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# An economic analysis indicates less strict infection control of COVID-19

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## PERSPECTIVES

ERIK MAGNUS SÆTHER

[ems@osloeconomics.no](mailto:ems@osloeconomics.no)

Erik Magnus Sæther, PhD in economics, partner in Oslo Economics and member of the government-appointed expert group charged with undertaking an economic analysis of the COVID-19 pandemic (the Holden Group).

The author has completed the ICMJE form and declares the following conflicts of interest: He is employed by Oslo Economics and is a member of the Holden Group.

HANNA ISABEL LØYLAND

Hanna Isabel Løyland, master of science in economics and business administration, senior economist in Oslo Economics.

The author has completed the ICMJE form and declares the following conflicts of interest: She is employed by Oslo Economics.

CHRISTOFFER BUGGE

Christoffer Bugge, master of science in economics and business administration, PhD candidate in health economics (thesis submitted) and manager of Oslo Economics.

The author has completed the ICMJE form and declares the following conflicts of interest: He is employed by Oslo Economics.

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**The societal burden of the COVID-19 pandemic is hard to determine, but a continuation of the strict infection control measures would be too costly compared to the gains of a lower disease burden, now that a large proportion of the population has been vaccinated.**

It is impossible to make a precise estimate of the societal and economic burden of the COVID-19 pandemic, but The Economist (1, 2) has made an attempt: The journal estimated excess mortality of 18.4 million lives at the turn of the year 2021–2022 and economic costs of approximately USD 10 trillion – exceeded only by the Great Depression in the 1930s and the two world wars. In Norway, the health consequences have so far been limited to 1 300 deaths and 7 300 hospital admissions with COVID-19 as their main cause (3). In addition, the financial crisis relief measures introduced in 2020 and 2021 have cost the Norwegian treasury NOK 233 billion, whereof NOK 104 billion have been targeted to private companies, NOK 39 billion to households, NOK 70 billion to critical sectors and NOK 10 billion to culture, sports and the voluntary sector (4).

*«The pandemic and the infection control measures lead to loss of value creation, reduced welfare and poorer services to other patients»*

The pandemic and the infection control measures lead to loss of value creation, reduced welfare and poorer services to other patients. The Holden Group, the expert committee that has prepared an economic assessment of the infection control measures, the vaccine strategy and the compensation schemes, has endorsed the Norwegian decision to control the spread of infection pending vaccination and better knowledge about the pandemic (5). The Government's goal is to reach the entire population with a booster dose before the end of February 2022 (6), and going forward we believe that capacity in the health service should be given greater emphasis when assessing the need for interventions, while the infection rate as such ought to be considered less important.

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## Principles for prioritising

Economists believe that public interventions should be prioritised based on their societal costs and benefits. However, the white paper and guidelines for priority setting in the healthcare services (7, 8) take a narrower perspective that includes only the costs and benefits in the healthcare sector. Benefits in the form of life years and quality of life are weighed against the costs to the health services of introducing an intervention. Other societal effects, such as the ability of patients to return to work or other effects on the economy, are not included in this trade-off. This way to prioritise contrasts with other areas, such as infrastructure investments or labour market interventions. In these areas, the analyses are based on the framework used by the Ministry of Finance (9), which considers all costs and benefits to be relevant. Interventions that help boost employment may benefit public budgets, which in turn can be used to improve health service provision (10). When making a decision, distribution effects, for example in terms of income distribution, age or geography also need to be taken into consideration. This framework is relevant for priority setting at the group level, but not at the individual level.

Although infection control measures are introduced to save lives and safeguard health, they have a wide impact with consequences that extend far beyond the health services. Prioritisation of measures and management of the pandemic should therefore also be based on a societal perspective and not exclusively on the effects that occur within the health services.

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## A large burden on society

Estimates made by Statistics Norway for the Coronavirus Commission show that the gross domestic product (GDP) for mainland Norway in 2020 fell NOK 145 billion, or 4.5 % short of what was expected before the pandemic struck [\(11\)](#). For large parts of the population, the non-economic consequences of the pandemic and the infection control measures represent the greatest burden, especially for children and adolescents [\(12\)](#).

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So far, reduced service provision to other patient groups has given rise to a substantial health loss, approximately six times the health loss of the COVID-19 patients, measured as estimates of quality-adjusted life years based on treatment statistics in the primary and specialist health services [\(13\)](#). We have no good indicators of the short- and long-term consequences for public health in the general population, but given that this affects a lot of people, even a small change will have significant consequences overall.

