Supplement to “Changes in Stress and Workplace Shortages Reported by US Critical Care Physicians treating COVID-19 patients”

Bradley M. Gray, PhD (1), Jonathan L. Vandergrift, MS (1), Brendan J. Barnhart, MS (1), Siddharta G., Reddy, MPH (1), MPH, Benjamin J. Chesluk, PhD (1), Jennifer S. Stevens, MD (2), Rebecca S. Lipner, PhD (1), Lorna A. Lynn, MD (1), Michael L. Barnett, MD (3), Bruce E. Landon, MD (4)

Corresponding author: Bradley Gray,

Contact information: email: bgray@abim.org, Phone: (202) 213 6646, Address: 510 Walnut Street, Suite 1700, Philadelphia, PA 19106

1. American Board of Internal Medicine
2. Beth Israel Deaconess Medical Center and Harvard Medical School
3. Harvard T.H. Chan School of Public Health
4. Harvard Medical School

eFigure 1: Sample selection 2

eTable 1: Demographic differences between responders and

non-responders to the Spring survey 3

eTable 2: Physical and emotional stress Levels 4

eTable 3: Physician’s reported stress in the Spring

 compared with fall 4

eTable 4: Contributors to emotional distress by level of stress 5

eTable 5a: Contributors of stress 6

eTable 5b: Contributors of stress for doctors with low

 emotional stress 7

eTable 5c: Contributors of stress for doctors with moderate

 emotional stress 8

eTable 5d: Contributors of stress for doctors with high

 emotional stress 9

eTable 6: Staffing 10

eTable 7: PPE availability 11

eTable 8: Frequency of PPE change 12

eTable 9: Medication and equipment 13

eTable 10. Changes in reported shortage between Spring and Fall 14

eTable 11 Changes in emotional distress by COVID-19 hotspot

 and shortages 15

eTable 12 Changes in physical stress by COVID-19 hotspot

 and shortages 21

eTable 13: Sping/Fall COVID-19 hotspot prevalence 27

**eFigure 1: Sample selection**

**15,161 Active Critical Care Medicine Physicians in United States**a

14,259 (94.1%)

Excluded 915 with an incorrect email address

Excluded 118 who unsubscribed from research opportunities

**2,882 (20.4%) Responders to First Administration**

**14,141 (93.3%)** **Starting Sample for First Administration**

2,590 (89.9%)

Excluded 11,259 who did not respond to the first survey administration

Excluded 175 who did not answer all questions in first administration

**2,375 (82.4%) Starting Sample for Second Administration**

Excluded 215 who did not wish to participate in the second survey administration

**1,278 (53.8%) Final Analysis Sampleb**

Excluded 1,019 who did not respond to the second survey administration

**1,356 (57.1%) Responders to Second Administration**

Excluded 78 who did not see Covid-19 patients in the second administration

Excluded 117 who did not see Covid-19 patients in the first administration

**2,765 (19.6%) Population that Saw Covid-19 Patients in the First Administration**

aActive is defined as not deceased, retired, under current disciplinary action, without an active medical license, or over 70 years old

bComplete data for both administrations; doctors who saw Covid-19 patients in Spring and Fall

**eTable 1: Demographic differences between responders and non-responders to the Spring survey**

|  |  |  |  |
| --- | --- | --- | --- |
| **Auxiliary Variable** | **Spring 2020 Administration Non-Responders (N=11,259)** | **Spring 2020 Administration Responders (N=2,882)** | **P-stat** |
| Physician agea [mean (SD)] | 49.3 (10.4) | 48.7 (9.7) | .01 |
| Female [N (%)] | 2,573 (22.9%) | 685 (23.8%) | .30 |
| International Medical School Graduate (IMG) [N (%)] | 4,531 (40.2%) | 1,220 (42.3%) | .04 |
| Hotspot Location |  |  |  |
| Not a hotspot | 9,830 (87.4%) | 2,482 (86.2%) | .68 |
| In a hotspot | 1,414 (12.6%) | 399 (13.8%) |  |
| US Census Regionb [N (%)] |  |  |  |
|  West | 2,386 (21.2%) | 604 (21.0%) | .64 |
|  Midwest | 2,314 (20.6%) | 622 (21.6%) |  |
|  South | 3,835 (34.1%) | 958 (33.2%) |  |
|  Northeast | 2,724 (24.2%) | 698 (24.2%) |  |
| Active Critical Care Medicine Certification [N (%)] | 9,059 (80.5%) | 2,678 (92.9%) | <.001 |

aAge is calculated based on physician date of birth in ABIM registration data as of January 1, 2020.

bRegion is calculated based on reported address in ABIM registration data.

**eTable 2: Physical and emotional stress Levels (N=1,278)**

During this period when caring for COVID-19 patients I have felt…

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Stress Variable, N (%)** | **Admin** | **Not at** all | **Very little** | **Moderately** | **A lot** | **Extremely** |
| Physically exhausted at work | Spring | 120 (9.4) | 228 (17.8) | 558 (43.7) | 286 (22.4) | 86 (6.7) |
| Physically exhausted at work | Fall | 141 (11) | 306 (23.9) | 493 (38.6) | 235 (18.4) | 103 (8.1) |
| Emotionally distressed at work | Spring | 112 (8.8) | 302 (23.6) | 529 (41.4) | 235 (18.4) | 100 (7.8) |
| Emotionally distressed at work | Fall | 152 (11.9) | 363 (28.4) | 469 (36.7) | 207 (16.2) | 87 (6.8) |

**eTable 3: Physician’s reported stress in Spring compared with Fall**

|  |  |  |
| --- | --- | --- |
|   | **Stress in Fall, N (%)** | **Total, N** |
| **Lowa** | **Moderate** | **Highb** |
| **Stress in Spring** |  |  |  |  |
|  Emotional distress |  |  |  |  |
|  Lowa | 271 (65.5) | 110 (26.6) | 33 (8.0) | 414 |
|  Moderate | 187 (35.3) | 250 (47.3) | 92 (17.4) | 529 |
|  High b | 57 (17.0) | 109 (32.5) | 169 (50.4) | 335 |
|  Physical Stress |  |  |  |  |
|  Lowa | 196 (56.3) | 108 (31.0) | 44 (12.6) | 348 |
|  Moderate | 183 (32.8) | 249 (44.6) | 126 (22.6) | 558 |
|  Highb | 68 (18.3) | 136 (36.6) | 168 (45.2) | 372 |

aLow stress defined as “Not at all” or “Very Little” stress

bHigh stress defined as “A lot” or “Extremely” stressed

**eTable 4: Contributors to emotional distress by level of stress**

|  |  |
| --- | --- |
| **Category** | **Reported it was a significant factor** |
|
| **Spring,N (%)** | **Fall,N (%)** | **Percentage point difference(95% CI)** | **P-value** |
| **Conditional on a lot or extreme stress** |  |  |  |  |
| Total Number | 335 | 294 | - | - |
|  Personal risk of exposure to COVID-19 | 236 (70.4) | 163 (55.4) | -15.0 (-22.5 to -7.5) | <.001 |
|  Lack of personal protective equipment | 127 (37.9) | 77 (26.2) | -11.7 (-19.1 to -4.4) | 0.002 |
|  Risk of exposing family/friends to COVID-19 | 263 (78.5) | 216 (73.5) | -5.0 (-11.7 to 1.6) | 0.14 |
|  Ethical decisions related to the care of patients with COVID-19 | 187 (55.8) | 152 (51.7) | -4.1 (-11.9 to 3.7) | 0.30 |
|  Risk to staff/colleagues of exposure to COVID-19 | naa | 168 (57.1)  | - | - |
|  Lack of knowledge about COVID-19  | naa | 91 (31.0) | - | - |
|  High mortality of COVID-19 patients | naa | 236 (80.3) | - | - |
|  Caring for patients isolated from their families.  | naa | 225 (76.5) | - | - |
|  Emotional wellbeing of staff and colleagues | naa | 221 (75.2) | - | - |
| **Conditional on moderate stress** |  |  |  |  |
| Total Number | 529 | 469 | - | - |
|  Personal risk of exposure to COVID-19 | 261 (49.3) | 178 (38.0) | -11.4 (-17.6 to -5.2) | <.001 |
|  Lack of personal protective equipment | 108 (20.4) | 53 (11.3) | -9.1 (-13.7 to -4.5) | <.001 |
|  Risk of exposing family/friends to COVID-19 | 355 (67.1) | 292 (62.3) | -4.8 (-10.8 to 1.1) | 0.11 |
|  Ethical decisions related to the care of patients with COVID-19 | 185 (35.0) | 170 (36.2) | 1.3 (-4.7 to 7.2) | 0.67 |
|  Risk to staff/colleagues of exposure to COVID-19 | naa | 196 (41.8) | - | - |
|  Lack of knowledge about COVID-19  | naa | 70 (14.9) | - | - |
|  High mortality of COVID-19 patients | naa | 288 (61.4) | - | - |
|  Caring for patients isolated from their families.  | naa | 297 (63.3) | - | - |
|  Emotional wellbeing of staff and colleagues | naa | 282 (60.1) | - | - |

aQuestion not included on Spring survey

**eTable 5a: Contributors of stress (N=1,278)**

Which of the following factors were significant contributors to your emotional stress (check all that apply)?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Factor, N (%)** | **Admin** | **Not a factor** | **A minor factor** | **A significant factor** |
| Personal Risk of exposure to COVID-19 | Spring | 92 (7.9) | 487 (41.8) | 586 (50.3) |
| Personal Risk of exposure to COVID-19 | Fall | 180 (16) | 528 (47) | 416 (37) |
| Risk to staff/colleagues of exposure to COVID-19 | Spring | - | - | - |
| Risk to staff/colleagues of exposure to COVID-19 | Fall | 140 (12.5) | 529 (47.1) | 455 (40.5) |
| Risk of exposing family/friends to COVID-19 | Spring | 64 (5.5) | 317 (27.4) | 776 (67.1) |
| Risk of exposing family/friends to COVID-19 | Fall | 97 (8.6) | 375 (33.4) | 652 (58) |
| Lack of knowledge about COVID-19 | Spring | - | - | - |
| Lack of knowledge about COVID-19 | Fall | 554 (49.5) | 379 (33.8) | 187 (16.7) |
| High mortality of COVID-19 patients | Spring | - | - | - |
| High mortality of COVID-19 patients | Fall | 104 (9.2) | 350 (31.1) | 672 (59.7) |
| Caring for patients isolated from their families | Spring | - | - | - |
| Caring for patients isolated from their families | Fall | 69 (6.1) | 385 (34.2) | 671 (59.6) |
| Emotional wellbeing of staff and colleagues | Spring | - | - | - |
| Emotional wellbeing of staff and colleagues | Fall | 52 (4.6) | 419 (37.4) | 650 (58) |
| Ethical decisions related to the care of patients with COVID-19 | Spring | 309 (26.6) | 412 (35.5) | 441 (38) |
| Ethical decisions related to the care of patients with COVID-19 | Fall | 246 (21.9) | 485 (43.1) | 393 (35) |
| Lack of personal protective equipment | Spring | 491 (42.1) | 403 (34.6) | 271 (23.3) |
| Lack of personal protective equipment | Fall | 689 (61.5) | 282 (25.2) | 149 (13.3) |

