



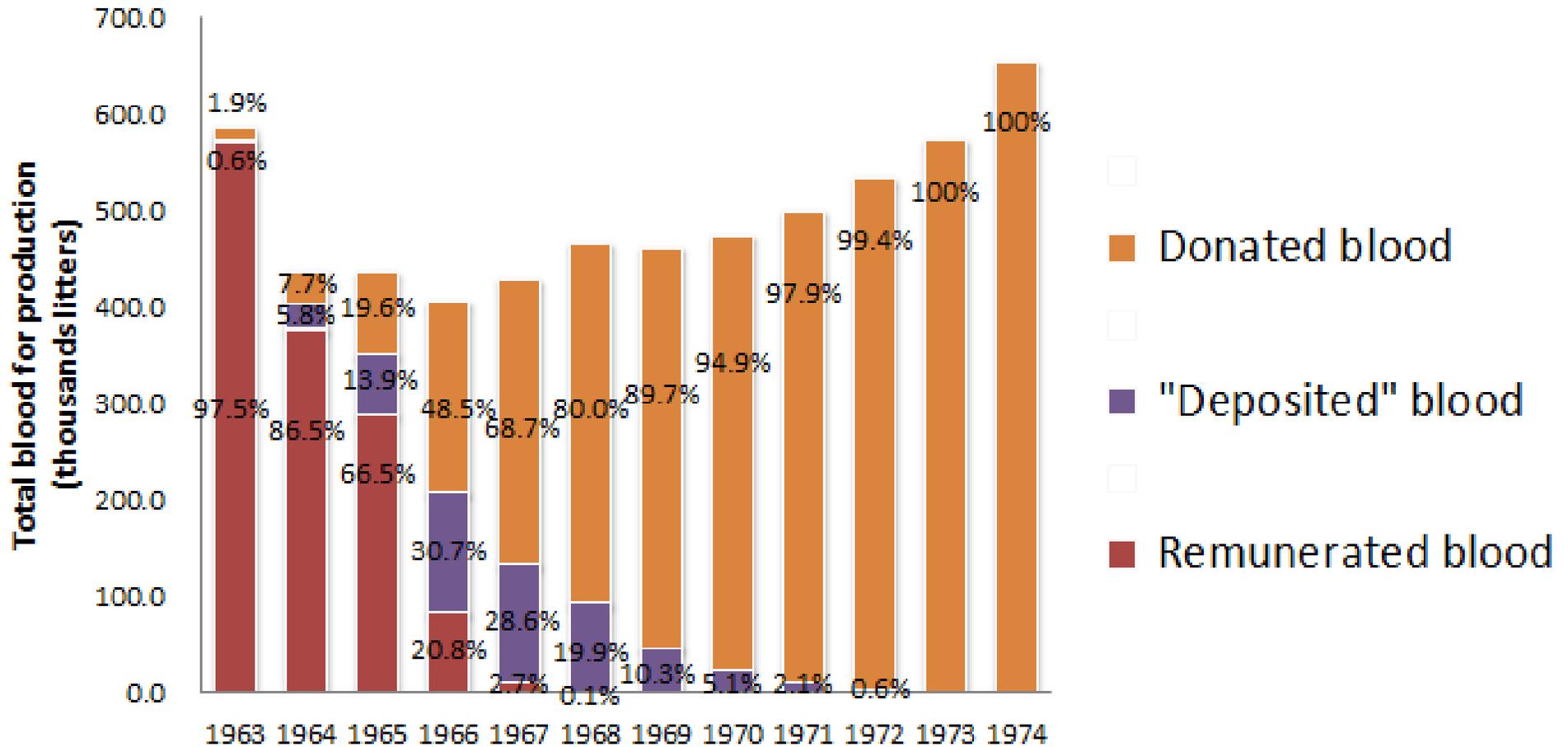
Yangon, Myanmar  
Jan 23, 2018

# Over View of Blood Management System in Japan

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# Japan achieved 100% VNRBD for transfusion in 10 years (1964-1973)



