

UGM Experts Explain the Causes of Different PCR Swab Results

Thursday, 10 December 2020 WIB, By: Natasa Adelayanti




Swab test with Polymerase Chain Reaction (PCR) is currently the most accurate method in detecting the novel coronavirus infection that causes Covid-19. However, the results of the examination were sometimes different though the swab test was carried out at a very close time.

Clinical Microbiology Expert at Faculty of Medicine, Public Health, and Nursing (FKKMK) UGM, dr. Titik Nuryastuti, M.Si., Ph.D., Sp.MK(K) explained that various factors influence the difference between the PCR swab results. Two of them are the time factor and swab sampling procedure.

“Taking swabs at different times can deliver different results,” she explained when contacted on Tuesday (8/12).

For instance, someone did a swab test at a hospital and resulted in a positive. The next day, this person did another PCR swab at a different hospital but tested negative.

“If this occurs within the virus incubation period, which is 2-14 days after exposure, this condition is



called a false negative. This may take place because the number of the virus is low and below the threshold of PCR detection, which results in negative,” explained the Head of the Covid-19 Laboratory Team of FKKMK UGM.

Titik explained the many factors that can affect the results, including the pre-analytical, analytical, and post-analytical phases. The pre-analytical has the most influence, such as the sampling process, handling and transporting before arriving at the laboratory, and the storing and delivery.

Next, the analytical phase is the process of carrying out the extraction of RNA and PCR itself. The last is the post-analytical phase, which is the stage of interpreting the results and leaving it to the patient.

Titik mentioned these stages affect the accuracy of the swab test results.

“So it can be from the sampling, its procedures, the transporting of the samples to the lab, and others. But, the most critical is in the timing of sampling,” she explained.

The Covid-19 Lab of FKKMK/RSA UGM is a lab with BSL 2 plus facilities and has carried out the PCR swab test procedures according to WHO/CDC standards. Her team has also conducted an External Quality Monitoring (PME) test at the Agency for Health Research and Development (Litbangkes) in Jakarta and has 100% passed the test. Currently, the lab is also taking a proficiency test by working on the isolated panel sent by the referral lab of Litbangkes. The PCR kits are also in line with BNPB's recommendations, which provide good sensitivity and specificity and are proven to have no cross-reaction with other viruses of respiratory tract infections.

“Some of the samples entered in our lab have undergone sequencing to find out the genome sequence, proving that the PCR process here can indeed amplify the SARS CoV-2 virus gene that causes Covid-19,” she said.

On the different results among laboratories, Titik emphasized the need to consider that the PCR swab test is carried out concerning close contact tracing. If the results are positive, it is not necessary to do a repeat swab shortly.

“Repeat swab is not obligatory. If it is to be done, it should be after 10 days,” she explained. Virology expert at FKKMK UGM, as one of the UGM Covid-19 Lab team, dr. Mohamad Saifudin Hakim, M.Sc., Ph.D., added that the PCR swab test greatly depends on the timeliness (window period). For example, if the symptoms appear on the 0th day, the optimal PCR examination will be on the 3rd and

5th day after.

Then, how to respond to this situation? Hakim said that it is better to continue to self-isolate for those without symptoms as per the COVID-19 prevention health protocol established by the government. Because someone with a positive initial PCR swab, that turns negative next, still has the potential to be the source of Covid-19 transmission.

According to him, many positive cases show no symptom or mild symptoms, which correspond to the data from WHO that confirm currently 80% of the population has been infected with Covid-19 with no symptom or only mild symptoms.

Furthermore, Arif Nurcahyanto, S.Psi, M.A., as one of the UGM Covid-19 Task Force, did not deny the presence of anxiety in the community regarding this difference. Everyone is not ready to hear or accept such painful facts, such as being infected with the Covid-19.

“Everyone prefers to hear the things they want rather than the truth,” he said.

Someone who tested positive for Covid-19 generally felt shocked at first. There is also a sense of anger and fear of being rejected by the surroundings, so they choose to do a comparison test at a different hospital.

“Accepting the reality for what it is is necessary to deal with this condition. The keys are in the acceptance, the urge to break the transmission chain, and the willingness to reduce the outside activities and to comply with health protocols,” he explained.

Author: Ika

Photo: Shutterstock.com

Translator: Salma

Related News

- [Doctor of UGM Academic Hospital: Swab Test is Safe](#)
- [UGM Conducts a Massive Rapid Test for 500 Employees](#)
- [UGM Experts Explain the Causes of Different PCR Swab Results](#)

- 
- [UGM Increases the Intensity of Health Promotion to Prevent Covid-19 Transmission](#)
 - [Three Hospitals in DIY Use UGM Swab Sampling Booth](#)