

COVID-19 vaccination strategies

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Executive summary

Health Council of the Netherlands



Since the beginning of 2020, the world has been facing a COVID-19 pandemic caused by the novel coronavirus (SARS-CoV-2). The spread of the virus has so far resulted in at least 40 million people becoming ill and approximately 1 million people being known to have died of the consequences of COVID-19.

Various vaccines are currently being developed in order to combat the pandemic. The Dutch Ministry of Health, Welfare and Sport asked the Health Council of the Netherlands to provide recommendations about vaccination against COVID-19. No vaccines are yet available to assess. In anticipation of vaccines becoming available in the future, the Health Council's Permanent Committee on Vaccinations outlines which vaccination strategies could be used as soon as a vaccine becomes available, given that there will not immediately be sufficient vaccines available to vaccinate everyone in the Netherlands.

High disease burden of COVID-19

COVID-19 is a respiratory tract infection caused by *severe acute respiratory syndrome coronavirus 2* (SARS-CoV-2). Although the disease only causes mild symptoms in some people, it can also lead to hospital admission and death. Evidence has shown that the elderly and people with serious underlying health conditions run a higher risk of becoming seriously ill or dying after an infection.

The Netherlands faces a high burden of disease. Until the beginning of October almost 145,000 confirmed cases and well over 6,400 deaths had been reported and more than 13,000 COVID-19 patients had been admitted to hospital. As not everyone who has or had symptoms is also tested for the presence of SARS-CoV-2, the actual numbers are higher.

Current lack of effective treatment

Although the symptoms of COVID-19 can be mitigated by using various (existing) pharmacotherapies and hospitalization, there is no way yet to prevent people from becoming ill from the virus. Research into vaccines to combat COVID-19 is being conducted all over the world. The first vaccines are expected to become available in the spring of 2021. At the European level, the Netherlands has signed contracts for the purchase of six vaccines which are currently being developed.

In addition to vaccination, research is also being carried out into passive immunisation which involves the administration of antibodies.

Considerations for prioritisation

The amount and timing of vaccine availability in the Netherlands is not yet known. Initially, the number of available vaccines will be insufficient to vaccinate the adult population. As a result,



the government will have to set priorities in terms of who will be offered vaccination first and why.

Prioritising groups for vaccination is a complex issue, because it cannot be based solely on medical and scientific data. In order to justify the choices made with regard to prioritisation, it is important to explain the ethical arguments on which they are based. General ethical principles which provide a guideline for prioritisation are utility and fairness.

- The *principle of utility* implies that the distribution of resources maximises (health) benefits for the population as a whole.
- The *principle of fairness* implies that equal weight is given to equal claims of people to resources.

Potential vaccination strategies

The ethical principles guide potential objectives for group prioritisation for vaccination. On the basis of those objectives the committee has devised the following potential vaccination strategies.

1) *Reducing (severe) morbidity and mortality as a consequence of COVID-19*

In the case of scarce resources during a pandemic, a common focus of utility is reducing severe morbidity and mortality. The fact that increased risks of severe morbidity and mortality fall on those who are already the most vulnerable, means that preventing deaths can also be defended by the principle of fairness.

If this is applied to the distribution of a limited availability of vaccines against COVID-19, this would mean that priority should be given to groups that run the highest risk of becoming seriously ill or dying from COVID-19. These groups consist of people over the age of 60 and people with serious underlying health conditions affecting, for example, the heart or respiratory system, or people with diabetes mellitus.

If the medical risk groups cannot be vaccinated for medical reasons, indirect protection can be aimed for by vaccinating healthcare workers or informal carers who are in direct contact with people in medical risk groups. This would apply,

for example, to employees in long-term care institutions, such as nursing homes.

A group that is also eligible for vaccination in this strategy are people who run a greater risk of becoming infected due to their profession or living conditions. That applies, for example, to healthcare workers who are in direct contact with patients.

