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Correspondence



Blunting COVID-19's negative impact: Lessons from Israel's vaccination campaign

Dear *Travel Medicine and Infectious Disease* Editors,

In a recent study, data from Israel's largest health care organization found the effectiveness of preventing deaths of the BNT162b2 mRNA vaccine to be 72% with a 95% CI [19,100] for days 14 through 20 after the first dose [1]. According to data from Oxford University's Our World in Data, Israel currently (February 24/25, 2021 data) has the highest number of single shot vaccinations per capita in the world (90.21 vaccinations per 100 people), with an absolute number of 7.81 million COVID-19 vaccine doses (total population = 9.3 million), ranking it 4th highest in the world [2].

Studying those trends in more detail is an attempt to capture values of vaccinations that might suggest a visible change in health status of the Israeli population. Using Our World in Data [3] from December 20, 2020 to February 12, 2021, the 7-day moving average of daily new deaths (per million), estimated infections per 100 K, and new ICU admissions show an inverted U shape with estimated infections peaking on January 3, new ICU admissions peaking on January 20, and the 7-day moving average of new deaths peaking on January 22, while total number of vaccinations per 100 people has been increasing continuously from

December 19, 2020, reaching 72 vaccinations per 100 people at the end of the data series. Estimated infections peaked when vaccinations per 100 people reached 16, while new ICU admissions dropped abruptly at around 40 vaccinations per 100, suggesting that vaccinations at that level might be reducing the number of serious infections.

While data in Fig. 1 suggests that "herd immunity" has not been reached, one possibly reason being some vaccine hesitancy in Israel [4], even at around 20 vaccinations per 100 people, some level of protection to the population was conferred via a reduction in infections with reductions in new ICU admissions and new deaths lagging behind. Understandably, no extrapolations should be made from this observational case study and, over time, whether this trend holds true for other nations with different policies in place, or when other vaccines are used, needs to be explored further.

We strongly recommend the continued use of the vaccination campaign [5], masks and social distancing measures as the Stringency Index shows a relaxation of policies dropping from 85 on January 30, 2021 to 81 on February 4 to 63 on February 11, reaching the lowest stringency since the start of the vaccination [2]. This is not yet the time to relax such measures.

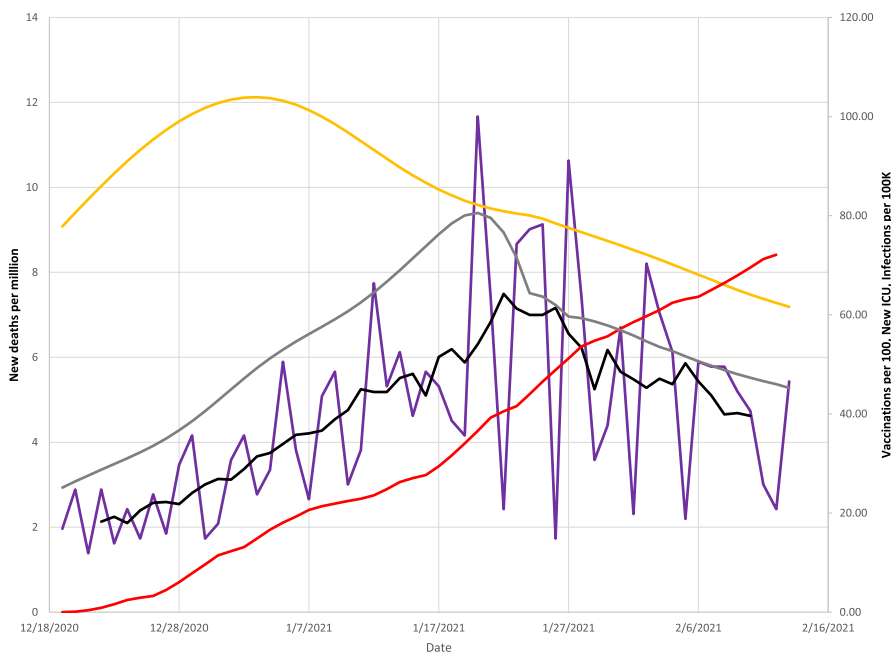


Fig. 1. Primary Y-axis plots new deaths per million (purple) and its 7-day moving average (black). Secondary Y-axis plots total number of vaccination doses per 100 people (red), mean new ICU admissions (grey), and mean infections per 100,000 people (yellow) in Israel. Source: new deaths per million and total vaccinations per 100 people from Our World in Data [2]. The mean new ICU admissions and estimated mean infections from IHME [3]. A multiple regression of the estimated infections per 100K over this period yields an adjusted R^2 of 77% and a negative association with respect to total vaccinations per 100 ($p < 0.001$) controlling for the IHME stringency index of policies ($p < 0.001$). (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

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Declaration of competing interest

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