Supplemental Online Content

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eTable 1. Acute Respiratory Infection Codes, November 1, 2021, to March 18, 2022

eTable 2. Adjusted Effectiveness Associated With BNT162b2 Against Emergency Department or Urgent Care Encounters (Without Subsequent Hospitalization) for Delta- or Omicron-Related Acute Respiratory Illness

eTable 3. Unadjusted and Adjusted Effectiveness Associated With BNT162b2 Against Emergency Department or Urgent Care Encounters (Without Subsequent Hospitalization) for Delta- or Omicron-Related Acute Respiratory Illness Among Patients Without Prior Documented SARS-CoV-2 Infection

This supplemental material has been provided by the authors to give readers additional information about their work.
| Code   | Description                                              |
|--------|----------------------------------------------------------|
| A48.1  | LEGIONNAIRES' DISEASE                                   |
| B34.2  | CORONAVIRUS INFECTION, UNSPECIFIED                      |
| B44.0  | INVASIVE PULMONARY ASPERGILLOSIS                       |
| B97.29 | OTH CORONAVIRUS AS THE CAUSE OF DISEASES CLASSD ELSWHR  |
| J00    | ACUTE NASOPHARYNGITIS (COMMON COLD)                     |
| J01.00 | ACUTE MAXILLARY SINUSITIS, UNSPECIFIED                  |
| J01.10 | ACUTE FRONTAL SINUSITIS, UNSPECIFIED                    |
| J01.20 | ACUTE ETHMOIDAL SINUSITIS, UNSPECIFIED                  |
| J01.30 | ACUTE SPHENOIDAL SINUSITIS, UNSPECIFIED                 |
| J01.40 | ACUTE PANSINUSITIS, UNSPECIFIED                         |
| J01.80 | OTHER ACUTE SINUSITIS                                   |
| J01.90 | ACUTE SINUSITIS                                          |
| J02.0  | STREPTOCOCCAL PHARYNGITIS                              |
| J02.8  | ACUTE PHARYNGITIS DUE TO OTHER SPECIFIED ORGANISMS      |
| J02.9  | ACUTE PHARYNGITIS, UNSPECIFIED                         |
| J03.00 | ACUTE STREPTOCOCCAL TONSILLITIS, UNSPECIFIED            |
| J03.90 | ACUTE TONSILLITIS, UNSPECIFIED                          |
| J04.0  | ACUTE LARYNGITIS                                        |
| J04.10 | ACUTE TRACHEITIS WITHOUT OBSTRUCTION                    |
| J05.0  | ACUTE OBTURATIVE LARYNGITIS (CROUP)                     |
| J05.10 | ACUTE EPIGLOTITIS WITHOUT OBSTRUCTION                   |
| J06.0  | ACUTE LARYNGOPHARYNGITIS                               |
| J06.9  | ACUTE UPPER RESPIRATORY INFECTION, UNSPECIFIED          |
| J09.X1 | INFLUENZA DUE TO IDENT NOVEL INFLUENZA A VIRUS W PNEUMONIA |
| J09.X2 | FLU DUE TO IDENT NOVEL INFLUENZA A VIRUS W OTH RESP MANIFEST |
| J10.00 | FLU DUE TO OTH IDENT FLU VIRUS W UNSP TYPE OF PNEUMONIA |
| J10.01 | FLU DUE TO OTH IDENT FLU VIRUS W SAME OTH IDENT FLU VIRUS PN |
| J10.08 | INFLUENZA DUE TO OTH IDENT INFLUENZA VIRUS W OTH PNEUMONIA |
| J10.1  | FLU DUE TO OTH IDENT INFLUENZA VIRUS W OTH RESP MANIFEST |
| J10.2  | INFLUENZA DUE TO OTH IDENT INFLUENZA VIRUS W GI MANIFEST |
| J11.00 | FLU DUE TO UNIDENTIFIED FLU VIRUS W UNSP TYPE OF PNEUMONIA |
| J11.08 | FLU DUE TO UNIDENTIFIED FLU VIRUS W SPECIFIED PNEUMONIA  |
| J11.1  | FLU DUE TO UNIDENTIFIED INFLUENZA VIRUS W OTH RESP MANIFEST |
| J12.1  | RESPIRATORY SYNCYTIAL VIRUS PNEUMONIA                   |
| J12.2  | PARAINFLUENZA VIRUS PNEUMONIA                           |
| J12.3  | HUMAN METAPNEUMOVIRUS PNEUMONIA                         |
| J12.81 | PNEUMONIA DUE TO SARS-ASSOCIATED CORONAVIRUS             |
| J12.82 | PNEUMONIA DUE TO CORONAVIRUS DISEASE 2019               |