\* Data source: White paper (1963 – 74), Ministry of Health

# Legal Basis of Blood Services in Japan

## Blood Law

Law on Securing Stable Supply of Safe Blood Products  
requires

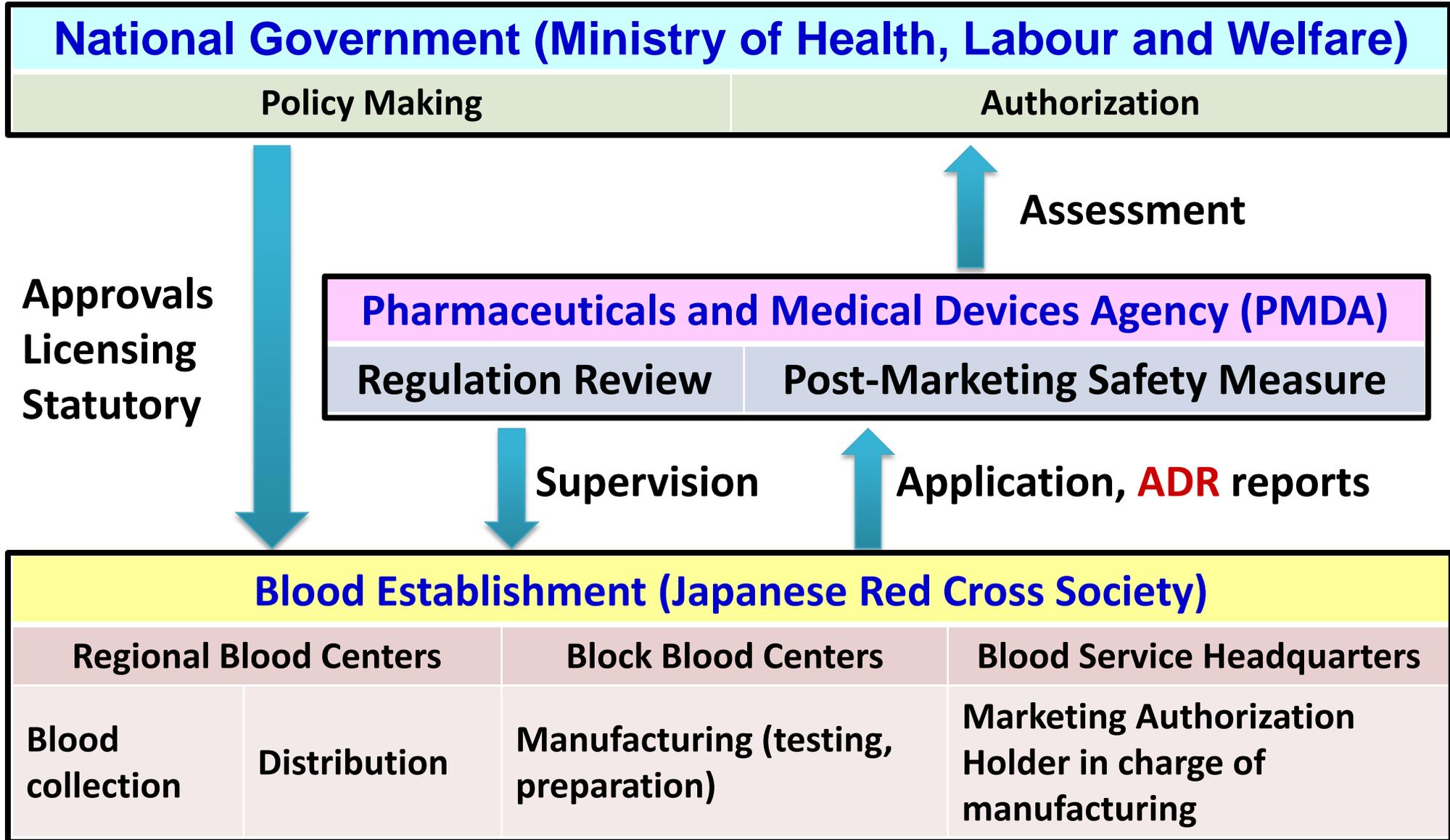
- Self sufficiency and stable supply
- Appropriate use

## Revised Pharmaceutical & Medical Devices Act(PMD Act)

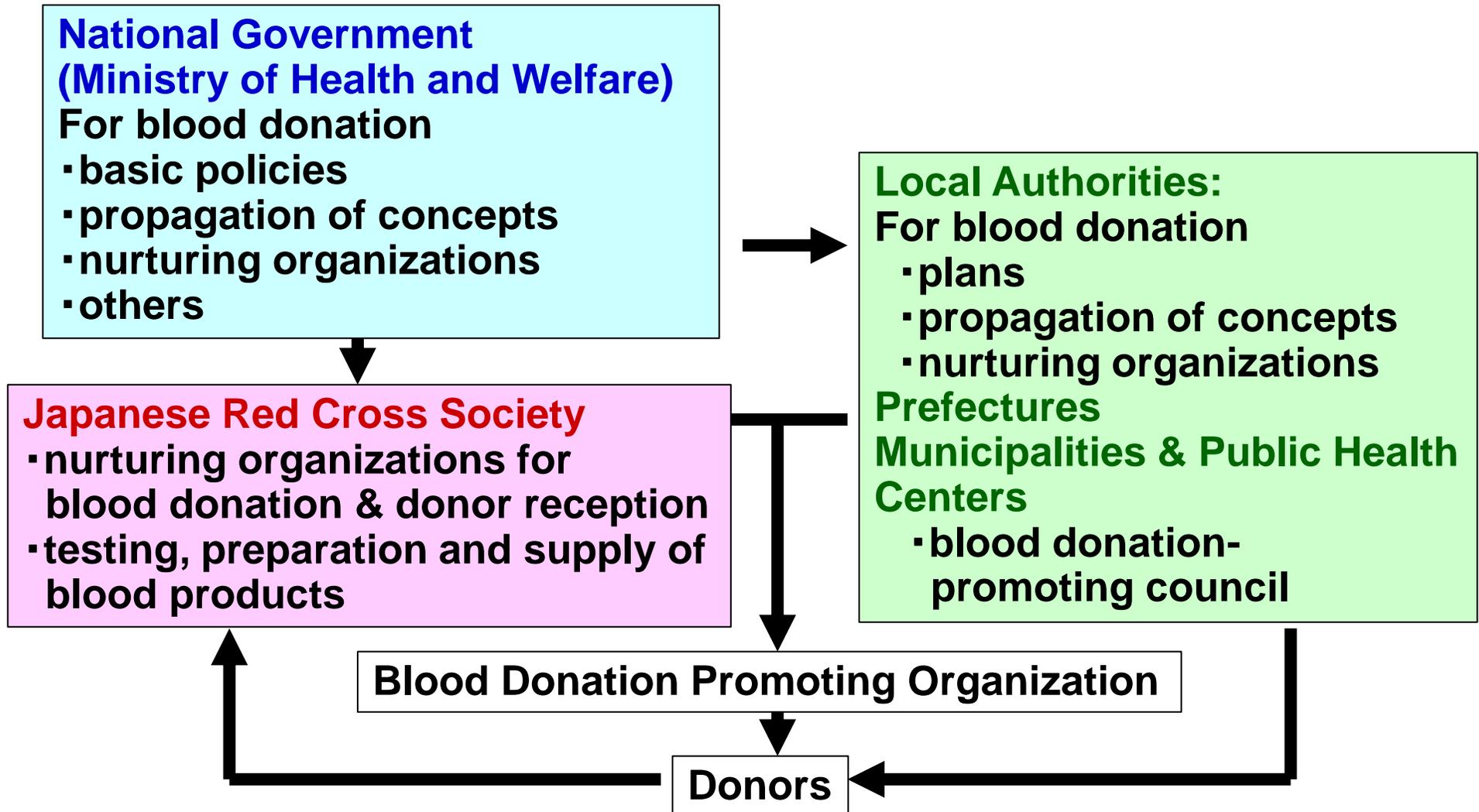
Act on Securing Quality, Efficiency and Safety of  
Pharmaceuticals, Medical Devices, Regenerative and Cellular  
Therapy Products, Gene Therapy Products, and Cosmetics  
requires

