**Supplemental Table 1:** Survey instrument to assess risk factors hypothesized to be associated with SARS-CoV-2 infection in trainees from February 1 through June 30, 2020

|  |
| --- |
| **Sociodemographic factors** |
| **What is your age?** |
| **Please select the sex you were assigned at birth:**  Female  Male  Other  Prefer not to answer |
| **Please select the racial or ethnic categories that best describe your heritage (you may select more than one):**  American Indian, Native American or Alaskan Native  Asian (East or Southeast Asian, South Asian / Indian)  Black / African American / African  Native Hawaiian or Other Pacific Islander  Caucasian / White  Other (specify)  Please specify the other racial and/or ethnic categories that best describe your heritage: |
| **Do you identify as Hispanic or Latinx?**  No  Yes |
| **Occupational factors**  Data provided by Graduate Medical Education office: training specialty, postgraduate year, training level (i.e., resident vs. fellowship status), primary hospital site |
| ***Work setting between February 1 and June 30, 2020*** |
| **Select the settings to which you were assigned from February 2020 through June 2020? (Select all that apply)** |
| Intensive care unit (ICU)  Medical/surgical (non-ICU)  Emergency department  Telemedicine  Ambulatory care/clinic  Other (specify)  Please specify any other setting to which you were assigned from February 1, 2020 through June 30, 2020: |
| ***High-risk occupational exposures between February 1 and June 30, 2020*** |
| **From February 2020 through June 2020, did you care for patients with COVID-19? (In-person only, do not consider telemedicine.)**  Yes  No |
| **From February 2020 through June 2020, did you perform or attend an AEROSOL-GENERATING PROCEDURE performed on a patient under investigation (PUI) or with confirmed COVID-19?**  **Please consider only the following procedures as aerosol-generating:**   * **Cardiopulmonary resuscitation** * **Endotracheal intubation and extubation** * **Noninvasive positive pressure ventilation (e.g., BiPAP, CPAP)** * **Manual ventilation** * **Open suctioning of airway secretions** * **Bronchoscopy**   Yes  No |
| **Did you have CONTACT FOR MORE THAN 10 MINUTES with a patient under investigation (PUI) or with confirmed COVID-19 without wearing any of the following PPE during the period from February 1, 2020 through June 30, 2020?**   * **Without wearing N95 respirator?** * **Without wearing eye protection?** * **Without wearing gown?** * **Without wearing gloves?**   Yes, once  Yes, multiple times  No, never |
| ***Deployment factors between February 1 and June 30, 2020*** |
| **From February 2020 through June 2020, were you assigned to patient care duties outside of your usual clinical site? E.g., your usual clinical sites are Mount Sinai Hospital and Bronx VA and you were assigned to work at Mount Sinai Brooklyn.**  Yes  No |
| **From February 2020 through June 2020, did your typical clinical activities significantly change?**  **E.g., a pediatric resident caring for adult patients or an orthopedics resident working in an ICU**  Yes  No |
| **Select the type of change in your clinical activities from February 2020 through June 2020 (you may select more than one):**  Patient population change (e.g., a pediatric resident treating adults)  Department change (e.g., from surgical resident working in the emergency department)  Setting change (e.g., from primarily outpatient to inpatient care)  More time dedicated to telemedicine  Other (specify) |
| **Community factors** |
| **Zip code of your primary residence during the period from February 2020 through June 2020** |
| **Have you had more than 10 minutes of contact OUTSIDE OF WORK with a person with confirmed or suspected SARS-CoV-2 infection from February 2020 through June 2020?**  Yes, with someone with confirmed infection  Yes, with someone with suspected infection  No |
| **Number of adults in your household (including yourself)** |
| **Number of children (< 18 years) in your household** |
| **What was your PRIMARY mode of transportation TO/FROM WORK from February 2020 through June 2020 (you may select more than one):**  Subway  Bus  Cab or rideshare (e.g., Uber, Lyft)  Personal vehicle  Bicycle  Walking  Commuter train  Ferry  Did not commute to/from work during this period  Other |
| **What was your PRIMARY mode of transportation in your frequent activities UNRELATED TO WORK (e.g., when going for groceries, or during your leisure time) from February 2020 through June 2020 (you may select more than one):**  Subway  Bus  Cab or rideshare (e.g., Uber, Lyft)  Personal vehicle  Bicycle  Walking  Commuter train  Ferry  Did not commute to/from work during this period  Other |