| J12.89 | OTHER VIRAL PNEUMONIA                                  |
| J12.9  | VIRAL PNEUMONIA, UNSPECIFIED                            |
| Code | Description |
|------|-------------|
| J13  | Pneumonia due to Streptococcus pneumoniae |
| J14  | Pneumonia due to Hemophilus influenzae |
| J15.0| Pneumonia due to Klebsiella pneumoniae |
| J15.1| Pneumonia due to Pseudomonas |
| J15.20| Pneumonia due to Staphylococcus, unspecified |
| J15.211| Pneumonia due to Methicillin susceptible Staph |
| J15.212| Pneumonia due to Methicillin-resistant Staphylococcus aureus |
| J15.4| Pneumonia due to other Streptococci |
| J15.5| Pneumonia due to Escherichia coli |
| J15.6| Pneumonia due to other aerobic gram-negative bacteria |
| J15.7| Pneumonia due to Mycoplasma pneumoniae |
| J15.8| Pneumonia due to other specified bacteria |
| J15.9| Unspecified bacterial pneumonia |
| J16.8| Pneumonia due to other specified infectious organisms |
| J18.0| Bronchopneumonia, unspecified organism |
| J18.1| Lobar pneumonia, unspecified organism |
| J18.8| Other pneumonia, unspecified organism |
| J18.9| Pneumonia, unspecified organism |
| J20.2| Acute bronchitis due to Streptococcus |
| J20.5| Acute bronchitis due to Respiratory syncytial virus |
| J20.6| Acute bronchitis due to Rhinovirus |
| J20.8| Acute bronchitis due to other specified organisms |
| J20.9| Acute bronchitis, unspecified |
| J22| Unspecified acute lower respiratory infection |
| J39.0| Retropharyngeal and parapharyngeal abscess |
| J39.1| Other abscess of pharynx |
| J39.2| Other diseases of pharynx |
| J39.8| Other specified diseases of upper respiratory tract |
| J80| Acute respiratory distress syndrome |
| J96.00| Acute respiratory failure, unspecified with hypoxia or hypercapnia |
| J96.01| Acute respiratory failure with hypoxia |
| J96.02| Acute respiratory failure with hypercapnia |
| J96.10| Chronic respiratory failure, unspecified with hypoxia or hypercapnia |
| J96.11| Chronic respiratory failure with hypoxia |
| J96.12| Chronic respiratory failure with hypercapnia |
| J96.20| Acute and chronic respiratory failure, unspecified with hypoxia or hypercapnia |
| J96.21| Acute and chronic respiratory failure with hypoxia |
| J96.22| Acute and chronic respiratory failure with hypercapnia |
| J96.90| Respiratory failure, unspecified, unspecified with hypoxia or hypercapnia |
| J96.91| Respiratory failure, unspecified with hypoxia |
| J96.92| Respiratory failure, unspecified with hypercapnia |
| Code    | Description                                           |
|---------|-------------------------------------------------------|
| M35.81  | MULTISYSTEM INFLAMATORY SYNDROME                      |
| M35.89  | OTHER SPECIFIED SYSTEMIC INVOLVEMENT OF CONNECTIVE TISSUE |
| R05.1   | ACUTE COUGH                                          |
| R05.3   | CHRONIC COUGH                                        |
| R05.4   | COUGH SYNCOPE                                        |
| R05.8   | OTHER SPECIFIED COUGH                                 |
| R05.9   | COUGH, UNSPECIFIED                                   |
| R09.2   | RESPIRATORY ARREST                                   |
| R50.9   | FEVER, UNSPECIFIED                                   |
| U07.1   | COVID-19                                              |
Table 2. Adjusted Effectiveness Associated With BNT162b2 Against Emergency Department or Urgent Care Encounters (Without Subsequent Hospitalization) for Delta- or Omicron-Related Acute Respiratory Illness