- Safety as biological products & prescription drugs
- Post-marketing procedures
- Pharmacovigilance - **Haemovigilance** for blood products

# Blood Service and Regulation



# Promoting Blood Donations



# Wide Area Management System since 2012

**Hokkaido**

**Kinki**

**Kyushu**

**Tohoku**

**Kanto-Koshinetsu**

**Tokai-Hokuriku**

**Chugoku-Shikoku**

■ **7 Block Blood Centers**



● **47 Regional Blood Centers**



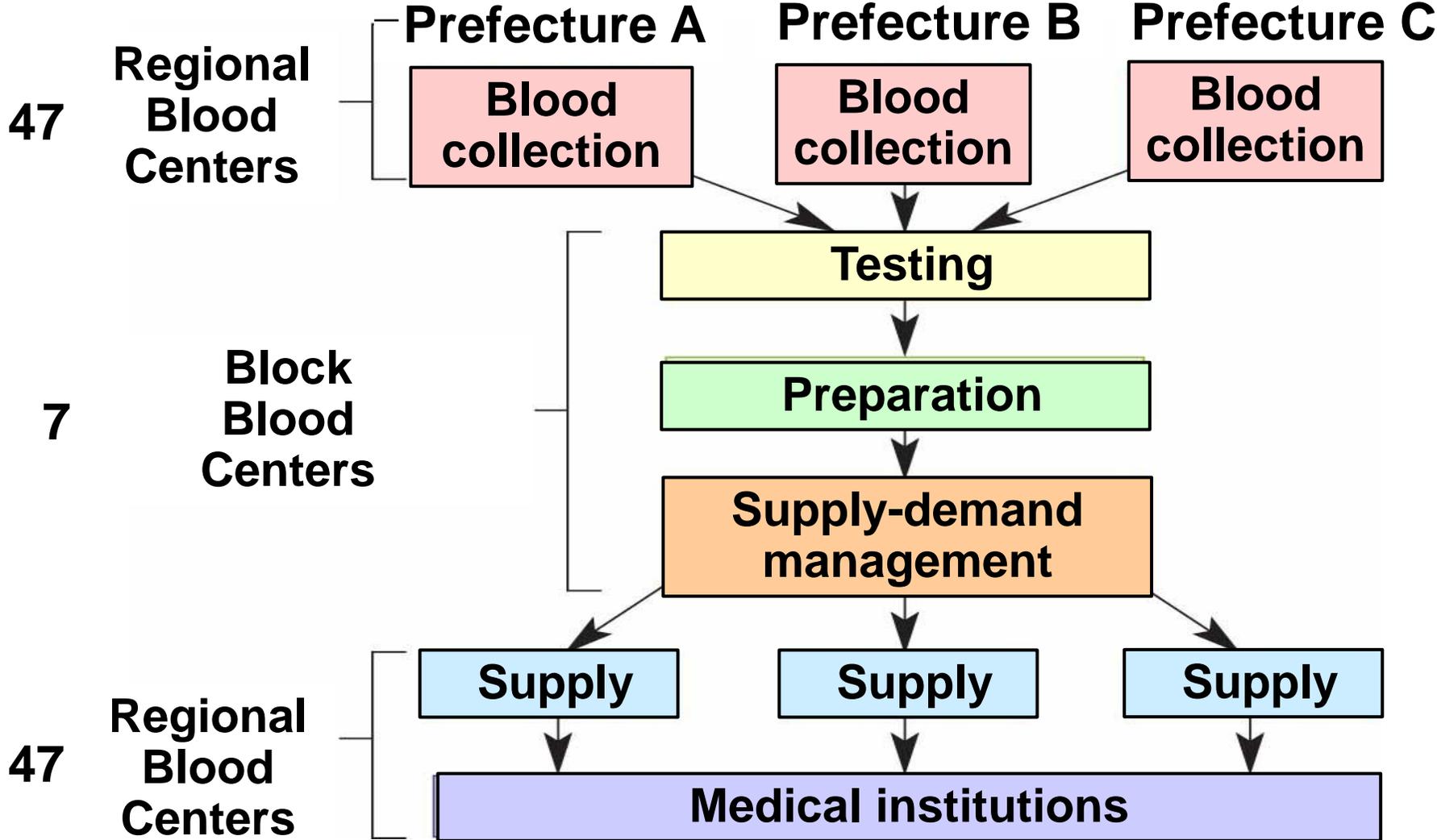
**180 Branches of Blood Centers  
(Including 129 Blood Donation Rooms)**



(As of December, 2016)



# Testing & Preparation at Block Blood Centers



# Blood Donation and Blood Products

## Blood Donation

## Blood Products

Whole blood  
(200mL, 400mL)

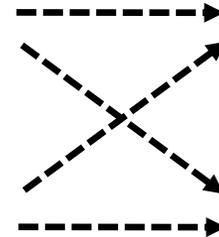
Red Cells

Plasma

Plasma pheresis  
Platelet pheresis

Plasma

Platelets



Fresh Frozen  
Plasma

Plasma  
Derivatives



# Measures for Blood/Donor Safety

Donor identification by drivers license etc.

Medical interviews following questionnaire

Skin disinfection to prevent bacterial contamination

Diversion of initial 25mL blood for laboratory tests

Tests for transfusion-transmissible agents

Pre-storage leukoreduction to antigen & pathogen exposure

Irradiation to prevent post-transfusion GVHD

Inventory hold of plasma to get rid of possible pathogen

identified through following donations

# Tests for Blood Quality

- ABO typing
- Rh(D) typing
- RBC antibody screening
- ALT (GPT)
- Glycoalbumin
- serologic test for syphilis
- HBs antigen, HBs antibody, HBe antibody
- HCV antibody
- HIV-1/2 antibody
- HTLV-1 antibody
- human parvovirus B19 antigen
- Nucleic acid amplification test (NAT)
  - HBV
  - HCV
  - HIV

