STATE HOSPITAL WORKFORCE DEFICIT ESTIMATOR

Summary

The August 7 update of the Mullan Institute (MI) State Hospital Workforce Deficit Estimator finds that amid the COVID-19 pandemic, a majority of states are at risk for shortages in healthcare workers to treat COVID-19 patients. The Workforce Estimator developed by researchers at the George Washington University Milken Institute School of Public Health helps states and the federal government gauge the demand for health care professionals under different scenarios of COVID-19 cases and attrition. While recent reports on COVID have focused on ICU bed shortages, these risky shortfalls in healthcare workers can be much harder to solve. Solutions for the strain and shortages in the workforce include re-deploying health care workers from other settings to serve on the frontlines of the pandemic.

New Findings at a Glance

This week's update of the Estimator shows that:
- Twenty-six states will face shortages in ICU doctors, up from five last week. These shortages mean COVID-19 patients in 26 states will need more care than the ICU doctors can handle. Five states are at risk of running low on their supply of ICU doctors. These highly trained doctors can help provide potentially life-saving care to COVID-19 patients and others with serious illness or injuries.
- Ten states are at risk of running low on their supply of critical care nurses. These highly trained nurses can help provide potentially life-saving care to COVID-19 patients and others with serious illness or injuries.
- Seven states will face shortages in hospitalists, up from zero states last week. These shortages mean COVID-19 patients in these seven states will need more care than the hospitalists can handle. Sixteen states are at risk of running low on their supply of hospitalists. These highly trained doctors can help provide potentially life-saving care to COVID-19 patients and others with serious illness or injuries.
- Nine states will face shortages in respiratory therapists, up from zero states last week. These shortages mean COVID-19 patients in these nine states will need more care than respiratory therapists can handle. Twelve states are at risk of running low on their

supply of respiratory therapists. These highly trained professionals can help provide potentially life-saving care to COVID-19 patients and others with serious illness or injuries.

- Six states will face shortages in pharmacists, up from zero states last week. These shortages mean COVID-19 patients in these six states will need more care than the pharmacists can handle. Sixteen states are at risk of running low on their supply of pharmacists. These highly trained professionals can help provide potentially life-saving care to COVID-19 patients and others with serious illness or injuries.

Table 1. States at Risk for Insufficient Health Workforce for COVID-19

State	Predicted Peak Hospital Utilization	Intensivists	Critical Care Nurses	Hospitalists	Respiratory Therapists	Pharmacists
Alabama	12/01/2020	Shortage	Sufficient	Strain	Strain	Strain
Arizona	08/07/2020	Shortage	Sufficient	Sufficient	Sufficient	Sufficient
Arkansas	12/01/2020	Shortage	Strain	Shortage	Strain	Shortage
California	12/01/2020	Shortage	Strain	Shortage	Shortage	Strain
Colorado	11/10/2020	Shortage	Sufficient	Strain	Shortage	Strain
Florida	08/22/2020	Shortage	Sufficient	Strain	Strain	Strain
Georgia	10/06/2020	Shortage	Strain	Shortage	Shortage	Shortage
Idaho	12/01/2020	Shortage	Sufficient	Sufficient	Sufficient	Sufficient
Indiana	12/01/2020	Strain	Sufficient	Sufficient	Sufficient	Sufficient
Iowa	12/01/2020	Shortage	Strain	Strain	Strain	Strain
Kansas	11/06/2020	Shortage	Strain	Strain	Shortage	Strain
Kentucky	12/01/2020	Shortage	Sufficient	Strain	Strain	Strain
Louisiana	10/15/2020	Shortage	Sufficient	Strain	Strain	Strain
Mississippi	08/21/2020	Shortage	Sufficient	Strain	Sufficient	Strain
Missouri	11/02/2020	Shortage	Sufficient	Strain	Strain	Strain
Montana	12/01/2020	Shortage	Sufficient	Sufficient	Sufficient	Sufficient
Nebraska	12/01/2020	Shortage	Sufficient	Strain	Sufficient	Sufficient
Nevada	10/18/2020	Shortage	Sufficient	Shortage	Strain	Shortage
New Mexico	12/01/2020	Shortage	Strain	Strain	Shortage	Strain
North Carolina	11/14/2020	Shortage	Sufficient	Strain	Strain	Strain
Ohio	12/01/2020	Strain	Sufficient	Sufficient	Sufficient	Sufficient

