

Viral Hepatitis in Blood Donors

VHPB country meeting

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- Transfusion-transmitted viral infections as HBV and HCV are still one of the most serious complications of blood transfusion particularly in country with high and intermediate prevalence of them.
- They lead to chronic and life-threatening disorders in blood recipients , so a huge number of scientific researchers have focused on this problem in order to improve blood transfusion practice and, particularly, to improve the safety of blood transfusions.
- This problem is even more sensible in the present situation of our country because on the epidemiological maps, Albania is shown among high prevalence countries for HBV, over 8% and intermediate prevalence of HCV.
- Continuous monitoring of HBV and HCV marker among blood donors permits an assessment of the occurrence of infection in the blood donor population and consequently the safety of the collected donations

Hepatitis viral in blood donors

Blood safety is depend from :

- a) Quality of blood donors
- b) Selection procedure of blood donors
- c) Testing methods used for blood screening

In Albania blood donation system is mix. The blood was collected from :

- a) commercial blood donors (CBDs)
- b) Unpaid blood donors
 - voluntary non remunerate blood donors (VNRBD),
 - family replacement donors (FRBD)

Donors were classified :

- first-time
- Repeat/regular blood donors

The VNBD and FRBD have donated blood only one time, so they are first time blood donors

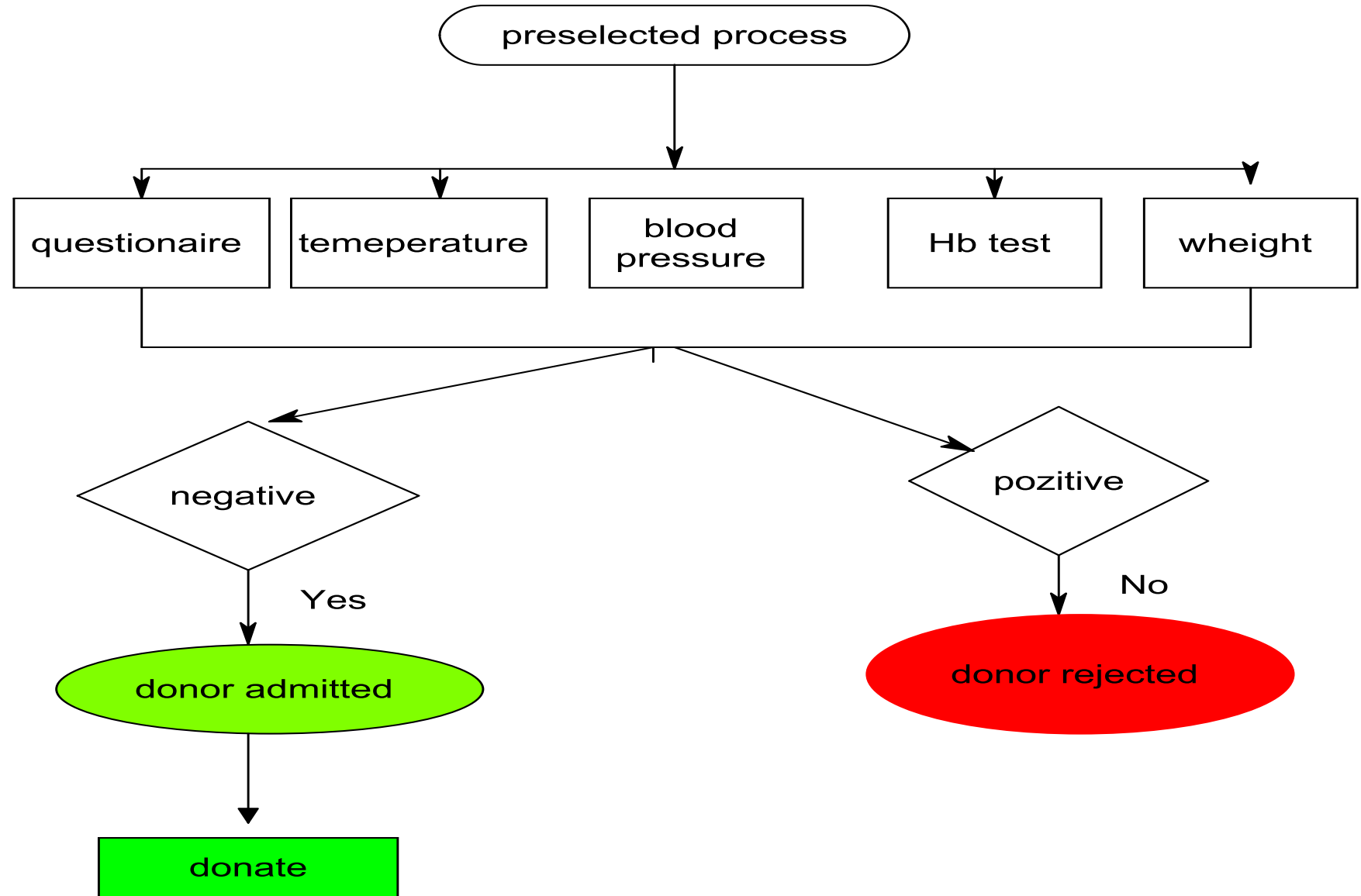
All donors are selected in two phase :

