MONITORING VIRAL HEPATITIS AND HIV IN DIALYSIS AND MULTIPLE BLOOD TRANSFUSION PERSONS

EUGENA ERINDI – TOMINI MD, PhD
Institute of Public Health

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INTRODUCTION

- Prevention of infectious agents diffusion at the multi blood transfusion persons and evaluation of blood safety, has an special importance in Public Health.

- Blood control for HIV and other infectious agents is regulated by law No. 8689 “To Prevent the spread of HIV / AIDS infection in the Republic of Albania”. According to this law every blood unit donated in Albania is controlled for presence of infectious agents that can be transmitted through it as HIV, Hepatitis B and C, CMV dhe Syphilis.

- A big number of paid donators belongs to vulnerable groups or those specifically vulnerable (Roma population, drug users, migrants from rural to urban zones), so the awareness for self exclusion is low.

- Referring to WHO data regarding the blood safety, World accumulation of blood determined around 92 million donations every year in all ways of blood donations (unpaid voluntary, family / substituent and paid donators).

- Multi blood transfusion persons are those that has connected their life with time after time blood transfusion and the risk for contamination with infectious agents transmitted through blood is high.

- Biological Surveillance for evaluation of infective agents at the multi blood transfusion persons has started at the end of 2006 by the Institute of Public Health.

- Institute of Public Health, through this surveillance has became one of the main actors of hem vigilance system based on fact than earlier, before 2006 year, this surveillance doesn’t exist.

- This is the first study that evaluate the progress of surveillance at multi Blood transfusion persons in Albania.

- This biological surveillance is repeated also in 2008 year and 2010 year. Actually, IPH is in process of data analyzing for surveillance in 2015 year.

METODOLOGY

AIM

- Evaluation of prevalence of infectious agents at multi blood transfusion persons and blood safety for HIV, HBV, HCV

OBJECTIVES

- To monitoring with efficiency and effectively infectious agents at multi blood transfusion persons and also to evaluate the blood safety

- To monitoring the trend of incidence at risk factors for infectious agents

- To identify infection persons looking for cause infection

- To put on place an referral frame for evaluation of infectious agents transmissions in different districts of Country

MATHERIAL AND METHODS

•In study are included main Districts:

- ✓Tirana,
- ✓Durrësi,
- ✓Lushnja,
- ✓Gjirokastra,
- ✓Shkodra,
- ✓Korça,
- ✓Vlora
- ✓Dialysis at UHC during period 2006-2008 and 2010 -2011

•For every patient – an individual form

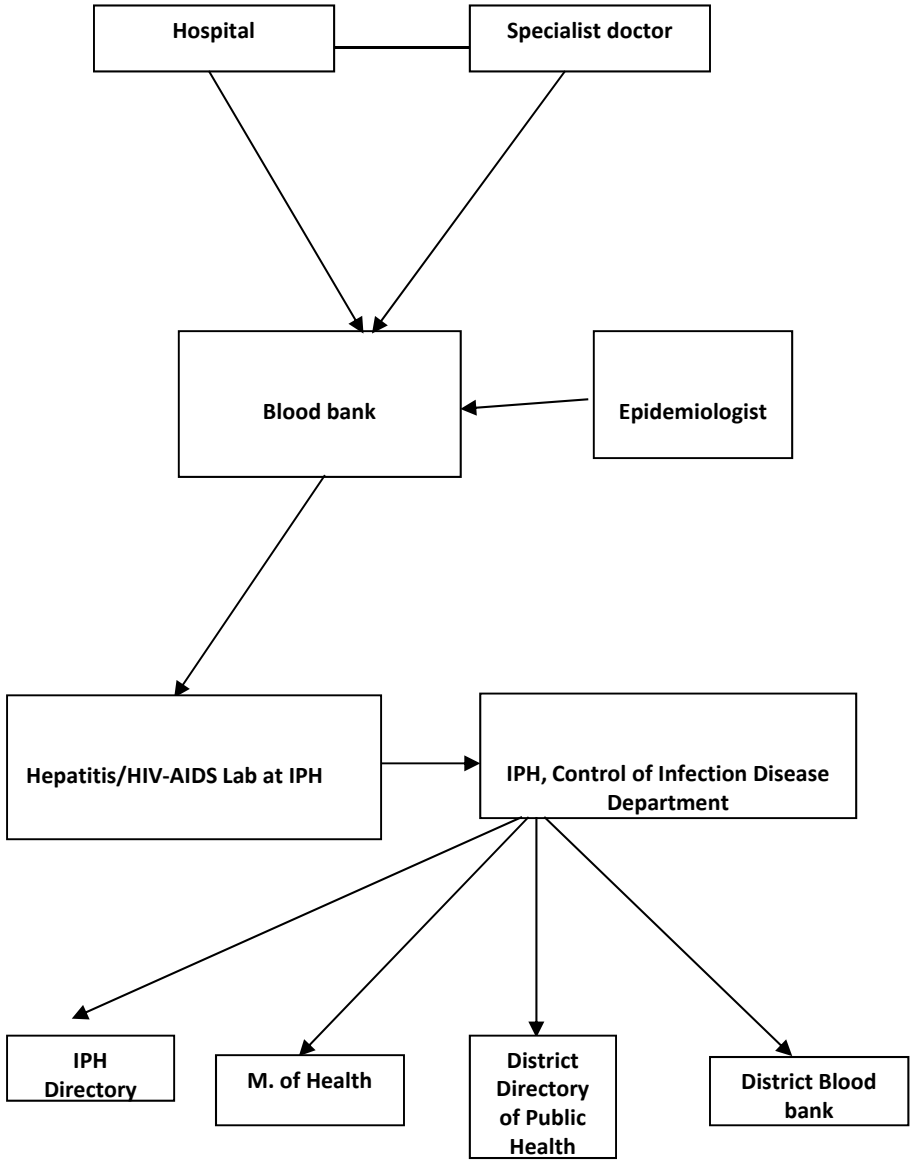
•Every blood sample is accompanied with individual form and has to have the identification according to the scheme: Name / Father's name / Surname.

•Every blood sample taken is saved in the fridge +2 - +8 or, if sample is subjected to centrifugation, the serous is saved at - 20^0C.

•Blood samples are tested for presence of Hep B, Hep C, HIV at the HEP/HIV/AIDS Lab in IPH with ELISA method.

• All data are calculated with SPSS 16.0. program

Scheme of blood sample transportation to the Lab



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Tel: +355 4374756, Fax 355 43 70058

DEPARTAMENTI I KONTROLLIT TE SEMUNDJEVE INFEKTIVE

SKEDE INDIVIDUALE PER PERSONAT E POLITRANSFUZUAR

1. Te dhena anagrafike **Kodi** _____/_____/_____/_____/_____

Kujdes: nuk plotesohet Kodi; (plotesimi i tij behet vetem nga IShP).

Emri _____ Vendlindja _____
Atesia _____ Vendbanimi (adresa) _____
Mbiemri _____ Datelindja____/___/_____ Mosha: Vjeç_____
Muaj_____
Diagnoza _____