Oklahoma	11/26/2020	Shortage	Strain	Shortage	Shortage	Shortage
Oregon	11/09/2020	Shortage	Strain	Strain	Shortage	Shortage
South Carolina	8/07/2020	Shortage	Sufficient	Strain	Strain	Strain
South Dakota	12/01/2020	Strain	Sufficient	Sufficient	Sufficient	Sufficient
Tennessee	12/01/2020	Strain	Sufficient	Sufficient	Sufficient	Sufficient
Texas	10/09/2020	Shortage	Sufficient	Shortage	Strain	Strain
Utah	12/01/2020	Shortage	Strain	Shortage	Shortage	Shortage
Virginia	12/01/2020	Strain	Sufficient	Sufficient	Sufficient	Sufficient
Washington	12/01/2020	Shortage	Sufficient	Strain	Strain	Strain
Wisconsin	11/30/2020	Shortage	Strain	Strain	Shortage	Strain

Shortage: More than 100% of the state's workforce needed to treat COVID-19 patients

Strain: Less than 50% workforce remaining for non-COVID patients after COVID-19 demand is met

Sufficient: More than 50% of the workforce available to treat non-COVID patients after COVID-19 demand is

Why does it Matter?

The news media has largely focused on hospitalizations and the danger of depleting the ICU bed supply, but staffing these beds may be an even greater problem. New beds can be set up in other hospital units, or even outside the hospital setting, but it takes time to find highly specialized ICU professionals. Moreover, existing staff in these high COVID setting are likely to be working more shifts and with more intensity, leading to burnout and even infections among health personnel.

The MI State Hospital Workforce Deficit Estimator allows states to adjust the attrition rates and anticipate predicted workforce shortages. The site also provides resources on emergency measures that can be used to quickly to attract additional professionals, including inactive clinicians in their state and clinicians from other states.

View Map

* In addition to the limitations inherent in any projection model and the limitations of the IHME model specifically, the data we used for the health professions supply side also has limitations. First, all data is at the state level, and there are variations in distribution within states that are important. Second, the data on intensivists and physician hospitalists are the only data that takes into account evidence of practice, i.e., claims data. The other four professions are based on estimates from BLS, AHA, and NSSRNs. The advantage of claims data is that, since there is not always an exact match between specialty education and actual practice area, we can see who is providing the set of services that are of interest. Third, hospital work for all these

professions is based on shifts, and, over the course of a given period, individuals often alter the number of shifts they work based on other factors in their lives, including the need for income and home responsibilities. Our estimates assume full time work. Lastly, it is worth recalling that the nursing data is based on a national sample survey, making estimates of nursing supply the least reliable of the five professions.

Background

The purpose of the MI State Hospital Workforce Deficit Estimator is to help state and federal policy leaders assess the sufficiency of their health workforce to meet COVID-19 cases in hospitals. The Estimator currently provides estimates for:

- **Intensivists** – physicians trained and experienced in providing ICU care
- **Critical Care Nurses (CCRNs)** – nurses trained and experience in providing ICU care
- **Hospitalists** – physicians who focus on the medical care of hospitalized patients in non-ICU settings
- **Respiratory Therapists (RTs)** – health professionals trained to assess and treat patients with pulmonary disease, including the management of ventilators
- **Pharmacists** – health professionals with expertise in medication who ensure that medicines are dispensed safely and accurately.

The Estimator allows users to switch between two staffing models – non-surge and surge. To meet increasing health workforce needs, one of the first steps health care organizations might take is to transition to surge capacity staffing levels, i.e., requiring providers to care for more patients than usual. For example, in our models, intensivists at surge staffing would care for a panel of 10 patients rather than 7 patients at non-surge staffing levels (Table 2). However, surge staffing levels pose a higher risk of provider burnout if used for an extended period.