**Supplemental Table 2:** Categorization of trainees who responded to the online survey between June 26 and August 31, 2020.

|  |  |  |  |
| --- | --- | --- | --- |
| Training specialty | Hospital-based, primarily non-procedural  (n = 213; 65%) | Surgery, OB-GYN or subspecialty  (n =53; 16%) | High-risk, primarily procedural  (n = 52; 16%) |
| Adult Cardiothoracic Surgery | 0 | 2 | 0 |
| Advanced Minimally Invasive Surgery | 0 | 1 | 0 |
| Allergy and Immunology | 3 | 0 | 0 |
| Anatomic and Clinical Pathology | 2 | 0 | 0 |
| Anesthesiology | 0 | 0 | 22 |
| Breast Surgery | 0 | 1 | 0 |
| Cardiology CT/MR Imaging | 1 | 0 | 0 |
| Cardiothoracic Imaging | 1 | 0 | 0 |
| Cardiovascular Disease | 1 | 0 | 0 |
| Cardiovascular Disease (Investigator) | 2 | 0 | 0 |
| Cardiovascular EP | 1 | 0 | 0 |
| Child and Adolescent Psychiatry | 3 | 0 | 0 |
| Clinical Neurophysiology | 1 | 0 | 0 |
| Complex General Surgical Oncology | 0 | 1 | 0 |
| Critical Care Medicine | 0 | 0 | 2 |
| Dermatology | 6 | 0 | 0 |
| Dermatopharmacology | 1 | 0 | 0 |
| Diagnostic Radiology | 11 | 0 | 0 |
| Emergency Medicine | 0 | 0 | 21 |
| Endocrinology | 1 | 0 | 0 |
| Endocrinology, Diabetes and Metabolism | 5 | 0 | 0 |
| Family Medicine | 11 | 0 | 0 |
| Female Pelvic Medicine and Reconstructive Surgery | 0 | 1 | 0 |
| Gastroenterology | 5 | 0 | 0 |
| General Practice Dentistry | 0 | 3 | 0 |
| Geriatric Medicine | 7 | 0 | 0 |
| Head and Neck Surgery | 0 | 4 | 0 |
| Headache Medicine | 1 | 0 | 0 |
| Hematology and Medical Oncology | 7 | 0 | 0 |
| Hospice and Palliative Medicine | 5 | 0 | 0 |
| Inflammatory Bowel Diseases | 1 | 0 | 0 |
| Infectious Disease | 6 | 0 | 0 |
| Internal Medicine | 58 | 0 | 0 |
| Liaison Psychiatry | 1 | 0 | 0 |
| Medicine | 1 | 0 | 0 |
| Movement Disorders | 1 | 0 | 0 |
| Multiple Sclerosis | 1 | 0 | 0 |
| Neonatal Perinatal Medicine | 0 | 2 | 0 |
| Nephrology | 2 | 0 | 0 |
| Neurocritical Care | 0 | 0 | 1 |
| Neurology | 9 | 0 | 0 |
| Neuromuscular Medicine | 1 | 0 | 0 |
| Neuroradiology | 1 | 0 | 0 |
| Neurosurgery | 0 | 1 | 0 |
| Obstetrics and Gynecology | 0 | 8 | 0 |
| Occupational Medicine | 1 | 0 | 0 |
| Ophthalmology | 0 | 1 | 0 |
| Oral and Maxillofacial | 0 | 1 | 0 |
| Orthopedic Surgery | 0 | 7 | 0 |
| Oral and Maxillofacial Surgery | 0 | 1 | 0 |
| Pediatric Gastroenterology | 1 | 0 | 0 |
| Pediatric Inflammatory Bowel Diseases | 1 | 0 | 0 |
| Pediatrics | 17 | 0 | 0 |
| Pediatrics/Medical Genetics | 1 | 0 | 0 |
| Pediatrics/Psychiatry/Child and Adolescent Psychiatry | 3 | 0 | 0 |
| Physical Medicine and Rehabilitation | 2 | 0 | 0 |
| Podiatric Medicine and Surgery | 0 | 1 | 0 |
| Preventive Medicine | 2 | 0 | 0 |
| Procedural Dermatology | 0 | 1 | 0 |
| Psychiatry | 24 | 0 | 0 |
| Pulmonary Disease and Critical Care Medicine | 0 | 0 | 5 |
| Radiation Oncology | 2 | 0 | 0 |
| Regional Anesthesiology and Acute Pain Medicine | 0 | 0 | 1 |
| Rheumatology | 2 | 0 | 0 |
| Shoulder Orthopedics | 0 | 1 | 0 |
| Surgery | 0 | 12 | 0 |
| Thoracic Surgery Integrated | 0 | 2 | 0 |
| Urology | 0 | 2 | 0 |

