

Up to 45 percent of SARS-CoV-2 infections may be asymptomatic

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An extraordinary percentage of people infected by the virus behind the ongoing deadly COVID-19 pandemic never show symptoms of the disease, according to the results of a Scripps Research analysis of public datasets on asymptomatic infections.

The findings, published in *Annals of Internal Medicine*, suggest that asymptomatic infections may account for as much as 45 percent of all COVID-19 cases, playing a significant role in the early and ongoing spread of COVID-19. The report highlights the need for expansive testing and contact tracing to mitigate the pandemic.

"The silent spread of the virus makes it all the more challenging to control," says Eric Topol, MD, founder and director of the Scripps Research Translational Institute and professor of Molecular Medicine at Scripps Research. "Our review really highlights the importance of testing. It's clear that with such a high asymptomatic rate, we need to cast a very wide net, otherwise the virus will continue to evade us."

Together with behavioral scientist Daniel Oran, Topol collected information from testing studies on 16 diverse cohorts from around the world. These datasets—gathered via keyword searches of PubMed, bioRxiv and medRxiv, as well as Google searches of relevant news reports—included data on nursing home residents, cruise ship passengers, prison inmates and various other groups.

"What virtually all of them had in common was that a very large proportion of infected individuals had no symptoms," says Oran. "Among more than 3,000 prison inmates in four states who tested positive for the [coronavirus](#), the figure was astronomical: 96 percent asymptomatic."

The review further suggests that [asymptomatic individuals](#) are able to transmit the virus for an extended period of time, perhaps longer than 14 days. The viral loads are very similar in people with or without symptoms, but it remains unclear whether their infectiousness is of the same magnitude. To resolve that issue, we'll need large-scale studies that include sufficient numbers of asymptomatic people.

The authors also conclude that the absence of symptoms may not imply an absence of harm. CT scans conducted on 54 percent of 76 asymptomatic individuals on the Diamond Princess cruise ship, appear to show significant subclinical lung abnormalities raising the possibility of SARS-CoV-2 infection impacting lung function that might not be immediately apparent. The scientists say further research is needed to confirm the potential significance of this finding.

The authors also acknowledge that the lack of longitudinal data makes distinguishing between asymptomatic and presymptomatic individuals difficult. An asymptomatic individual is someone who is infected with SARS-CoV-2, but never develops symptoms of COVID-19, while a presymptomatic person is similarly infected, but will eventually develop symptoms. Longitudinal testing, which refers to repeated testing of individuals over time, would help differentiate between the two.

"Our estimate of 40 to 45 percent asymptomatic means that, if you're unlucky enough to get infected, the probability is almost a flip of a coin on whether you're going to have symptoms. So to protect others, we think that wearing a mask makes a lot of sense," Oran concludes.

More information: Daniel P. Oran et al, Prevalence of Asymptomatic SARS-CoV-2 Infection, *Annals of Internal Medicine* (2020). [DOI: 10.7326/M20-3012](https://doi.org/10.7326/M20-3012)

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