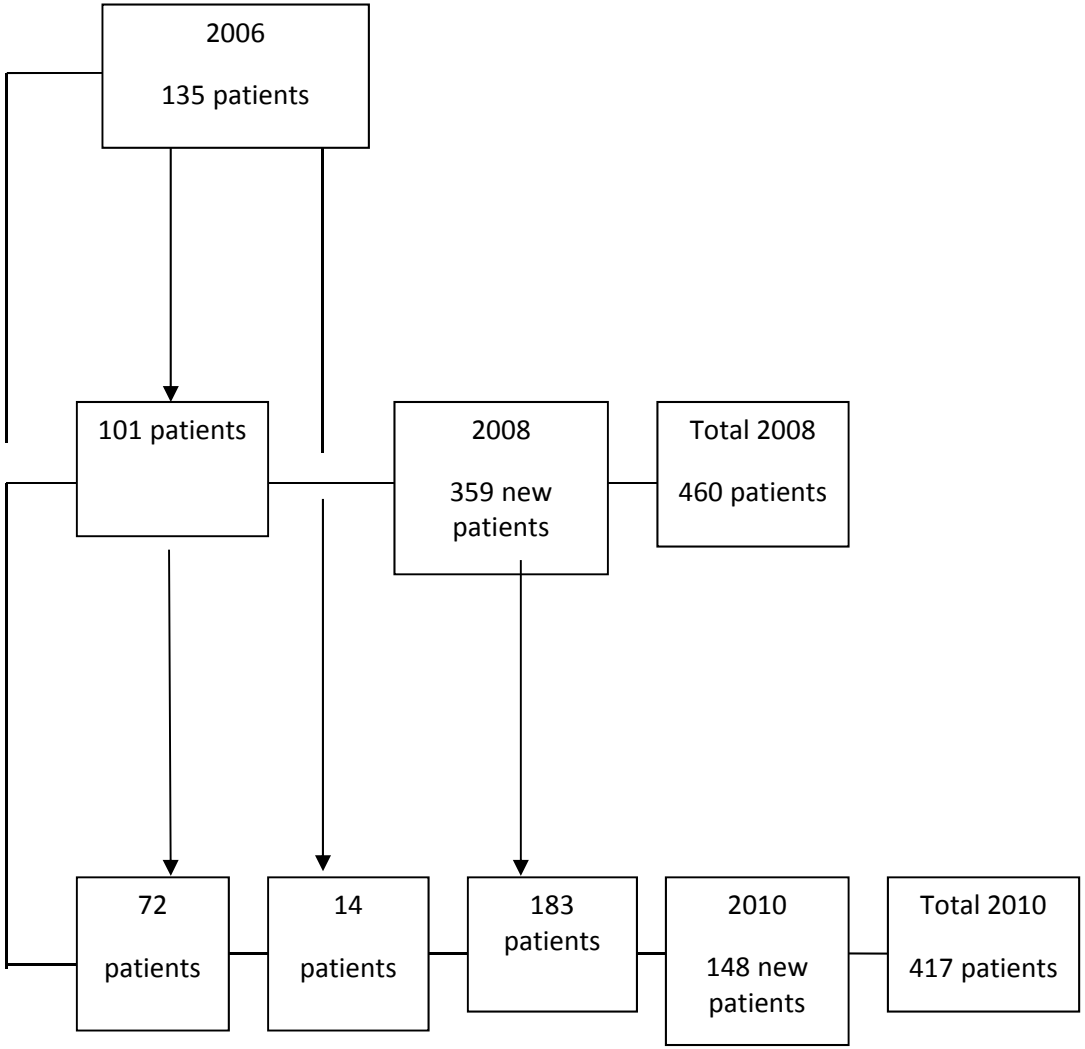
2. Te dhena mbi transfuzionin e gjakut
Ne cilin spital u krye transfuzioni i gjakut ? _____
Numri perkates i regjistrit per kete transfuzion dhe sa njesi? ___/___/_____Nr i njesive--------
Numri perkates i karteles ? ___/___/_____
Tipi i transfuzionit te fundit :
Mase eritrocitare ☐ Krioprecipitat ☐ Plazem ☐
Mase trombocitare ☐ Faktor VII ☐ Faktor IX ☐

3.Te dhena mbi testimet e kryera
A jeni testuar per infeksionet e meposhtme :
Hepatit B: Po ☐ **Rezultati:** Pozitiv ☐ **Tipi i testit:** Test i shpejte ☐ **Vendi i testimit:** Banke gjaku ☐
Jo ☐ Negativ ☐ ELISA ☐ Privat ☐ Tjeter ☐
Hepatit C: Po ☐ **Rezultati:** Pozitiv ☐ **Tipi i testit:** Test i shpejte ☐ **Vendi i testimit:** Banke gjaku ☐
Jo ☐ Negativ ☐ ELISA ☐ Privat ☐
Tjeter ☐
CMV: Po ☐ **Rezultati:** Pozitiv ☐ **Tipi i testit:** Test i shpejte ☐ **Vendi i testimit:** Banke gjaku ☐
Jo ☐ Negativ ☐ ELISA ☐ Privat ☐
T eter ☐
HIV: Po ☐ **Rezultati:** Pozitiv ☐ **Tipi i testit:** Test i shpejte ☐ **Vendi i testimit:** Banke gjaku ☐
Jo ☐ Negativ ☐ ELISA ☐ Privat ☐
W. Blot ☐ Tjeter ☐
Sifiliz: Po ☐ **Rezultati:** Pozitiv ☐ **Tipi i testit:** Test i shpejte ☐ **Vendi i testimit:** Banke gjaku ☐
Jo ☐ Negativ ☐ RPR ☐ Privat ☐
TPHA ☐ Tjeter ☐
(*)Tjeter: Po ☐ Jo ☐ _____
Rezultati: Pozitiv ☐ **Tipi i testit:** Test i shpejte ☐ **Vendi i testimit:** Banke gjaku ☐
Negativ ☐ ELISA ☐ Privat ☐ Tjeter ☐
Nenshkrimi i personit ose prindit (ne rast se femija nuk gjykon dot) _____
Shenim i Mjekut_____
Mjeku (emer, mbiemer, firme) _____

Kjo skede individuale se bashku me mostren e gjakut (mostren serike) te pacientit dergohet ne ISHP (Programi Kombetar HIV/AIDS/IST dhe Laboratori i references HIV/AIDS/IST).
(*) Plotesohet per infeksione te tjera te transmetueshme nepermjet gjakut. Specifikoni infeksionin.

RESULTS

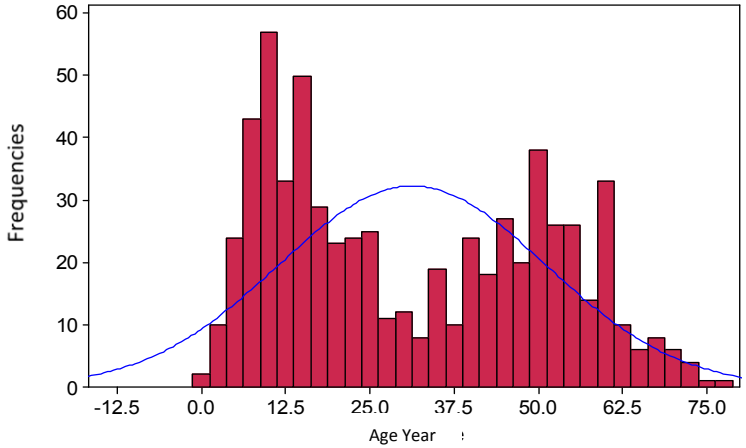
Scheme of multi blood transfusion persons surveillance



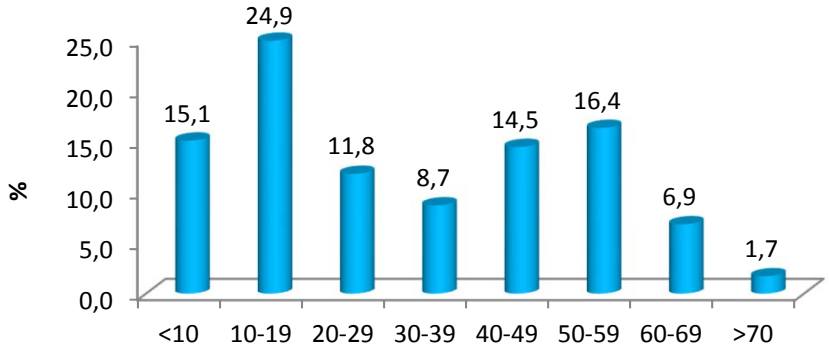
Social – dedmographic characteristics of multi blood transfusion persons

	N	%	p
Gender			
Female	282	43.9	
Male	360	56.1	<0.01
Age Group , years			
<10	97	15.1	
10-19	160	24.9	
20-29	76	11.8	
30-39	56	8.7	
40-49	93	14.5	
50-59	105	16.4	
60-69	44	6.9	
>70	11	1.7	<0.01
Place of transfusion			
Durres	17	2.6	
Elbasan	69	10.7	
Gjirokaster	14	2.2	
Korce	11	1.7	
Lushnje	129	20.1	
Shkoder	45	7.0	
Vlore	9	1.4	
Tirane	348	54.2	<0.01
Year			
2006	135	21.0	
2008	359	55.9	
2010	148	23.1	<0.01

