American Red Cross Biomedical Services
Washington, DC 20006

Fact Sheet: Red Cross Testing Methodologies

Screening and Confirmatory or Supplemental Test Methods

The following table lists the screening test of record and manufacturer or method. The second column lists the confirmatory, supplemental, or discriminatory testing that is routinely performed when a screening test or nucleic acid test (NAT) is reactive.

Screening Test of Record	**Additional Tests – Confirmatory, Supplemental, Discriminatory**
Manufacturer or method	**Manufacturer or method and notes**
***Trypanosoma cruzi* (Chagas)**	
Anti *T. cruzi* (Chagas): Chemiluminescent immunoassay (ChLIA) (Abbott) on PRISM	Abbott Chagas Enzyme Strip Assay (Abbott ESA) • If ESA is positive, then Enzyme immunoassay (EIA) (Ortho) is performed.
Hepatitis	
Hepatitis B surface Antigen (HBsAg): ChLIA (Abbott) on PRISM	Discriminatory HBV (dHBV) • If reactive, no further testing is performed. HBsAg Confirmatory-Abbott Neutralization (PRISM) is performed **only** if • NAT Multiplex is nonreactive or • NAT Multiplex is reactive, and dHBV is negative or not tested. • If HBsAg Confirmatory-Abbott Neutralization is performed and is positive and NAT Multiplex is nonreactive, then dHBV is performed (reflex).
Anti-Hepatitis B Core (Total) (HBc antibody [Ab] or anti-HBc): ChLIA (Abbott) on PRISM	dHBV is performed only when **both** the following are nonreactive or not tested: • NAT Multiplex • HBsAg
Anti-Hepatitis C Virus (anti-HCV): ChLIA (Abbott) on PRISM	Discriminatory HCV (dHCV) • If reactive, no further testing is performed. Anti-HCV Supplemental (Ortho EIA) antibody test is performed **only** if • NAT Multiplex is nonreactive or • NAT Multiplex is reactive, and dHCV is negative or not tested.

Screening Test of Record	Additional Tests – Confirmatory, Supplemental, Discriminatory
Manufacturer or method	**Manufacturer or method and notes**
HIV	
Anti-Human Immunodeficiency Virus-1/ HIV-2 (anti-HIV-1/HIV-2): ChLIA (Abbott) on PRISM • Includes HIV-1, HIV-2, and subgroups of HIV type 1, including groups M and O	Discriminatory HIV NAT (dHIV) *No further testing is performed when dHIV is reactive.* If dHIV is nonreactive or not tested, then Geenius HIV-1/2 assay or HIV-1 Western Blot (WB) is performed. If HIV-1 WB is performed, and is positive and NAT Multiplex is nonreactive, then dHIV is performed. • If dHIV is nonreactive or not tested, then Geenius HIV-1/2 Assay is performed. • If HIV-1 WB is negative or indeterminate, then HIV-2 EIA is performed. • If HIV-2 EIA is reactive, then Geenius HIV-1/2 Assay is performed. • If HIV-1 WB is not tested, then Geenius HIV-1/2 Assay is performed.
HTLV	
Anti-Human T-Cell Lymphotropic Virus I/II (anti-HTLV-I/HTLV-II): ChLIA (Abbott) on PRISM	Western blot (MP Diagnostics)
In-Process Testing	
NAT for B19 Parvovirus (Parvo NAT) – Roche PCR	N/A — In-process test result performed by outside vendor only on donations with fractionated plasma
NAT for Hepatitis A Virus (HAV NAT) – Roche PCR	N/A — In-process test result performed by outside vendor only on donations with fractionated plasma *Only positive results are entered and reported for market withdrawal; no donor notification.*
Multiplex NAT	
NAT Multiplex Pool (HIV-1, HBV, and HCV) – TMA - Grifols • Procleix Ultrio Plus Assay (HBV DNA, HCV RNA, and HIV-1 RNA)	Individual Multiplex NAT (ID NAT) Procleix Ultrio Plus Assay If ID NAT is reactive, then all of the following apply: • Discriminatory HIV-1 NAT (dHIV) • Discriminatory HCV NAT (dHCV) • Discriminatory HBV NAT (dHBV)
	Low Yield Testing: Roche MPX is performed for the following: • dHIV is reactive and anti-HIV-1/HIV-2 is nonreactive • dHCV is reactive and anti-HCV is nonreactive • dHBV is reactive and HBsAg is nonreactive

Screening Test of Record	Additional Tests – Confirmatory, Supplemental, Discriminatory
Manufacturer or method	**Manufacturer or method and notes**
Syphilis	
Syphilis (Serologic Test for Syphilis – STS) • Beckman Coulter PK-TP system (*Treponema pallidum* – partial agglutination)	Syphilis Captia G-EIA Confirmatory - Trinity If EIA is reactive or equivocal, then the Becton Dickinson - Qualitative Rapid Plasma Reagin Test (RPR) is performed.
WNV	
West Nile Virus RNA Nucleic Acid Testing: TMA • WNV NAT by TMA (Grifols) on Panther	Repeat WNV by TMA • If reactive, no further testing • If nonreactive or not tested, then antibody (IgG/IgM) testing is performed.
ZIKV	
ZIKA Virus RNA Nucleic Acid Testing: TMA (Grifols) on Panther	• Retest Zika Virus RNA Nucleic Acid Testing • ZIKV IgM • If ZIKV IgM is reactive, then Plaque Reduction Neutralization Test (PRNT) is performed.
HLA Antibodies	
HLA Class I and Class II Antibodies Qualitative Assay: ELISA Test is performed on ever-pregnant, first-time female apheresis donors and additionally with any change in number of pregnancies	N/A
Ferritin	
Ferritin quantitative test: Beckman Coulter (Latex agglutination – Spectrophotometer) Test is performed on donors less than 19 years old and donating whole blood (WB) or any red cell.	N/A

The American Red Cross is currently investigating selective screening options for the intraerythrocytic parasite, Babesia (common in the northeastern and mid-western sections of the U.S.). Currently, investigational testing for Babesia is performed by an investigational Grifols' nucleic acid test (NAT) on donations collected in selected regions where Babesia is endemic. The Grifols' test detects four species of Babesia.

Additional confirmation for research testing may be done by IFA (anti-*Babesia microti*) and polymerase chain reaction (PCR) (alternate Babesia NAT assays).

False Positive Results

The rate of false positivity exceeds that of true positivity for low-risk blood donors for the following two reasons:

- Volunteer blood donors are a uniquely healthy population who self-report an absence of symptoms or risk for blood-borne pathogens – people for whom infectious disease testing would be clinically contraindicated.
- In order to ensure the safest possible blood supply, the Food and Drug Administration requires the use of the most sensitive tests.

This should be considered when counseling patients who may have received blood from a donor whose subsequent donation is now demonstrating a reactive screening result, but confirmatory results are not yet available.