1. Pre-donation selection :

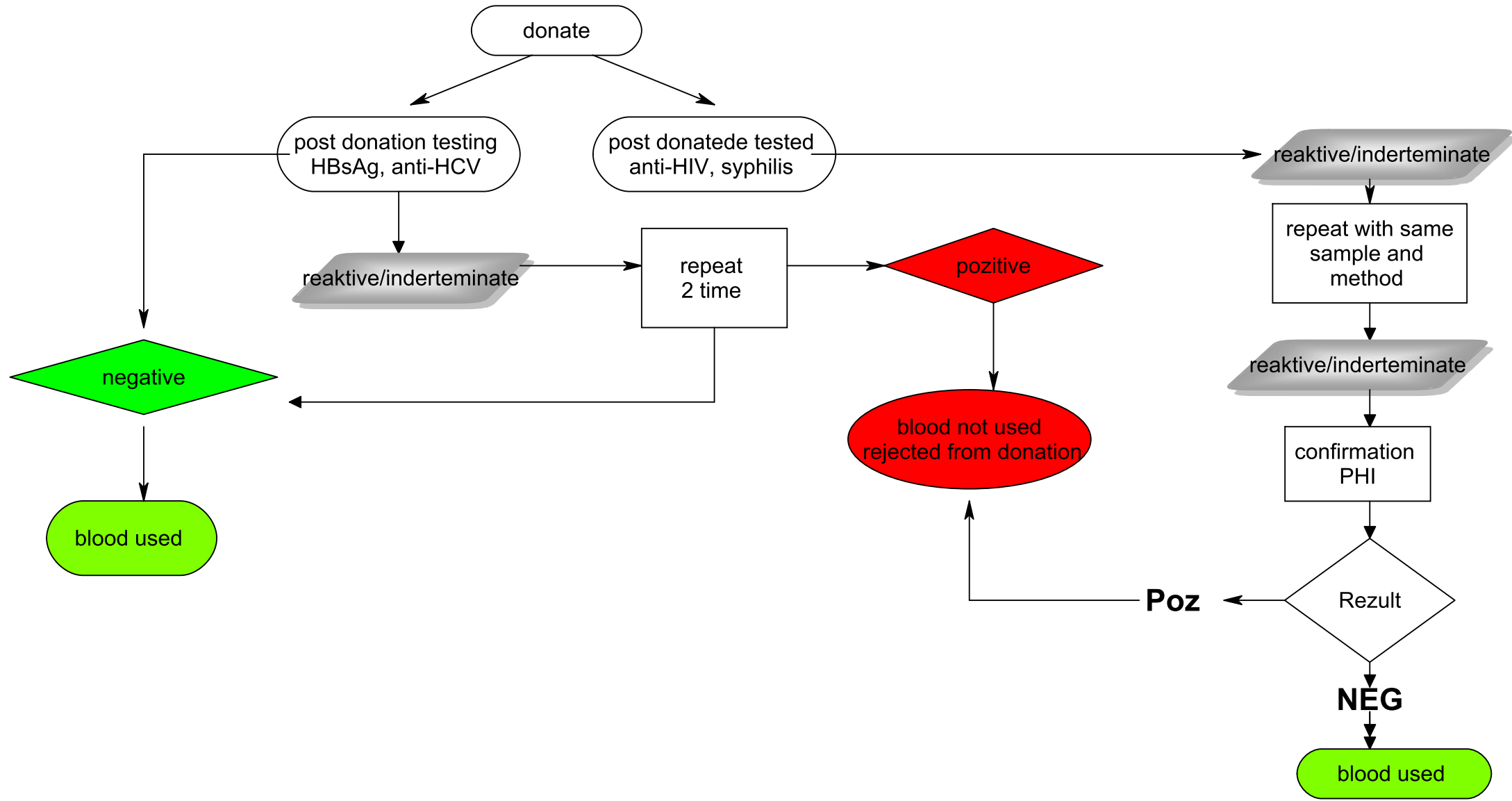
- a) Self evaluation (questionnaire)
- b) Hb test, Blood pressure, temperature and weight