**eTable 5b: Contributors of stress for doctors with low emotional stress***a* **(Spring N=414; Fall N=515)**

Which of the following factors were significant contributors to your emotional stress (check all that apply)?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Factor, N (%)** | **Admin** | **Not a factor** | **A minor factor** | **A significant factor** |
| Personal Risk of exposure to COVID-19 | Spring | 34 (11.3) | 179 (59.3) | 89 (29.5) |
| Personal Risk of exposure to COVID-19 | Fall | 90 (24.9) | 197 (54.4) | 75 (20.7) |
| Risk to staff/colleagues of exposure to COVID-19 | Spring | - | - | - |
| Risk to staff/colleagues of exposure to COVID-19 | Fall | 74 (20.4) | 197 (54.4) | 91 (25.1) |
| Risk of exposing family/friends to COVID-19 | Spring | 27 (8.9) | 117 (38.7) | 158 (52.3) |
| Risk of exposing family/friends to COVID-19 | Fall | 54 (14.9) | 164 (45.3) | 144 (39.8) |
| Lack of knowledge about COVID-19 | Spring | - | - | - |
| Lack of knowledge about COVID-19 | Fall | 224 (62) | 111 (30.7) | 26 (7.2) |
| High mortality of COVID-19 patients | Spring | - | - | - |
| High mortality of COVID-19 patients | Fall | 65 (17.9) | 150 (41.3) | 148 (40.8) |
| Caring for patients isolated from their families | Spring | - | - | - |
| Caring for patients isolated from their families | Fall | 40 (11) | 174 (47.9) | 149 (41) |
| Emotional wellbeing of staff and colleagues | Spring | - | - | - |
| Emotional wellbeing of staff and colleagues | Fall | 28 (7.8) | 186 (51.5) | 147 (40.7) |
| Ethical decisions related to the care of patients with COVID-19 | Spring | 119 (39.4) | 114 (37.7) | 69 (22.8) |
| Ethical decisions related to the care of patients with COVID-19 | Fall | 120 (33.1) | 172 (47.4) | 71 (19.6) |
| Lack of personal protective equipment | Spring | 179 (59.3) | 87 (28.8) | 36 (11.9) |
| Lack of personal protective equipment | Fall | 260 (72) | 82 (22.7) | 19 (5.3) |

*aIncludes doctors in each administration who had "Not at all" or "Very little" emotional stress*

**eTable 5c: Contributors of stress for doctors with moderate emotional stressa (Spring N=529; Fall N=469)**

Which of the following factors were significant contributors to your emotional stress (check all that apply)?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Factor, N (%)** | **Admin** | **Not a factor** | **A minor factor** | **A significant factor** |
| Personal Risk of exposure to COVID-19 | Spring | 46 (8.7) | 222 (42) | 261 (49.3) |
| Personal Risk of exposure to COVID-19 | Fall | 60 (12.8) | 230 (49.1) | 178 (38) |
| Risk to staff/colleagues of exposure to COVID-19 | Spring | - | - | - |
| Risk to staff/colleagues of exposure to COVID-19 | Fall | 43 (9.2) | 229 (48.9) | 196 (41.9) |
| Risk of exposing family/friends to COVID-19 | Spring | 31 (5.9) | 140 (26.6) | 355 (67.5) |
| Risk of exposing family/friends to COVID-19 | Fall | 28 (6) | 148 (31.6) | 292 (62.4) |
| Lack of knowledge about COVID-19 | Spring | - | - | - |
| Lack of knowledge about COVID-19 | Fall | 226 (48.5) | 170 (36.5) | 70 (15) |
| High mortality of COVID-19 patients | Spring | - | - | - |
| High mortality of COVID-19 patients | Fall | 33 (7) | 148 (31.6) | 288 (61.4) |
| Caring for patients isolated from their families | Spring | - | - | - |
| Caring for patients isolated from their families | Fall | 18 (3.8) | 154 (32.8) | 297 (63.3) |
| Emotional wellbeing of staff and colleagues | Spring | - | - | - |
| Emotional wellbeing of staff and colleagues | Fall | 18 (3.9) | 167 (35.8) | 282 (60.4) |
| Ethical decisions related to the care of patients with COVID-19 | Spring | 133 (25.3) | 208 (39.5) | 185 (35.2) |
| Ethical decisions related to the care of patients with COVID-19 | Fall | 92 (19.7) | 205 (43.9) | 170 (36.4) |
| Lack of personal protective equipment | Spring | 215 (40.7) | 205 (38.8) | 108 (20.5) |
| Lack of personal protective equipment | Fall | 292 (62.8) | 120 (25.8) | 53 (11.4) |

*a Includes doctors in each administration who had "Moderate" emotional stress*

**eTable 5d: Contributors of stress for doctors with high emotional stress1 (Spring N=335; Fall N=294)**

Which of the following factors were significant contributors to your emotional stress (check all that apply)?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Factor, N (%)** | **Admin** | **Not a factor** | **A minor factor** | **A significant factor** |
| Personal Risk of exposure to COVID-19 | Spring | 12 (3.6) | 86 (25.7) | 236 (70.7) |
| Personal Risk of exposure to COVID-19 | Fall | 30 (10.2) | 101 (34.4) | 163 (55.4) |
| Risk to staff/colleagues of exposure to COVID-19 | Spring | - | - | - |
| Risk to staff/colleagues of exposure to COVID-19 | Fall | 23 (7.8) | 103 (35) | 168 (57.1) |
| Risk of exposing family/friends to COVID-19 | Spring | 6 (1.8) | 60 (18.2) | 263 (79.9) |
| Risk of exposing family/friends to COVID-19 | Fall | 15 (5.1) | 63 (21.4) | 216 (73.5) |
| Lack of knowledge about COVID-19 | Spring | - | - | - |
| Lack of knowledge about COVID-19 | Fall | 104 (35.5) | 98 (33.4) | 91 (31.1) |
| High mortality of COVID-19 patients | Spring | - | - | - |
| High mortality of COVID-19 patients | Fall | 6 (2) | 52 (17.7) | 236 (80.3) |
| Caring for patients isolated from their families | Spring | - | - | - |
| Caring for patients isolated from their families | Fall | 11 (3.8) | 57 (19.5) | 225 (76.8) |
| Emotional wellbeing of staff and colleagues | Spring | - | - | - |
| Emotional wellbeing of staff and colleagues | Fall | 6 (2) | 66 (22.5) | 221 (75.4) |
| Ethical decisions related to the care of patients with COVID-19 | Spring | 57 (17.1) | 90 (26.9) | 187 (56) |
| Ethical decisions related to the care of patients with COVID-19 | Fall | 34 (11.6) | 108 (36.7) | 152 (51.7) |
| Lack of personal protective equipment | Spring | 97 (29) | 111 (33.1) | 127 (37.9) |
| Lack of personal protective equipment | Fall | 137 (46.6) | 80 (27.2) | 77 (26.2) |

*1. Includes doctors in each administration who had "A lot" or "Extreme" emotional stress*

**eTable 6: Staffing (N=1,278)**

At this hospital, choose the options that best describe your availability of staff for each of the following types:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Staff Variable, N (%)** | **Admin** | **Adequate with usual ICU-trained staff** | **Adequate with Additional ICU-experienced staff reassigned to support the pandemic response** | **Adequate levels with staff that include non-ICU-trained personnel** | **Inadequate levels** | **I don't know** |
| Attending physicians | Spring | 658 (51.5) | 337 (26.4) | 212 (16.6) | 69 (5.4) | 2 (0.2) |
| Attending physicians | Fall | 774 (60.6) | 246 (19.2) | 122 (9.5) | 131 (10.3) | 5 (0.4) |
| Nurses | Spring | 504 (39.4) | 332 (26) | 309 (24.2) | 128 (10) | 5 (0.4) |
| Nurses | Fall | 493 (38.6) | 354 (27.7) | 188 (14.7) | 235 (18.4) | 8 (0.6) |
| Physician assistants and/or nurse practitioners | Spring | 529 (41.4) | 211 (16.5) | 232 (18.2) | 145 (11.3) | 161 (12.6) |
| Physician assistants and/or nurse practitioners | Fall | 595 (46.6) | 192 (15) | 127 (9.9) | 201 (15.7) | 163 (12.8) |
| Respiratory therapists | Spring | 666 (52.1) | 296 (23.2) | 132 (10.3) | 174 (13.6) | 10 (0.8) |
| Respiratory therapists | Fall | 681 (53.3) | 255 (20) | 96 (7.5) | 222 (17.4) | 24 (1.9) |

**eTable 7: PPE availability (N=1,278)**

Choose the option that best describes the current availability of each type of Personal Protective Equipment (PPE) at this hospital:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **PPE, N (%)** | **Admin** | **Adequate availability, no shortage** | **Shortage, but no change to clinical protocols** | **Shortage that has impacted clinical protocols** | **Currently unavailable** | **I don't know** |
| Surgical masks | Spring | 599 (46.9) | 330 (25.8) | 347 (27.2) |  (0) | 2 (0.2) |
| Surgical masks | Fall | 1013 (79.3) | 163 (12.8) | 98 (7.7) |  (0) | 4 (0.3) |
| N95 masks | Spring | 344 (26.9) | 348 (27.2) | 578 (45.2) | 7 (0.5) | 1 (0.1) |
| N95 masks | Fall | 735 (57.5) | 302 (23.6) | 230 (18) | 5 (0.4) | 6 (0.5) |
| Face shields | Spring | 509 (39.8) | 387 (30.3) | 357 (27.9) | 13 (1) | 12 (0.9) |
| Face shields | Fall | 918 (71.8) | 221 (17.3) | 119 (9.3) | 10 (0.8) | 10 (0.8) |
| Surgical gowns | Spring | 577 (45.1) | 331 (25.9) | 340 (26.6) | 10 (0.8) | 20 (1.6) |
| Surgical gowns | Fall | 894 (70) | 239 (18.7) | 134 (10.5) | 2 (0.2) | 9 (0.7) |
| Gloves | Spring | 1042 (81.5) | 185 (14.5) | 40 (3.1) |  (0) | 11 (0.9) |
| Gloves | Fall | 1116 (87.3) | 120 (9.4) | 38 (3) |  (0) | 4 (0.3) |
| Protective hood | Spring | - | - | - | - | - |
| Protective hood | Fall | 658 (51.5) | 208 (16.3) | 119 (9.3) | 117 (9.2) | 176 (13.8) |

**eTable 8: Frequency of PPE change (N=1,278)**

During this period, how often have you changed your PPE?

