Who should be vaccinated first to slow the spread of new COVID variants?

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During a pandemic like the one caused by SARS-CoV-2, it is impossible to quickly vaccinate the entire population. Which individuals should be vaccinated first? The most fragile in order to reduce their risk of becoming ill? The youngest and most active individuals in order to limit epidemic progression? The decision is further complicated if we adopt an evolutionary standpoint: vaccination induces a selection pressure that

can favor certain strains of the virus, or variants, that are resistant to vaccines.

Is it possible to choose vaccine strategies that can slow down this evolution? This question is all the more crucial given that vaccine coverage against COVID-19 remains low in certain countries. On 18 January 2022, scientists from the Centre d'Ecologie Fonctionnelle et Evolutive (CNRS/Université de Montpellier/EPHE-PSL/IRD) published a theoretical framework in *PNAS* that assesses the impact of various vaccination strategies on the rate of emergence for new variants. For instance, in the case of SARS-CoV-2, the strategy of vaccinating older individuals as a priority appears highly effective, as it minimizes both selection for a resistant variant and overall mortality.

This study underscores the importance of taking the evolutionary dynamics of the virus into consideration as a complement to an exclusive focus on the dynamics of the epidemic.

More information: Sylvain Gandon et al, Targeted vaccination and the speed of SARS-CoV-2 adaptation, *Proceedings of the National Academy of Sciences* (2022). DOI: 10.1073/pnas.2110666119

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