2. Post donation selection :

- a) HBV , HCV, HIV ½, Syphilis



Algorithm of serology blood testing



Blood donors testing

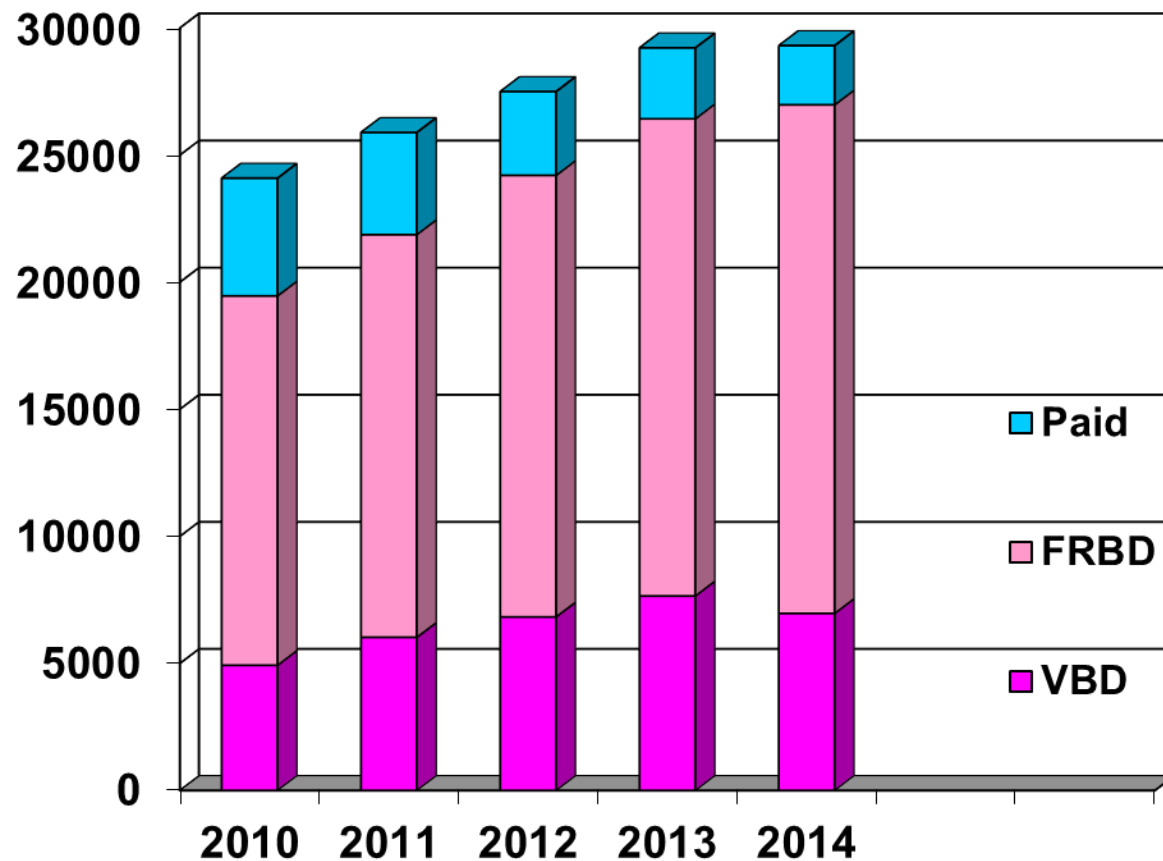
- Reactive samples for Anti- HCV and HBsAg were not performed the confirmation test until June 2016.
- A sample was considered as HBsAg and Anti-HCV positive when found two times repeatedly reactive with CMIA method
- Virus screening of blood donations started in the 70s with HBsAg assays followed by anti-HIV and anti-HCV (serological assays) in the 80s and 90s respectively.
- In Albania screening of blood donors for viral hepatitis's marker, are mandatory according to national legislation since 1975 for HBsAg and 1993 for anti- HCV

Tab.1 The method used for blood testing during years

Years	Screening kit	Manufacture	Sensitivity	Method
1975	HBsAG	imunoelctrophoresis		Manual
1994	HBsAg and HCV	ELISA method		Manual
1999	Auszyme Monoclonal HBsAg	Quantum II ABBOT	Ad 04 ng/ml, ay 0.7 ng/ml	Manual
2000	Auszyme Monoclonal HBsAg	Quantum II ABBOT	Ad 04 ng/ml, ay 0.7 ng/ml	Manual
2001	Auszyme Monoclonal HBsAg	Quantum II ABBOT	Ad 04 ng/ml, ay 0.7 ng/ml	Manual
2002	Auszyme Monoclonal HBsAg	Quantum II ABBOT	Ad 04 ng/ml, ay 0.7 ng/ml	Manual
2003	IMx	ABBOT	Ad 0.22 ng/ml Ay 0.17 ng/ml	Semi automatic
2004	IMx	ABBOT	Ad 0.22 ng/ml Ay 0.17 ng/ml	Semi automatic
2005	IMx	ABBOT	Ad 0.22 ng/ml Ay 0.17 ng/ml	Semi automatic
2006	AxSYM HBsAg (MEIA)	ABBOT	Ad 0.15 ng/mL Ay 0.12 ng/mL ≤0.5 ng/mL	semi automated
2007	AXSYM CMIA	ABBOT	100%	automated
2008	Architect	ABBOT	100%	fully automate
June 2016	NAT test			