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **PPE, N (%)** | **Admin** | **With each patient encounter** | **Only after high-risk patient encounters** | **Only once a day** | **Retain until soiled** | **Not applicable** |
| Surgical masks | Spring | 246 (19.3) | 250 (19.6) | 489 (38.4) | 260 (20.4) | 30 (2.4) |
| Surgical masks | Fall | 258 (20.2) | 282 (22.1) | 436 (34.1) | 282 (22.1) | 20 (1.6) |
| N95 masks | Spring | 100 (7.8) | 199 (15.6) | 370 (29) | 565 (44.3) | 41 (3.2) |
| N95 masks | Fall | 115 (9) | 217 (17) | 341 (26.7) | 567 (44.4) | 38 (3) |
| Face shields | Spring | 186 (14.6) | 168 (13.2) | 199 (15.6) | 610 (47.8) | 113 (8.9) |
| Face shields | Fall | 175 (13.7) | 184 (14.4) | 185 (14.5) | 628 (49.1) | 106 (8.3) |
| Surgical gowns | Spring | 827 (64.8) | 251 (19.7) | 104 (8.2) | 48 (3.8) | 46 (3.6) |
| Surgical gowns | Fall | 962 (75.3) | 211 (16.5) | 54 (4.2) | 31 (2.4) | 20 (1.6) |
| Gloves | Spring | 1192 (93.8) | 47 (3.7) | 13 (1) | 11 (0.9) | 8 (0.6) |
| Gloves | Fall | 1204 (94.2) | 47 (3.7) | 12 (0.9) | 8 (0.6) | 7 (0.5) |
| Protective hood | Spring | - | - | - | - | - |
| Protective hood | Fall | 205 (16) | 176 (13.8) | 79 (6.2) | 248 (19.4) | 570 (44.6) |

**eTable 9: Medication and equipment (N=1,278)**

Please indicate availability of the following medications/equipment at this hospital:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Medication / Equipment, N (%)** | **Admin** | **Adequate availability, no shortage** | **Shortage, but no change to clinical protocols** | **Shortage that has impacted clinical protocols** | **Currently unavailable** | **I don't know** |
| Paralytics | Spring | 621 (48.6) | 354 (27.7) | 290 (22.7) | 4 (0.3) | 9 (0.7) |
| Paralytics | Fall | 969 (75.8) | 221 (17.3) | 66 (5.2) | 1 (0.1) | 21 (1.6) |
| Sedatives | Spring | 510 (39.9) | 371 (29) | 392 (30.7) | 1 (0.1) | 4 (0.3) |
| Sedatives | Fall | 951 (74.4) | 231 (18.1) | 81 (6.3) |  (0) | 15 (1.2) |
| Vasopressors | Spring | 1031 (80.7) | 205 (16) | 29 (2.3) | 2 (0.2) | 11 (0.9) |
| Vasopressors | Fall | 1155 (90.4) | 90 (7) | 21 (1.6) |  (0) | 12 (0.9) |
| Antibiotics | Spring | 1094 (85.6) | 151 (11.8) | 23 (1.8) | 2 (0.2) | 8 (0.6) |
| Antibiotics | Fall | 1194 (93.4) | 64 (5) | 11 (0.9) |  (0) | 9 (0.7) |
| Bronchodilators | Spring | 857 (67.1) | 190 (14.9) | 210 (16.4) | 6 (0.5) | 15 (1.2) |
| Bronchodilators | Fall | 1155 (90.4) | 78 (6.1) | 33 (2.6) | 1 (0.1) | 11 (0.9) |
| Opioid analgesics | Spring | 591 (46.2) | 342 (26.8) | 339 (26.5) | 1 (0.1) | 5 (0.4) |
| Opioid analgesics | Fall | 1057 (82.7) | 149 (11.7) | 61 (4.8) |  (0) | 11 (0.9) |
| Dexamethasone | Spring | - | - | - | - | - |
| Dexamethasone | Fall | 1176 (92) | 69 (5.4) | 17 (1.3) | 1 (0.1) | 15 (1.2) |
| Ventilators | Spring | 1017 (79.6) | 166 (13) | 92 (7.2) | 1 (0.1) | 2 (0.2) |
| Ventilators | Fall | 1144 (89.5) | 98 (7.7) | 30 (2.3) |  (0) | 6 (0.5) |
| Renal replacement machines | Spring | 865 (67.7) | 209 (16.4) | 165 (12.9) | 17 (1.3) | 22 (1.7) |
| Renal replacement machines | Fall | 977 (76.4) | 178 (13.9) | 67 (5.2) | 25 (2) | 31 (2.4) |

**eTable 10. Changes in reported shortage between Spring and Fall**

|  |  |  |
| --- | --- | --- |
|  | **Shortage in Spring** | **Physician with no shortage in Spring** |
| **Always shortage, N (# shortage in Fall / # shortage in Spring)** | **Decreased shortage, N (# not shortage in Fall / # shortage in Spring** | **Total N** | **Never shortage, N (# no shortage in Fall / # no shortage in Spring)** | **Increased shortage, N (# shortage in Fall / # no shortage in Spring)** | **Total N** |
| **Intensive care unit staff shortagesa** |  |  |  |  |  |  |
|  Attending physicians  | 101 (35.9) | 180 (64.1) | 281 | 845 (84.8) | 152 (15.2) | 997 |
|  Nurse  | 208 (47.6) | 229 (52.4) | 437 | 626 (74.4) | 215 (25.6) | 841 |
|  PA/NP  | 166 (44.0) | 211 (56.0) | 377 | 739 (82.0) | 162 (18.0) | 901 |
|  Respiratory therapist  | 148 (48.4) | 158 (51.6) | 306 | 802 (82.5) | 170 (17.5) | 972 |
| **Medication shortagesb** |   |  |  |   |  |  |
|  Paralytics  | 38 (12.9) | 256 (87.1) | 294 | 955 (97.1) | 29 (2.9) | 984 |
|  Sedatives  | 59 (15.0) | 334 (85.0) | 393 | 863 (97.5) | 22 (2.5) | 885 |
|  Opioid analgesics  | 36 (10.6) | 304 (89.4) | 340 | 913 (97.3) | 25 (2.7) | 938 |
|  Bronchodilators | 22 (10.2) | 194 (89.8) | 216 | 1050 (98.9) | 12 (1.1) | 1062 |
|  Antibiotics  | 2 (8.0) | 23 (92.0) | 25 | 1244 (99.3) | 9 (0.7) | 1253 |
|  Vasopressors | 5 (16.1) | 26 (83.9) | 31 | 1231 (98.7) | 16 (1.3) | 1247 |
| **Equipment shortagesb** |   |  |  |   |  |  |
| Renal | 42 (23.1) | 140 (76.9) | 182 | 1046 (95.4) | 50 (4.6) | 1096 |
| Ventilator  | 13 (14.0) | 80 (86.0) | 93 | 1168 (98.6) | 17 (1.4) | 1185 |
| **Personal Protective Equipmentb** |   |  |  |   |  |  |
| Surgical masks  | 72 (20.7) | 275 (79.3) | 347 | 905 (97.2) | 26 (2.8) | 931 |
| N95 masks  | 188 (32.1) | 397 (67.9) | 585 | 646 (93.2) | 47 (6.8) | 693 |
| Shield  | 81 (21.9) | 289 (78.1) | 370 | 860 (94.7) | 48 (5.3) | 908 |
| Gown  | 86 (24.6) | 264 (75.4) | 350 | 878 (94.6) | 50 (5.4) | 928 |
| Gloves  | 6 (15.0) | 34 (85.0) | 40 | 1206 (97.4) | 32 (2.6) | 1238 |
| **Testing more than a day** | 141 (29.7) | 334 (70.3) | 475 | 723 (90.0) | 80 (10.0) | 803 |

