False Positive HIV Laboratory Test Results

This resource is to assist testing providers with interpretation of HIV results when BCCDC Public Health Laboratory (BCCDC PHL) reports results as FALSE POSITIVE

Key Points

- Tests always produce a small number of false positive results.
- In settings where very few people have HIV, a higher proportion of reactive results will be false positives.
- A diagnosis of HIV is never made on the basis of a single test result.

False Positive Results and Specificity

- No test or algorithm can be completely accurate.
- A false positive test result is when a person is not infected with HIV, but the test indicates a positive reading.
- In BC, the 4th generation testing platforms used to test for HIV have a specificity of approximately 99.5%. Meaning that if 1,000 uninfected people are tested, around 5 people (0.5%) will have a false positive result.

Causes of False Positive HIV Test Results

Though not limited to the below list, false positive HIV test results can occur due to:

- Technical Issues associated with the test
  - Specimen mix-up
  - Mislabelling
  - Improper handling
  - Misinterpretation of a visually read rapid test result (Point of Care)

- Biological Causes
    - Participation in an HIV vaccine study
    - Autoimmune disorders (ex. Lupus)
    - Recent flu vaccine or gamma-globulin
    - Cross reactive antibodies that may be present following a blood transfusion or pregnancy
    - Hypergammaglobulinemia related to another condition, such as hematological malignancy, liver cirrhosis or hepatitis
    - Other medical conditions or infections

Testing to Distinguish True Positive from False Positive

When an initial HIV screening test is reactive (positive), additional testing is needed to determine if the positive result was accurate or whether the screening test was falsely positive.

In BC, an algorithm is followed that tests the original specimen on 2 different 4th generation platforms; this is followed by either an immunoblot test to detect specific antibodies, or an HIV NAT test to rule out acute infection (see examples below).

Provincial Reporting of False Positive Lab Results

Initial Results

The following lab results are examples of how you may see INITIAL false positive lab results reported by the BCCDC Public Health Laboratory:

Example 1

- First 4th generation HIV Ab/Ag screening test is reactive **or** equivocal.
- Second supplemental 4th generation HIV Ab/Ag test is non-reactive.
- HIV NAT (to rule out acute infection) not detecting HIV RNA.
- Immunoblot (confirmatory test) to detect specific antibodies not performed.

HIV 1+2 Ab+p24 Ag; Screen	**Equivocal.**	**AA**
HIV 1+2 Ab+HIV1 p24 Ag	Nonreactive.	
HIV 1 RNA; PCR/NAAT	No HIV 1 RNA detected.	
HIV 1+2 antibody; Serum; Immune Blot		
	HIV confirmation (immunoblot) was not performed because it is of limited value for samples with low EIA signals.	
HIV Ab Report	Current sample tested low reactive by screening and nonreactive by supplemental assays. The low reactive screening test likely represents a false positive result. These findings are not consistent with HIV infection.	
	If clinically indicated, please submit a follow up sample in 2 to 4 weeks.	

Example 2

- First 4th generation HIV Ab/Ag screening test is reactive.
- Second supplemental 4th generation HIV Ab/Ag test is reactive.
- HIV NAT (to rule out acute infection) not detecting HIV RNA.
- Immunoblot (confirmatory test) to detect specific antibodies not performed.

Anti HIV Ag/Ab Combo Anti HIV 12 Combo EIA	**	**Reactive.**
Anti HIV Ag/Ab Combo HIV 1 and 2 Ab/Ag EIA	**	**Reactive.**
HIV Report Anti HIV Report		INTERPRETATION: These findings are not consistent with HIV infection. However, a follow up EDTA blood is requested within 2 - 4 weeks to rule out infection.
HIV 1 Quant NAT HIV 1 RNA		No HIV 1 RNA detected.
HIV Confirmatory Assay HIV 1 and 2 Immunoblot		HIV confirmation (immunoblot) was not performed because it is of limited value for samples with low EIA signals.

Follow-up Recommendations

Follow-up testing is recommended 2-4 weeks following original specimen collection on all false positive lab results to confirm a biological cause and/or if a technical issue contributed to the false-positive test result.

An EDTA-tall lavender sample tube is preferred; however, a gold top (SST) tube may be used if an EDTA tube is not easily obtainable.

Final Results

If the results of the subsequent blood work are consistent with the original or are now negative, the initial sample is considered a false positive, provided a person has no new exposure risks.

Below is how you may see FINAL false positive lab results reported by the BCCDC Public Health Laboratory:

Example 1

Anti HIV Ag/Ab Combo Anti HIV 12 Combo EIA	:	Nonreactive.
Anti HIV Ag/Ab Combo HIV 1 and 2 Ab/Ag EIA		Nonreactive.
HIV Report Anti HIV Report	:	Current sample tested non reactive by screening and supplemental assays. Previous screening test results were equivocal on the sample collected on 24 JAN 2023 INTERPRETATION: No evidence of HIV infection.

Example 2

Anti HIV Ag/Ab Combo Anti HIV 12 Combo EIA	:	Nonreactive.
Anti HIV Ag/Ab Combo HIV 1 and 2 Ab/Ag EIA		Nonreactive.
HIV 1 Quant NAT HIV 1 RNA	:	Test not performed.
HIV Confirmatory Assay HIV 1 and 2 Immunoblot		Test not performed.
HIV Report Anti HIV Report		INTERPRETATION: Current sample tested non reactive by screening and supplemental assays. Previous screening test results were equivocal on the sample collected on 10 DEC 2022. No evidence of HIV infection.