# Statistics for 2016

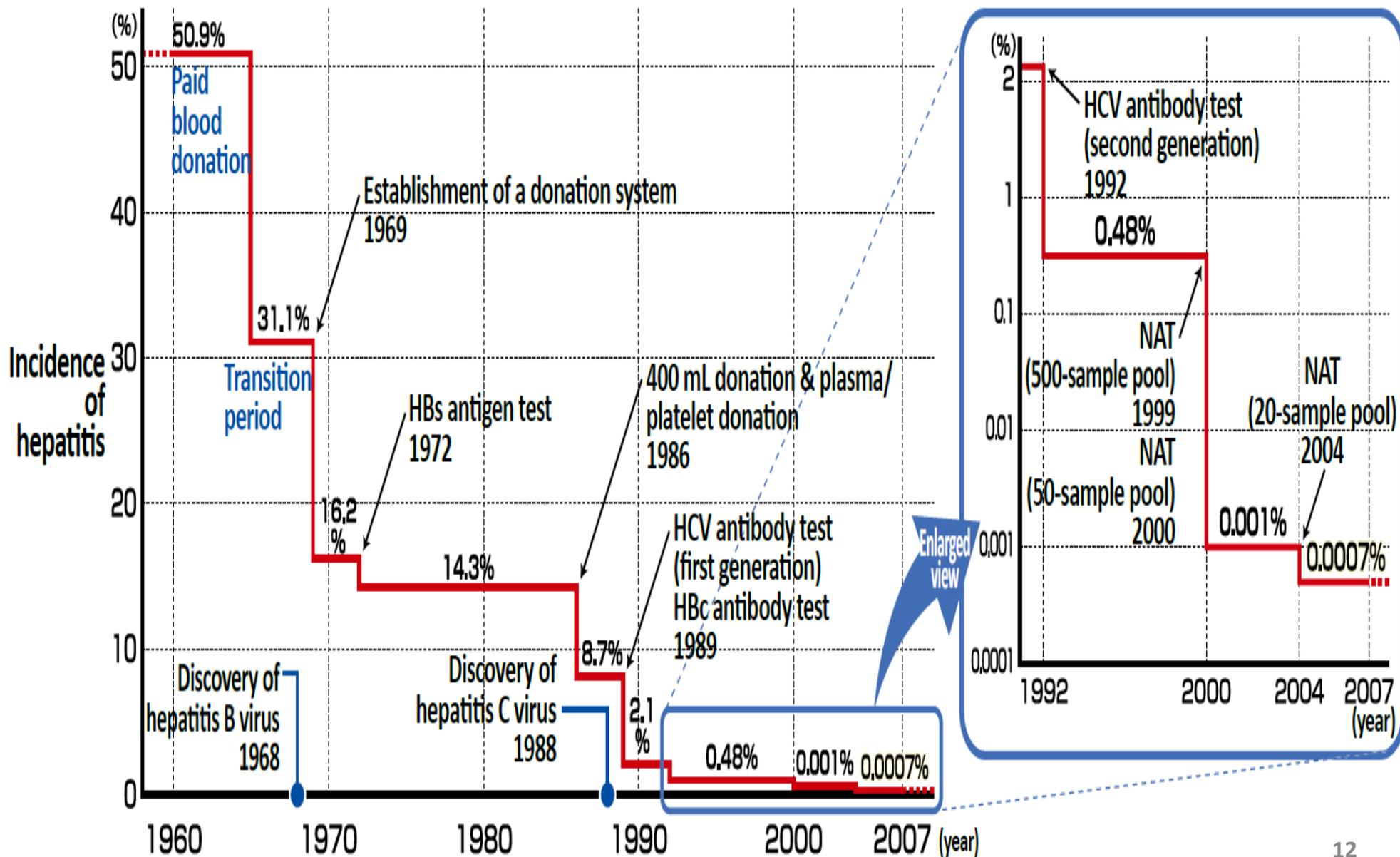
<b>Donation applicants</b>	<b>5,579,776</b>	<b>Deferral</b>	<b>738,175 (13.2%)</b>
<b>Blood donations</b>	<b>4,841,601 (86.8%)</b>	<b>Male</b>	<b>3,489,340</b>
		<b>Female</b>	<b>1,352,261</b>
<b>Whole blood donations</b>	<b>3,449,829</b>	<b>200mL</b>	<b>168,758</b>
		<b>400mL</b>	<b>3,281,071</b>
<b>Apheresis donations</b>	<b>1,391,772</b>	<b>Platelet</b>	<b>713,405</b>
		<b>Plasma</b>	<b>678,367</b>