aInadequate staffing or only adequate with non-ICU-trained personnel

bCurrently unavailable or a shortage that impacted clinical protocols

**eTable 11: Changes in emotional distress by COVID-19 hotspot category and shortages**

|  |  |
| --- | --- |
|   | **Emotional distress** |
| **Spring to Fall decrease****(if stress in Spring is moderate or high)** | **Spring to Fall increase**  **(if stress in Spring is low or moderate)** |
| **N/D (% with a change)** | **N/D (% of the conditional)** | **N (% of total population)** | **N/D (% with a change)** | **N/D (% that matched the conditional)** | **N (% of total population)** |
| Spring COVID-19 Hotspot |   |   |   |   |   |   |
| Spring hotspot | Decrease Hot | 65/127 (51.2) | 127/129 (98.4) | 129 (10.1) | 14/111 (12.6) | 111/113 (98.2) | 113 (8.8) |
| Always Hot | 0/2 (0.0) | 2/129 (1.6) | 1/2 (50.0) | 2/113 (1.8) |
| % point diff: Decrease - Always | 51.2 (-18.7 to 121.0) |   | -37.4 (-84.8 to 10.1) |   |
| Not Spring hotspot | Increase Hot | 53/148 (35.8) | 148/735 (20.1) | 735 (57.5) | 60/184 (32.6) | 184/830 (22.2) | 830 (64.9) |
| Never Hot | 235/587 (40.0) | 587/735 (79.9) | 160/646 (24.8) | 646/830 (77.8) |
| % point diff: Increase - Never  | -4.2 (-13.0 to 4.6) |   | 7.8 (0.6 to 15.1) |   |
| Intensive care unit staff shortagesa |   |   |   |   |   |   |
| Attending physicians  |   |   |   |   |   |   |
| Spring hotspot | Decrease | 69/133 (51.9) | 133/211 (63.0) | 211 (16.5) | 17/114 (14.9) | 114/174 (65.5) | 174 (13.6) |
| Always shortage | 27/78 (34.6) | 78/211 (37.0) | 22/60 (36.7) | 60/174 (34.5) |
| % point diff: Decrease - Always | 17.3 (3.3 to 31.2) |   | -21.8 (-34.8 to -8.7) |   |
| Not Spring hotspot | Increase | 32/117 (27.4) | 117/653 (17.9) | 653 (51.1) | 45/102 (44.1) | 102/769 (13.3) | 769 (60.2) |
| Never shortage | 225/536 (42.0) | 536/653 (82.1) | 151/667 (22.6) | 667/769 (86.7) |
| % point diff: Increase - Never  | -14.6 (-24.4 to -4.9) |   | 21.5 (12.4 to 30.6) |   |
| Nurse  |   |   |   |   |   |   |
| Spring shortage | Decrease | 86/164 (52.4) | 164/328 (50.0) | 328 (25.7) | 31/168 (18.5) | 168/299 (56.2) | 299 (23.4) |
| Always shortage | 55/164 (33.5) | 164/328 (50.0) | 39/131 (29.8) | 131/299 (43.8) |
| % point diff: Decrease - Always | 18.9 (8.2 to 29.6) |   | -11.3 (-21.0 to -1.6) |   |
| Not Spring shortage | Increase | 31/144 (21.5) | 144/536 (26.9) | 536 (41.9) | 75/156 (48.1) | 156/644 (24.2) | 644 (50.4) |
| Never shortage | 181/392 (46.2) | 392/536 (73.1) | 90/488 (18.4) | 488/644 (75.8) |
| % point diff: Increase - Never  | -24.6 (-34.0 to -15.3) |   | 29.6 (21.8 to 37.5) |   |
|  Physician Assistant/Nurse Practitioner |   |   |   |   |   |   |
| Spring shortage | Decrease | 77/155 (49.7) | 155/281 (55.2) | 281 (22.0) | 26/145 (17.9) | 145/249 (58.2) | 249 (19.5) |
| Always shortage | 45/126 (35.7) | 126/281 (44.8) | 35/104 (33.7) | 104/249 (41.8) |
| % point diff: Decrease - Always | 14.0 (2.3 to 25.6) |   | -15.7 (-26.6 to -4.9) |   |
| Not Spring shortage | Increase | 27/110 (24.5) | 110/583 (18.9) | 583 (45.6) | 51/116 (44.0) | 116/694 (16.7) | 694 (54.3) |
| Never shortage | 204/473 (43.1) | 473/583 (81.1) | 123/578 (21.3) | 578/694 (83.3) |
| % point diff: Increase - Never | -18.6 (-28.7 to -8.4) |   | 22.7 (14.0 to 31.3) |   |
|  Respiratory therapist  |   |   |   |   |   |   |
| Spring shortage | Decrease | 68/122 (55.7) | 122/235 (51.9) | 235 (18.4) | 15/105 (14.3) | 105/200 (52.5) | 200 (15.6) |
| Always shortage | 35/113 (31.0) | 113/235 (48.1) | 34/95 (35.8) | 95/200 (47.5) |
| % point diff: Decrease - Always | 24.8 (12.1 to 37.5) |   | -21.5 (-33.4 to -9.6) |   |
| Not Spring shortage | Increase | 24/123 (19.5) | 123/629 (19.6) | 629 (49.2) | 55/124 (44.4) | 124/743 (16.7) | 743 (58.1) |
| Never shortage | 226/506 (44.7) | 506/629 (80.4) | 131/619 (21.2) | 619/743 (83.3) |
| % point diff: Increase - Never  | -25.2 (-34.8 to -15.5) |   | 23.2 (14.8 to 31.5) |   |
| Medication shortagesb |   |   |   |   |   |   |
| Paralytics  |   |   |   |   |   |   |
| Spring shortage | Decrease | 83/188 (44.1) | 188/215 (87.4) | 215 (16.8) | 40/170 (23.5) | 170/192 (88.5) | 192 (15.0) |
| Always shortage | 9/27 (33.3) | 27/215 (12.6) | 10/22 (45.5) | 22/192 (11.5) |
| % point diff: Decrease - Always | 10.8 (-9.1 to 30.8) |   | -21.9 (-41.4 to -2.4) |   |
| Not Spring shortage | Increase | 5/20 (25.0) | 20/649 (3.1) | 649 (50.8) | 7/16 (43.8) | 16/751 (2.1) | 751 (58.8) |
| Never shortage | 256/629 (40.7) | 629/649 (96.9) | 178/735 (24.2) | 735/751 (97.9) |
| % point diff: Increase - Never  | -15.7 (-37.5 to 6.1) |   | 19.5 (-1.8 to 40.9) |   |
|  Sedatives  |   |   |   |   |   |   |
| Spring shortage | Decrease | 103/249 (41.4) | 249/293 (85.0) | 293 (22.9) | 56/226 (24.8) | 226/263 (85.9) | 263 (20.6) |
| Always shortage | 23/44 (52.3) | 44/293 (15.0) | 13/37 (35.1) | 37/263 (14.1) |
| % point diff: Decrease - Always | -10.9 (-26.8 to 5.0) |   | -10.4 (-25.6 to 4.9) |   |
| Not Spring shortage | Increase | 1/15 (6.7) | 15/571 (2.6) | 571 (44.7) | 10/16 (62.5) | 16/680 (2.4) | 680 (53.2) |
| Never shortage | 226/556 (40.6) | 556/571 (97.4) | 156/664 (23.5) | 664/680 (97.6) |
| % point diff: Increase - Never  | -34.0 (-59.1 to -8.9) |   | 39.0 (17.7 to 60.3) |   |
| Opioid analgesics  |   |   |   |   |   |   |
| Spring shortage | Decrease | 97/233 (41.6) | 233/258 (90.3) | 258 (20.2) | 49/208 (23.6) | 208/227 (91.6) | 227 (17.8) |
| Always shortage | 15/25 (60.0) | 25/258 (9.7) | 6/19 (31.6) | 19/227 (8.4) |
| % point diff: Decrease - Always | -18.4 (-38.8 to 2.1) |   | -8.0 (-28.1 to 12.1) |   |
| Not Spring shortage | Increase | 3/14 (21.4) | 14/606 (2.3) | 606 (47.4) | 11/19 (57.9) | 19/716 (2.7) | 716 (56.0) |
| Never shortage | 238/592 (40.2) | 592/606 (97.7) | 169/697 (24.2) | 697/716 (97.3) |
| % point diff: Increase - Never  | -18.8 (-44.7 to 7.2) |   | 33.6 (13.9 to 53.4) |   |
| Bronchodilator |   |   |   |   |   |   |
| Spring shortage | Decrease | 55/143 (38.5) | 143/161 (88.8) | 161 (12.6) | 42/153 (27.5) | 153/164 (93.3) | 164 (12.8) |
| Always shortage | 6/18 (33.3) | 18/161 (11.2) | 5/11 (45.5) | 11/164 (6.7) |
| % point diff: Decrease - Always | 5.1 (-18.7 to 28.9) |   | -18.0 (-45.7 to 9.7) |   |
| Not Spring shortage | Increase | 2/9 (22.2) | 9/703 (1.3) | 703 (55.0) | 6/9 (66.7) | 9/779 (1.2) | 779 (61.0) |
| Never shortage | 290/694 (41.8) | 694/703 (98.7) | 182/770 (23.6) | 770/779 (98.8) |
