

What to expect from Covid-19 serology in a period of deconfinement?

Press release from the French National Academy of Medicine and the National Academy of Pharmacy

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Despite the significant impact of containment on the course of the Covid-19 epidemic, the circulation of the virus persists on the French territory, even among the least affected regions. As of May 11, the date set for the end of the containment, a model from the Pasteur Institute estimated that the infection would have affected 5.7% of the population, with significant regional variations, from less than 2% in Brittany, New Aquitaine and Pays de Loire to 10-13% in the Grand Est and Ile-de-France [1].

The level of immunity of the French population to Sars CoV-2 thus seems very low, far from the theoretical threshold of 60% which would allow us to expect a collective level of protection. This situation makes it necessary to implement iterative population-based sero-epidemiological surveys, representative of each region, each age group and each socio-professional category to assess the spread of the epidemic in the population. In addition, there is a strong demand for serological tests from the professionally exposed workers and, more widely, from many worried people anxious to know their immune status.

Numerous serological tests have been developed for the detection of IgG and IgM antibodies against SARS-CoV-2 in a sample of venous or capillary blood. These are the ELISA tests that can be used in large series on automatic machines and the unit tests (rapid diagnostic tests, TDR, and rapid diagnostic orientation tests, TROD), which can be performed individually on a drop of capillary blood obtained by fingertip pricking [2]. Their evaluation by the National Centres of Reference (CNR) for respiratory infection viruses has made it possible to select tests that meet the performance requirements of the French High Authority for Health (sensitivity $\geq 90\%$ and specificity $\geq 98\%$), but these tests have not yet been validated by the health authorities and do not give the right to reimbursement. It should be noted, however, that even if a test with a specificity of 98% is used, the positive predictive value of seropositivity will only be 50% in all regions of the country spared by the epidemic, where seroprevalence is estimated an average of 2% [3].

Furthermore, while positive serology indicates immunity to the virus, it does not allow to predict with certainty that the person will be protected in the event of a reinfection.

In the current context, given the sharp increase in individual requests for serological tests without medical prescription, access to tests must remain controlled in order to avoid any behavioural drift that could be induced by misinterpretation of the results.

The National Academies of Medicine and Pharmacy recommend:

- that only those tests that will be recommended by the CNRs and validated by the Ministry of Health and Solidarity be used, whether they are unit tests or ELISA tests;
- that the sero-epidemiological population surveys be coordinated by the Regional Health Authority (ARS) and that each person recruited be informed personally and confidentially of his or her serological status;
- that the Covid-19 serological tests should be carried out neither at a simple individual request, nor at the behest of employers;
- that the serological tests be carried out only on medical prescription, the general practitioner having to judge their necessity after consultation or teleconsultation;
- that prescribing physicians have access to interpretation algorithms, helping them to comment on their patients' results, to request additional virological tests if necessary, and draw the possible consequences;
- that a positive test result does not lead to the establishment of a "certificate of seropositivity" or of an "immunological passport";
- that medical confidentiality be scrupulously preserved.

1. <https://hal-pasteur.archives-ouvertes.fr/pasteur-02548181>

2. Press release of the National Academy of Medicine "Covid-19 tests: collective and individual applications" 10 April 2020.

3. https://www.has-sante.fr/upload/docs/application/pdf/2020-05/rapport_tests_serologiques_rapides_covid-19_vd.pdf