Blood Donation 2010- 2014

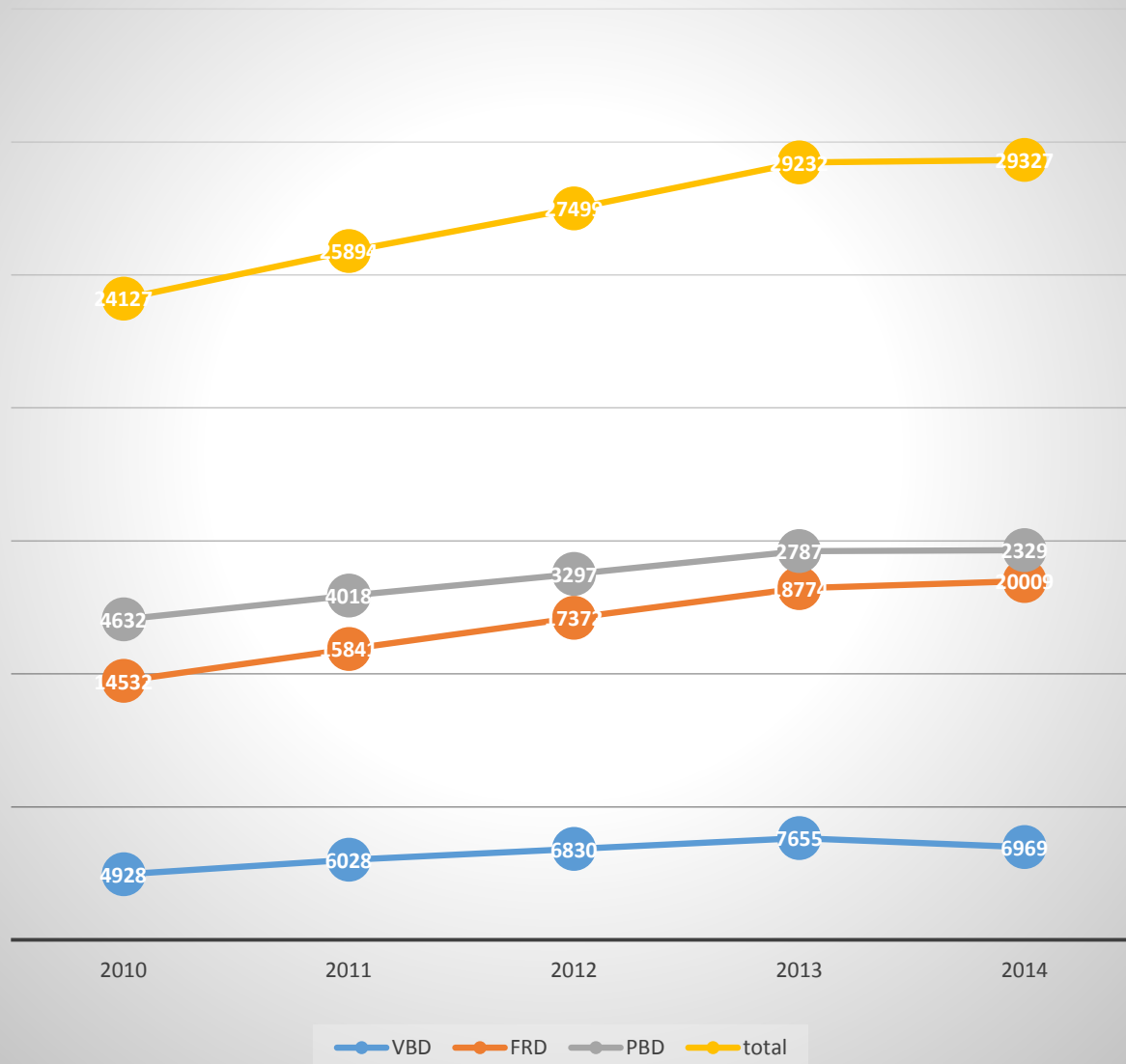
Year	2010	2011	2012	2013	2014
VBDs	4928 (20.42%)	6028 (23.27)	6830 (24.83)	7 655 (26.18%)	6969 (23.76%)
FRBs	14532 (60.23%)	15841 (61.17%)	17372 (63.17%)	18774 (64.22%)	20009 (68.22%)
PBDs	4632 (19.19%)	4018 (15.51%)	3297 (11.98%)	2 787 (9.53%)	2329 (7.9%)
ABDs	35 (0.14)	7 (0.02%)	0	20 (0.06%)	9
Total	24127	25894	27499	29232	29327



Referred data the total number of donation was increased and the quality structure of blood donors was improved during years

The data show the Important steps done towards gradually phasing out paid blood donation and increasing unpaid blood donors as FRBDs and VBDs

Blood donation



- In 2014 commercial donation composed only 7.9% of all donation compared with 19.1% in 2010.
- VNRBD are increased from 20.4% in 2010 to 23.7% in 2014
- Family replacement donation from 60.2 % to 68.2% in 2014
- **But Change of quality structure of blood donors resulted in a very high percentage of first time blood donors**
- In 2014 the blood collected from first time blood donors (VBD, FRBD) composed **92%** of total blood collected at national level.
- **But donations from FRBD consist of the majority of unpaid blood donations yet, 68.2%**
- In this condition, evaluation of trends of Viral hepatitis marker in blood donors remains a critical point for monitoring blood supply safety and donor screening effectiveness in our country.