**Population of Japan (as of Oct 2016)**  
**Total 126,933,000**  
**Male 61,766,000**  
**Female 65,167,000**

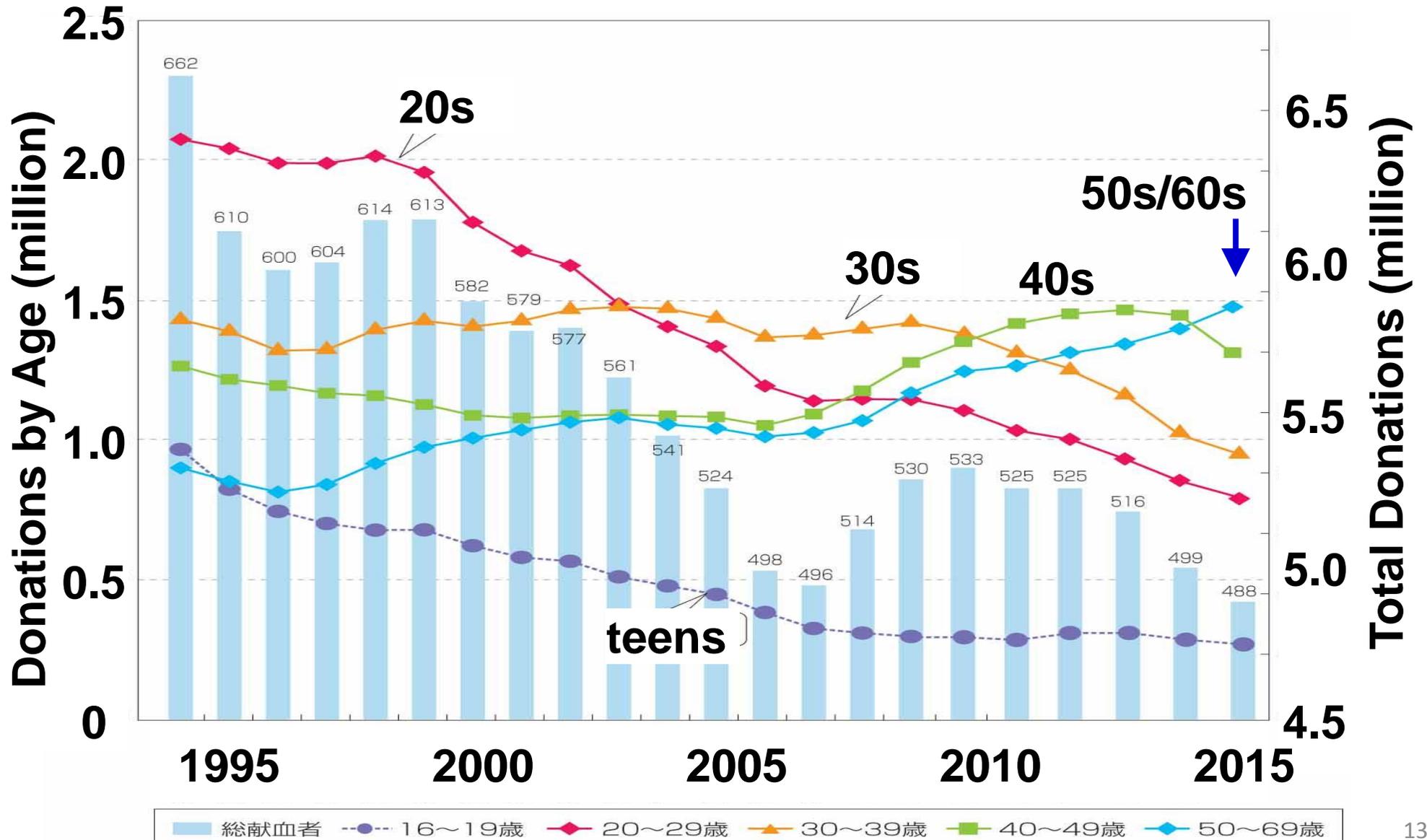
<b>Unqualified</b>	<b>Syphilis</b>	<b>HBsAg</b>	<b>HBcAb</b>	<b>HCVAb</b>	<b>HIVAb</b>	<b>HBV NAT</b>	<b>HCV NAT</b>	<b>HIV NAT</b>
<b>91,861 (1.9%)</b>	<b>4,480</b>	<b>1,392</b>	<b>15,443</b>	<b>1,059</b>	<b>2,966</b>			
	<b>HTLV-1</b>	<b>H.Parvo.B19</b>		<b>ALT</b>	<b>Irregular Ab</b>			
				<b>54,809</b>	<b>3,404</b>			

<b>Preparation (total)</b>	<b>Whole blood</b>	<b>Red blood cells</b>	<b>Platelets</b>	<b>Plasma</b>
<b>5,074,024 (bags)</b>	<b>55</b>	<b>3,303,004</b>	<b>841,332</b>	<b>929,633</b>

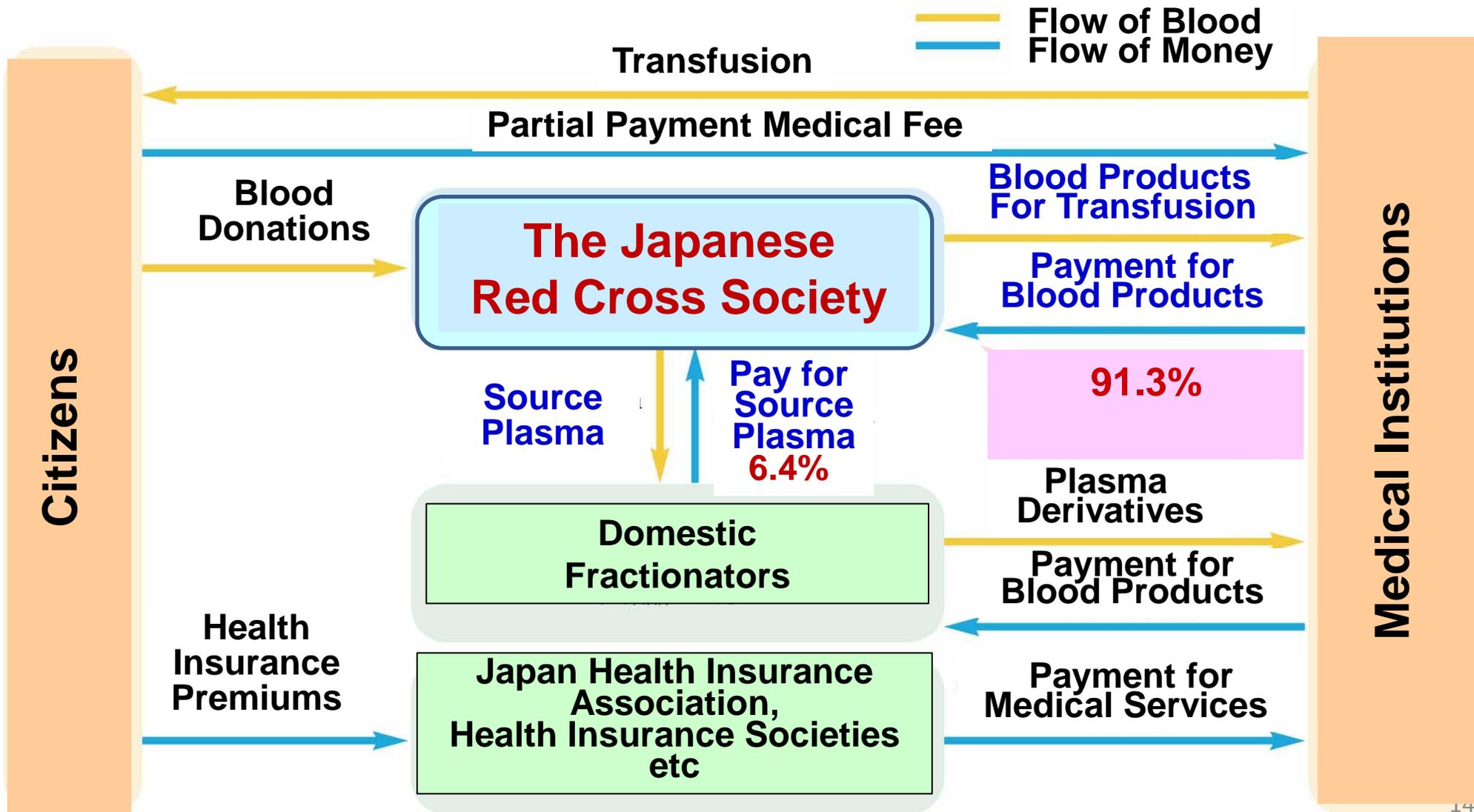
# Effects of the Safety Measures on TT-Hepatitis



