

ORIGINAL ARTICLE

## Prevalence and Trends of Transfusion Transmitted Infections Among Blood Donors of Blood Bank Attached to Government Hospital, Vadodara

Jhalak Patel<sup>1\*</sup>, Milind Dighe<sup>2</sup>, Farzana Kothari<sup>3</sup>, Swati Patel<sup>4</sup>

<sup>1</sup>2<sup>nd</sup> Year Resident in IHBT, <sup>2</sup>Head of Department, <sup>3</sup>Associate Professor, <sup>4</sup>Assistant Professor Department of Immunohematology and Blood Transfusion; S.S.G Hospital, Baroda.

### ABSTRACT

**BACKGROUND:** Blood transfusion is life saving measure in emergencies and is important for the medical treatment of every patient; but it is never risk free. It always carries a potential risk of transfusion transmitted infections. The risk of transfusion transmitted infections is estimated to be 1 in 66,77,000 units for HIV; 1 in 1,03,000 units for hepatitis –C and 1 in 63000 units for hepatitis-B magnitude varies from country to country. **OBJECTIVE:** To assess the prevalence and trends in transfusion transmitted infections among blood donors in blood bank attached to government hospital, Vadodara. **MATERIALS AND METHOD:** A retrospective study of record covering the period of Jan-2014 to June-2016 was done in present study. All samples were screened by 3<sup>rd</sup> generation ELISA method for HIV1-2, HBsAg, HCV; screening for syphilis by Rapid Plasma Reagent and Malaria is done by peripheral smear. **RESULT:** Out of 29750 overall seroprevalence was 596 (2%). Out of 596; 41 (0.13%) reactive for HIV; 302 (1.01%) reactive for HBV; 173 (0.58%) reactive for HCV; 80 (0.26%) reactive for syphilis and 0 (0%) reactive for malaria. **CONCLUSION:** With implementation of strict donor criteria and use of sensitive screening tests it may be possible to reduce the incidence of transfusion transmitted infections in Indian scenario.

**Keywords:** Seroprevalence, HIV, HCV, HBsAg, Syphilis, Malaria, Blood donors.

### INTRODUCTION

Blood transfusion is a life saving intervention and millions of lives are saved each year globally through this procedure. Unsafe blood remains a major threat for the global spread of transfusion transmitted infections (TTI).

According to WHO, safe blood is a universal right. Strategies have been put in place which have been extremely effective in controlling TTI's but transfusion of diseases still occurs. It is thus essential to know the prevalence rate of TTI's so as to compare geographical variations among various regions in India and to predict the trend so as to utilize the data for implementing guidelines for the control of TTI's in blood donors.

### \*Corresponding Author:

Dr. Jhalak Patel  
Blood Bank,  
Opp. Rukmani Chenani Building,  
S.S.G Hospital, Anandpura,  
Vadodara-390001  
Mobile No.: 9978315574  
E-mail: jhalakp30@gmail.com

**Aims & Objectives:** The aim of the present study was to know the seroprevalence of TTI amongst blood donors.

### MATERIAL AND METHODS

The study was conducted at a S.S.G hospital, blood bank attached to government medical college, Baroda. Tests were routinely done on every blood unit to exclude HIV, HBV, HCV, Syphilis and Malaria. Data was collected for a period of two year and seven months from January 2014 to July 2017. In two year and seven months period, 29750 donors were tested. Donors were selected by the standard criteria for donor fitness. The screening of HIV was done by ELISA (Enzaid). HBsAg was detected by ELISA (Microscreen). Anti-HCV test was done by ELISA (Qualisa). Test for syphilis was done by Rapid Plasma Reagent test (Rekon). Test for malaria is done by peripheral smear (thick smear).

### RESULTS

Out of 29750 donors included in the study, 75.93% were voluntary donors and 24.07% were replacement donors. In the present study, 596 (2%) had serological evidence of TTI's. (Table-1, Table -2)

## Prevalence and Trends of Transfusion Transmitted Infections Among Blood Donors

Overall HBV was the most common TTI recorded having a seroprevalence rate of 1.01% followed by HCV (0.58%), syphilis (0.26%), HIV (0.13%) and malaria (0%) respectively. (Table-1)

**Table 1: Prevalence of transfusion transmitted infection in donors**

year	Total donors	HIV		HBV		HCV		SYPHILLIS		MALARIA		TOTAL	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2014	12036	21	0.17	142	1.17	84	0.69	44	0.36	00	0	291	2.41
2015	11480	14	0.12	106	0.92	54	0.47	26	0.22	00	0	200	1.74
2016 till july	6234	06	0.09	54	0.86	35	0.56	10	0.16	00	0	105	1.68
Total	<b>29750</b>	<b>41</b>	<b>0.13</b>	<b>302</b>	<b>1.01</b>	<b>173</b>	<b>0.58</b>	<b>80</b>	<b>0.26</b>	<b>00</b>	<b>0</b>	<b>596</b>	<b>2</b>

There is overall decreasing trend seen in TTIs among donors from Jan 2006 to July 2016; except for two year (2012,2013) in which the trend has seen a abrupt rise in TTI amongst blood donors. This rise was seen due to sudden fall in voluntary blood donation which was because of false scare created by media amongst voluntary blood donors that if they donate blood than they also get infected by infections and also that the components of blood for being misused commercially for making

In the present study, replacement donors (2.83%) have more serological evidence of TTIs than in voluntary donors (1.73%). (Table-2)

money. (Table-3)

This shows that voluntary donation has direct impact on the trends of TTIs.