The change in structure of blood donors are result of the following factors as :

- Strength the promotoin of voluntary blood donors
- Desided the special budget for promotion activities from MoH
- Approved the legislation to support the associations included in propmotion of VBD
- Interrupted blood donation for firs time commercial donors since 2008

Blood donor testing

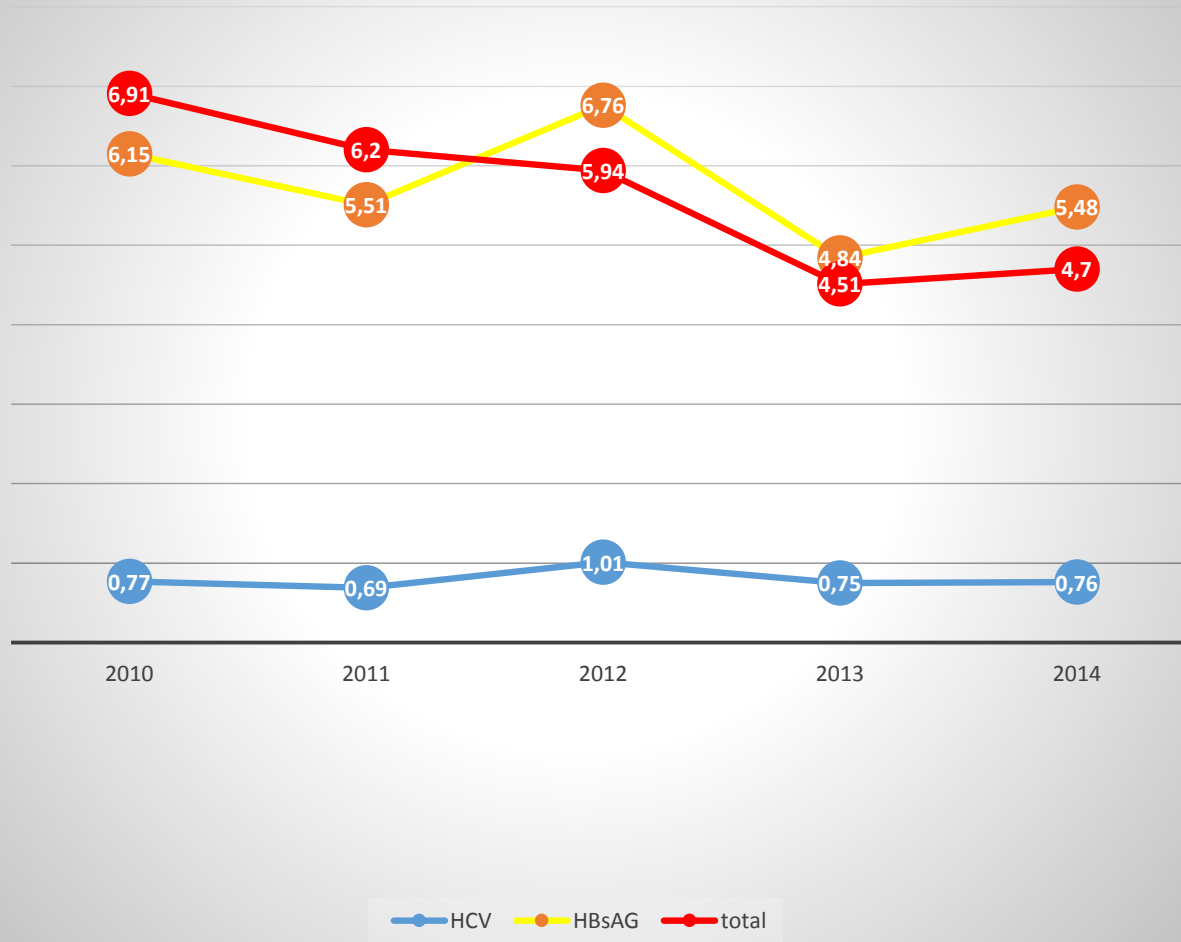
The prevalence of viral marker in blood donors is depended :

- Prevalence of hepatitis viral market in general population
- Human demographic characteristics and behaviors
- Structure of blood donors
- Testing method

Albania is a country with high HBV prevalence , intermediate HCV prevalence. So, in the present situation the monitoring of blood donors for viral marker is more sensible

