

## Concise Communication

# Uptake of coronavirus disease 2019 (COVID-19) vaccination among general hospital staff in Israel

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### Abstract

Data from all general hospitals in Israel to April 2021 show that the mean hospital rate of staff vaccination was 84.4% for the first dose and 77.1% for the second dose, which are lower than general population rate, with mean 7% who did not complete their vaccinations. Healthcare workers have an important role in influencing the wider community.

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Following 3 pandemic waves, COVID-19 vaccination was rolled out in Israel in December 2020. Hospitals were the first to offer vaccines to all clinical and administrative staff. By April 22, 2021, 56% and 54% of the total population (9.3 million) had received their first and second vaccine doses, respectively, and ~90% of those aged >50 years were immune, that is, were vaccinated or had recovered from COVID-19.<sup>1</sup>

The official guidelines issued by the Ministry of Health in February 2021 mandated vaccination (or regular negative tests) of healthcare workers (HCWs) in contact with immunocompromised patients.<sup>2</sup> However, this requirement was not universally enforced and was not perceived as a compulsory mandate for healthcare staff to be vaccinated against COVID-19. Vaccination was made easily available to staff and was encouraged at all hospitals, and many reminders were sent to those who did not initially come forward. One medical center in Hadassah, Jerusalem, issued a statement that nonvaccinated workers were prohibited from working with patients.

Early vaccination of hospital staff was designed to protect the health of staff, to prevent transmission of the virus, to prevent staff quarantine, and to provide a role model for the general population. Although hospital staff have been at the forefront of the pandemic, data have shown both substantial levels of vaccine hesitancy and, once vaccination began, less than optimal uptake. Only 756 (63%) of 1,200 nurses surveyed in Hong Kong (March–April 2020) intended to take the vaccine.<sup>3</sup> In the United States, by March, only 52% of frontline HCWs were vaccinated with one dose, and 42% with both doses.<sup>5</sup> In this study, we examined staff uptake of the COVID-19 vaccine in Israel. Here, we describe changes in COVID-19 numbers and the need for quarantine among hospital staff as well as our analysis of the relationship between vaccine uptake and the burden of hospitalized COVID-19 patients.

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### Methods

Data obtained from the Israel Ministry of Health (<https://data.gov.il/dataset/covid-19>) on COVID-19 morbidity and quarantine data for the staff of all general hospitals between February 27, 2020, to May 19, 2021, showed 3 major waves of COVID-19 cases and staff quarantines: in March–April 2020, in July–October 2020, and in December–February 2021. Following vaccination, the number of staff infected and quarantined fell dramatically from January onward, reaching the lowest levels in April 2021 (Fig. 1). Quarantine (for staff in contact with a confirmed case or arriving from abroad) was counted daily (ie, was counted as an “event” for 10–14 consecutive days).

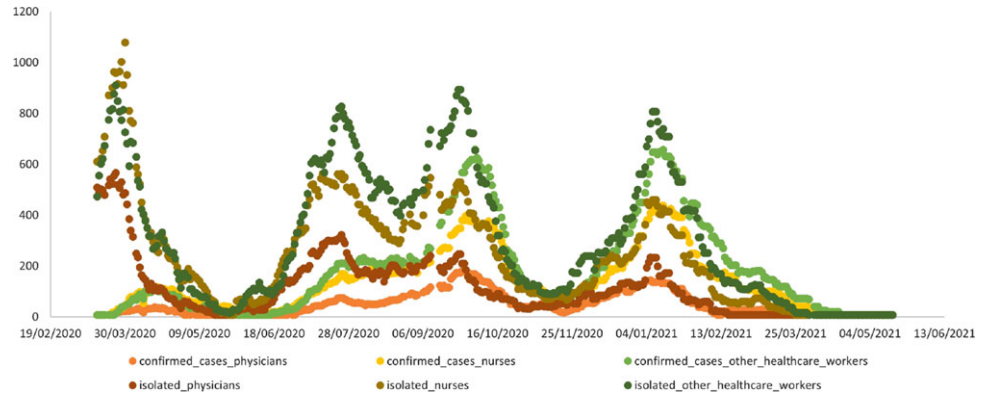
### Results

During the first wave, quarantines and infections were highest among nurses, with “other” nonclinical staff comprising fewer isolations. In the second and third waves, the “other” staff category demonstrated the highest number of confirmed cases and quarantines.