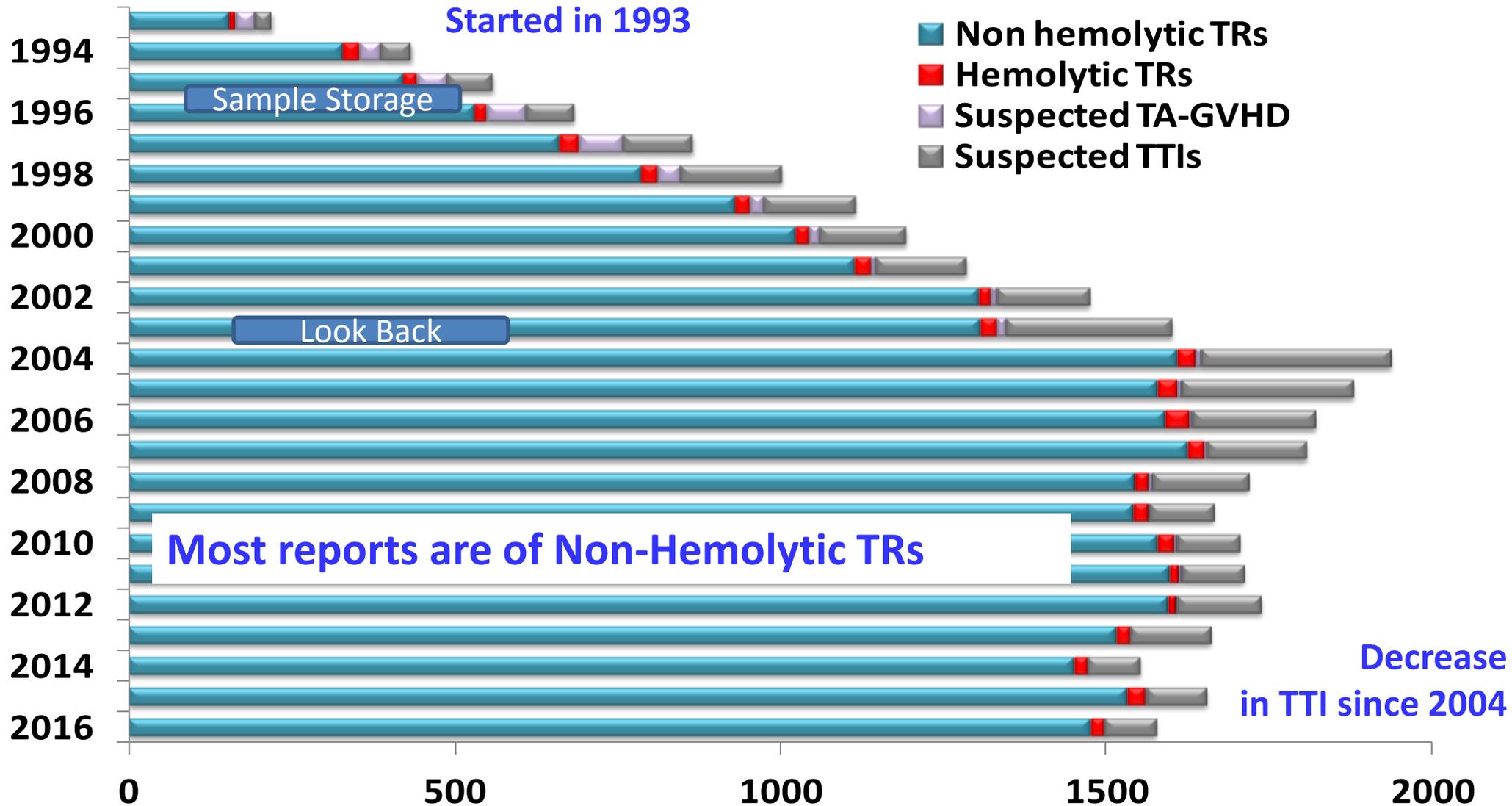
# Donations by Age of Donors



# Flow of Money in Blood Services

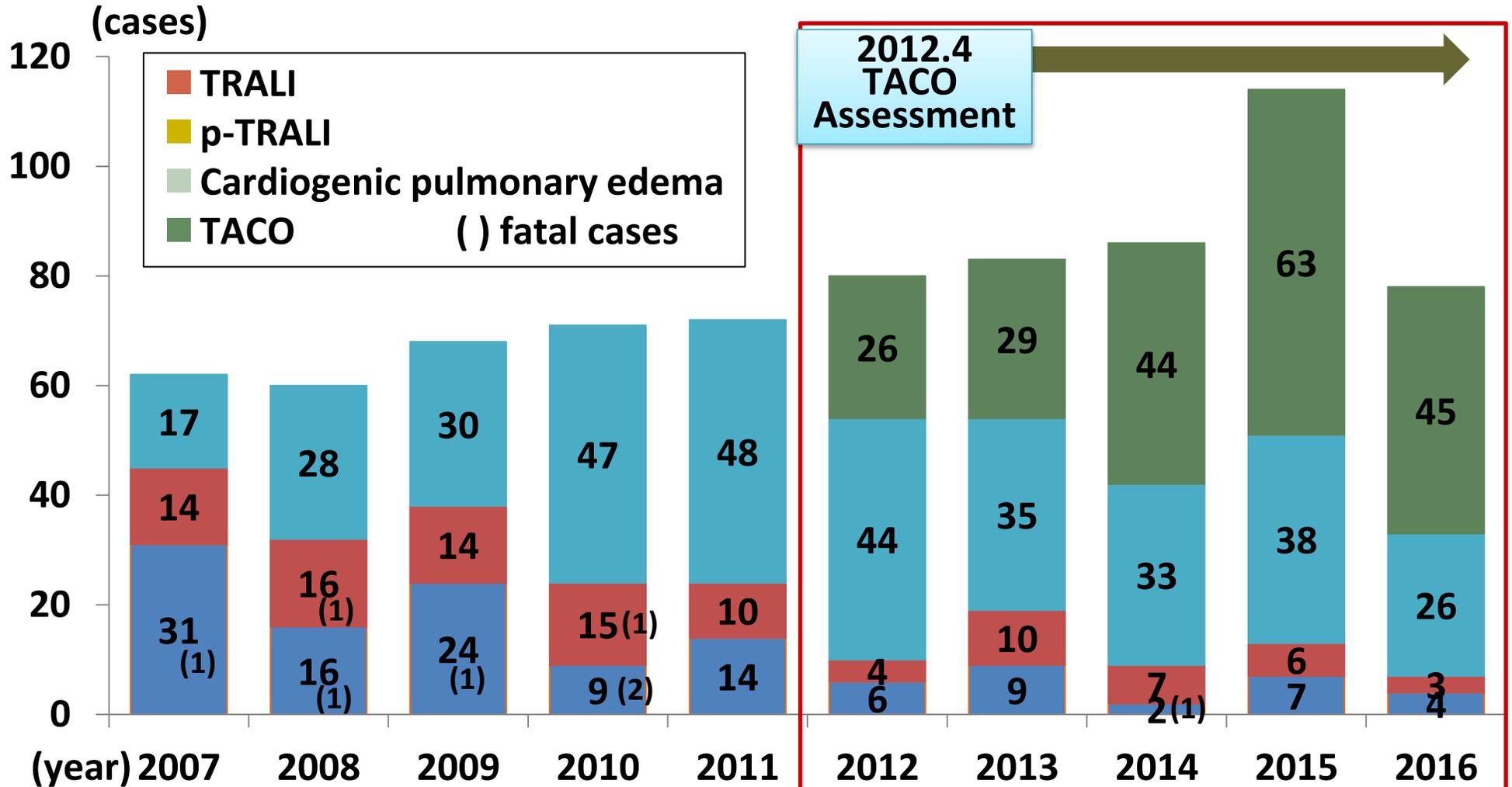


# JRC Haemovigilance: Number of Reports



Total number & esp. TTI have decreased since 2004.

# Number of Established Cases of TRALI & TACO



2011  
**FFP** from 400mL WB prepared mainly from **male** donation

# Priorities in Blood Services

**Sustainable blood service responsive to change in circumstances**

- 1. efficiency**
- 2. stable donation**
- 3. “work-style” reforms**
- 4. stable financial base**

# Brochures on Blood Services in Japan

## Transfusion Information

1707-154

### Infectious Cases that were Probably Related to Transfused Blood Components (2016)

JRCS analyzed and evaluated suspected cases of transfusion-transmitted viral and other infections reported voluntarily by medical institutions to JRC blood centers as well as retrospective study (Lookback study) cases based on post-donation information. In 2016, there were 1 case of HBV infection, 3 cases of HEV infection, and 1 case of bacterial infection that were confirmed by detection of viral nucleic acid in a repository sample of the involved blood donation or bacteria in the relevant blood bags.

**The yearly number of cases reported to JRC blood centers as suspected transfusion-transmitted infections, and the breakdown and analysis of suspected cases in 2016 by pathogens.**

Pathogens	Number of reported cases	Number of confirmed cases
HBV	18	1
HCV	28	0
Bacteria	20	1
CMV	7	0
HEV	4	3
HAV	1	0
B19	2	0
Total	80	5

Case no.	Primary disease	Blood component (year and month of blood collection)	Age	Sex	Pre-transfusion test			Post-transfusion test		ALT (U/L)		Recipient's outcome
					Test items	Test results	Period to transfusion	Positive conversion items	Interval after transfusion**	Maximum (U/L)	Interval after transfusion**	