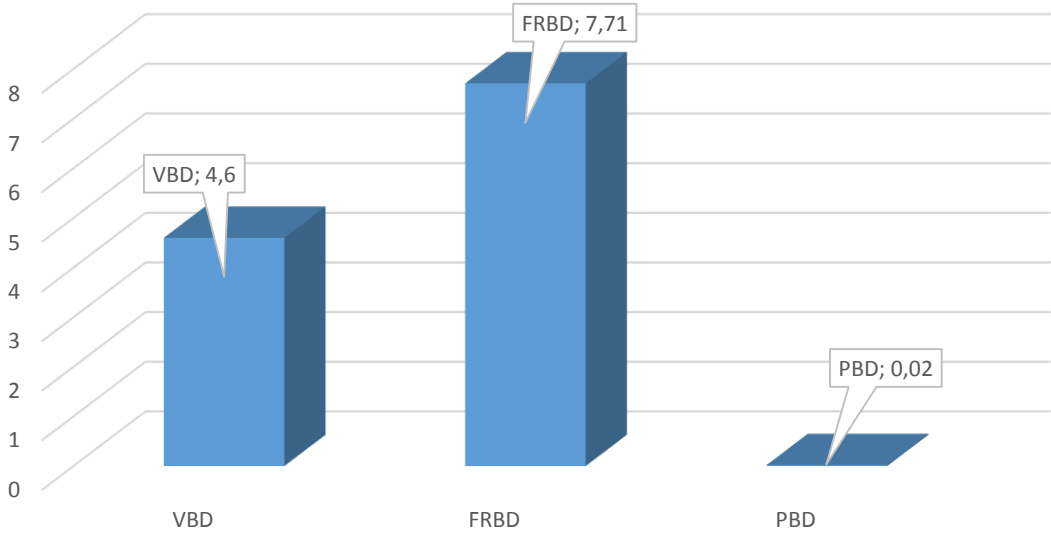
Prevalence of HBsAg and Anti-HCV in blood donors

Prevalence of HBsAg and HCV

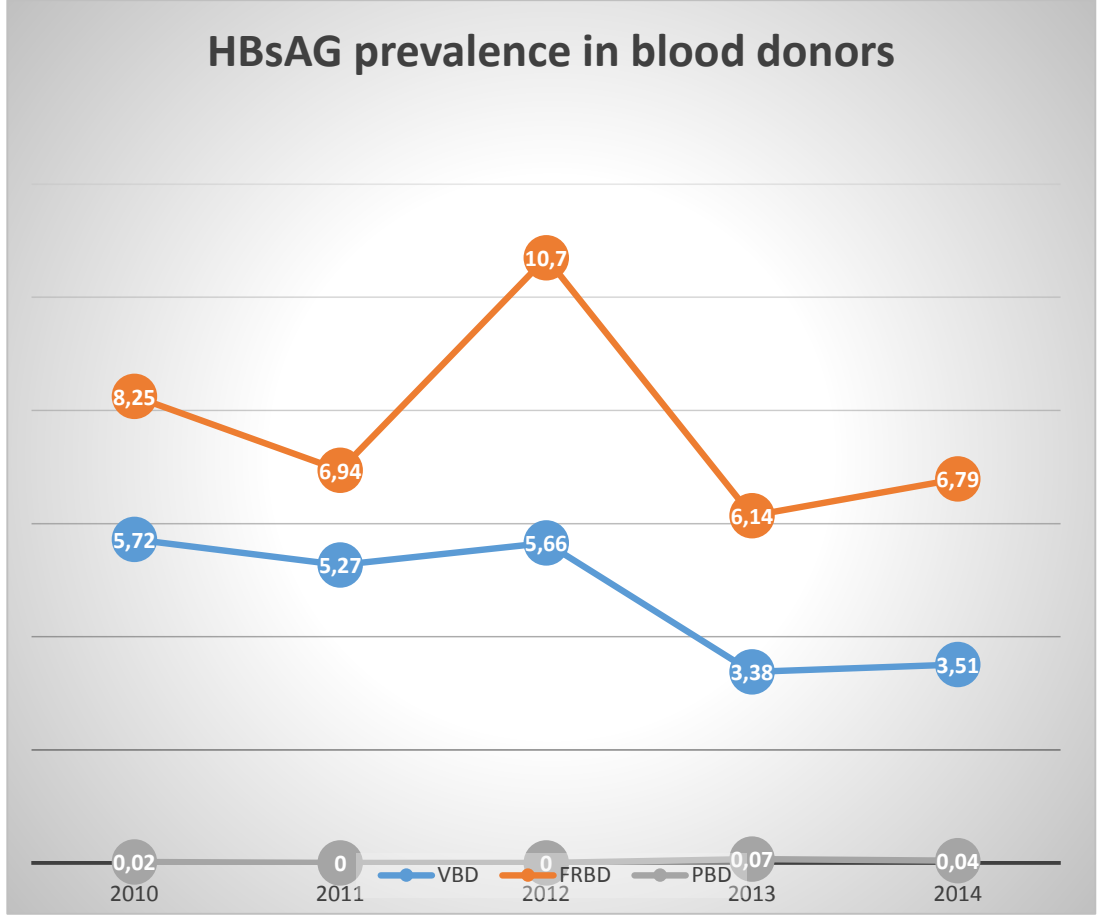


- The prevalence of **viral hepatitis** in our donor populations in 2014 was 4.7%.
- While during period time of study, the prevalence of hepatitis viral marker has decrease tendency from 6.9% in 2010 to 4.7 in 2014
- The prevalence of **HBsAg** in our donor populations in 2014 was 5.48 %.
- While during period time of study, the prevalence of HBsAg varies from 6.15% in 2010 to 5.48 in 2014
- The prevalence of **HCV** in our donor populations in 2014 was 0.76 %.
- HCV prevalence was increased from 0.77% in 2010 to 1.01 in 2012 and decreased in 0.76 in 2014