Table 2. Non-Surge and Surge Staffing Capacities

	Acute Care Teams		ICU Teams	
	Baseline Patients Each	**Surge Patients Each**	**Baseline Patients Each**	**Surge Patients Each**
Intensivists	N/A	N/A	7	10
Critical Care Nurses (CCRNs)	N/A	N/A	1	3
Hospitalists	10	18	N/A	N/A
Respiratory Therapists (RTs)	8	12	4	6
Pharmacists	8	30	8	30

Source: Healthforce Center at UCSF. Staffing plans for surge hospitals – public Apr 7 update

The Estimator also allows for adjustment based on different health workforce attrition rates. Attrition might be due to infection, quarantine, or loss due to childcare or other family demands. Health workforce attrition estimates for COVID-19 have ranged from 7.5% in Washington to 34.5% in New York.

Methods

The MI State Health Workforce Deficit Estimator for COVID-19 uses the IHME COVID-19 demand model, American Hospital Association 2018 Hospital Survey data, publicly available CMS data (NPPES, PECOS, and Medicare Part B PUF), Bureau of Labor Statistics Occupational Employment Statistics, and the 2018 National Sample Survey of Registered Nurses data to examine the sufficiency of the health workforce to meet projected COVID-19 hospital and ICU bed demand across states. View additional information on each health worker type in the methodology.

For our estimations, the date with the highest demand in the remaining period of IHME's projections (8/7/2020 through 12/1/2020) is classified as the peak date for each state. Additionally, IHME presents three scenarios: (1) Current Projections; (2) Mandates Easing; and (3) Universal Masks. We use the Current Projections scenario for our estimations.

Planning for COVID-19 Health Workforce Needs

Even for states with sufficient health workforce for COVID-19 patients, states will have varying degrees of capacity to meet ongoing non-COVID-19 patient needs. Hospitals could further face challenges due to health worker attrition, and hospitals resuming full service with potential pent-up demand may increase overall health workforce needs over time.

A first point to consider is that the Bureau of Labor Statistics and NSSRN data estimate there are 21,000 additional advanced practice nurses working in critical care settings and 93,000 working in inpatient settings. The NCCPA reported 1,502 physician assistants specialized in critical care medicine and 3,436 were hospitalists in 2018. These practitioners are an important resource to consider. Because of data uncertainty, these professions were not included in the Estimator, but they are important resources that policymakers and planners should consider in their efforts to meet the demand for COVID-19 care.

For states that have already implemented surge capacity staffing ratios, for a short period, more aggressive staffing ratios are possible. The Society of Critical Care Medicine provides a Tiered Staffing Strategy for Pandemic, augmenting experienced intensivists, respiratory therapists, and ICU nurses with non-ICU health workers. Shifting to surge capacity and tiered staffing models

requires advance planning, with training and support for health workers. Additionally, surge staffing ratios may be unsustainable over longer periods of time.

Another strategy healthcare organizations and states are pursuing is re-deploying or recruiting health workers from other settings. While the Estimator predicts shortages based on the active adult intensivist and hospitalist workforce, for each state, it also identifies the number of intensivists and hospitalists active in non-ICU or non-hospital settings (respectively) or no longer active (e.g. retired), and primary care physicians billing a large portion of their Medicare services (50-90%) in the inpatient setting. These are individuals that might be identified and re-deployed to support COVID-19 needs.

State-by-state modeling can further inform federal and state planning. The military has an estimated [medical workforce of 180,000](), including respiratory therapists. Understanding which states face the greatest predicted shortfalls can help the federal government plan and deploy to meet national needs. Understanding their own health workforce capacity can also help states target their efforts and support the release of health workers to other states with greater need, following California's recent example of sending [500 ventilators back to the national stockpile]().

Understanding health workforce needs for COVID-19 can help states prepare to meet these needs. However, it should be noted that the state modeling does not consider the distribution of the health workforce across the state and in different health care organizations. Health workers do not move easily – planning and extensive negotiated coordination is needed. That is why it is important to have data for conversations about health workforce needs early in the process.

For additional [Emerging Health Workforce Strategies to Address COVID-19, click here]().