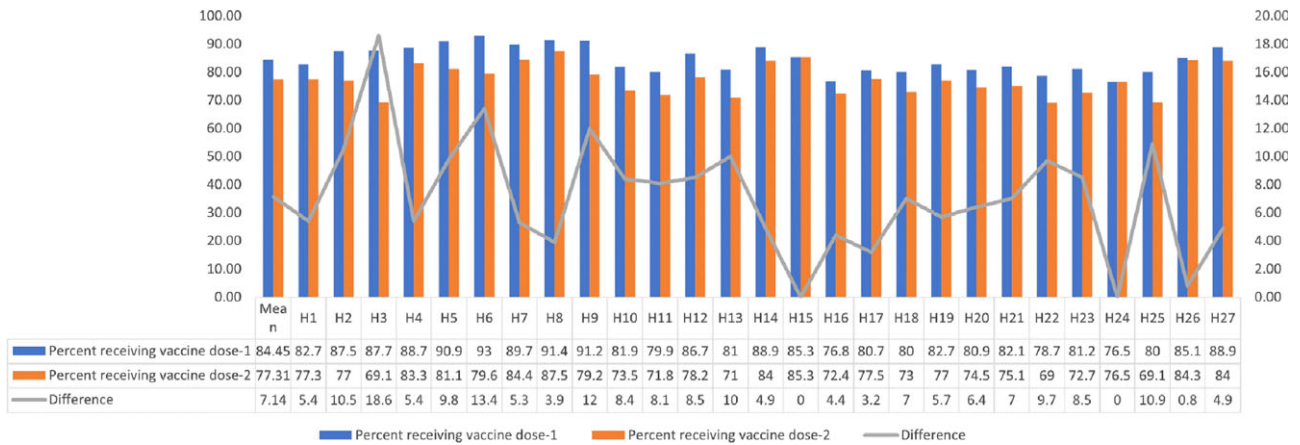
Data on staff uptake of first and second vaccine doses were obtained from the Ministry of Health updated to April 22, 2021. These data included 27 of 29 general public hospitals in Israel, covering 96.1% of the overall number of general hospital beds in the country. The mean rates of hospital staff vaccination were 84.4% and 77.1% for the first and second vaccine doses, respectively (Fig. 2). The mean vaccination rate for first dose varied between 76.5% and 93% among hospitals. Uptake for the second dose ranged from 69.0% to 87.5%. Up to 18% of hospital employees dropped out before completing vaccination, with a mean of 7%. The 2 hospitals reported no gap, that is, the same percentage of staff received both doses.

### Discussion

Despite the high risk of exposure to COVID-19 and broad availability of vaccines, uptake of vaccination among staff was not consistently high across general hospitals in Israel, with a mean of 77%



**Fig. 1.** COVID-19 in healthcare workers: confirmed cases and isolated personnel, by date and profession, February 2020–May 2021.



**Fig. 2.** Proportion of hospital staff vaccinated in dose 1 and dose 2 of BioNTech m-RNA vaccine by hospital between February 20 and April 22, 2020.

completing the required 2 doses. This rate is slightly lower than the overall population rate of 80% among those aged 20–70 years (equivalent to working age population) who received 2 doses.

During the peaks of the 3 pandemic waves, many hospital staff were infected and quarantined, putting extra burden on the remaining hospital staff. These numbers began to fall several weeks after the vaccination campaign was implemented.

Early in the pandemic, severe acute respiratory coronavirus virus 2 (SARS-CoV-2) transmission within hospitals occurred between staff members and between patients and staff. The latter was a particular source of contagion prior to the introduction of personal protective equipment (PPE)<sup>6</sup> and the cohorting of COVID-19 patients in designated wards. Given the high burden of disease among staff before the introduction of the vaccine, their knowledge about the course of the disease, and easy access to the vaccine offered to them on site, high uptake was expected.

The mean proportion of Israeli hospital staff who received one dose of the vaccine (84%) is lower than that reported in the British SIREN study (89%).<sup>4</sup> Both countries started to vaccinate hospital personnel in December 2020; however, the second dose was delayed in the United Kingdom, and in Israel it was delivered after a 3-week interval.

With the exception of 1 medical center (Hadassah), which clearly stated that nonvaccinated staff could not care for patients, other hospitals used reminders and “soft” measures to encourage vaccination, alongside the government’s green pass incentive scheme for vaccinated or recovered people. Indeed, the largest

of Hadassah’s 2 campuses scored relatively high in their rates of first dose (89%) and second dose (84%).

It is important to learn why a substantial proportion did not complete full vaccination, despite it being easily accessible. Concerns surrounding safety and efficacy of the novel vaccine early in the vaccination campaign as well as antivaccine rhetoric on social media may have influenced staff attitudes. Beyond vaccine hesitancy, vaccine apathy has been described in relation to the COVID-19 vaccine, whereby vaccination is perceived as low priority once the rate of infection begins to drop, or workers may be overwhelmed by daily struggles perceived as having higher priority.<sup>7</sup> Thus, along with conflicting reports regarding efficacy of a single dose, these factors may lead some staff to consider 1 dose sufficient, despite data that support the 2-dose regimen. A study of UK HCWs concluded that the likelihood of staff getting COVID-19 was reduced after a single dose; however, infections still occurred among partially vaccinated staff.<sup>8</sup>

Achieving high vaccine coverage within hospitals is important to protect patients and staff, to reduce lost workdays, and to influence others. A survey among US HCWs in October–November 2020 found that more than half preferred to defer their decision regarding uptake of the vaccine until reviewing more data. Safety (69%), effectiveness (69%), and speed of development (74%) were the concerns most commonly expressed.<sup>9</sup> Furthermore, acceptance of COVID-19 vaccine was associated with a plan to recommend vaccination to friends and family. HCWs are a trustworthy and credible source of vaccine-related information, and they could help build public confidence in vaccination.<sup>10</sup> Although HCWs may be

influenced by attitudes in the community, they can equally influence others from a position of knowledge. Vaccine hesitancy or failure to complete vaccination among HCWs might contribute to hesitancy among their patients, families, and the wider community.

In summary, Israel reached high overall vaccination rate in a short time. Swift vaccination of medical teams led to a sharp drop in staff infections and quarantines. However, the proportion of hospital staff choosing to be vaccinated was not higher than the age-matched rate in the general population, and ~7% of staff did not complete the second dose. Healthcare workers have an important role in influencing the wider community regarding vaccination. Understanding individual and system-based barriers to vaccination in hospital staff, particularly the reasons for not completing the second dose, and providing transparent information on the risk of vaccine adverse events versus COVID-19 risks, could boost vaccination rates among staff and improve their position as role models for the general population.

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