Blood and Plasma Donation Centers

Blood and plasma donation centers understand how critical it is to detect viral hepatitis in the very early stages of an infection in order to reduce the risk of parenteral transmission. These centers currently use a combination of nucleic acid amplification testing (NAT), antigen testing and antibody testing: HBV, HC and HIV NAT; HBsAg; and, anti-HBc IgM and anti-HCV IgG. Since both HBV DNA and HVC RNA can be detected 2-5 weeks following infection and (for HBV) 1-3 months prior to the appearance of the HBsAg or antibody responses to HBV/HCV/HIV, NAT assays are the primary methods for detecting hepatitis in donation centers.

1. **Screening**
    a. Centers use minipool multiplex assays (NAT assay that detects HBV DNA, HCV RNA and HIV-1 RNA) for screening. A minipool is formed by pooling of samples from subpools or by directly pooling samples from individual donors. Depending on whether whole blood or plasma specimens are used, minipools may contain 16-96 samples to be tested using the multiplex assay (5 different multiplex assays on the market).
        i. Procleix Ultrio Plus Assay (Gen-Probe)-16 samples in a pool for whole blood and blood components.
        ii. UltraQual HBV PCR Assay (National Genetics Institute)-which provides results of HBV NAT of source plasma samples or of plasma samples from source plasma donors at the time of donation. Can test up to 512 donations in a pool.
    b. Screening may be in a minipool donation sample testing format or an individual donation testing format and may include multiplex NAT with testing of other agents (HCV, HIV) or may be single virus NAT for HBV only.
    c. Discriminatory testing:
        i. HBV
            1. If a center detects a positive from the minipool multiplex testing, every individual sample from the pool must be re-run using the same multiplex assay to identify the discrete positive sample. The positive sample is then tested with HBV NAT, HBsAg , IgM HBc.
            2. Screening may be in a minipool donation sample testing format or an individual donation testing format and may include multiplex NAT with testing of other agents (HCV, HIV) or may be single virus NAT for HBV only.
        ii. HCV
            1. Donors infected with HCV may experience intermittent viremias for a variable period of time prior to a persistently detectable viremia or an antibody response. Since these episodes of transient viremia may extend over a longer window period, the “Lookback rule” requires review of all records for a period of 12 months before the donor’s reactive NAT in accordance with 21 CFR610.47

(https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?fr=610.47) which is the responsibility of the donor site.

2. Certain HCV NAT tests are used as a supplemental test to confirm HCV infection for samples that test reactive on an anti-HCV test.
    a. If the HCV NAT is reactive, the result confirms HCV infection and no additional testing is necessary.
    b. If the HCV NAT is nonreactive, further testing is necessary. The donation center should perform a second, different licensed donor screening test for anti-HCV.
        c. If the result is negative, the donor should be counseled that HCV infection was not confirmed and is unlikely. The test results for the donation may be regarded as negative.
        d. If the result is repeatedly-reactive for anti-HCV, the donor should be counseled appropriately. The test results for the donation are considered positive.

LHD CD nurse Role:

1. Plasma and blood donation centers: Every person without a previously reported hepatitis B event that is identified by a plasma or blood donation center should be confirmed by testing through their own provider or the local health department. However, if the patient refuses or is lost to follow-up (per LHD policy) then the CD nurse is finished and the positive from the donation center will be submitted to the state for reporting. Events that have retesting identified as pending will need to remain in LHD workflows
    a. This is in part because the HBV DNA and HCV RNA will show up much earlier than the HBsAg or anti-HBC. Follow-up testing 1-3 month after initial testing could reveal an acute infection.
    b. Call the donation center and request the serologic tests (including negatives) that were performed in addition to those on the DHHS Form 2124 Part 1 and follow the same investigation process you do with all your other HBV events.
2. Since plasma centers are not a diagnosing facility HCV investigation do not have to be undertaken unless the following occurs:
    a. A negative HCV antibody **OR** negative hepatitis C virus detection test (in someone without a prior diagnosis of HCV infection) followed within 12 months by a positive hepatitis C virus detection test (HCV RNA test conversion) in the absence of a more likely diagnosis
    b. ALT >200 or total direct bilirubin >3.0 are present in blood specimens run by the plasma center (unlikely since plasma centers do not perform those tests).

Guidance:

1. MMWR-4-19-1991 / 40 (RR-4); 1-17 Public Health Service Inter-Agency Guidelines for Screening Donors of Blood, Plasma, Organs, Tissues, and Semen for Evidence- https://www.cdc.gov/mmwr/preview/mmwrhtml/00043883.htm
2. Hepatitis C Virus "Lookback" requirements: https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?fr=610.47
3. https://www.fda.gov/media/124225/download