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Screening for SARS-CoV-2 carriers: what about saliva tests?

Press release from the French National Academy of Medicine

June 30, 2020

The decrease in the number of medical consultations for suspected Covid-19 for several weeks, the hospital occupancy rate of resuscitation beds, which recently fell below the symbolic mark of 700 (682 on June 23), and maintaining a R0 coefficient below 1 in most regions, confirm the end of the epidemic outbreak. However, the virus is still circulating and a resurgence is possible within a few weeks to a few months. The current situation in China, India and Portugal calls for vigilance and to give oneself the means to detect any new outbreak as soon as possible.

The current surveillance strategy is based on the detection of new epidemic foci and the search for contact cases, in using RT-PCR tests on nasopharyngeal swabs.

This strategy, which is lagged in time compared to an upsurge of the virus circulation, is effective as long as the number of new outbreaks remains limited.

A complementary approach would be to carry out virological tests on representative samples of the population of each department, in an iterative way. This would allow the level of virus circulation on the day of sampling to be known and thus to react more quickly.

However, nasopharyngeal swabs have disadvantages: they require dedicated equipment and qualified personnel to perform them properly. They are unpleasant or even painful for the patient, which means that people who do not feel the need may refuse to be tested.

The alternative is saliva or sputum collection, which eliminates the inconvenience of nasopharyngeal sampling.

A review of the literature shows that:

- according to some studies the virus is present in saliva in smaller quantities than in nasopharyngeal swabs, although this concept should be clarified to take into account the protocol differences;

- the two sampling methods give concordant results for the majority of positive cases and about 20% of discordant results one way or the other. Several

explanations are mentioned, including the difficulties in successfully performing rhino-pharyngeal sampling or time shifted samples.

Nasopharyngeal sampling remains the reference technique for the diagnosis of Covid-19.

However, considering the value of epidemiological studies to monitor the circulation of SARS-CoV-2, in order to respond quickly and well to the threat of a second wave, **the National Academy of Medicine recommends** :

- to conduct a comparative study of the two sampling methods (rhinopharyngeal versus saliva or sputum) carried out the same day, following a precise protocol for saliva and sputum sampling, and the sample analysis (RNA extraction, RT-qPCR on a single platform), supplemented if possible by a serological test;
- to proceed now with an epidemiological study limited to two departments in the two regions most affected by the epidemic (Île-de-France and Grand-Est);
- based on the preliminary results obtained in these two departments, to model an epidemiological study over the whole territory with a short periodicity to be able to respond immediately to a possible resumption of the epidemic.