

## Supplemental Online Content

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### **eMethods**

**eTable.** ICD-10 codes used to define acute respiratory infection

This supplemental material has been provided by the authors to give readers additional information about their work.

## **eMethods**

### *Study design and participants*

Kaiser Permanente Southern California (KPSC) is a large integrated health-care system with more than 4.7 million members in Southern California USA. KPSC has an integrated electronic health record (EHR) system that includes data for members across all settings of care. During the first part of the study period, BA.4/5 was the predominant sublineage in the United States with some BA.2-related sublineages (including BA.2.12.1) co-circulating with BA.4/5. Beginning in October 2022, BQ.1x sublineages began increasing, however, by the week of January 22, 2023, XBB-related sublineages became predominant. Participants 1–4 years of age were required to have at least one year of health plan membership to determine comorbidities and medical history. A 30-day gap in membership was allowed to account for any delays in renewal of membership. Participants <1 year of age were not required to have any prior health plan membership.

### *Exposures*

All members were eligible for COVID-19 vaccines at no cost based on FDA authorized or approved indications. KPSC EHRs captured all vaccinations administered within KPSC and were updated daily with vaccine administration data from the California Immunization Registry, to which all healthcare providers are required by law to report COVID-19 vaccinations within 24 hours. As such, misclassification of vaccination status is unlikely.

Patients were included only if they were (1) unvaccinated against COVID-19 (i.e., never received a COVID-19 vaccine of any type) or (2) received 2 or 3 doses of original, wild-

type Pfizer-BioNTech BNT162b2. A child's vaccination status was determined based on doses received  $\geq 14$  days prior to the encounter. Minimal required intervals between doses varied by recommendation<sup>1</sup> and were defined as:  $\geq 21$  days between a first and second dose and  $\geq 8$  weeks ( $\geq 56$  days) between a second and third dose.<sup>1</sup> Children who received only 1 dose of BNT162b2,  $>3$  doses of BNT162b2, or any other COVID-19 vaccine were excluded.

### *Outcomes*

SARS-CoV-2 PCR tests among cases and controls were restricted to those administered  $\leq 14$  days prior to the initial encounter or  $\leq 3$  days after the encounter. Patients could contribute more than one event to the study if the events were  $>90$  days apart.

### *Statistical analysis*

Patient and clinical characteristics were compared across cases and test-negative controls and by vaccination status. Adjusted ORs and 95% CIs were estimated by adjusting for date of encounter, age (0, 1, 2, 3, or 4 years), sex (male, female), self-reported race/ethnicity (non-Hispanic Asian/Pacific Islander, non-Hispanic Black, Hispanic, non-Hispanic White, and other [including individuals who identified as American Indian or multiple or other race and ethnicity] or unknown), pediatric risk score<sup>2</sup> (0, 1, 2, 3, and  $\geq 4$ ), and documentation of prior SARS-CoV-2 infection (ever vs never) in multivariable logistic regression models. Missing values were treated as separate categories for all variables in all analyses.

### **References**

1. Munoz FM, Sher LD, Sabharwal C, et al. Evaluation of BNT162b2 Covid-19 Vaccine in Children Younger than 5 Years of Age. *N Engl J Med*. Feb 16 2023;388(7):621-634. doi:10.1056/NEJMoa2211031
2. Sun JW, Bourgeois FT, Haneuse S, et al. Development and Validation of a Pediatric Comorbidity Index. *Am J Epidemiol*. May 4 2021;190(5):918-927. doi:10.1093/aje/kwaa244

**eTable. ICD-10 codes used to define acute respiratory infection**

ARI	ICD-10	A22.1, A37.00, A37.01, A37.10, A37.11, A37.80, A37.81, A37.90, A37.91, A48.1, B25.0, B34.2, B44.0, B77.81, B97.29, J00, J01, J02, J03, J04, J05, J06, J09.X1, J09.X2, J09.X3, J09.X9, J10.00, J10.01, J10.08, J10.1, J10.2, J10.8, J10.81, J10.82, J10.83, J10.89, J11.00, J11.08, J11.1, J11.2, J11.81, J11.82, J11.83, J11.89, J12.0, J12.1, J12.2, J12.81, J12.82, J12.89, J12.3, J12.89, J12.9, J13, J14, J15.0, J15.1, J15.20, J15.211, J15.212, J15.29, J15.3, J15.4, J15.5, J15.6, J15.7, J15.8, J15.9, J16.0, J16.8, J17, J18.0, J18.1, J18.2, J18.8, J18.9, J20, J21.0, J21.1, J21.8, J21.9, J22, J80, J96, M35.81, R05, R06.00, R06.02, R06.03, R06.09, R06.1, R06.82, R09.02, R09.2, R50.9, U07.1, U07.2
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