Age histogram



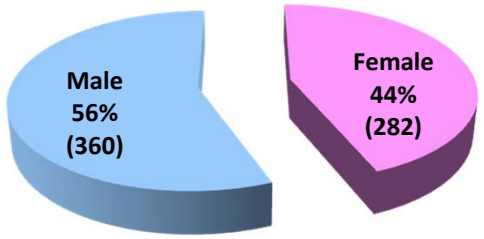
It's noticed that average age of multi blood transfusion persons at dialysis process is 47.8 ± 12.6 years, while the average age of multi blood transfusion persons near hematology clinics is 16.4 ± 11.6 years with statistically significant difference between them (Mann-Whitney U=32.7 p<0.01)

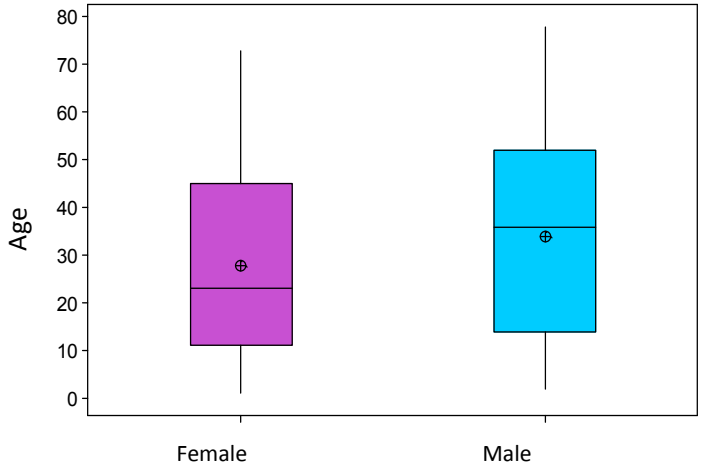


Age group, years

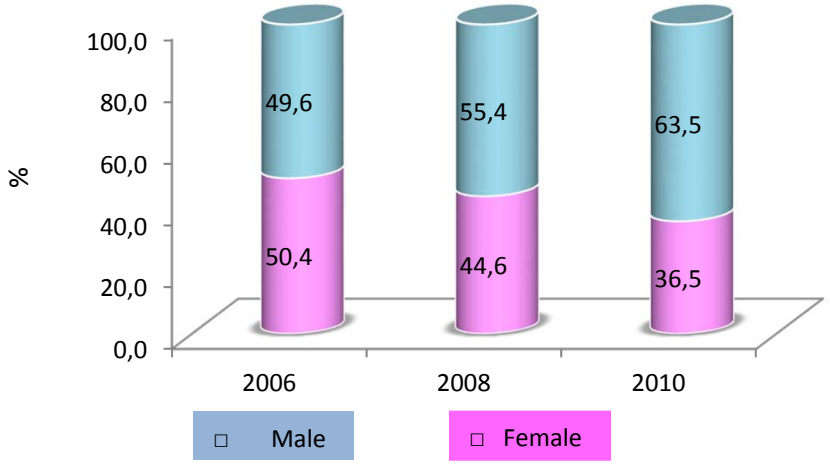
Patients sharing according to agegroup

Patients sharing according to Gender



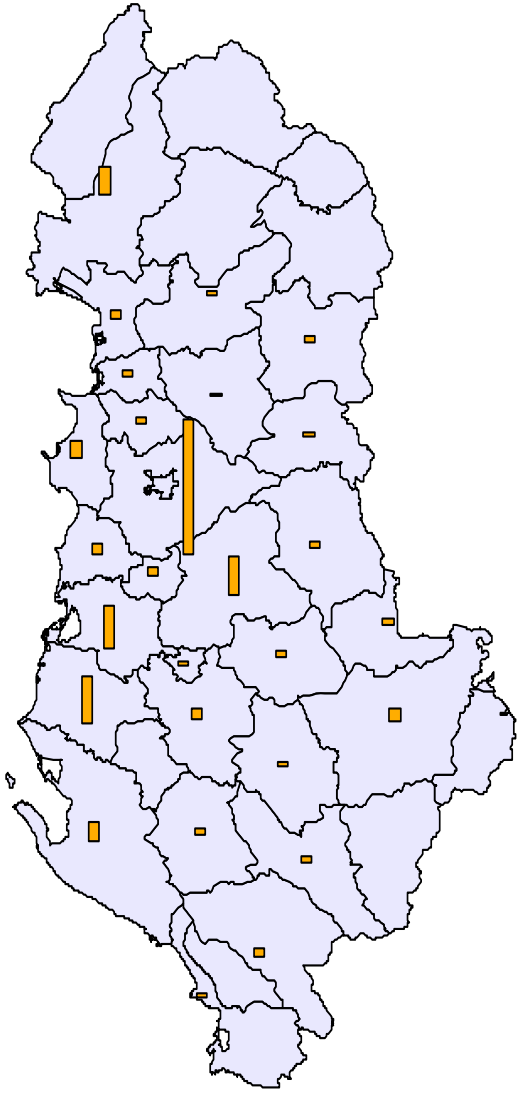


Comparison of patients age according to gender

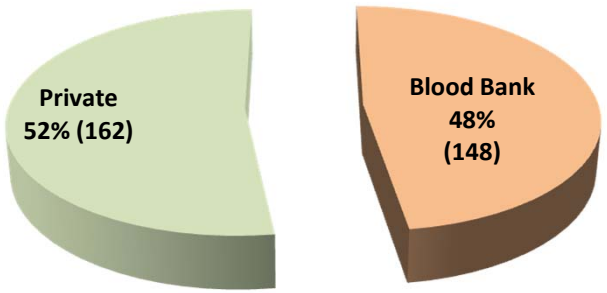


Distribution of new patients according to years and gender

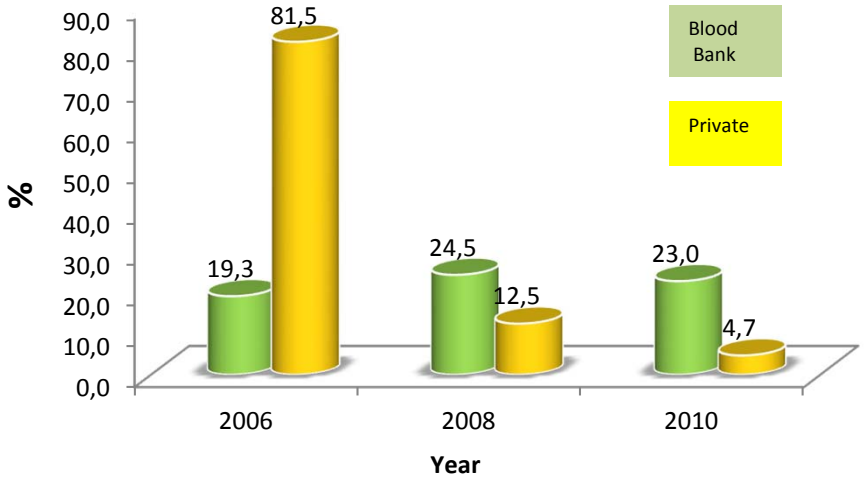
Distribution of multi blood transfusion persons according to settlement.
Number of cases and percentage on total