1	Mitral valve incompetence	B-NBC-LR (2015,6)	80s	F	HEV-RNA IgM-HEV-IgG IgG-HEV-IgG	Neg.	3 days	IgM-HEV-IgG	56 wks	267	7 wks	Recovery

A total of 46 cases including 18 HBV cases and 28 HCV cases were reported to JRCS as suspected transfusion-transmitted infections. One confirmed case of HBV was reported for the first time after introduction of individual nucleic acid amplification test (NAT). No cases of HCV, on the other hand, were confirmed to be a transfusion-transmitted infection. For cases of suspected CMV infections, 7 cases were reported. However, none of them were confirmed as a transfusion-transmitted infection. They were actively collected by the cooperation of medical institutions since previous year.

**Summary of Case Reports**  
(Cases confirmed to be transfusion transmission for which pathogenic agents were detected in the sample and/or the relevant blood bags from the concerned donors) (2016)

**HBV**

● Post-donation information: A case revealed by Lookback studies based on positive conversion identified at screening of donated blood

Case no.	Primary disease	Blood component (year and month of blood collection)	Age	Sex	Pre-transfusion test			Post-transfusion test		ALT (U/L)		Recipient's outcome
					Test items	Test results	Period to transfusion	Positive conversion items	Interval after transfusion**	Maximum (U/L)	Interval after transfusion**	
1	Acute myeloid leukemia	B-PC-LR (2015,1)* B-PC-LR (2015,12)**	70s	F	HBV-DNA HBs-Ag HBs-IgM HBc-IgM	Neg.	400 days 9 days 9 days 9 days	HBV-DNA HBs-Ag	12 wks 13 wks	38	10 wks	Remission

\* The concerned donated blood was negative for HBV-NAT, but positive for HBV-NAT at the time of donation in January 2015. \*\* It was rechecked from the date of transfusion with blood components collected in November 2015.

