

COVID-19 vaccination predicted to be cost effective in USA

Vaccination with a hypothetical COVID-19 vaccine is predicted to be cost effective in USA, according to findings of a Moderna-funded cost-utility analysis published in *Vaccine*.

A Markov model was used to estimate COVID-19-related direct medical costs and deaths with and without implementation of a hypothetical COVID-19 vaccine with 60% efficacy, in all US adults (≥ 18 years) and with prioritisation in subgroups based on age, risk and age, and occupation and age. Cost effectiveness was assessed from a US healthcare system perspective over a one-year time horizon. The assumed price of the vaccine was \$35* per dose (\$70 per course).

Overall, in the US adult population, the estimated incremental cost-effectiveness ratio (ICER) for COVID-19 vaccination versus no vaccination was \$8200 per QALY gained. In subgroups at the highest risk of COVID-19-related complications, such as adults aged 65 years or over, vaccination was found to be cost saving compared to no vaccination. However, in adults aged 49 years or below at low risk of COVID-19-related hospitalisation and death, estimated ICERs were \$94 000 per QALY gained or greater.

In sensitivity analysis, ICERs were found to be sensitive to vaccine price, vaccine efficacy, the prevalence of COVID-19 infection, and COVID-19 treatment costs.

In scenario analysis, it was estimated that a hypothetical COVID-19 vaccine would prevent 31% of COVID-19-related deaths in an optimistic supply scenario but only 23% of deaths under supply constraints. Prioritisation became more important when vaccine supply was constrained.

"Despite the uncertainties, our analyses demonstrate that a hypothetical COVID-19 vaccine would be a cost-effective health care intervention compared to no vaccine. Under the base case conditions, the vaccine would have to be priced as high as \$150 per dose to exceed an ICER of \$50,000 per QALY gained when targeted to the entire adult population," concluded the authors.

* 2020 US dollars