

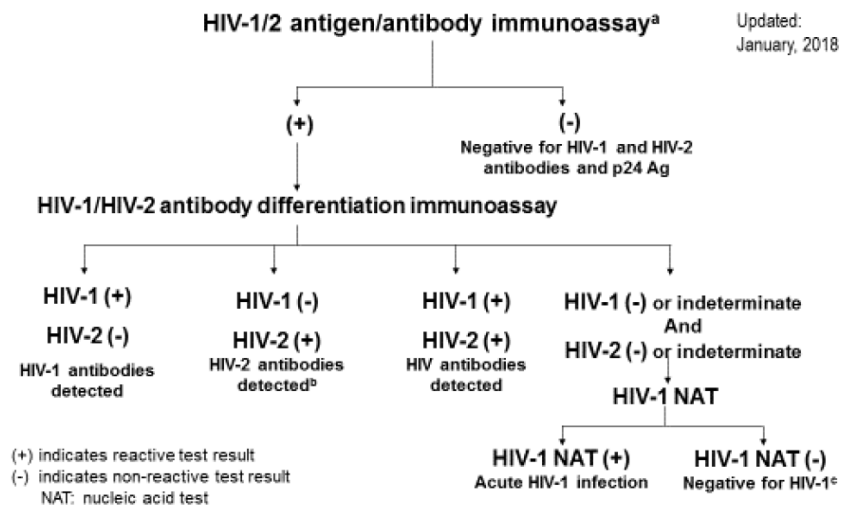
HIV Testing in Pregnancy

Routine HIV testing during pregnancy is a key step in the perinatal HIV prevention cascade. The purpose of this document is to respond to common questions received on the National Perinatal HIV Hotline about the use of currently available HIV tests in pregnancy. Information is based on expert opinion, taking into consideration current CDC and DHHS guidelines^{1,2} and the implications of a reactive test in pregnancy.

My pregnant patient has a reactive HIV screening test. What do I do now?

The most commonly used HIV antibody screening tests include 3rd generation enzyme immunoassays (EIAs) which detect IgM and IgG, and 4th generation EIAs which detect IgM, IgG, and the HIV p24 antigen. These *screening* tests are then followed by supplemental *diagnostic* tests. Below is the current CDC-recommended algorithm for HIV testing, regardless of pregnancy status:

Recommended Laboratory HIV Testing Algorithm for Serum or Plasma Specimens



For up to date information on CDC recommendations for HIV testing (regardless of pregnancy status), please see: <http://www.cdc.gov/hiv/testing/>.

For reactive tests on labor and delivery or in any acute care setting, see below for modified recommendations. Please note: *a reactive rapid test on labor and delivery should always be treated as reflective of a true HIV infection while additional testing is obtained.*

¹ <https://www.cdc.gov/hiv/testing/laboratorytests.html>

² <https://aidsinfo.nih.gov/guidelines/html/3/perinatal/0>

Why is timely and accurate HIV testing critical during pregnancy?

Acute HIV in pregnancy is associated with increased risk of perinatal transmission. Consequently, timely diagnosis of acute HIV is essential to allow maximal time for interventions (e.g. maternal ART initiation) to reduce transmission risk. On the other hand, a false-positive result in pregnancy can lead to unnecessary interventions for a mother and her child. Simultaneously expediting the HIV-1/HIV-2 antibody differentiation immunoassay and the HIV-1 nucleic acid test (NAT, usually quantitative RNA, AKA “viral load”) can help differentiate between these results.³ Please see the section ['How can testing algorithms in pregnancy be modified when expeditious results are required?'](#)

How does pregnancy affect provider decision-making with regard to following (and interpreting) standard testing algorithms?

For routine HIV testing in pregnancy, the standard CDC HIV testing algorithm should be followed. The initial screening test in pregnancy should be the 4th generation HIV antigen/antibody immunoassay. Most, but not all, lab-based HIV antigen/antibody tests can be run in under an hour, but require trained laboratory staff and may not be available 24 hours a day. On labor and delivery, point of care “rapid” HIV tests may be the most expeditious test available⁴. Positive point of care tests should be followed first by a lab-based HIV test, with additional tests as indicated, following the algorithm above.

HIV screening tests perform equally well in pregnant and non-pregnant patients (i.e. pregnancy does not increase the rate of false positives).⁵ However, pregnant patients have a low prevalence of HIV in general, which makes the positive predictive value of an HIV screening test lower (*positive predictive value*: probability that the disease is present when the test is positive).

How can testing algorithms in pregnancy be modified when expeditious results are desired?