● Voluntary report: Cases reported by medical institutions as a suspected transfusion transmitted viral infection

Case no.	Primary disease	Blood component (year and month of blood collection)	Age	Sex	Pre-transfusion test			Post-transfusion test		ALT (U/L)		Recipient's outcome
					Test items	Test results	Period to transfusion	Positive conversion items	Interval after transfusion**	Maximum (U/L)	Interval after transfusion**	
1	Acute myeloid leukemia	B-NBC-LR (2015,3)	40s	F	HEV-RNA	Neg.	140 days	IgA-HEV-IgG	11 wks	1252	11 wks	Recovery
2	Myelodysplastic syndrome	B-PC-LR (2016,6)	50s	M	IgA-HEV-IgG	Neg.	49 days	IgA-HEV-IgG	9 wks	1200	9 wks	Remission

**HEV**

● Post-donation information: A case revealed by Lookback studies based on close investigation of source plasma for plasma derivatives

Case no.	Primary disease	Blood component (year and month of blood collection)	Age	Sex	Pre-transfusion test			Post-transfusion test		ALT (U/L)		Recipient's outcome
					Test items	Test results	Period to transfusion	Positive conversion items	Interval after transfusion	Maximum (U/L)	Interval after transfusion	
1	Mitral valve incompetence	B-NBC-LR (2015,6)	80s	F	HEV-RNA IgM-HEV-IgG IgG-HEV-IgG	Neg.	3 days	IgM-HEV-IgG	56 wks	267	7 wks	Recovery

**Bacteria**

● Voluntary report: A case reported by a medical institution as a suspected transfusion-transmitted bacterial infection

Case no.	Primary disease	Blood component (year and month of blood collection)	Age	Sex	Blood culture results of post-transfusion		Symptoms	Onset time (after administration)	Recipient's outcome
					Blood components	Recipient's blood			
1	Aplastic anemia	B-PC-LR (2016,5)	60s	M	Citrobacter koseri	Citrobacter koseri	Abdominal pain, vomiting, diarrhea, shivering, fever, inflammatory response	47 min.	Recovery, with sequelae

**Importance of preserving pre-transfusion recipient samples and infection tests**

Among the suspected cases of transfusion-transmitted infections reported by medical institutions in 2016, the following cases were assessed by both medical institutions and JRCS as "no cause of imputability to transfusion" based on the results of tests on the recipient blood and the donated blood: Three cases of HBV (17% of reported HBV cases) and four cases of HCV (14% of reported HCV cases).

• Breakdown -

- ◆ Viral genome detected in pre-transfusion recipient samples: Two HBV cases and one HCV case.
- ◆ Viral genome and serological test of post-transfusion recipient samples turned out negative: One HBV case and three HCV cases.

○ If pre- and post-transfusion recipient samples are appropriately preserved according to the "Guidelines for lookback studies of blood products," an additional examination may reveal the pre- and post-transfusion status of infection.

**Transfusion-transmitted bacterial infection cases**

Components	Before introduction of the diversion pouch and leukocyte reduction procedures (2000-2006)		After introduction of the diversion pouch and pre-storage leukocyte reduction (2007-2016)	
	Number of cases (fatal case)	Implicated bacteria	Number of cases (fatal cases)	Implicated bacteria
Red blood cells	3 cases (0)	<i>Yersinia enterocolitica</i> (2 cases) <i>Bacillus cereus</i>	0 cases (0)	
Platelets	2 cases (2)	<i>Staphylococcus aureus</i> <i>Streptococcus pneumoniae</i>	10 cases (0)	<i>Streptococcus dysgalactiae</i> spp. <i>equisimilis</i> (3 cases) <i>Staphylococcus aureus</i> (2 cases) <i>Streptococcus agalactiae</i> <i>Serratia marcescens</i> <i>Streptococcus pyogenes</i> <i>Enterichia coli</i> <i>Citrobacter koseri</i>

Analysis of cases suspected as transfusion-transmitted bacterial infection revealed no confirmed cases of bacterial infection from red blood cells since introduction of the diversion pouch and pre-storage leukocyte reduction procedures (2007). However, bacterial infections from platelets have occurred approximately 1 case a year, and most of the cases were related to day 4 platelets including the day of collection. Visual inspection regarding the presence of swirling, aggregates, etc., should therefore be conducted just before transfusion. If any abnormalities are found, please stop using the component and contact the medical representative of the JRC blood center. If a transfusion-transmitted bacterial infection is suspected, please conduct blood cultures of the recipient immediately and store the residual blood component bag appropriately according to the "Guidelines for lookback studies of blood products."

(Reference)  
Guidelines for lookback studies of blood products [March 2005 (partial revision: July 2014)]. Blood and Blood Products Division, Pharmaceutical and Food Safety Bureau, Japan Ministry of Health, Labour and Welfare  
[http://www.mhlw.go.jp/new-info/hobetu/yaku/kenketsuigo/c140814\\_02n.pdf](http://www.mhlw.go.jp/new-info/hobetu/yaku/kenketsuigo/c140814_02n.pdf)

**In case of any adverse reactions and/or infections related to transfusion of blood components, please notify the medical representatives of your local JRC blood center immediately. Please provide the residual products, the recipient pre- and post-transfusion samples, and any other related materials; it is helpful to investigate and/or identify the cause. For storage of residual products and the recipient samples, refer to the "Guidelines for lookback studies of blood products."**

Issued by:  
**Medical Information Division, Technical Department,  
Blood Service Headquarters, Japanese Red Cross Society**  
1-2-1, Srinbo-kaen, Minato-ku, Tokyo 105-8511, Japan

\* For more information, please contact the medical representatives of your local JRC blood center.

For blood products and transfusion information  
**Japanese Red Cross Society  
Haemovigilance Information English website**

Japanese Red Cross Society Haemovigilance Information

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Special thanks to **Dr. Kazuma Ikeda**, Okayama Red Cross Blood Center, who prepare this presentation.

