

Accelerating vaccination against Covid-19

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The major challenge in overcoming the current health crisis is to acquire a sufficient herd immunity to control the circulation of SARS-CoV-2 and to consider the relaxation of restriction measures. Two factors contribute to this collective immunity: the proportion of people who have been infected since the beginning of the pandemic, estimated at 20% of the French population, and the vaccination coverage, which has just exceeded 18% of adults for the first injection.

Post-infectious immunity is based on neutralizing antibodies that persist for more than one year after a moderate or severe form of Covid-19, and 6 to 8 months after an asymptomatic form [1], but also on the cellular response of T lymphocytes. This observation has led the French High Authority for Health to recommend that vaccination of immunocompetent individuals with confirmed SARS-CoV-2 infection be delayed for 3 to 6 months after the infectious episode and reduced to a single dose [2].

The vaccination coverage rate to reach the control of the epidemic has been increased to take into account the increased transmissibility of the B.1.1.7 variant, known as "British", which has become predominant throughout metropolitan France. According to the Pasteur Institute's modelling, more than 90% of the adult population would need to be vaccinated to achieve this objective, as long as the vaccination of children is not foreseen [3].

These estimates reinforce the prospect of a sustained circulation of SARS-CoV-2, which may lead to the emergence of new variants, with deleterious consequences on public health and the country's economy. They make it necessary to accelerate the mass vaccination campaign despite supply difficulties and the loss of public confidence in some vaccines.

Two very recent studies (April 2021) show that a single dose of a messenger RNA vaccine rapidly confers a very high protection. The first one, conducted in a target population, by the US Centers for Disease Control and Prevention (CDC) shows that a single dose (BioNtech/Pfizer or Moderna) confers a 80% protective efficacy against infection two weeks after the injection, the second dose raising this protection rate to 90% [4]. The second study, conducted in the UK among hospital staffs when the circulating virus was the variant B1.1.7, estimated the protective efficacy to be 72% with the BioNtech/Pfizer vaccine 21 days after the first dose and 86% seven days after the second dose [5].

These very convincing data allow the French National Academy of Medicine to reconsider its recommendations to delay the injection of the second dose of messenger RNA vaccine only in people under 50 year old and without exceeding 3 weeks [6]. In view of the need to rush the

vaccination campaign despite vaccine supply limitations, and based on the vaccination coverage modeling work, a longer period of around 6 months would make it possible to reach a herd immunity much faster with the same number of doses while ensuring a satisfactory individual protection.

The current evolution of the epidemic in France, under the pressure of the B.1.1.7 variant, and the constraints of vaccine supply impose an urgent adaptation of the vaccine strategy. Therefore, **the French National Academy of Medicine recommends:**

- to postpone the vaccination of people having been infected by SARS-CoV-2, on the basis of a positive RT-PCR test, to 6 months after the date of positivity of this test;
- to delay the date of the second injection of messenger RNA vaccine by 6 months in immunocompetent people under 55 years old;
- to broaden the population of people who can receive a first injection of messenger RNA vaccine, which would make it possible to offer it as soon as possible to highly exposed people, especially to teaching professionals.

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3. Bosetti P et al. A race between SARS-CoV-2 variants and vaccination: The case of the B.1.1.7 variant in France, *HAL Pasteur* 2021
4. Thompson MG et al. Interim Estimates of Vaccine Effectiveness of BNT162b2 and mRNA-1273 COVID-19 Vaccines in Preventing SARS-CoV-2 Infection Among Health Care Personnel, First Responders, and Other Essential and Frontline Workers - Eight U.S. Locations, Dec 2020-March 2021. *MMWR* 2021, 70; 13: 495-500.
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