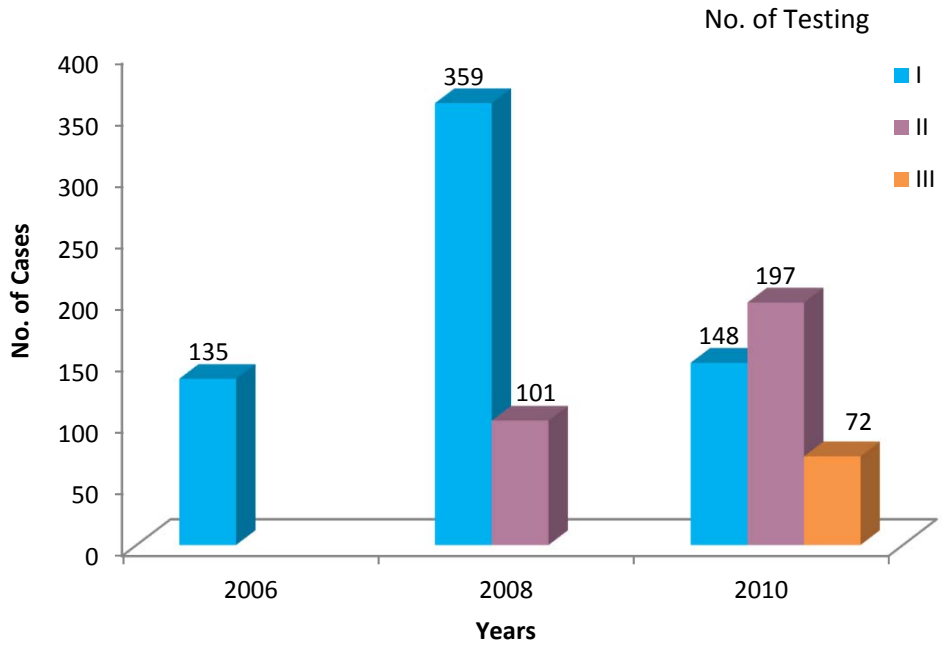
Distribution of patients according to the place of testing



Distribution of patients according to years and place of testing



Number of patients as per testing and retesting



In 2006 year:

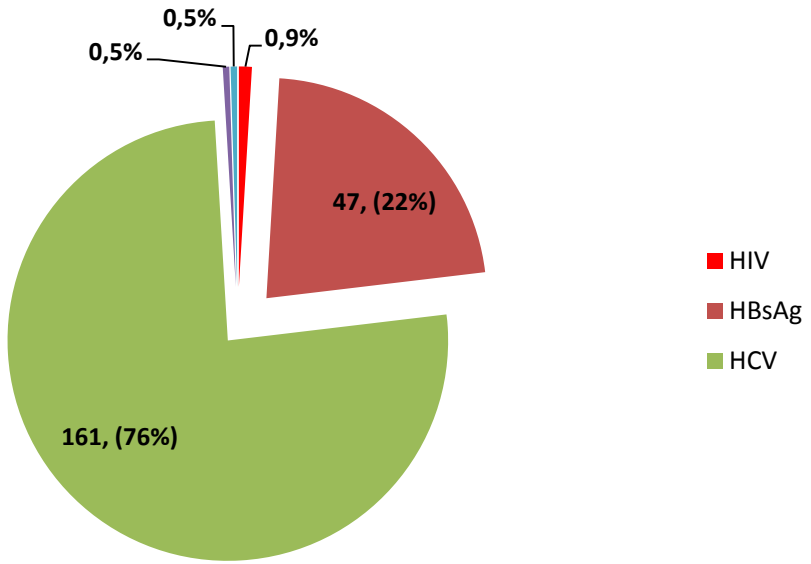
There are testing 135 (100%) patients involved in surveillance, from them in year 2008 are retested only 101 or 74.8%, meanwhile in 2010 year 86 (67.3%) of them.

In 2010 year:

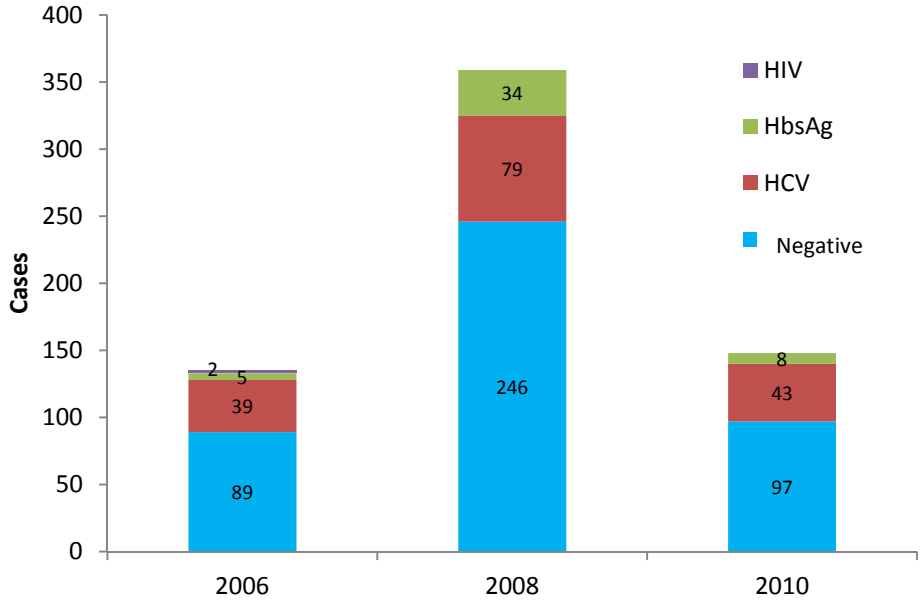
197 patients are tested for the second time, 14 (10.4%) patients from 2006 and 183 (51%) patients of 2008. 72 (53.3%) of patients are tested for the third time

Type and prevalence of infections at patients

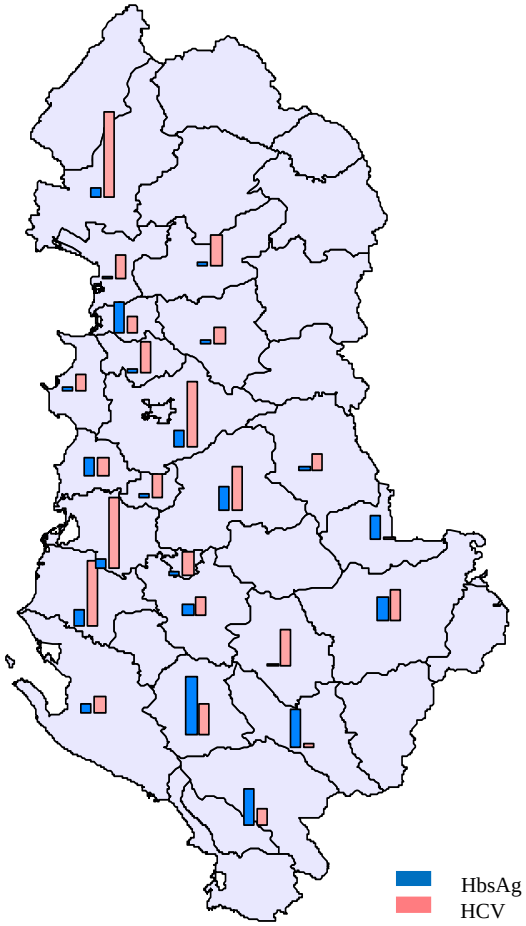
Infeksioni	N	%	95%CI
HIV	2	0.3	0.08 - 1.1
HBsAg	47	7.3	5.5 – 9.5
HCV	161	25.1	21.9 – 28.5



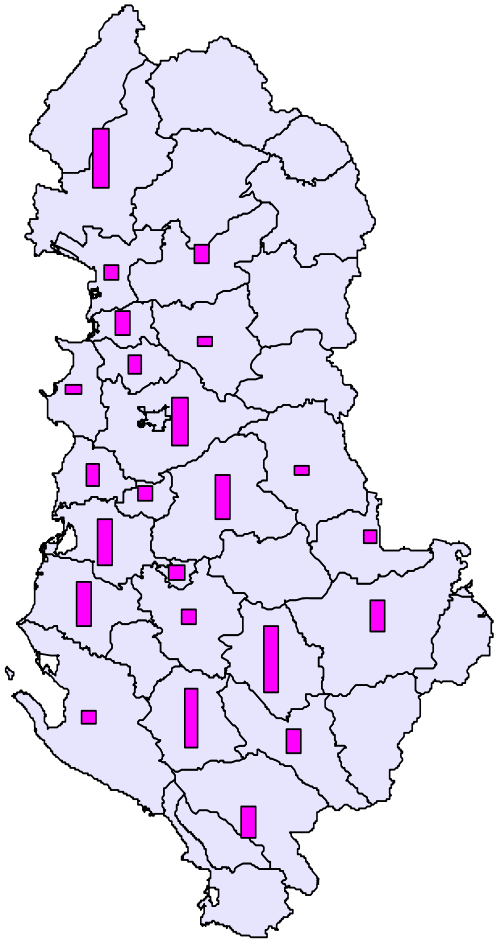
Positivity in new patients testing during surveillance among years