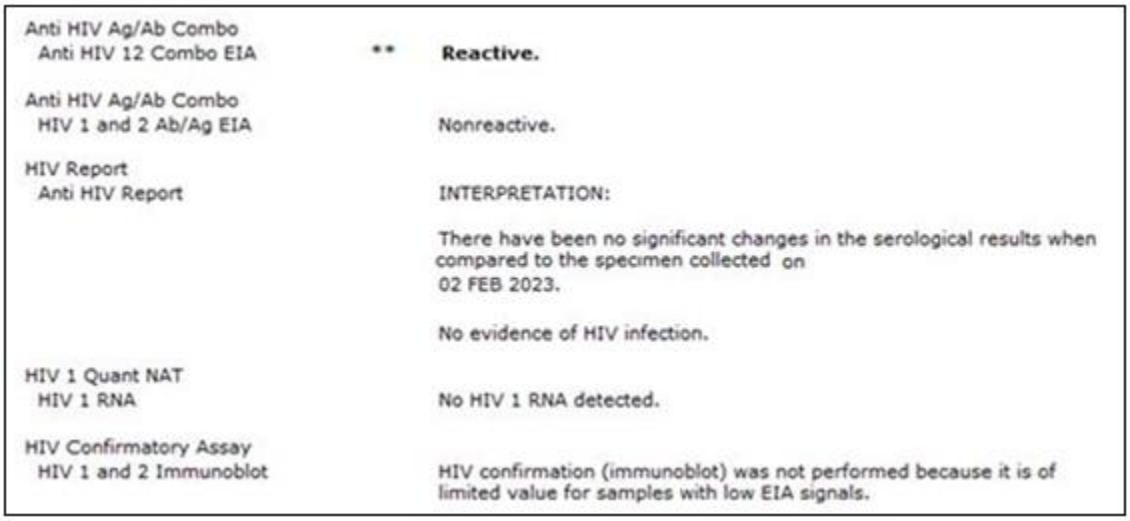
Ongoing Results

A false positive result may have been an isolated event (something that triggered the test and is of a transient nature) or a phenomenon that will occur over the course of a person's lifespan.

Ongoing recommendations regarding HIV testing should be considered in the context of an individual's exposure risks.

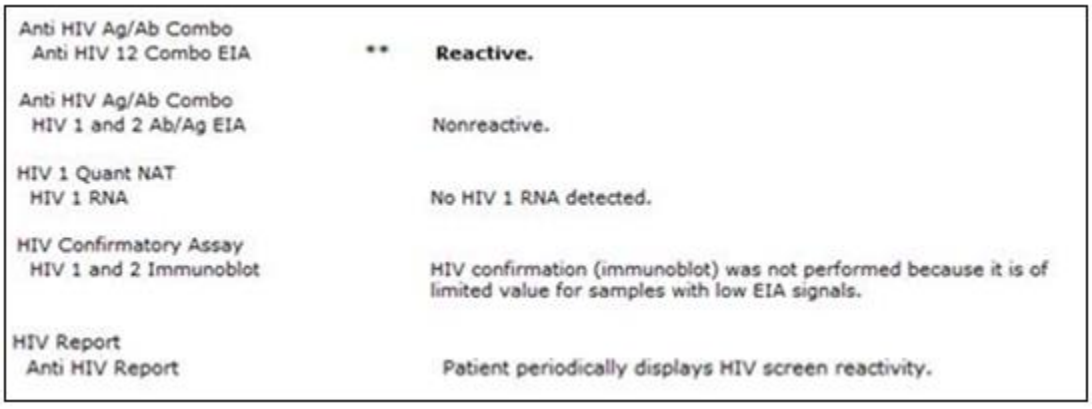
Below is how you may see ONGOING false positive lab results reported by the BCCDC Public Health Laboratory:

Example 1



Anti HIV Ag/Ab Combo Anti HIV 12 Combo EIA	**	**Reactive.**
Anti HIV Ag/Ab Combo HIV 1 and 2 Ab/Ag EIA		Nonreactive.
HIV Report Anti HIV Report		INTERPRETATION: There have been no significant changes in the serological results when compared to the specimen collected on 02 FEB 2023. No evidence of HIV infection.
HIV 1 Quant NAT HIV 1 RNA		No HIV 1 RNA detected.
HIV Confirmatory Assay HIV 1 and 2 Immunoblot		HIV confirmation (immunoblot) was not performed because it is of limited value for samples with low EIA signals.

Example 2



Anti HIV Ag/Ab Combo Anti HIV 12 Combo EIA	**	**Reactive.**
Anti HIV Ag/Ab Combo HIV 1 and 2 Ab/Ag EIA		Nonreactive.
HIV 1 Quant NAT HIV 1 RNA		No HIV 1 RNA detected.
HIV Confirmatory Assay HIV 1 and 2 Immunoblot		HIV confirmation (immunoblot) was not performed because it is of limited value for samples with low EIA signals.
HIV Report Anti HIV Report		Patient periodically displays HIV screen reactivity.