmissible infections. Characteristic of blood donors who donate for the first time is their age. More than 90% are aged 18 to 21 year. These data encourage further interest in examining and revealing the causes and risk factors for high prevalence of HBsAg and anti-HCV antibody positive in this young population group. It takes continuous information to the general population is a major factor in recruiting voluntary and unpaid, ie safe blood donors. By educating the public and donors are allowing these alone be excluded from donation (if you belong to any of the risk groups). Mandatory selection of donors of blood, taking a detailed anamnestic data and review before taking the blood (fill in the questionnaire) and the high priority the elimination of family donation. It is necessary test taken every unit of blood transmissible markers with highly sensitive and specific tests, regular and continuous supply of competent laboratories with appropriate screening tests and tests for confirmation of reactive specimens, development and application of methods for removal and inactivation of viruses in blood products, and ongoing education of health professionals working in BMI and regional centers.