2) *Reducing transmission of SARS-CoV-2*

The spread of SARS-CoV-2 negatively affects everyone in society. Negative consequences include direct harm to individuals (varying from mild symptoms to serious illness and death) and indirect social harm in the form of downscaling regular healthcare, unemployment, educational disadvantages or loneliness. A vaccination strategy aimed at reducing transmission of the virus implies that the ones being vaccinated first are the people who play a major role in spreading the virus in the population. This will provide indirect protection to vulnerable groups and reduce the level of indirect social harm. This strategy is underpinned by a broad



interpretation of utility (not just health by itself). In this strategy, groups who contribute the most to spreading the virus are eligible for vaccination. However, more research is needed to determine the effect this strategy can achieve. Moreover, it is not yet clear whether candidate vaccines offer protection against transmission.

3) Preventing societal disruption

Another potential broad interpretation of the principle of utility involves retaining society's vital infrastructure. In this context, a distinction can be made between safeguarding continuity of healthcare and continuity of other vital processes, such as security, education and public administration. The focus on retaining society's vital infrastructure is not based solely on considerations of public health, but involves, additionally, a broader societal choice.

This vaccination strategy would involve prioritisation of people who work in healthcare and in other vital sectors. However, the decision to adopt this strategy in a situation of scarcity should be supported by a realistic threat of

societal disruption. A key factor is the epidemiological situation (including sick leave or mortality in certain sectors) at the moment the vaccine becomes available.

Advice

Which strategy can best be used depends on scientific data on the vaccines which, to this date, are still unavailable. It also depends on the pandemic situation at the time when the vaccines become available. Based on current scientific knowledge and the current number of infections and hospital admissions, the committee recommends opting to reduce severe morbidity and mortality (strategy 1). This strategy implies that, initially, the following groups are eligible for vaccination:

- clinically vulnerable groups: people who run an increased risk of severe morbidity and mortality, namely people over the age of 60 and people with serious heart or respiratory conditions, diabetes mellitus, chronic renal insufficiency, immune disorders, or people being treated with immunosuppressants

leading to reduced resistance to respiratory infections, people with mental disabilities who live in institutions and residents of nursing homes;

- if these medical risk groups cannot themselves be vaccinated for medical reasons, informal carers and healthcare workers who risk infecting them;
- healthcare workers who are in direct contact with patients.

Due to the limited quantities of vaccine that will be available, it is likely that within the proposed strategy further prioritisation will be necessary. The committee expects that the greatest health benefit can be achieved by starting with people aged over 60 who have serious disorders, followed by the oldest members of that group, or the informal carers and healthcare workers who risk infecting them if these groups cannot themselves be vaccinated for medical reasons.

The committee wishes to emphasise that these recommendations are provisional and that it



may be necessary to review them once there is more certainty about the effectiveness of the various vaccines among different target groups. Also of importance is the epidemiologic setting. In the event of a decrease in infections, greater collective health benefits may be achieved by using the limited number of vaccines to reduce community transmission (strategy 2). It is also possible to opt for a strategy in which the focus is primarily on preventing societal disruption (strategy 3), or on a combination of the different strategies. The committee could imagine that considerations such as continuity of healthcare are also factored in, meaning that societal choices will have to be made in addition to health-related choices.



The Health Council of the Netherlands, established in 1902, is an independent scientific advisory body. Its remit is “to advise the government and Parliament on the current level of knowledge with respect to public health issues and health (services) research...” (Section 22, Health Act).

The Health Council receives most requests for advice from the Ministers of Health, Welfare and Sport, Infrastructure and Water Management, Social Affairs and Employment, and Agriculture, Nature and Food Quality. The Council can publish advisory reports on its own initiative. It usually does this in order to ask attention for developments or trends that are thought to be relevant to government policy.

Most Health Council reports are prepared by multidisciplinary committees of Dutch or, sometimes, foreign experts, appointed in a personal capacity. The reports are available to the public.

This publication can be downloaded from www.healthcouncil.nl.

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