**Supplemental Table 3:** Self-reportedSARS-CoV-2 test results

|  |  |  |
| --- | --- | --- |
| **Variable** | **Negative SARS-CoV-2 test**  **(n = 262)** | **Positive SARS-CoV-2 test**  **(n = 66)** |
| RT- PCR (nasal or oral swab) only,no. (%) | 12 (5) | 2 (3) |
| IgG antibodies only, no. (%) | 158 (60) | 47 (71) |
| RT- PCR and IgG antibodies, no. (%) | 92 (35) | 17 (26) |

Abbreviations: RT-PCR, reverse transcriptase-polymerase chain reaction.

**Supplemental Table 4:** Comparison of main characteristics between study participants (n=328), the randomly selected sample (n=62) and all initially eligible trainees (n=2543)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Study participants**  **(n = 328)** | **Randomly selected sample**  **(n = 62)** | | **All eligible trainees**  **(n = 2543)** | |
|  | **n (%)** | **n (%)** | ***P-*valuea** | **n (%)** | ***P-*valueb** |
| **Primary hospital site, n (%)** |  |  | 0.74 |  | 0.01 |
| Beth Israel Medical Center | 28 (9) | 2 (3) | 232 (9) |
| Elmhurst Hospital Center | 15 (5) | 3 (5) | 157 (6) |
| Institute for Family Health | 6 (2) | 1 (2) | 23 (1) |
| Mount Sinai Medical Center | 211 (64) | 40 (65) | 1403 (55) |
| New York Eye and Ear Infirmary | 0 (0) | 0 (0) | 27 (1) |
| North Central Bronx | 1 (0) | 0 (0) | 32 (1) |
| Queens Hospital Center | 7 (2) | 1 (2) | 87 (3) |
| South Nassau Communities Hospital | 4 (1) | 0 (0) | 71 (3) |
| St. Luke's Roosevelt Hospital | 56 (17) | 15 (24) | 511 (20) |
| **PGY level, n (%)** |  |  | 0.35 |  | 0.64 |
| 1 | 73 (22) | 16 (26) | 605 (24) |
| 2 | 62 (19) | 7 (11) | 512 (20) |
| ≥ 3 | 193 (59) | 39 (63) | 1426 (56) |
| **Residency or fellowship, n (%)** |  |  | 0.44 |  | 0.27 |
| Fellowship | 85 (26) | 19 (31) | 589 (23) |
| Residency | 243 (74) | 43 (69) | 1954 (77) |
| **Self-reported SARS-CoV-2 test result** |  |  | 0.22 |  |  |
| Negative | 262 (80) | 54 (87) |  |  |
| Positive | 66 (20) | 8 (13) |  |  |
| **Race** |  |  | 0.28 |  |  |
| White | 208 (63) | 40 (65) |  |  |
| Asian | 82 (25) | 19 (31) |  |  |