• During the surveillance of 2006 year are tested **135 patients with multi blood transfusion.** From those **89 cases are resulted negative** for infectious agents and **46 cases positive** for infectious agents.
From those 46 positive cases is noted that:
2 or **1.5 % of cases** results HIV positive 95% CI (0.4-5.2)
5 or **3.7% of cases** result HBsAg positive 95% CI (1.5-8.3)
39 or **28.9 % of cases** result HCV positive 95% CI (21.9-37)
• During the same procedures at 2008 are tested **359 new patients** and from those **246 cases negative for infectious agents** and **113 cases positive** for infectious agents. In 2008 we don't have any new patient infected with HIV, **34 or 9.5 % 95% CI (6.8-12.9**) of cases results HBsAg positive and **79 or 22.0 % 95% CI (18.0-26.5**) of patients results HCV positive.
• During surveillance in 2010 are tested **148 new patients** and from those result **97 cases negative for infectious agents** and **51 cases positive for infectious agents**. In 2010 we don't have any new patient infected with HIV, **8 ose 5.4 % 95%CI (2.7-10.2**) of cases results HBsAg positive and **43 ose 29.1 % 95%CI (22.3-36.8**) of patients result sHCV positive

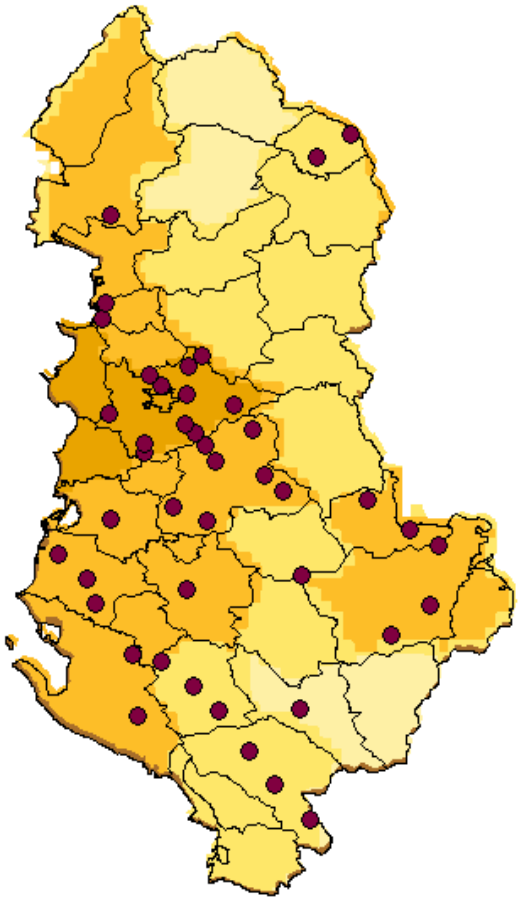


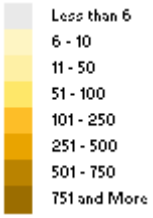
HbsAg and HCV positive prevalence

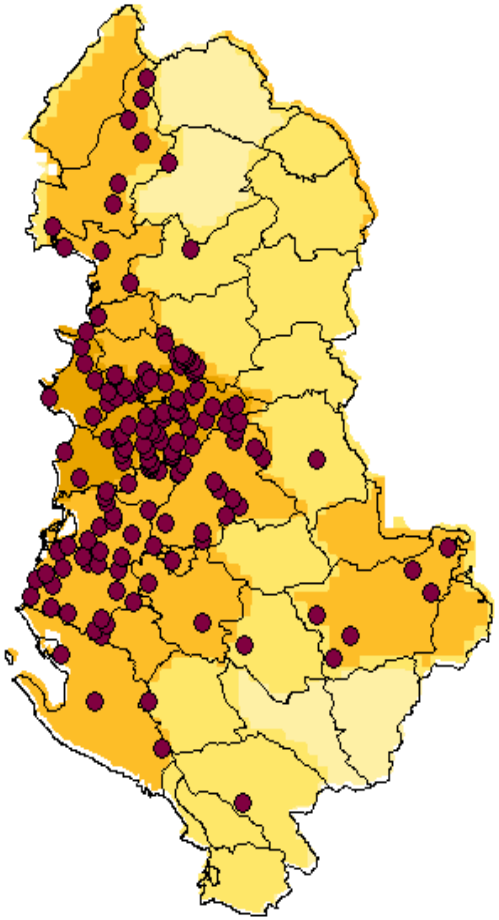


Total positive prevalence as per Districts

Number of cases according to population density



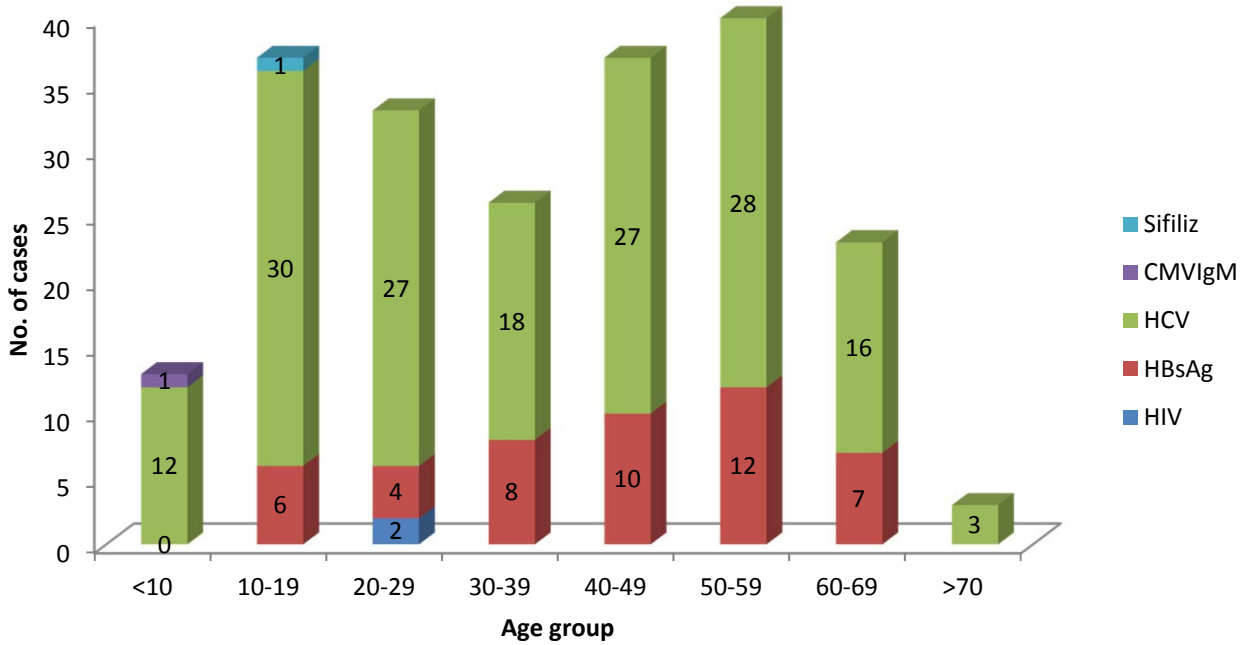




HbsAg

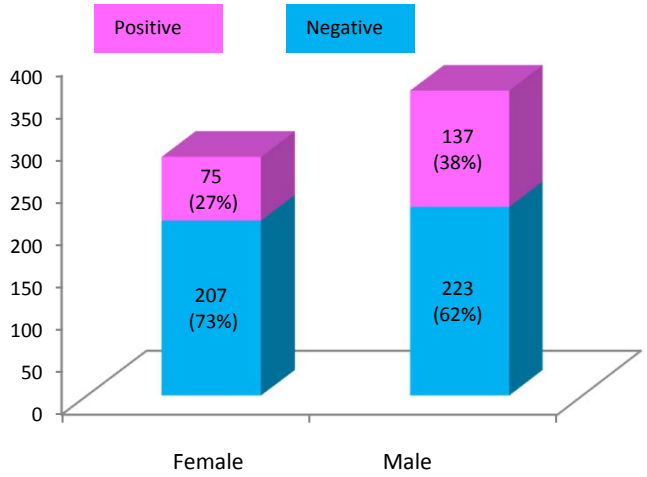
HCV

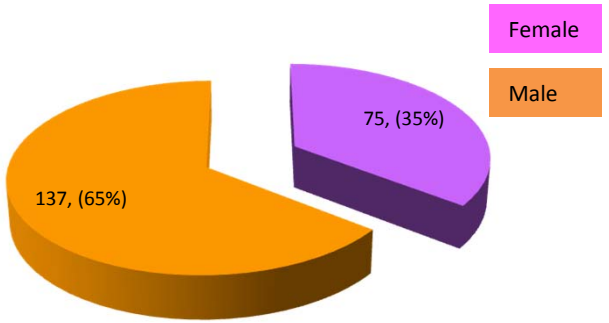
Distribution of positive cases according to age group



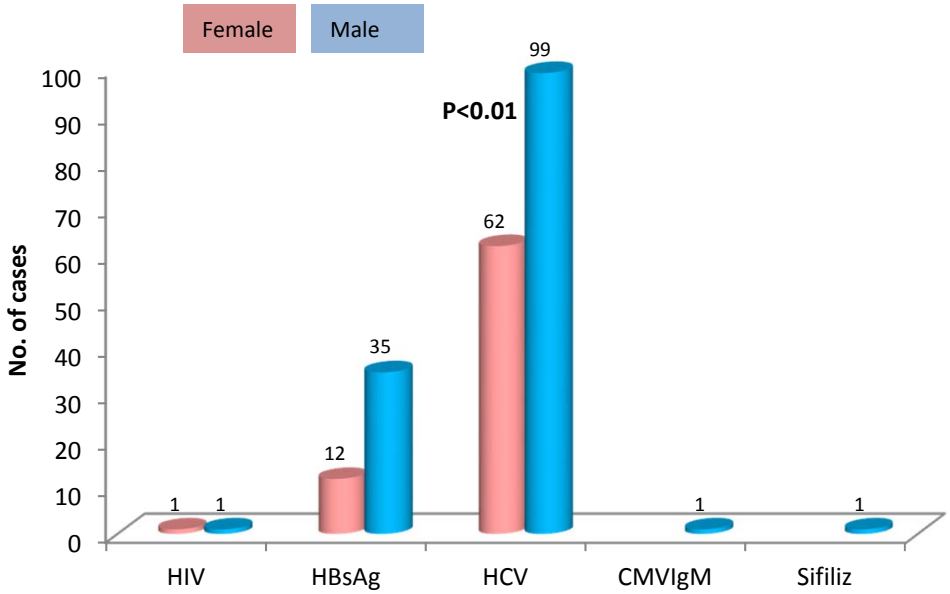
An important statistical linear trend is noted for positivity increase of HBsAg with age increase $\chi^2_{\text{for trend}} = 5.8$ $p=0.01$
An important statistical linear trend is noted for positivity increase of HCV with age increase $\chi^2_{\text{for trend}} = 10.6$ $p<0.01$
An important statistical linear trend is noted for total positivity increase with age increase $\chi^2_{\text{for trend}} = 25.2$ $p<0.01$