| % point diff: Increase - Never  | -19.6 (-52.0 to 12.8) |   | 43.0 (14.9 to 71.1) |   |
| Antibiotics  |   |   |   |   |   |   |
| Spring shortage | Decrease | 6/18 (33.3) | 18/20 (90.0) | 20 (1.6) | 3/11 (27.3) | 11/12 (91.7) | 12 (0.9) |
| Always shortage | 2/2 (100.0) | 2/20 (10.0) | 0/1 (0.0) | 1/12 (8.3) |
| % point diff: Decrease - Always | -66.7 (-138.2 to 4.9) |   | 27.3 (-61.4 to 115.9) |   |
| Not Spring shortage | Increase | 1/8 (12.5) | 8/844 (0.9) | 844 (66.0) | 2/4 (50.0) | 4/931 (0.4) | 931 (72.8) |
| Never shortage | 344/836 (41.1) | 836/844 (99.1) | 230/927 (24.8) | 927/931 (99.6) |
| % point diff: Increase - Never  | -28.6 (-62.9 to 5.6) |   | 25.2 (-17.3 to 67.7) |   |
| Vasopressors |   |   |   |   |   |   |
| Spring shortage | Decrease | 11/23 (47.8) | 23/28 (82.1) | 28 (2.2) | 2/14 (14.3) | 14/17 (82.4) | 17 (1.3) |
| Always shortage | 1/5 (20.0) | 5/28 (17.9) | 0/3 (0.0) | 3/17 (17.6) |
| % point diff: Decrease - Always | 27.8 (-20.0 to 75.7) |   | 14.3 (-25.9 to 54.5) |   |
| Not Spring shortage | Increase | 2/11 (18.2) | 11/836 (1.3) | 836 (65.4) | 7/8 (87.5) | 8/926 (0.9) | 926 (72.5) |
| Never shortage | 339/825 (41.1) | 825/836 (98.7) | 226/918 (24.6) | 918/926 (99.1) |
| % point diff: Increase - Never  | -22.9 (-52.1 to 6.3) |   | 62.9 (32.7 to 93.1) |   |
| Equipment shortagesb |
| Renal therapy  |   |   |   |   |   |   |
| Spring shortage | Decrease | 51/101 (50.5) | 101/131 (77.1) | 131 (10.3) | 16/99 (16.2) | 99/127 (78.0) | 127 (9.9) |
| Always shortage | 10/30 (33.3) | 30/131 (22.9) | 10/28 (35.7) | 28/127 (22.0) |
| % point diff: Decrease - Always | 17.2 (-3.2 to 37.5) |   | -19.6 (-36.5 to -2.6) |   |
| Not Spring shortage | Increase | 12/34 (35.3) | 34/733 (4.6) | 733 (57.4) | 12/29 (41.4) | 29/816 (3.6) | 816 (63.8) |
| Never shortage | 280/699 (40.1) | 699/733 (95.4) | 197/787 (25.0) | 787/816 (96.4) |
| % point diff: Increase - Never  | -4.8 (-21.6 to 12.1) |   | 16.3 (0.2 to 32.5) |   |
|  Ventilator  |   |   |   |   |   |   |
| Spring shortage | Decrease | 32/64 (50.0) | 64/74 (86.5) | 74 (5.8) | 3/52 (5.8) | 52/58 (89.7) | 58 (4.5) |
| Always shortage | 3/10 (30.0) | 10/74 (13.5) | 3/6 (50.0) | 6/58 (10.3) |
| % point diff: Decrease - Always | 20.0 (-13.3 to 53.3) |   | -44.2 (-70.0 to -18.5) |   |
| Not Spring shortage | Increase | 3/12 (25.0) | 12/790 (1.5) | 790 (61.8) | 6/11 (54.5) | 11/885 (1.2) | 885 (69.2) |
| Never shortage | 315/778 (40.5) | 778/790 (98.5) | 223/874 (25.5) | 874/885 (98.8) |
| % point diff: Increase - Never  | -15.5 (-43.4 to 12.5) |   | 29.0 (3.0 to 55.1) |   |
| Personal Protective Equipmentb  |  |  |  |  |  |  |
|  Surgical masks  |   |   |   |   |   |   |
| Spring shortage | Decrease | 86/216 (39.8) | 216/272 (79.4) | 272 (21.3) | 46/186 (24.7) | 186/231 (80.5) | 231 (18.1) |
| Always shortage | 13/56 (23.2) | 56/272 (20.6) | 17/45 (37.8) | 45/231 (19.5) |
| % point diff: Decrease - Always | 16.6 (2.5 to 30.7) |   | -13.0 (-27.5 to 1.5) |   |
| Not Spring shortage | Increase | 4/17 (23.5) | 17/592 (2.9) | 592 (46.3) | 9/17 (52.9) | 17/712 (2.4) | 712 (55.7) |
| Never shortage | 250/575 (43.5) | 575/592 (97.1) | 163/695 (23.5) | 695/712 (97.6) |
| % point diff: Increase - Never  | -19.9 (-43.8 to 3.9) |   | 29.5 (8.9 to 50.1) |   |
|  N95 masks  |   |   |   |   |   |   |
| Spring shortage | Decrease | 126/288 (43.8) | 288/437 (65.9) | 437 (34.2) | 70/283 (24.7) | 283/392 (72.2) | 392 (30.7) |
| Always shortage | 40/149 (26.8) | 149/437 (34.1) | 45/109 (41.3) | 109/392 (27.8) |
| % point diff: Decrease - Always | 16.9 (7.3 to 26.5) |   | -16.5 (-26.6 to -6.5) |   |
| Not Spring shortage | Increase | 9/30 (30.0) | 30/427 (7.0) | 427 (33.4) | 12/32 (37.5) | 32/551 (5.8) | 551 (43.1) |
| Never shortage | 178/397 (44.8) | 397/427 (93.0) | 108/519 (20.8) | 519/551 (94.2) |
| % point diff: Increase - Never  | -14.8 (-33.2 to 3.6) |   | 16.7 (2.0 to 31.4) |   |
|  Shield  |   |   |   |   |   |   |
| Spring shortage | Decrease | 89/222 (40.1) | 222/285 (77.9) | 285 (22.3) | 57/195 (29.2) | 195/238 (81.9) | 238 (18.6) |
| Always shortage | 13/63 (20.6) | 63/285 (22.1) | 18/43 (41.9) | 43/238 (18.1) |
| % point diff: Decrease - Always | 19.5 (6.0 to 32.9) |   | -12.6 (-28.0 to 2.7) |   |
| Not Spring shortage | Increase | 6/35 (17.1) | 35/579 (6.0) | 579 (45.3) | 15/33 (45.5) | 33/705 (4.7) | 705 (55.2) |
| Never shortage | 245/544 (45.0) | 544/579 (94.0) | 145/672 (21.6) | 672/705 (95.3) |
| % point diff: Increase - Never  | -27.9 (-44.8 to -11.0) |   | 23.9 (9.2 to 38.5) |   |
|  Gown  |   |   |   |   |   |   |
| Spring shortage | Decrease | 91/197 (46.2) | 197/268 (73.5) | 268 (21.0) | 48/180 (26.7) | 180/225 (80.0) | 225 (17.6) |
| Always shortage | 17/71 (23.9) | 71/268 (26.5) | 21/45 (46.7) | 45/225 (20.0) |
| % point diff: Decrease - Always | 22.2 (8.9 to 35.6) |   | -20.0 (-35.1 to -4.9) |   |
| Not Spring shortage | Increase | 10/34 (29.4) | 34/596 (5.7) | 596 (46.6) | 9/35 (25.7) | 35/718 (4.9) | 718 (56.2) |
| Never shortage | 235/562 (41.8) | 562/596 (94.3) | 157/683 (23.0) | 683/718 (95.1) |
| % point diff: Increase - Never  | -12.4 (-29.4 to 4.6) |   | 2.7 (-11.6 to 17.0) |   |
|  Gloves  |   |   |   |   |   |   |
| Spring shortage | Decrease | 12/32 (37.5) | 32/37 (86.5) | 37 (2.9) | 5/16 (31.3) | 16/19 (84.2) | 19 (1.5) |
| Always shortage | 1/5 (20.0) | 5/37 (13.5) | 3/3 (100.0) | 3/19 (15.8) |
| % point diff: Decrease - Always | 17.5 (-27.5 to 62.5) |   | -68.8 (-129.6 to -7.9) |   |
| Not Spring shortage | Increase | 6/25 (24.0) | 25/827 (3.0) | 827 (64.7) | 7/15 (46.7) | 15/924 (1.6) | 924 (72.3) |
| Never shortage | 334/802 (41.6) | 802/827 (97.0) | 220/909 (24.2) | 909/924 (98.4) |
| % point diff: Increase - Never  | -17.6 (-37.2 to 1.9) |   | 22.5 (0.5 to 44.4) |   |
| Testing more than a day |   |   |   |   |   |   |
| Spring shortage | Decrease | 93/236 (39.4) | 236/345 (68.4) | 345 (27.0) | 57/243 (23.5) | 243/331 (73.4) | 331 (25.9) |
| Always shortage | 35/109 (32.1) | 109/345 (31.6) | 32/88 (36.4) | 88/331 (26.6) |
| % point diff: Decrease - Always | 7.3 (-3.7 to 18.3) |   | -12.9 (-23.7 to -2.1) |   |
| Not Spring shortage | Increase | 24/61 (39.3) | 61/519 (11.8) | 519 (40.6) | 8/55 (14.5) | 55/612 (9.0) | 612 (47.9) |
| Never shortage | 201/458 (43.9) | 458/519 (88.2) | 138/557 (24.8) | 557/612 (91.0) |
| % point diff: Increase - Never  | -4.5 (-17.8 to 8.7) |   | -10.2 (-22.0 to 1.6) |   |

