Policy and Expert Panel, consisting of Austrian decision makers, clinical and ethical experts as well as international modeling specialists.

Results:

Maximum reduction of hospitalizations and deaths was achieved by starting vaccinations with the elderly and vulnerable, followed by middle-aged, HCW, and younger individuals. Optimizations for vaccinating 2.5 million individuals yielded the same prioritization and avoided about one third of deaths and hospitalizations. Starting vaccination with HCWs leads to slightly smaller reductions. The negative effects of COVID-19-related HCW absenteeism were not yet considered in our model.

Conclusions:

Our decision-analytic study shows that the elderly and vulnerable should be prioritized for vaccination until further vaccines are available to minimize COVID-19-related hospitalizations and deaths. An important ethical aspect complementing our modeling results is the protection of HCW, maximizing their occupational safety and ensuring risk-compensatory justice.

Key messages:

- To minimize COVID-19-related hospitalizations and death the elderly and vulnerable should be prioritized for vaccination until further vaccines are available.
- Prioritizing health care workers for COVID-19 vaccination is slightly less effective in the simulation but they may be considered for occupational safety and to ensure risk-compensatory justice.

Evaluation of a targeted COVID-19 vaccination strategy for Austria–a decision-analytic modeling study

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Background:

The supply of COVID-19 vaccine was limited when introduced. We aimed to inform decision makers at an early stage about targeted COVID vaccination strategies, accounting for limited capacities and adherence to support vaccination prioritization in Austria.

Methods:

We applied a dynamic agent-based population model to compare different vaccination prioritization strategies targeting the elderly (65 $\geq$ years), middle aged (45-64 years), younger (15-44 years), vulnerable (risk of severe disease due to comorbidities), and healthcare workers (HCW), to minimize COVID-19-related hospitalizations and deaths. First, outcomes were optimized for an initially available vaccine batch for 200,000 individuals. Second, stepwise optimization was performed, deriving a prioritization sequence for 2.5 million people. We considered sterilizing and non-sterilizing immunity, with different assumptions of effectiveness, over a 6-month period. The project team was advised by a Standing