Vaccine effectiveness and 95% confidence intervals based on results from multivariable logistic regression analysis comparing adolescents 12–17 years of age who received the two-dose primary or a third (booster) dose of BNT162b2 compared to the unvaccinated adjusted for age, sex, race/ethnicity, BMI, prior positive PCR test, pediatric comorbidity index, and admission date. Sample size was insufficient to determine effectiveness of three doses of BNT162b2 against delta.

| Time since completion of two-dose primary series | Time since completion of three-doses (booster) |
|-------------------------------------------------|-----------------------------------------------|
| <2 months                                       | Delta  | Omicron | Delta  | Omicron | Delta  | Omicron | Delta  | Omicron | Omicron |
| Unadjusted Vaccine Effectiveness (95% CI)       | 87 (66-95) | 72 (54-83) | 65 (42-79) | 47 (27-61) | 67 (52-78) | 50 (36-61) | 28 (1-48) | -31 (-62-6) | 91 (82-95) |
| Adjusted Vaccine Effectiveness (95% CI)        | 89 (69-96) | 73 (54-84) | 68 (46-81) | 38 (14-56) | 71 (57-81) | 45 (28-57) | 49 (27-65) | 16 (-7-34) | 87 (72-94) |
| Test-Negative Case-Control Status              |        |         |        |         |        |         |        |         |         |
| Vaccinated Cases                               | 22     | 78      | 149    | 280     | 10     |
| Unvaccinated Cases                             | 439    | 439     | 439    | 439     | 439    |
| Vaccinated Controls                            | 158    | 268     | 544    | 408     | 99     |
| Unvaccinated Controls                          | 713    | 713     | 713    | 713     | 713    |
**eTable 3.** Unadjusted and Adjusted Effectiveness Associated With BNT162b2 Against Emergency Department or Urgent Care Encounters (Without Subsequent Hospitalization) for Delta- or Omicron-Related Acute Respiratory Illness Among Patients Without Prior Documented SARS-CoV-2 Infection

Vaccine effectiveness and 95% confidence intervals based on results from multivariable logistic regression analysis comparing adolescents 12–17 years of age who received the two-dose primary or a third (booster) dose of BNT162b2 compared to the unvaccinated adjusted for age, sex, race/ethnicity, BMI, prior positive PCR test, pediatric comorbidity index, and admission date. Sample size was insufficient to determine effectiveness of two or three doses among those with documented prior SARS-CoV-2 infection and among those with three doses of BNT162b2 against delta.

| Overall two-dose primary series | Time since completion of two-dose primary series | Adjusted Vaccine Effectiveness (95% CI) |
|--------------------------------|-----------------------------------------------|----------------------------------------|
|                                | Delta | Omicron | Delta | Omicron | Delta | Omicron | Delta | Omicron | Delta | Omicron | Delta | Omicron |
|                                |       |         |       |         |       |         |       |         |       |         |       |         |
| Unadjusted Vaccine Effectiveness |       |         |       |         |       |         |       |         |       |         |       |         |
| (95% CI)                        |       |         |       |         |       |         |       |         |       |         |       |         |
|                                | 59(47-69) | 32(19-44) | 88(67-96) | 73(54-84) | 65(42-79) | 47(27-62) | 69(54-79) | 54(41-65) | 32(5-51) | -22(-52-2) | 91(83-96) |
| Adjusted Vaccine Effectiveness  | 64(53-73) | 37(23-49) | 88(68-96) | 72(52-84) | 66(44-80) | 35(9-54) | 70(56-80) | 46(29-59) | 47(23-63) | 18(-6-36) | 87(71-95) |

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