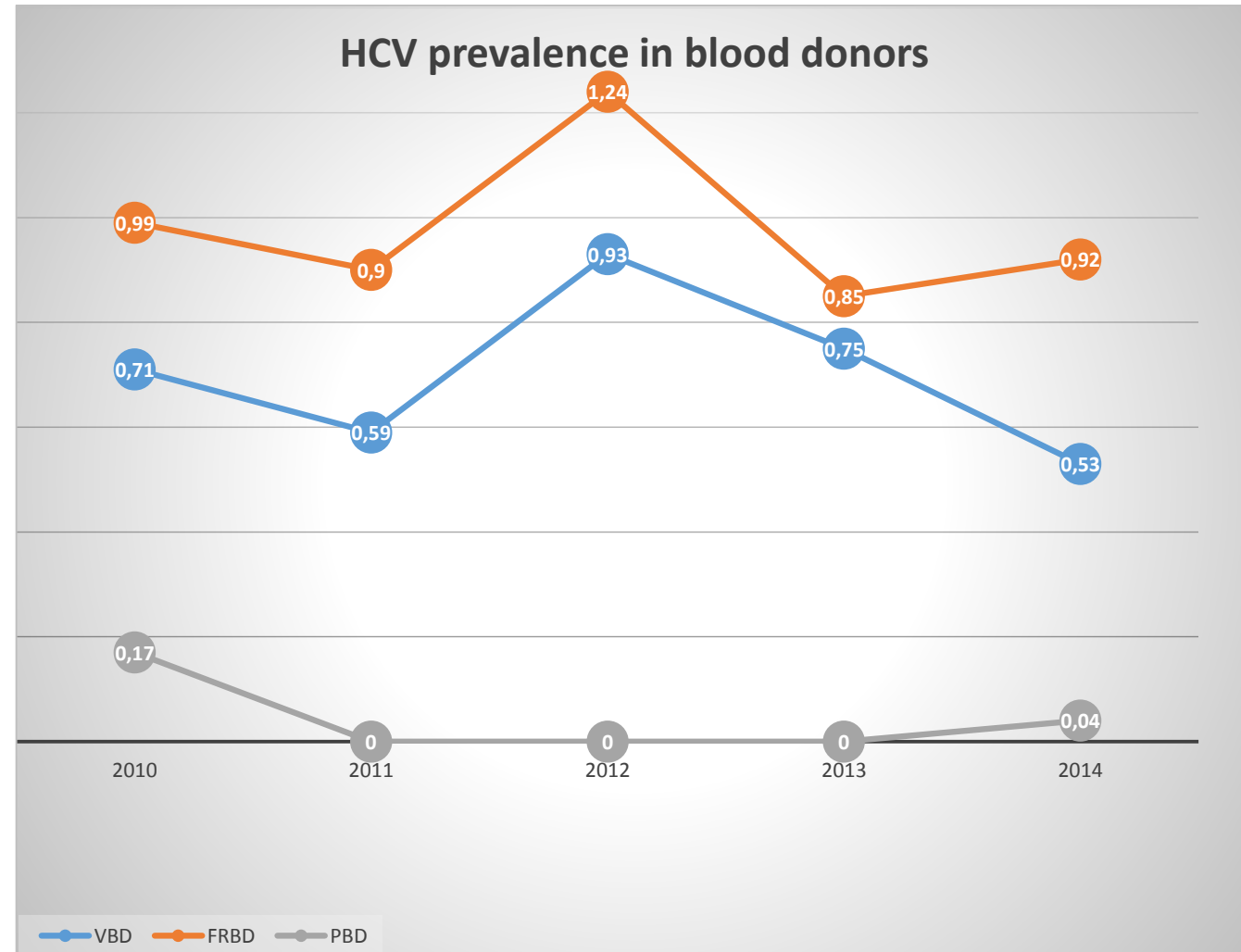
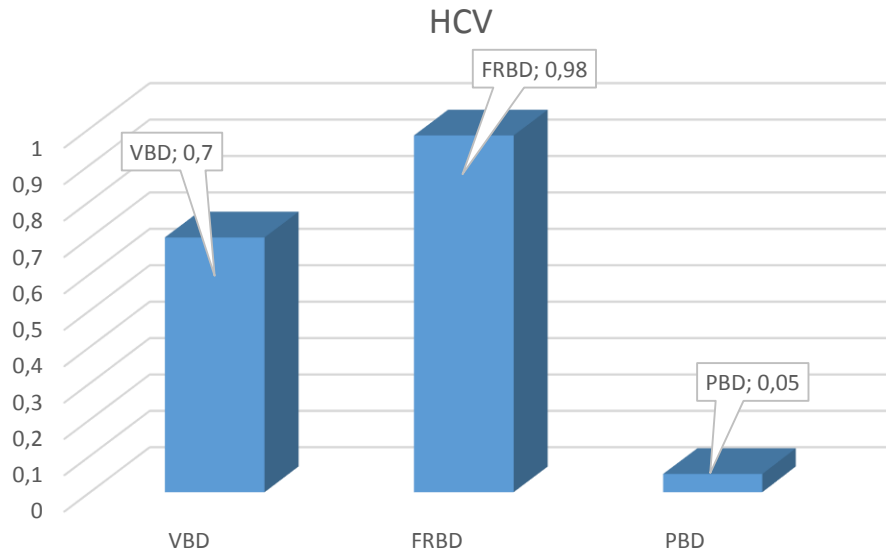
HBsAg prevalence according to type of blood donors