Nucleic acid testing (NAT) with either a quantitative RNA PCR (results include a numerical result, or “viral load”) or qualitative RNA PCR (results are given as “positive”/“detected” or “negative”/“not detected”) can evaluate for acute HIV. While the quantitative RNA (“viral load”) test is not FDA approved for *diagnostic* purposes, it is widely available, has a rapid turn-around if done on-site, and undetectable viral load results essentially eliminate the possibility of acute

³ The vast majority of HIV cases in the United States are HIV-1. If HIV-2 is suspected, the testing will look different. Please contact the Perinatal HIV Hotline at 1-888-448-8765 for guidance.

⁴ Point of care tests are also known as “CLIA-waived” tests. They are performed on oral fluid or whole blood samples, usually by clinical staff outside of a laboratory. A “rapid” HIV test can either be a point of care test or an expedited lab-based test run on serum or plasma specimens.

⁵ Adhikari et al. “Diagnostic accuracy of fourth-generation ARCHITECT HIV Ag/Ab Combo assay and utility of signal-to-cutoff ratio to predict false-positive HIV tests in pregnancy”, *AJOG*, 2008. Wesolowski et al. “False-Positive Human Immunodeficiency Virus Enzyme Immunoassay Results in Pregnant Women”, *PLOS One*, 2011.

HIV.⁶ Sending either HIV RNA PCR test simultaneously with the HIV-1/HIV-2 antibody differentiation assay can help confirm or refute an HIV diagnosis more rapidly than working through the testing algorithm in a step-wise manner.⁷ A more rapid diagnosis may change the recommendation for mode of delivery, breast feeding, or the need for neonatal post exposure prophylaxis with antiretroviral medications. Very rarely, low level viremia on viral load testing can reflect a false positive result (usually related to lab error). In these situations, expert consultation is recommended to interpret the results.

How fast can a lab turn around confirmatory results?

The HIV-1/HIV-2 antibody differentiation assay takes under an hour to run. If this test is positive, chronic HIV is confirmed. If it is negative, acute HIV must be ruled out with an RNA test (quantitative or qualitative). Viral loads can be run in a couple of hours. However, these tests often take longer because they need to be sent to an outside lab, trained laboratory staff are not available 24/7, and/or labs don't find it cost-effective to run the tests more than once or twice a week (e.g. allows for "batching" specimens). Expedited results can often be obtained by informing the lab director that these results will prevent unnecessary interventions for the mother and/or neonate.

Should a patient with an early false positive test have repeat testing later in pregnancy?

The CDC recommends repeat HIV testing in the 3rd trimester for "at risk" women, including women who live in high prevalence areas and have high risk for seroconversion in pregnancy (see <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5514a1.htm> for the CDC's definition of "high risk"). Providers may also consider repeat testing in the 3rd trimester for patients with prior false positive tests to potentially avoid a rapid test on labor and delivery that could then lead to unnecessary interventions for false positive results.

How do I manage a positive rapid test on labor and delivery?

According to the DHHS Perinatal HIV Guidelines⁸, a positive rapid test on labor and delivery should be treated as a true positive while additional testing is done, even if a false positive result is suspected. Providers are recommended to request that the lab run an HIV RNA PCR test simultaneously with the HIV-1/HIV-2 antibody differentiation assay, and call their lab director to expedite viral load results. The national Perinatal HIV Hotline is also available for consultation 24 hours a day, 7 days a week at 1- 888-448-8765 to assist with these challenging cases.

⁶ Qualitative RNA tests are FDA-approved for use as an aid in the diagnosis of HIV-1 infection, including acute or primary infection, but are generally not as widely available.

⁷ The HIV-1 RNA will require a separate order and potentially a separate specimen in order to run it simultaneously with the antibody.

⁸ <https://aidsinfo.nih.gov/guidelines/html/3/perinatal-guidelines/0>

How should a woman be counseled about her preliminary positive test on labor & delivery?

Please see resources for counseling at:

<http://www.hivpregnancyhotline.org/content/resource/rapid-hiv-test-counseling-labor-and-delivery-flip-chart>.

Where to obtain more information:

Link to CDC testing Guidelines here: <http://www.cdc.gov/hiv/testing/>

Link to DHHS Perinatal HIV Guidelines here: <http://www.aidsinfo.nih.gov/guidelines>
Health care professionals are welcome to call the National Perinatal HIV Hotline with questions. Consultation is available at no cost to callers 24 hours a day, 7 days a week at 1-888-448-8765.

Please send questions or feedback to Marliese Warren at marliese.warren@ucsf.edu

This material is intended for educational purposes for healthcare providers only. It is not intended as a substitute for professional medical care or advice, nor to replace a healthcare professional's clinical judgment regarding their individual patient care.

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