| Black | 26 (8) | 1 (2) |  |  |
| Other | 12 (4) | 2 (3) |  |  |
| **Hispanic/Latinx** |  |  | 0.48 |  |  |
| No | 294 (90) | 58 (94) |  |  |
| Yes | 34 (10) | 4 (6) |  |  |
| **Change in usual patient population** |  |  | 0.65 |  |  |
| No | 296 (90) | 55 (89) |  |  |
| Yes | 32 (10) | 7 (11) |  |  |
| **Medical/surgical unit** |  |  | >0.99 |  |  |
| No | 106 (32) | 20 (32) |  |  |
| Yes | 222 (68) | 42 (68) |  |  |
| **Ambulatory clinic** |  |  | 0.23 |  |  |
| No | 227 (69) | 48 (77) |  |  |
| Yes | 101 (31) | 14 (23) |  |  |
| **Contact >10 mins *without N95*with a PUI or confirmed COVID-19 case** |  |  | 0.61 |  |  |
| Never | 221 (67) | 38 (61) |  |  |
| Once | 55 (17) | 12 (19) |  |  |
| More than once | 52 (16) | 12 (19) |  |  |
| **Training specialty** |  |  | 0.47 |  |  |
| Hospital based, primarily non-procedural | 221 (67) | 38 (61) |  |  |
| High-risk procedural | 53 (16) | 14 (23) |  |  |
| Surgery/subspecialty | 54 (17) | 10 (16) |  |  |
| **Number of children in household** |  |  | 0.85 |  |  |
| 0 | 275 (84) | 53 (86) |  |  |
| ≥ 1 | 53 (16) | 9 (14) |  |  |
| **Contact with individual with confirmed or suspected COVID-19 outside of work** |  |  | 0.41 |  |  |
| Yes | 73 (22) | 17 (27) |  |  |
| No | 255 (78) | 45 (73) |  |  |
| **Primary mode of transportation to locations other than work: *subway or bus*** |  |  | 0.86 |  |  |
| No | 269 (82) | 52 (84) |  |  |
| Yes | 59 (18) | 10 (16) |  |  |
| **Primary mode of transportation to locations other than work*: private car, bike, walk*** |  |  | 0.22 |  |  |
| No | 19 (6) | 1 (2) |  |  |
| Yes | 309 (94) | 61 (98) |  |  |
| **Primary residence (zip code)** |  |  | 0.98 |  |  |
| Manhattan | 264 (81) | 52 (84) |  |  |
| Queens | 30 (9) | 5 (8) |  |  |
| Brooklyn | 12 (4) | 2 (3) |  |  |
| Bronx | 5 (2) | 1 (2) |  |  |
| Other (outside of NYC) | 17 (5) | 2 (3) |  |  |

Abbreviations: PGY, post-graduate year.

aStatistical comparison between study sample and randomly selected sample to increase study participation