- Prevalence of HBsAg in voluntary blood donors was 4.6%, in FRBD 7.71% and PBDs 0.02%
- Prevalence of HBsAg in VBDs varies from 5.72 in 2010 to 3,51 in 2014
- Prevalence of HBsAg in FRBDs varies from 8.25% in 2010 to 10.7 in 2012 and decreased to 6.79 % in 2014



HCV prevalence according to type of blood donors



- Prevalence of HCV in voluntary blood donors was 0.71%, in FRBD 0.98% and PBDs 0.05%
- Prevalence of HCV in VBDs was increased from 0.7% in 2010 to 0.93% in 2012 and decreased to 0.53 in 2014
- Prevalence of HCV in FRBDs varies from 0.99% in 2010 to 1.24% in 2012 and decreased to 0.92 % in 2014
- While in PBD the prevalence is in low level

Conclusion

1. The data show decreased the prevalence of viral hepatitis marker in blood donors but its higher compare with neighbouring countries. In Balkan countries the prevalence of HBV in blood donors varies from 0.5-2%. HBV.

These figures are results of some important measure implemented in blood transfusion service as:

- a) Centralization of blood testing for ITT (all blood collected in whole country), only in one center, in Tirana since 2010.
- b) Improved the testing method and sensitivity of test screening during years. The method of blood testing for ITT is full automatic and high sensitivity.
- c) Interrupted first time blood donors from donation since 2008.
- d) Implementation of national hepatitis B immunization programs since 1993, also have played an important role in decreasing the occurrence of hepatitis B in general population included and blood donors

State	HBsAg		HCV	
	RBD	FTBDs	RBD	FTDs
Turkey	1.7 %		0.07 %	
Greece**		3%		0.6%
Kosovo	4.7 %		0.3 %	
Serbia *	0.09%		0.06 %	
Croatia *	0.009 %	0.2%	0.003 %	0.06
Macedonia	0.45 %		0.003%	
Bosnja	0.78%		0.26%	
Albania	5.48%		0.76%	

* [D. Vučetić](#), [G Kecman](#), [V Ilić](#), and [B Balint](#). Blood donors' positivity for transfusion-transmissible infections: the Serbian Military Medical Academy experience [Blood Transfus.](#) 2015 Oct; 13(4): 569–575.
For FTD the data are from CDC 2010

For HBV, the prevalence in first-time blood donors ranged from 0.0% to 5.2% in EU country.

For HCV, the prevalence in first-time blood donors ranged from 0.02% to 3.3% .

The prevalence in first-time donors was lower than the prevalence in general population.

(according to CDC 2010(Hepatitis B and C in the EU neighbourhood)).

Conclusion

2. The prevalence of HBsAg and HCV was lower in VBDS than FRBd , but the prevalence of HBsAg and HCV still is higher comparing with neighbouring countries because the majority of blood donotation are from first time blood donors.

- While in first time blood donors group, the majority of donation are from family replacement blood donors.
- This data in blood donors reflected the epidemiological situation in our country for these markers. According to PHI the prevalence of Hepatitis B in Albania varies from 7-9% and hepatitis C from 0.5-1.5(PHI)

3. Implementation a good quality control practice starting from history taking of blood donors and extending up to laboratory practices, can minimize the risk of ITT to patients.

Recommandation

Improve the coverage of the surveillance systems of transfusion services focused attention on on improvement the quality of donors.

- a) To define the strategy for recruitment the new voluntary blood donors and retention of VNRBD donors and return them in regular VNRBD donors. Replacement on family blood donor with voluntary non remunerate blood donors, It's important to increase the frequency of donation per donors/ year.
- b) More strict selected procedure of donors through direct questioning of donors regarding risks for these viruses(more detailed pre-donation), more privacy for the donor at the time of completing the questionnaire (private areas), preparing the informative paper about viral hepatitis .

Information of people about viral hepatitis together with improving the testing methods is important thing to prevent the installation of this infection.

Thank you