aInadequate staffing or only adequate with non-ICU-trained personnel

bCurrently unavailable or a shortage that impacted clinical protocols

**eTable 12: Changes in physical stress by COVID-19 hotspot and shortages**

|  |  |
| --- | --- |
|   | Physical stress |
| Spring to fall decrease(if stress in Spring is moderate or high) | Spring to fall increase(if stress in Spring is low or moderate) |
| N/D (% with a change) | N/D (% of the conditional) | N (% of total population) | N/D (% with a change) | N/D (% that matched the conditional) | N (% of total population) |
| Spring COVID-19 hotspot |   |   |   |   |   |   |
| Spring hotspot | Decrease hot | 88/144 (61.1) | 144/147 (98.0) | 147 (11.5) | 8/92 (8.7) | 92/94 (97.9) | 94 (7.4) |
| Always hot | 2/3 (66.7) | 3/147 (2.0) | 0/2 (0.0) | 2/94 (2.1) |
| % point diff: Decrease - Always | -5.6 (-61.3 to 50.2) |   | 8.7 (-30.4 to 47.8) |   |
| Not Spring hotspot | Increase Hot | 50/162 (30.9) | 162/783 (20.7) | 783 (61.3) | 76/178 (42.7) | 178/812 (21.9) | 812 (63.5) |
| Never Hot | 247/621 (39.8) | 621/783 (79.3) | 194/634 (30.6) | 634/812 (78.1) |
| % point diff: Increase - Never  | -8.9 (-17.3 to -0.5) |   | 12.1 (4.3 to 19.9) |   |
| Intensive care unit staff shortagesa |   |   |  |   |   |   |
| Attending physicians  |   |   |  |   |   |   |
| Spring shortage | Decrease | 82/153 (53.6) | 153/241 (63.5) | 241 (18.9) | 15/105 (14.3) | 105/163 (64.4) | 163 (12.8) |
| Always shortage | 27/88 (30.7) | 88/241 (36.5) | 21/58 (36.2) | 58/163 (35.6) |
| % point diff: Decrease - Always | 22.9 (9.9 to 36.0) |   | -21.9 (-35.2 to -8.6) |   |
| Not Spring shortage | Increase | 36/120 (30.0) | 120/689 (17.4) | 689 (53.9) | 45/96 (46.9) | 96/743 (12.9) | 743 (58.1) |
| Never shortage | 242/569 (42.5) | 569/689 (82.6) | 197/647 (30.4) | 647/743 (87.1) |
| % point diff: Increase - Never  | -12.5 (-22.2 to -2.9) |   | 16.4 (6.4 to 26.5) |   |
| Nurse  |   |   |  |   |   |   |
| Spring shortage | Decrease | 99/180 (55.0) | 180/358 (50.3) | 358 (28.0) | 32/152 (21.1) | 152/268 (56.7) | 268 (21.0) |
| Always shortage | 67/178 (37.6) | 178/358 (49.7) | 38/116 (32.8) | 116/268 (43.3) |
| % point diff: Decrease - Always | 17.4 (7.0 to 27.7) |   | -11.7 (-22.3 to -1.1) |   |
| Not Spring shortage | Increase | 38/155 (24.5) | 155/572 (27.1) | 572 (44.8) | 81/152 (53.3) | 152/638 (23.8) | 638 (49.9) |
| Never shortage | 183/417 (43.9) | 417/572 (72.9) | 127/486 (26.1) | 486/638 (76.2) |
| % point diff: Increase - Never  | -19.4 (-28.3 to -10.4) |   | 27.2 (18.6 to 35.7) |   |
|  Physician Assistant/Nurse Practitioner |   |   |   |   |   |   |
| Spring shortage | Decrease | 93/181 (51.4) | 181/323 (56.0) | 323 (25.3) | 28/130 (21.5) | 130/226 (57.5) | 226 (17.7) |
| Always shortage | 53/142 (37.3) | 142/323 (44.0) | 27/96 (28.1) | 96/226 (42.5) |
| % point diff: Decrease - Always | 14.1 (3.1 to 25.0) |   | -6.6 (-17.9 to 4.7) |   |
| Not Spring shortage | Increase | 28/118 (23.7) | 118/607 (19.4) | 607 (47.5) | 55/111 (49.5) | 111/680 (16.3) | 680 (53.2) |
| Never shortage | 213/489 (43.6) | 489/607 (80.6) | 168/569 (29.5) | 569/680 (83.7) |
| % point diff: Increase - Never  | -19.8 (-29.7 to -10.0) |   | 20.0 (10.5 to 29.6) |   |
|  Respiratory therapist  |   |   |   |   |   |   |
| Spring shortage | Decrease | 89/141 (63.1) | 141/258 (54.7) | 258 (20.2) | 10/90 (11.1) | 90/173 (52.0) | 173 (13.5) |
| Always shortage | 42/117 (35.9) | 117/258 (45.3) | 34/83 (41.0) | 83/173 (48.0) |
| % point diff: Decrease - Always | 27.2 (15.0 to 39.5) |   | -29.9 (-42.8 to -16.9) |   |
| Not Spring shortage | Increase | 27/132 (20.5) | 132/672 (19.6) | 672 (52.6) | 58/118 (49.2) | 118/733 (16.1) | 733 (57.4) |
| Never shortage | 229/540 (42.4) | 540/672 (80.4) | 176/615 (28.6) | 615/733 (83.9) |
| % point diff: Increase - Never  | -22.0 (-31.2 to -12.7) |   | 20.5 (11.4 to 29.7) |   |
| Medication shortagesb |   |   |   |   |   |   |
| Paralytics  |   |   |   |   |   |   |
| Spring shortage | Decrease | 89/207 (43.0) | 207/241 (85.9) | 241 (18.9) | 47/153 (30.7) | 153/174 (87.9) | 174 (13.6) |
| Always shortage | 11/34 (32.4) | 34/241 (14.1) | 5/21 (23.8) | 21/174 (12.1) |
| % point diff: Decrease - Always | 10.6 (-7.2 to 28.5) |   | 6.9 (-14.0 to 27.8) |   |
| Not Spring shortage | Increase | 5/21 (23.8) | 21/689 (3.0) | 689 (53.9) | 7/17 (41.2) | 17/732 (2.3) | 732 (57.3) |
| Never shortage | 282/668 (42.2) | 668/689 (97.0) | 219/715 (30.6) | 715/732 (97.7) |
| % point diff: Increase - Never  | -18.4 (-39.8 to 3.0) |   | 10.5 (-11.7 to 32.8) |   |
| Sedatives  |   |   |   |   |   |   |
| Spring shortage | Decrease | 117/276 (42.4) | 276/324 (85.2) | 324 (25.4) | 61/207 (29.5) | 207/241 (85.9) | 241 (18.9) |
| Always shortage | 18/48 (37.5) | 48/324 (14.8) | 13/34 (38.2) | 34/241 (14.1) |
| % point diff: Decrease - Always | 4.9 (-10.2 to 20.0) |   | -8.8 (-25.5 to 8.0) |   |
| Not Spring shortage | Increase | 2/14 (14.3) | 14/606 (2.3) | 606 (47.4) | 6/14 (42.9) | 14/665 (2.1) | 665 (52.0) |
| Never shortage | 250/592 (42.2) | 592/606 (97.7) | 198/651 (30.4) | 651/665 (97.9) |
| % point diff: Increase - Never  | -27.9 (-54.1 to -1.8) |   | 12.4 (-12.0 to 36.9) |   |
| Opioid analgesics  |   |   |   |   |   |   |
| Spring shortage | Decrease | 110/251 (43.8) | 251/282 (89.0) | 282 (22.1) | 50/189 (26.5) | 189/208 (90.9) | 208 (16.3) |
| Always shortage | 11/31 (35.5) | 31/282 (11.0) | 5/19 (26.3) | 19/208 (9.1) |
| % point diff: Decrease - Always | 8.3 (-10.1 to 26.8) |   | 0.1 (-20.7 to 20.9) |   |
| Not Spring shortage | Increase | 4/15 (26.7) | 15/648 (2.3) | 648 (50.7) | 7/17 (41.2) | 17/698 (2.4) | 698 (54.6) |
| Never shortage | 262/633 (41.4) | 633/648 (97.7) | 216/681 (31.7) | 681/698 (97.6) |
| % point diff: Increase - Never  | -14.7 (-39.9 to 10.5) |   | 9.5 (-13.0 to 31.9) |   |
| Bronchodilator |   |   |   |   |   |   |
| Spring shortage | Decrease | 60/150 (40.0) | 150/167 (89.8) | 167 (13.1) | 47/142 (33.1) | 142/155 (91.6) | 155 (12.1) |
| Always shortage | 4/17 (23.5) | 17/167 (10.2) | 6/13 (46.2) | 13/155 (8.4) |
| % point diff: Decrease - Always | 16.5 (-7.9 to 40.9) |   | -13.1 (-40.0 to 13.9) |   |
| Not Spring shortage | Increase | 0/8 (0.0) | 8/763 (1.0) | 763 (59.7) | 5/9 (55.6) | 9/751 (1.2) | 751 (58.8) |
| Never shortage | 323/755 (42.8) | 755/763 (99.0) | 220/742 (29.6) | 742/751 (98.8) |
| % point diff: Increase - Never  | -42.8 (-77.2 to -8.4) |   | 25.9 (-4.2 to 56.0) |   |
| Antibiotics  |   |   |   |   |   |   |
| Spring shortage | Decrease | 6/21 (28.6) | 21/23 (91.3) | 23 (1.8) | 4/12 (33.3) | 12/13 (92.3) | 13 (1.0) |
| Always shortage | 2/2 (100.0) | 2/23 (8.7) | 0/1 (0.0) | 1/13 (7.7) |
| % point diff: Decrease - Always | -71.4 (-140.5 to -2.3) |   | 33.3 (-60.8 to 127.5) |   |
| Not Spring shortage | Increase | 1/8 (12.5) | 8/907 (0.9) | 907 (71.0) | 2/3 (66.7) | 3/893 (0.3) | 893 (69.9) |
| Never shortage | 378/899 (42.0) | 899/907 (99.1) | 272/890 (30.6) | 890/893 (99.7) |
| % point diff: Increase - Never  | -29.5 (-63.9 to 4.8) |   | 36.1 (-16.2 to 88.4) |   |
| Vasopressors |   |   |   |   |   |   |
| Spring shortage | Decrease | 13/22 (59.1) | 22/27 (81.5) | 27 (2.1) | 1/10 (10.0) | 10/12 (83.3) | 12 (0.9) |
| Always shortage | 2/5 (40.0) | 5/27 (18.5) | 2/2 (100.0) | 2/12 (16.7) |
| % point diff: Decrease - Always | 19.1 (-29.2 to 67.3) |   | -90.0 (-155.7 to -24.3) |   |
| Not Spring shortage | Increase | 3/11 (27.3) | 11/903 (1.2) | 903 (70.7) | 6/8 (75.0) | 8/894 (0.9) | 894 (70.0) |
| Never shortage | 369/892 (41.4) | 892/903 (98.8) | 269/886 (30.4) | 886/894 (99.1) |
| % point diff: Increase - Never  | -14.1 (-43.4 to 15.2) |   | 44.6 (12.5 to 76.8) |   |
|  Equipment shortagesb |  |  |  |  |  |  |
|  Renal therapy  |   |   |   |   |   |   |
| Spring shortage | Decrease | 64/114 (56.1) | 114/149 (76.5) | 149 (11.7) | 12/85 (14.1) | 85/112 (75.9) | 112 (8.8) |
| Always shortage | 14/35 (40.0) | 35/149 (23.5) | 12/27 (44.4) | 27/112 (24.1) |
| % point diff: Decrease - Always | 16.1 (-2.8 to 35.1) |   | -30.3 (-48.1 to -12.6) |   |
| Not Spring shortage | Increase | 5/34 (14.7) | 34/781 (4.4) | 781 (61.1) | 16/34 (47.1) | 34/794 (4.3) | 794 (62.1) |
| Never shortage | 304/747 (40.7) | 747/781 (95.6) | 238/760 (31.3) | 760/794 (95.7) |
| % point diff: Increase - Never  | -26.0 (-42.8 to -9.2) |   | 15.7 (-0.3 to 31.8) |   |
|  Ventilator  |   |   |   |   |   |   |
| Spring shortage | Decrease | 45/70 (64.3) | 70/82 (85.4) | 82 (6.4) | 6/43 (14.0) | 43/49 (87.8) | 49 (3.8) |
| Always shortage | 4/12 (33.3) | 12/82 (14.6) | 2/6 (33.3) | 6/49 (12.2) |
| % point diff: Decrease - Always | 31.0 (0.9 to 61.0) |   | -19.4 (-51.0 to 12.2) |   |
| Not Spring shortage | Increase | 4/14 (28.6) | 14/848 (1.7) | 848 (66.4) | 6/10 (60.0) | 10/857 (1.2) | 857 (67.1) |
| Never shortage | 334/834 (40.0) | 834/848 (98.3) | 264/847 (31.2) | 847/857 (98.8) |
| % point diff: Increase - Never  | -11.5 (-37.3 to 14.4) |   | 28.8 (-0.1 to 57.8) |   |
|  PPE: Change protocols or unavailable |  |  |  |  |  |  |
|  Surgical masks  |   |   |   |   |   |   |
| Spring shortage | Decrease | 86/228 (37.7) | 228/286 (79.7) | 286 (22.4) | 52/171 (30.4) | 171/208 (82.2) | 208 (16.3) |
| Always shortage | 16/58 (27.6) | 58/286 (20.3) | 16/37 (43.2) | 37/208 (17.8) |
| % point diff: Decrease - Always | 10.1 (-3.7 to 23.9) |   | -12.8 (-29.5 to 3.8) |   |
| Not Spring shortage | Increase | 5/16 (31.3) | 16/644 (2.5) | 644 (50.4) | 9/16 (56.3) | 16/698 (2.3) | 698 (54.6) |
| Never shortage | 280/628 (44.6) | 628/644 (97.5) | 201/682 (29.5) | 682/698 (97.7) |
| % point diff: Increase - Never  | -13.3 (-38.0 to 11.3) |   | 26.8 (4.0 to 49.5) |   |
|  N95 masks  |   |   |   |   |   |   |
| Spring shortage | Decrease | 124/302 (41.1) | 302/452 (66.8) | 452 (35.4) | 78/269 (29.0) | 269/374 (71.9) | 374 (29.3) |
| Always shortage | 44/150 (29.3) | 150/452 (33.2) | 45/105 (42.9) | 105/374 (28.1) |
| % point diff: Decrease - Always | 11.7 (2.3 to 21.2) |   | -13.9 (-24.5 to -3.3) |   |
| Not Spring shortage | Increase | 13/37 (35.1) | 37/478 (7.7) | 478 (37.4) | 17/29 (58.6) | 29/532 (5.5) | 532 (41.6) |
| Never shortage | 206/441 (46.7) | 441/478 (92.3) | 138/503 (27.4) | 503/532 (94.5) |
| % point diff: Increase - Never  | -11.6 (-28.3 to 5.1) |   | 31.2 (14.2 to 48.2) |   |
|  Shield  |   |   |   |   |   |   |
| Spring shortage | Decrease | 88/228 (38.6) | 228/293 (77.8) | 293 (22.9) | 61/184 (33.2) | 184/226 (81.4) | 226 (17.7) |
| Always shortage | 14/65 (21.5) | 65/293 (22.2) | 23/42 (54.8) | 42/226 (18.6) |
| % point diff: Decrease - Always | 17.1 (3.9 to 30.2) |   | -21.6 (-37.8 to -5.4) |   |
| Not Spring shortage | Increase | 12/38 (31.6) | 38/637 (6.0) | 637 (49.8) | 14/26 (53.8) | 26/680 (3.8) | 680 (53.2) |
| Never shortage | 273/599 (45.6) | 599/637 (94.0) | 180/654 (27.5) | 654/680 (96.2) |
| % point diff: Increase - Never  | -14.0 (-30.3 to 2.3) |   | 26.3 (8.6 to 44.0) |   |
|  Gown  |   |   |   |   |   |   |
| Spring shortage | Decrease | 92/209 (44.0) | 209/279 (74.9) | 279 (21.8) | 43/165 (26.1) | 165/209 (78.9) | 209 (16.4) |
| Always shortage | 19/70 (27.1) | 70/279 (25.1) | 25/44 (56.8) | 44/209 (21.1) |
| % point diff: Decrease - Always | 16.9 (3.6 to 30.1) |   | -30.8 (-46.3 to -15.2) |   |
| Not Spring shortage | Increase | 10/32 (31.3) | 32/651 (4.9) | 651 (50.9) | 18/36 (50.0) | 36/697 (5.2) | 697 (54.5) |
| Never shortage | 266/619 (43.0) | 619/651 (95.1) | 192/661 (29.0) | 661/697 (94.8) |
| % point diff: Increase - Never  | -11.7 (-29.3 to 5.8) |   | 21.0 (5.6 to 36.3) |   |
|  Gloves  |   |   |   |   |   |   |
| Spring shortage | Decrease | 13/31 (41.9) | 31/36 (86.1) | 36 (2.8) | 6/16 (37.5) | 16/18 (88.9) | 18 (1.4) |
| Always shortage | 1/5 (20.0) | 5/36 (13.9) | 2/2 (100.0) | 2/18 (11.1) |
| % point diff: Decrease - Always | 21.9 (-24.1 to 68.0) |   | -62.5 (-135.5 to 10.5) |   |
| Not Spring shortage | Increase | 5/23 (21.7) | 23/894 (2.6) | 894 (70.0) | 13/18 (72.2) | 18/888 (2.0) | 888 (69.5) |
| Never shortage | 368/871 (42.3) | 871/894 (97.4) | 257/870 (29.5) | 870/888 (98.0) |
| % point diff: Increase - Never  | -20.5 (-40.9 to -0.1) |   | 42.7 (21.2 to 64.2) |   |
| Testing more than a day |   |   |   |   |   |   |
| Spring shortage | Decrease | 98/255 (38.4) | 255/367 (69.5) | 367 (28.7) | 76/234 (32.5) | 234/319 (73.4) | 319 (25.0) |
| Always shortage | 49/112 (43.8) | 112/367 (30.5) | 35/85 (41.2) | 85/319 (26.6) |
| % point diff: Decrease - Always | -5.3 (-16.2 to 5.6) |   | -8.7 (-20.5 to 3.1) |   |
| Not Spring shortage | Increase | 26/59 (44.1) | 59/563 (10.5) | 563 (44.1) | 18/54 (33.3) | 54/587 (9.2) | 587 (45.9) |
| Never shortage | 214/504 (42.5) | 504/563 (89.5) | 149/533 (28.0) | 533/587 (90.8) |
| % point diff: Increase - Never  | 1.6 (-11.7 to 14.9) |   | 5.4 (-7.3 to 18.0) |   |