**Table 2: Distribution of TTIs in voluntary and replacement donor**

Year	Total Voluntary donors	Voluntary donor		Total Replacement donors	Replacement donor	
		No.	%		No.	%
2014	8592	193	2.24	3444	98	2.84
2015	8664	111	1.28	2816	89	3.16
2016 till july	5334	89	1.66	900	16	1.77
Total	<b>22590</b> <b>(75.93%)</b>	<b>393</b>	<b>1.73</b>	<b>7160</b> <b>(24.07%)</b>	<b>203</b>	<b>2.83</b>

**Table 3: Trends of transfusion transmitted infection in blood donors**

year	Total donors	HIV		HBV		HCV		Syphilis		Malaria		Total	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
2006	6375	38	0.60	81	1.27	33	0.52	56	0.88	00	0	208	3.26
2007	6269	24	0.38	68	1.08	25	0.39	57	0.90	00	0	174	2.77
2008	7430	14	0.19	62	0.83	08	0.11	37	0.49	00	0	121	1.62
2009	8085	19	0.23	53	0.65	14	0.17	29	0.36	00	0	115	1.42
2010	9707	29	0.30	80	0.82	13	0.13	22	0.23	00	0	144	1.48
2011	10584	46	0.43	112	1.06	30	0.28	21	0.20	00	0	209	1.97
2012	7698	22	0.29	89	1.16	15	0.19	21	0.27	00	0	147	1.91
2013	6702	21	0.31	127	1.89	16	0.24	46	0.69	00	0	210	3.13
2014	12036	21	0.17	142	1.17	84	0.69	44	0.36	00	0	291	2.41
2015	11480	14	0.12	106	0.92	54	0.47	26	0.22	00	0	200	1.74
2016 till July	6234	06	0.09	54	0.86	35	0.56	10	0.16	00	0	105	1.68

**Table 4: Comparison of TTI prevalence in different parts of India**

Zone	HIV%	HBV%	HCV%	Syphilis%	Reference study
North	0.16	0.75	1.79	0.67	Harjit Kaur et al (2013)
East	0.35	1.66	0.35	0.80	Bhattacharya.P et al (2010)
West	0.15	0.88	0.10	0.22	Shah et al (2013)
South	0.39	1.41	0.84	0.08	Bhawani et al (2010)
Present study	0.13	1.01	0.58	0.26	(2016)

### DISCUSSION

Blood transfusion is a significant route of transmission of transfusion transmitted infection (TTI). Screening of donated blood is important to ensure safe blood transfusion. Educating people and creating awareness about voluntary donation is an important factor. Acquisition of HIV disease through blood transfusion is

relatively efficient mode of transmission, with rates approaching 100%. Moreover it should never be forgotten that blood donation collected in the latent period of infection may be infectious despite a negative antibody test.

In our study, sero-positivity was 0.13% in total donors which is very low as compare to the study done by Bhattacharya.P et al, Bhawani et al. Seroprevalence of HBV was (1.01%) , HCV (0.58%), Syphilis (0.26%), and malaria (0%). HBV was most common TTI. This is comparable to the study done by Bhattacharya.P et al, Bhawani et al (Table-4). Significant decrease in TTI is observed in 2016 compare to 2015 except in HCV trend which is increasing in 2016 (Table-1). This observation is worrisome. There is a need for renewed intensification

of preventive programme aimed at high risk behavioral change.

Donors should be encourage to voluntary donate and to repeat blood donation to avoid scarcity of blood. Meanwhile, they should be educated regarding TTIs which are dangerous to both donors and recipients. Strict selection of blood donors and proper testing for TTIs will ensure safe blood transfusion.

#### **CONCLUSION**

In 2 year 7 month period, 29750 donors were tested .596 (2%) donors among total 29750 donors were positive for transfusion transmitted infections (TTIs). The seropositivity of HIV, HBV, HCV, Syphilis and Malaria was 0.13%, 1.01%, 0.58%, 0.26% and 0% respectively. The time and cost involved in screening donated blood can be reduced by an effective donor education and selection programme that promotes self exclusion by donors at risk of TTIs. Transmission of TTI during negative window period is a threat to blood safety. It is of utmost importance to continue screening donated blood with highly sensitive and specific test and to counsel donor who are positive to any of the above infection. It is absolutely necessary to avoid the transmission of infection from reactive donor.

#### **REFERENCES**

1. WHO guidelines of blood transfusion safety.
2. Battacharya P, Chandra PK ,Datta S et al. Significant increase in HIV,HBV,HCV and Syphilis infection among Blood Donors in West Bengal ,Eastern India. Indian J Pathol Microbiol 2001.
3. Bhawani Y, Rao PR, Sudhakar V. Seroprevalence of transfusin transmitted infections among blood donors in tertiary care hospital of Andhra Pradesh. Biology and Medicine 2010.
4. Harjit kaur et al ,seroprevalence of blood borne infection in blood donors:our 11 year experience in a tertiary care hospital at Amritsar, Punjab. International journal of advanced research 2014.
5. Shah N , shah JM, Jhaveri P et al.sero prevalence of HBV, HCV, HIV, syphilis among blood donors at a tertiary care hospital in Western India, Gujarat.
6. Arora D, Arora B, Khetarpal A. Seroprevalence of HIV, HBV, HCV and syphilis in blood donors in Southern Haryana. Indian J Pathol Microbial 2010.
7. National AIDS Control Organization. Standards for Blood Banks and Blood Transfusion Services. New Delhi: Ministry of Health and Family Welfare Government of India; 2007.
8. Chandra T, Kumar A, Gupta A. Prevalence of transfusion trasnmissible infection in blood donors: An Indian experience. Transfusion 2009.