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# Newsletter

LANCET LABORATORIES Rwanda

## INTERPRETATION OF COVID-19 RT PCR POSITIVE & NEGATIVE RESULTS ON SEQUENTIAL SAMPLES

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RT-PCR for SARS-CoV-2 is a diagnostic test designed for detecting the virus in respiratory samples of symptomatic individuals.

- It is therefore very specifc, so positive results are real sensitivity however is lower and false negative results may occur in up to 20% of swabs done, especially in mild or asymptomatically infected individuals.
- Referring doctors and patients usually have difficulty in interpreting these results, particularly when performed sequentially on patients, resulting in **negative/positive or positive/negative discordance**s.

### Reasons for these discordances include:

**A positive result followed by a negative one:**

- *"NICD"* recommends that patients who test positive are treated as such and isolated and their contacts traced.

**A low positive result (ct value37-40) may be followed by a second negative swab if**:

- i. The patient is nearing the end of their infection and has stopped secreting virus
- ii. The second swab wasn't taken from infected epithelium resulting in a false negative result
- iii. The patient is an intermittent secretor and was not secreting virus when the second swab was taken
- iv. The second result was obtained using a less sensitive assay than the first one

The complex viral dynamics of this infection, complicated by the differing sensitivities of assays used by various laboratories, causes result discordances and variable RNA shedding at different times can cause results discordant between different laboratories.

Note: the HIV-1 DNA PCR only detects HIV-1.

If infection with HIV-2 is suspected, an HIV-2 PCR can be done.

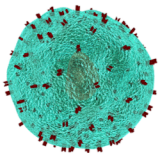
**A negative result followed by a positive one:**

a. The first swab was taken just before virus secretion began

b. The first swab wasn't taken from infected epithelium resulting in a false negative result

c. The patient is an intermittent secretor and was not secreting virus when the first swab was taken

d. The first result was obtained using a less sensitive assay than the second one



**References:**

World Health Organisation. WHO recommendations on the diagnosis of infection in infants and children. WHO Press 2010. ww.who.int/ entity/ hiv/ pub/ paediatric/ diagnosis/en/ index. html, accessed January2022.

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