aInadequate staffing or only adequate with non-ICU-trained personnel

bCurrently unavailable or a shortage that impacted clinical protocols

**eTable 13, Spring/Fall regional COVID-19 hotspot prevalence**

|  |  |  |
| --- | --- | --- |
|   | US Census Region [N (%)] | Total |
| Fall | West | Midwest | South | Northeast |
| Hotspot  | 36 (15.3) | 120 (50.8) | 75 (31.8) | 5 (2.1) | 236 |
| Not Hotspot  | 234 (22.5) | 144 (13.8) | 371 (35.6) | 293 (28.1) | 1042 |
| Spring |   |   |   |   |   |
| Hotspot  | 1 (0.6) | 2 (1.2) | 8 (4.8) | 154 (93.3) | 165 |
| Not Hotspot  | 269 (24.2) | 262 (23.5) | 438 (39.4) | 144 (12.9) | 1113 |

# **Fall Survey Instrument**

# Introduction

As a follow up to the COVID-19 survey you completed last Spring, researchers from the American Board of Internal Medicine, the Harvard University School of Medicine, the Beth Israel Deaconess Medical Center, and the Harvard T. H. Chan School of Public Health invite you to complete this five-minute follow up survey about the impact of the COVID-19 pandemic on you and the institution where you are currently providing care.

Your responses are confidential and will in no way affect your certification or standing with ABIM. Data from this survey will only be reported in aggregate.

*Answered by all; REQUIRED*

1. Have you recently spent any time caring for hospitalized patients diagnosed with, or likely to be diagnosed with, COVID-19? If so, please use the more precise period of time below.
	* Yes, in the past two weeks
	* Yes, in the past month but not in the past two weeks
	* No *[Answer only 5 and 6]*
	* I do not see hospitalized patients, or I am retired *[End of survey for these individuals]*

*If either YES to 1; REQUIRED*

1. During the past two weeks when caring for COVID-19 patients have you felt…

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Not at all | Very little | Moderately | A lot | Extremely |
| Physically exhausted at work | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Emotionally distressed at work | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |

*If either level of emotional distress to 2; REQUIRED*

3) Which of the following factors were significant contributors to your emotional distress? (Check all that apply.)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Not a factor | A minor factor | A significant factor |
| Personal risk of exposure to COVID-19 | ⃝ | ⃝ | ⃝ |
| Risk to staff/colleagues of exposure to COVID-19 | ⃝ | ⃝ | ⃝ |
| Risk of exposing family/friends to COVID-19 | ⃝ | ⃝ | ⃝ |
| Lack of knowledge about COVID-19  | ⃝ | ⃝ | ⃝ |
| High mortality of COVID-19 patients | ⃝ | ⃝ | ⃝ |
| Caring for patients isolated from their families.  | ⃝ | ⃝ | ⃝ |
| Emotional wellbeing of staff and colleagues | ⃝ | ⃝ | ⃝ |
| Ethical decisions related to the care of patients with COVID-19 | ⃝ | ⃝ | ⃝ |
| Lack of personal protective equipment | ⃝ | ⃝ | ⃝ |
| Enter another option [ ] | ⃝ | ⃝ | ⃝ |

*If either level of emotional distress to 2; OPTIONAL*

4) Has anything changed that has impacted, positively and/or negatively, your level of stress since late April (i.e., since ABIM’s first COVID-19 survey?) If so, what has changed, and how did it affect your level of stress?