Distribution of positive cases according to gender

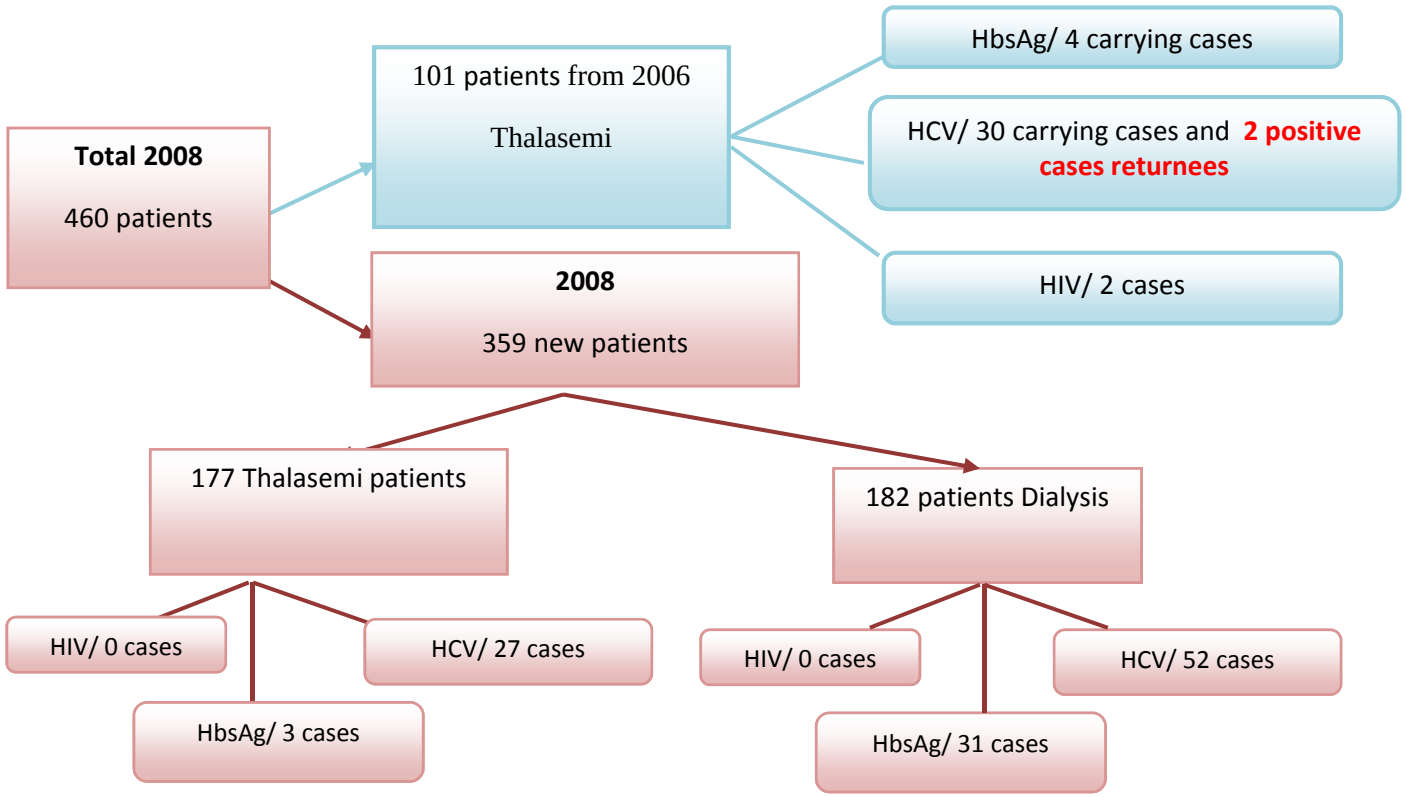




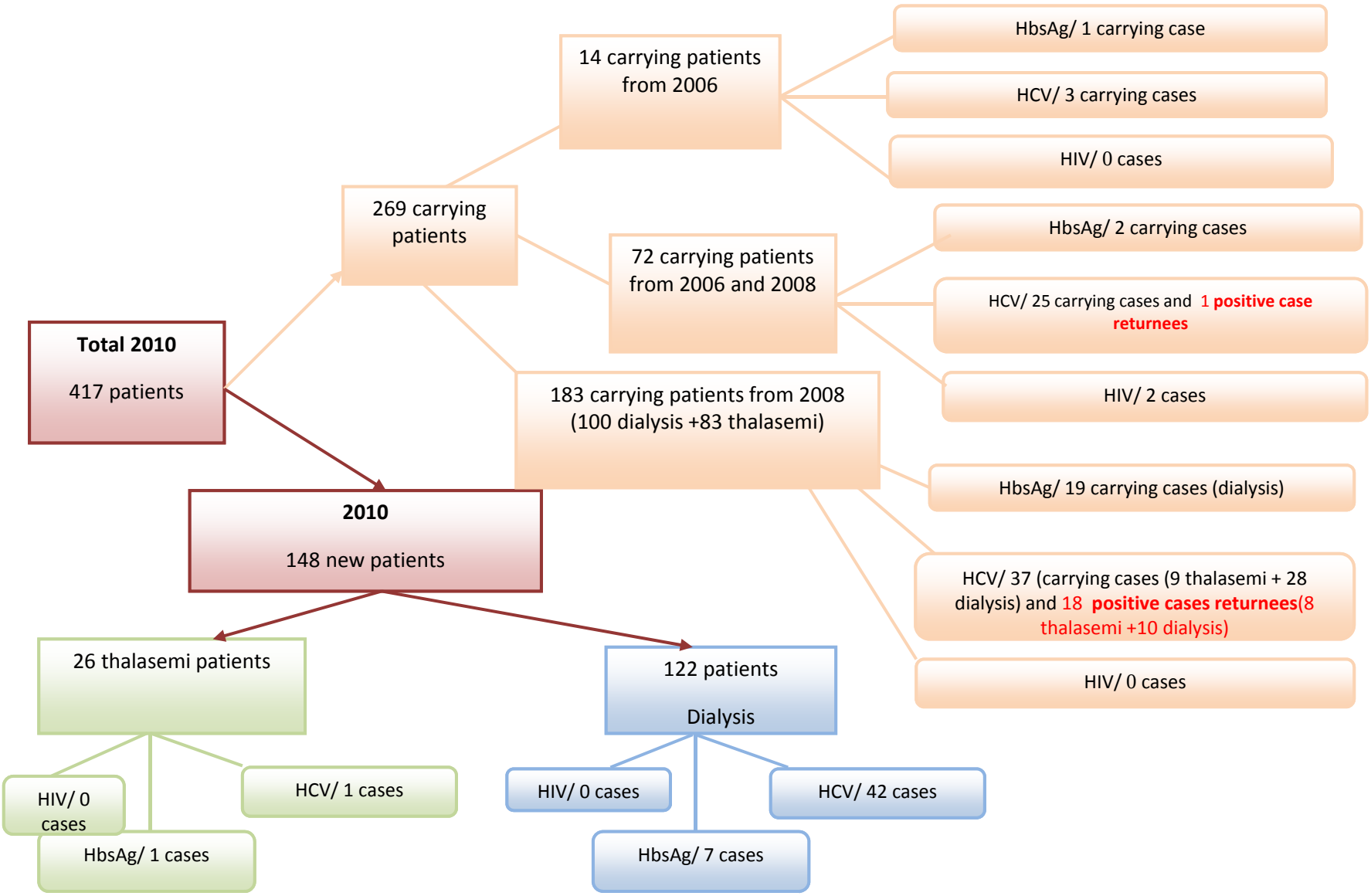
Relative risk RR	1.69
95% CI	1.43 - 2.38
z statistic	3.05
Significance	P < 0.01



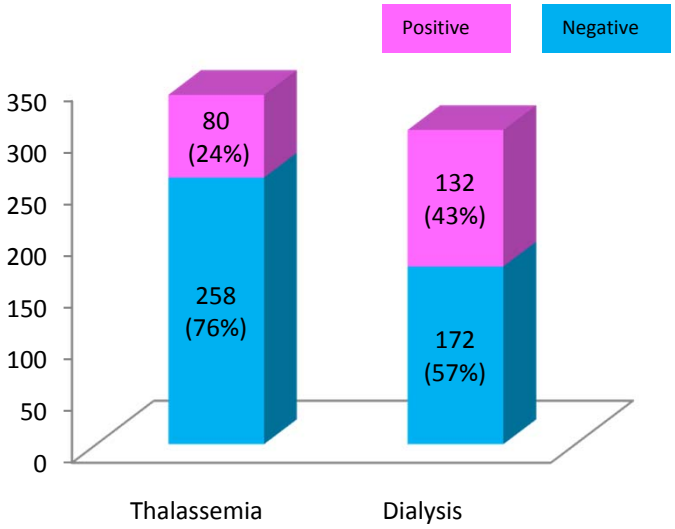
The progress of patients tested during the 2008 surveillance



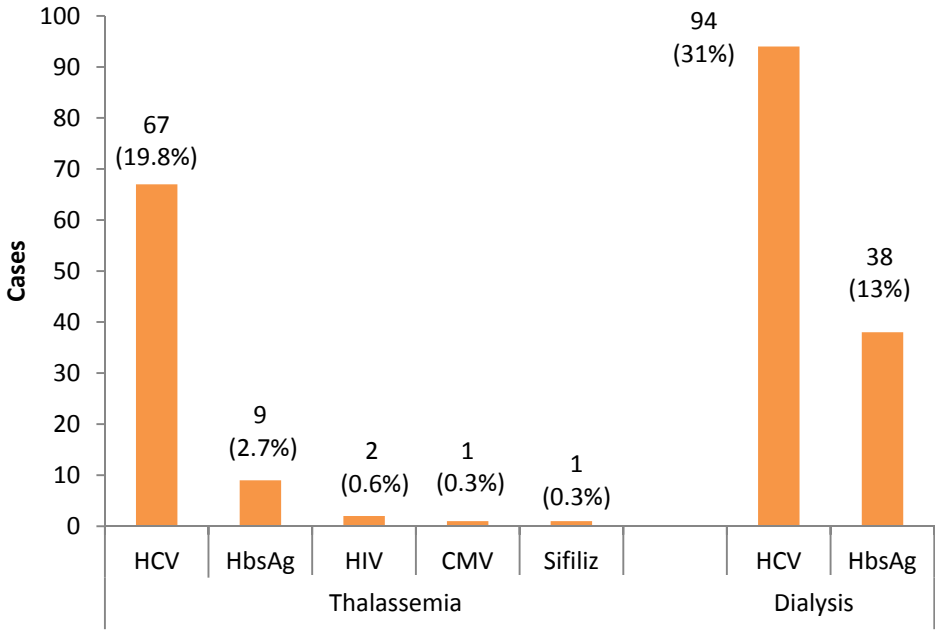
The progress of patients tested during the 2010 surveillance