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## Uncertainty about the road ahead

It is uncertain how many years of life we have saved as a result of the infection control measures, but based on early models from the Norwegian Institute of Public Health, the Holden Group estimated in its first report that in the absence of costly infection control measures we would lose somewhat more than 333 000 statistical life-years [\(14\)](#). Given a valuation taken from the Norwegian Directorate of Health's draft manual for health effects in economic analyses [\(15\)](#), the analyses assumed a value of NOK 1.4 million per quality adjusted life-year, which yields a value of NOK 466 billion for the estimated number of years of life lost. The actual willingness to pay for years of life saved when health service measures are being considered is not publicly known, but in light of individual cases that have been assessed by The National System for Managed Introduction of New Health Technologies within the Specialist Health Service in Norway, we estimate that the willingness to pay approaches NOK 1 million per quality-adjusted life year for the most serious diseases.

The Norwegian Directorate of Health has previously estimated that so far during this pandemic, we have paid far more per year of life gained or COVID-19 patient saved than we are normally prepared to pay (16). This is not because this patient group is valued higher than others, but because it has been easier to control the infection rate when it is low, with a view to preventing critical functions from collapsing.

Continuing the strict infection control regime is too costly relative to the gains from a lower disease burden now that a large proportion of the population has been vaccinated. Vaccinations and better treatment for the most vulnerable patients mean that the cost of the pandemic in terms of deaths and serious illness is lower than it was, and more contagious virus variants have made the pandemic harder to keep under control. Both these changes indicate that we need to accept a faster spread of the infection in order to avoid the negative effects of strict infection control measures.

We are nevertheless in a situation of uncertainty, where there are grounds to impose restrictions in light of the precautionary principle. There appears to be general agreement about three main measures at this stage of the pandemic: i) restrict the spread of infection to ensure that the capacity of the health services is not exceeded; ii) encourage as many as possible to take the vaccine in order to limit serious illness; and iii) strengthen the capacity of the health services to limit health loss and lessen the need for intrusive infection control measures. In the following, we discuss the design of these measures in an economic perspective.

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## A prioritisation map for infection control measures

Assessments of what measures should be continued and what should be discontinued should be based on balancing the burden the measures entail against their effect in terms of infection control, and not only economic concerns or infection control concerns. In particular, measures that entail large costs for welfare or the economy and little or moderate effect in terms of infection control should be given less priority. This appears to be a recognised principle, but very burdensome measures are still being applied, for example the 'red level' in schools.

*«In particular, measures that entail large costs for welfare or the economy and little or moderate effect in terms of infection control should be downgraded»*

Based on a cost/benefit approach, the Holden Group's prioritisation map indicates the kinds of infection control measures that should be prioritised when the restrictions are lifted (see Table 0.2 in the report from the Holden Group (13)). The sum of measures must be adapted in a way that will not cause the infection rate to soar, while the combination of measures must be seen as proportionate.

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## Vaccinations and disease limitation

Vaccination is one of the most cost-effective healthcare interventions of all [\(17, 18\)](#). Since fewer infected people develop severe illness, this is a key measure to reduce the risk of overburdening the healthcare sector [\(19\)](#). Compared with Europe in general, a relatively high proportion of the Norwegian population has been vaccinated [\(20\)](#).

Economic theory teaches us how to handle negative externalities, meaning that individuals do not face the full economic costs of their choices. For example, in a decision to refuse the vaccine, the individual concerned does not take into account the high cost that may be incurred by intensive care or that a number of health workers have their holidays cancelled. Economists often respond to unwanted behaviour with taxes, as we know from the case of tobacco and alcohol. Another twist is to positively discriminate in favour of people who comply with recommendations, meaning that the cost of non-compliance increases. The COVID-19 certificate is an example of positive discrimination. The effect of the COVID-19 certificate on the spread of infection is uncertain [\(21\)](#), but a mandatory COVID-19 certificate may help persuade more people to take the vaccine or the recommended booster doses.

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## Increase the capacity of the health services

While some intensive care staff work so much that they suffer from burnout, others have spare capacity, as shown by the decline in activity in the health trusts [\(22, 23\)](#). In our opinion, this spare capacity should be utilised, even if this might result in lower quality of care for COVID-19 patients, as long as this makes for increased total capacity and resilience over time.

*«This spare capacity should be utilised, even if this might result in lower treatment quality for COVID-19 patients, as long as this makes for increased total capacity and resilience over time»*

A 'let it rip' approach to the Omicron variant could possibly result in an exponential infection curve and cause the treatment capacity in hospitals to be exceeded by a wide margin. On the other hand, the need for continuing infection control should not serve as an excuse for refraining from doing as much as possible to boost the vaccination rate and increase the treatment capacity in the health services. As the final stage approaches, the need for a safety margin will gradually cease.

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## Conclusion

The further course of the pandemic remains uncertain. Areas of uncertainty include mutations and the development of the disease, self-regulating behaviour in the population and intervention fatigue, as well as vaccines.

The effects of the pandemic and infection control measures are wide-ranging. Prioritisations in health economics should be based on economic theory and the recommendations from the Holden Group, in the same way that the societal perspective is already applied in decision-making in other sectors.

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