 Changes that have increased stress

|  |
| --- |
|   |

 Changes that have decreased stress

|  |
| --- |
|   |

|  |  |
| --- | --- |
| *If any YES to 1* | *If No to 1* |
| Please answer the following questions based on the hospital location where you spent **most of your time** treating likely COVID-19 patients **in the past two weeks**. | Please answer the following questions based on the hospital location where you spent **most of your time** treating patients. |

*If either Yes or No to 1; REQUIRED*

5) What is the size of this hospital?

* + Fewer than 100 beds
	+ 100 to 499 beds
	+ 500 or more beds
	+ I don’t know

*If either Yes or No to 1; REQUIRED*

6) Please enter this hospital's 5-digit U.S. ZIP code. [ ]

***Survey ends for those who have not treated patients with COVID-19 in the past two weeks or past month***

*Remaining questions are REQUIRED for those answered either Yes to 1*

7) Has this hospital expanded the number of ICU beds because of the COVID-19 pandemic within the last month?

* + Yes
	+ No
	+ I don’t know

8) At this hospital, choose the option that best describes your availability of staff of each of the following types:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Adequate with usual ICU-trained staff  | Adequate with additional ICU-experienced staff reassigned to support the pandemic response | Adequate with staff that include non-ICU trained personnel | Inadequate  | I don’t know |
| Attending physicians | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Nurses | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Physician assistants and/or Nurse practitioners | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Respiratory therapists | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |

9) During this period, what is the typical length of time to obtain a test result for COVID-19 at this hospital?

* + Within three hours
	+ Up to a day
	+ Up to three days
	+ More than three days
	+ I don't know

10) Is Remdesivir available at this hospital?

* + Available in adequate supply
	+ Available but in short supply
	+ Not available
	+ I don’t know

11) Please indicate availability of the following medications/equipment at this hospital.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Adequate availability, no shortage  | Shortage, but no change to clinical protocols | Shortage that has impacted clinical protocols | Currently unavailable | I don’t know |
| Paralytics | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Sedatives | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Vasopressors | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Antibiotics | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Bronchodilators | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Opioid analgesics | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Dexamethasone | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Ventilators | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Renal replacement machines | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |

12) Choose the option that best describes the current availability of each type of Personal Protective Equipment (PPE) at this hospital:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Adequate availability, no shortage |  Shortage, but no change to clinical protocols | Shortage that has impacted clinical protocols  | Currently unavailable | I don’t know |
| Surgical masks | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| N95 masks | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Face shields | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Surgical gowns | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Gloves  | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Protective hood | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |

12) During this period, how often have you changed your PPE?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | With each patient encounter | Only after high risk patient encounters | Only once a day  | Retain until soiled | Not applicable |
| Surgical masks | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| N95 masks | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Face shields | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Surgical gowns | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Gloves  | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Protective hood | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |

13) Considering the changing nature of the COVID-19 pandemic across the country, would you be willing to participate in a similar survey in the near future?

* + Yes
	+ No

***End of survey***

# **Spring Survey Instrument**

# Survey introduction

Researchers from the American Board of Internal Medicine, the Harvard University School of Medicine and the Harvard T. H. Chan School of Public Health, in collaboration with the American Thoracic Society and the Society of Critical Care Medicine, invite you to complete this five-minute survey about the impact of the COVID-19 pandemic on you and the institution where you are currently providing care.

Your responses are confidential and will in no way affect your certification or standing with ABIM. Data from this survey will only be reported in aggregate.

# Survey content

1. Have you spent any time caring for patients diagnosed with, or likely to be diagnosed with, COVID-19 in the past two weeks?
	* Yes
	* No
	* I do not see hospitalized patients, or I am retired.

IF YES TO 1

1. During the past two weeks when caring for COVID-19 patients I have felt…

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Not at all | Very little | Moderately | A lot | Extremely |
| Physically exhausted at work | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Emotionally distressed at work | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |

IF YES TO 1 AND ANYTHING EXCEPT [NOT AT ALL] FOR EMOTIONALLY DISTRESSED IN 2

1. How much did the following factors contribute to your emotional distress in the past two weeks?

|  |  |  |  |
| --- | --- | --- | --- |
|  | Not a factor | A minor factor | A significant factor |
| Personal risk of exposure to COVID-19  | ⃝ | ⃝ | ⃝ |
| Lack of personal protective equipment | ⃝ | ⃝ | ⃝ |
| Risk of exposing family/friends to COVID-19 | ⃝ | ⃝ | ⃝ |
| Ethical decisions related to the care of patients with COVID-19 | ⃝ | ⃝ | ⃝ |
| Other (please specify) | ⃝ | ⃝ | ⃝ |

Instruction IF YES TO 1

Please answer the following questions based on the hospital location where you spent **most of your time** treating likely COVID-19 patients **in the past two weeks**.

Instruction IF NO TO 1

Please answer the following questions based on the hospital location where you spent **most of your time** treating patients.

ANSWERED BY ALL EXCEPT THOSE WHO ARE NOT SEEING HOSPITALIZED PATIENTS, OR RETIRED

1. What is the size of this hospital?
	* Fewer than 100 beds
	* 100 to 499 beds
	* 500 or more beds

ANSWERED BY ALL EXCEPT THOSE WHO ARE NOT SEEING HOSPITALIZED PATIENTS, OR RETIRED

1. Please enter this hospital's 5-digit U.S. ZIP code.
	* \_\_\_\_\_
	* No answer

[SUBMIT] SURVEY ENDS FOR THOSE WHO ANSWERED NO TO 1

IF YES TO 1

1. Has this hospital expanded the number of ICU beds because of the COVID-19 pandemic?
* Yes
* No

IF YES TO 1

1. At this hospital, choose the option that best describes your availability of staff of each of the following types:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Adequate with usual ICU-trained staff  | Adequate with additional ICU-experienced staff reassigned to support the pandemic response | Adequate with staff that include non-ICU trained personnel | Inadequate  | I don’t know |
| Attending physicians | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Residents and/or Fellows | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Nurses | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Physician assistants and/or Nurse practitioners | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Respiratory therapists | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |

IF YES TO 1

1. In the past two weeks, what is the typical length of time to obtain a test result for COVID-19 at this hospital?
	* Within three hours
	* Up to a day
	* Up to three days
	* More than three days

IF YES TO 1

1. Please indicate the availability of any of the following medications/equipment at this hospital:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Adequate availability, no shortage  | Shortage, but no change to clinical protocols | Shortage that has impacted clinical protocols | Currently unavailable | I don’t know |
| Paralytics | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Sedatives | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Pressors | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Antibiotics | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Bronchodilators | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Opioid analgesics | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Ventilators | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Renal replacement therapies | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |

IF YES TO 1

1. Choose the option that best describes the current availability of each type of Personal Protective Equipment (PPE) at this hospital:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Adequate availability, no shortage  |  Shortage, but no change to clinical protocols | Shortage that has impacted clinical protocols | Currently unavailable | I don’t know |
| Surgical masks | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| N95 masks | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Face shields | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Surgical gowns | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Gloves  | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |

IF YES TO 1

1. During the last two weeks, how often have you changed your PPE?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | With each patient encounter | Only after high risk patient encounters | Only once a day  | Retain until soiled | Not applicable |
| Surgical masks | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| N95 masks | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Face shields | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Surgical gowns | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |
| Gloves  | ⃝ | ⃝ | ⃝ | ⃝ | ⃝ |

ANSWERED BY ALL EXCEPT THOSE WHO ARE NOT SEEING HOSPITALIZED PATIENTS, OR RETIRED

1. Considering the changing nature of the COVID-19 pandemic across the country, would you be willing to participate in a similar survey in the near future?
	* Yes
	* No

IF YES TO 1 AND YES TO 13

1. If you prefer that we follow-up with a different email address, please provide it below.

[Email field]

IF YES OR NO TO 1

1. If there are additional thoughts about your experience caring for patient with COVID-19 infection you would like to share, please provide them here.

[Free text box]

[Submit]

# Thank you message

For respondents who complete the survey [IF YES OR NO TO 1]

Thank you. We appreciate your taking the time to share your experience. Your response will improve the community's understanding of the impact of COVID-19 on intensive care units across the country.

For respondents who are retired or do not see hospitalized patients

Thank you for responding. This survey is designed for critical care physicians who currently see hospitalized patients.

**COVID-19 Spring/Fall survey difference**

Physicians were asked to complete the Spring survey if they had seen a COVID-19 patient within the last two weeks versus one month for the Fall survey. We did this mainly because during the Spring period most physicians were on duty because the pandemic than was considered an emergency situation. By the Fall schedules had normalized so we wanted to included physician who may have had been off duty for a small period.

In the fall survey we included a fill in question where the physician was asked what had changed that either increased or decreased their stress as well as additional contributors to emotional distress (Lack of knowledge about COVID-19, High mortality of COVID-19 patients, Caring for patients isolated from their families, Emotional wellbeing of staff and colleagues). Questions also were added regarding the availability of Dexamethasone. We also replaced edited the medication title from “pressors” to vasopressors. We also asked specifically about the availability of Remdesivir.

With regard to the questions about availability and frequency of changing PPE, we added “protective hoods”. Due to high numbers of physicians reporting not knowing in the Spring survey, we omitted “Residents and/or Fellows” as a category of staff availability for the fall survey.

Finally, we included “I don’t know” response option more consistently to improve usability.

|  |  |
| --- | --- |
| **Spring** | **Fall** |
| Have you spent any time caring for patients diagnosed with, or likely to be diagnosed with, COVID-19 in the past two weeks?YesNoI do not see hospitalized patients, or I am retired. | Yes, in the past month but not in the past two weeks |
| Which of the following factors were significant contributors to your emotional distress? (Check all that apply.) | Added* Risk to staff/colleagues of exposure to COVID-19
* Lack of knowledge about COVID-19
* High mortality of COVID-19 patients
* Caring for patients isolated from their families.
* Emotional wellbeing of staff and colleagues
 |
| NEW | Has anything changed that has impacted, positively and/or negatively, your level of stress since late April (i.e., since ABIM’s first COVID-19 survey?) If so, what has changed, and how did it affect your level of stress? |