Positivity according to place of transfusion

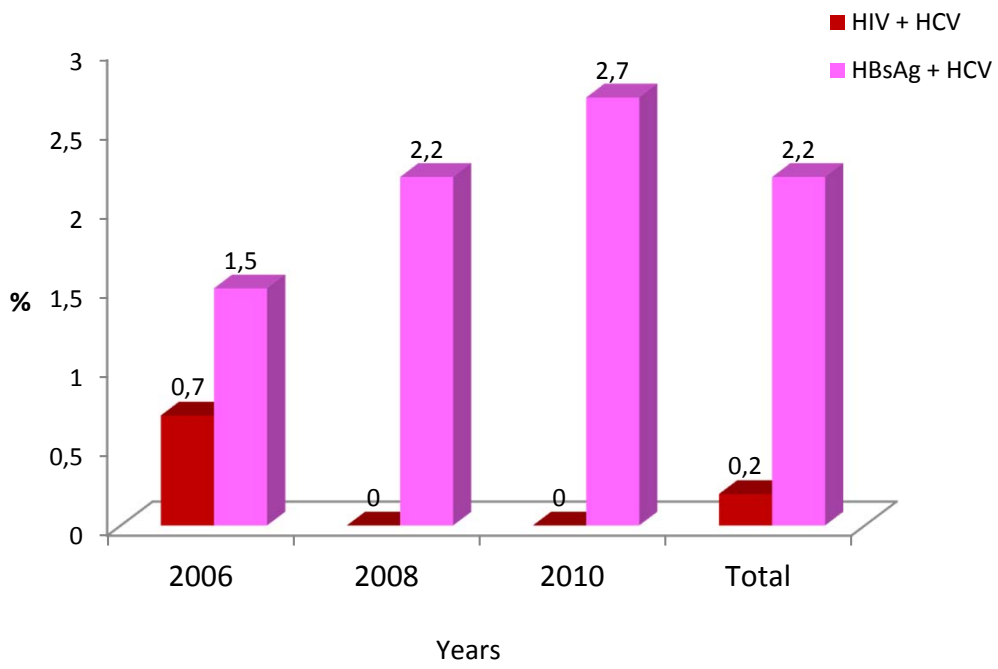


Relative risk RR	1.83
95% CI	1.45 - 2.3
z statistic	5.16
Significance	P < 0.0001

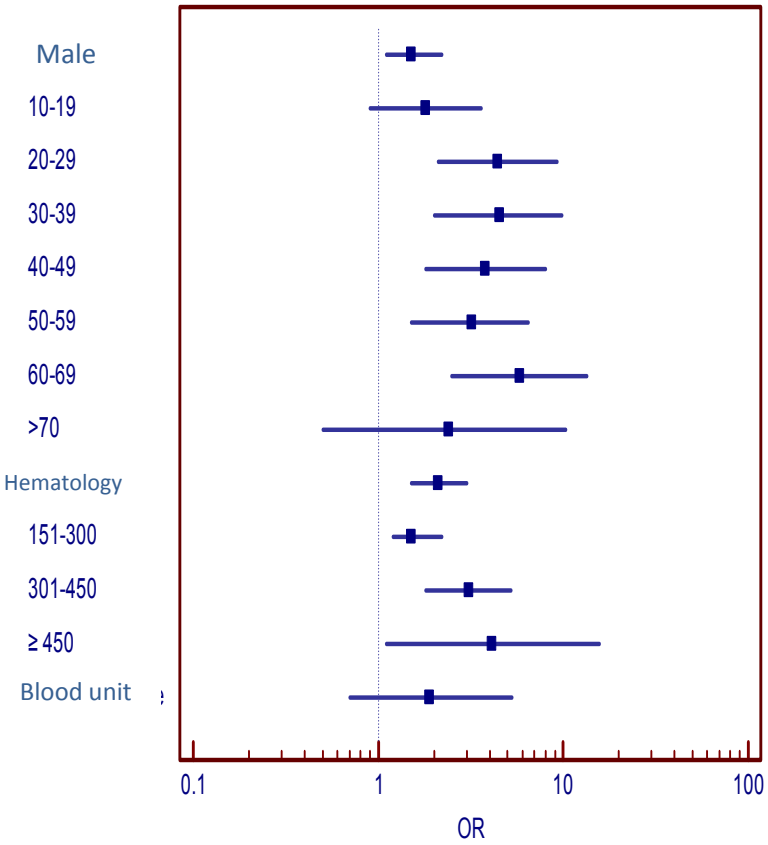


Distribution of infection type according to place of transfusion

Co-infections. Number of patients with more then one infection



Risk Factor for Infection. Univariate Analysis



Forest plot

In univariate analysis is noted an important statistical association between age group ,

20-29 years, OR = 4.4 95%CI 2.1-9.3 p<0.01
30-39 years, OR = 4.5 95%CI 2.0-9.9 p<0.01
40-49 years, OR = 3.8 95%CI 1.8-8.0 p<0.01
50-59 years OR = 3.2 95%CI 1.5-6.5 p=0.01
60-69 years OR = 5.8 95%CI 2.5-13.5 p<0.01
And total positivity of patients.

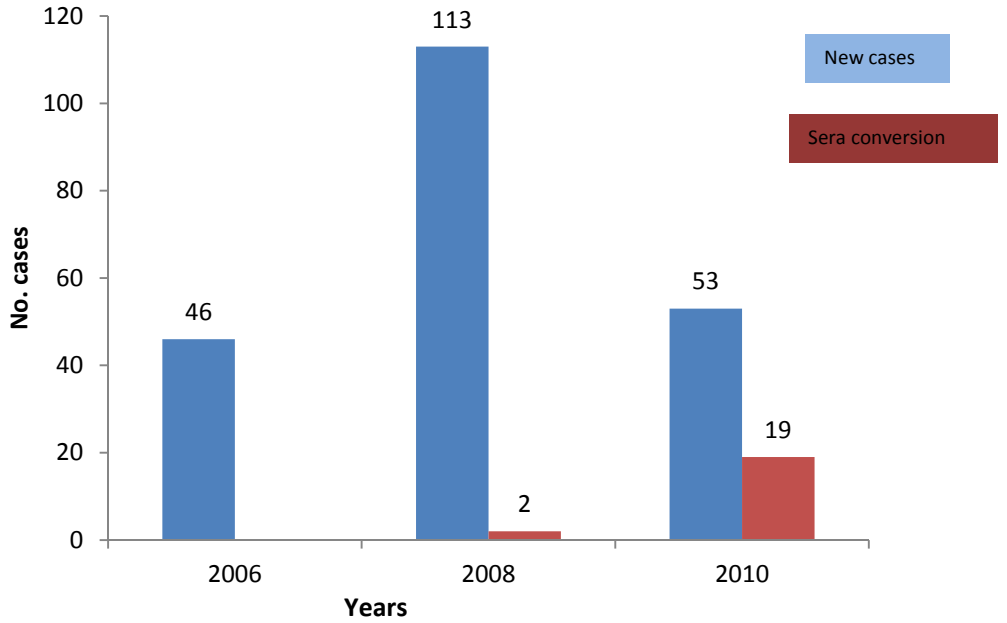
Also is noted an important statistical association between gender – Male with
OR = 1.5 95%CI 1.1-2.2 p<0.01

Number of blood units taken
151-300 OR = 1.5 95%CI 1.0-2.2 p=0.01
301-450 OR = 3.1 95%CI 1.8-5.2 p<0.01
≥ 450 OR = 4.1 95%CI 1.1-15.7 p<0.01
And total positivity of patients.

In multi variate analysis is noted that

Gender - Male OR = 1.5 95%CI 1.1 – 2.1 p=0.05
No. of units OR = 1.2 95%CI 1.1 - 1.3 p<0.01
Are significant risk factor for positive results.

New cases and sera conversion during 2006-2008 surveillance
Sera conversion (N=21)



During study period **21 or 3.3%, 95 % CI (2.1-4.9) of total number of patients have suffered sera conversion with HCV or 11 % of patients which first analysis has result negative.**

1 patient or **4.8% of sera conversion cases** has made less than 150 transfusions, 12 or 57.1% of new infected cases during multi blood transfusions as made 151-300 transfusions and 8 or 42.1% of patients has made more than 300 transfusions, $p<0.01$
All new cases infected during multi blood transfusions has made this process with erithocite blood unit.

CONCLUSIONS

- Number of patients involved in this surveillance is increasing year after year
- Districts with the highest incidence of multi blood transfusion persons are those with the highest density of population
- The patients are divided almost equal with those who need transfusion and those at dialysis
- Prevalence of infected persons during period 2006-2010 result 33%
- Prevalence of HCV is 26.3%, HBsAg is 7.3%, HIV is 0.3%
- Was not found any patient infected after the first transfusion
- It’s result that 2.2 % of patients has co-infection
- 4.4% of negative patients are infected with HCV

CONCLUSIONS

- Incidence of infection at multi blood transfusion persons is almost at the same level for three years
- Number of HBsAg and HCV cases represent a stable trend
- More than half of patients make the dialysis process at UHC “Nene Teresa”, Tirana
- Average age of multi blood transfusion persons is 31.2 years with the predominance of male gender Average age of tested patients is increased year after year during study period
- Exist a significant correlation between number of blood units taken, number of dialysis process and infection at the multi blood transfusion persons
- Number of blood units taken and number of dialysis process together with gender male, are independent risk factor for infection

THANK YOU