bStatistical comparison between study sample and all trainees

**Supplemental Table 5:** Sensitivity analysis

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variable** |  | |  | |  | |
| **Final adjusted model** | | **Excluding trainees without IgG antibody results** | | **Adjustment for date of SARS-CoV-2 test** | |
| **(n = 328)** | | **(n = 314)** | | **(n = 186)** | |
|  | **OR** | **95% CI** | **OR** | **95% CI** | **OR** | **95% CI** |
| **Race** |  |  |  |  |  |  |
| White (ref) | 1.00 | - | 1.00 | - | 1.00 | - |
| Asian | 0.53 | 0.24, 1.15 | 0.56 | 0.26, 1.23 | 0.52 | 0.20, 1.33 |
| Black | 1.42 | 0.50, 4.01 | 1.17 | 0.40, 3.39 | 0.61 | 0.16, 2.36 |
| Other | 0.64 | 0.14, 2.92 | 0.51 | 0.10, 2.57 | 0.84 | 0.14, 4.93 |
| **Hispanic/Latinx** |  |  |  |  |  |  |
| No (ref) | 1.00 | - | 1.00 | - | 1.00 | - |
| Yes | 1.98 | 0.72,5.46 | 1.96 | 0.70, 5.50 | 2.11 | 0.68, 6.57 |
| **Change in usual patient population** |  |  |  |  |  |  |
| No (ref) | 1.00 | - | 1.00 | - | 1.00 | - |
| Yes | 0.16 | 0.03, 0.73 | 0.16 | 0.04, 0.73 | 0.22 | 0.05, 1.04 |
| **Medical/surgical unit** |  |  |  |  |  |  |
| No (ref) | 1.00 | - | 1.00 | - | 1.00 | - |
| Yes | 2.51 | 1.18, 5.34 | 2.40 | 1.12, 5.13 | 1.54 | 0.63, 3.80 |
| **Ambulatory clinic** |  |  |  |  |  |  |
| No (ref) | 1.00 | - | 1.00 | - | 1.00 | - |
| Yes | 0.61 | 0.29, 1.30 | 0.57 | 0.27, 1.23 | 0.55 | 0.21, 1.42 |
| **Contact >10 mins *without N95*with a PUI or confirmed COVID-19 case** |  |  |  |  |  |  |
| Never (ref) | 1.00 | - | 1.00 | - | 1.00 | - |
| Once | 1.24 | 0.55, 2.75 | 1.19 | 0.54, 2.66 | 1.15 | 0.44, 2.98 |
| More than once | 1.59 | 0.74, 3.43 | 1.43 | 0.65, 3.18 | 1.37 | 0.53, 3.52 |
| **Training specialty** |  |  |  |  |  |  |
| Primarily non-procedural | 1.00 | - | 1.00 | - | 1.00 | - |
| High-risk procedural | 2.93 | 1.24, 6.92 | 2.78 | 1.18, 6.58 | 2.56 | 0.88, 7.42 |
| Surgery/subspecialty | 1.51 | 0.65, 3.50 | 1.33 | 0.56, 3.13 | 1.15 | 0.44, 2.99 |
| **Number of children in household** |  |  |  |  |  |  |
| 0 | 1.00 | - | 1.00 | - | 1.00 | - |
| ≥ 1 | 0.59 | 0.23, 1.48 | 0.60 | 0.24, 1.53 | 0.57 | 0.18, 1.86 |
| **Contact with individual with confirmed or suspected COVID-19 outside of work** |  |  |  |  |  |  |
| No | 1.00 | - | 1.00 | - | 1.00 | - |
| Yes | 1.58 | 0.78, 3.17 | 1.51 | 0.74, 3.07 | 1.71 | 0.69, 4.26 |
| **Primary mode of transportation to locations other than work: *subway or bus*** |  |  |  |  |  |  |
| No | 1.00 | - | 1.00 | - | 1.00 | - |
| Yes | 1.85 | 0.85, 3.99 | 1.84 | 0.84, 4.02 | 1.74 | 0.64, 4.77 |
| **Primary mode of transportation to locations other than work*: private car, bike, walk*** |  |  |  |  |  |  |
| No | 1.00 | - | 1.00 | - | 1.00 | - |
| Yes | 0.42 | 0.14, 1.27 | 0.39 | 0.13, 1.20 | 0.36 | 0.09, 1.47 |
| **Primary residence (zip code)** |  |  |  |  |  |  |
| Manhattan | 1.00 | - | 1.00 | - | 1.00 | - |
| Queens | 0.34 | 0.10, 1.20 | 0.40 | 0.11, 1.40 | 0.34 | 0.06, 1.90 |
| Brooklyn | 0.30 | 0.06, 1.62 | 0.32 | 0.06, 1.77 | 0.37 | 0.06, 2.09 |
| Bronx | 0.48 | 0.08, 3.08 | 0.57 | 0.09, 3.76 | - | - |
| Other (outside of NYC) | 1.51 | 0.44, 5.20 | 1.65 | 0.47, 5.76 | 1.91 | 0.36, 10.21 |
| **Date of test** | - | - | - | - | 1.33 | 0.94, 1.86 |

Abbreviations: OR, odds ratio; CI, confidence interval; ref, reference.