

## Planning for a COVID

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Pandemics are the ultimate stress to the healthcare system and society. To declare a pandemic, a wide geographical area has to be involved and an exceptionally high number of people have to be affected<sup>1</sup>. Under any understanding, the pandemic is the ultimate stress to healthcare.

COVID19 pandemic already resulted in severe demand to supply mismatch due to disproportional influx of sick patients, we see not only shortages of PPEs, ventilators but also qualified medical personnel. Publicly accessible prediction tool suggests between 80 to 800 patients being admitted to the ICU with an assumption 5% hospitalization, 1 to 2 % ICU need in the average size academic institution and 15% market share for an institution. This is a prevalent scenario for several cities around the world in which the healthcare system has to deal with several victims concomitantly while exhausting resources. Often these processes are exacerbated by lack of preparedness. Healthcare resources can be divided into several domains: personnel, equipment, medication, space, and time. Each of these domains can be improved somewhat in advance even if the notice is short.

Giving the personnel rest as much as possible in anticipation of the surge is critical since pandemic will demand a lot while inducing anxiety. Having rested personnel beforehand is critical. Canceling elective surgical schedules before surge and planning wellness support is important. This preserves not only personnel but also supplies critical to fight pandemic. Increasing the capacity of staff can be achieved in

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<sup>1</sup> [https://www.who.int/csr/disease/swineflu/frequently\\_asked\\_questions/pandemic/en/](https://www.who.int/csr/disease/swineflu/frequently_asked_questions/pandemic/en/)

several ways. Looking for individuals who able to switch from different positions but still have ICU skills can augment staffing. Tiered approach to ICU staffing has been advocated during the time of natural disasters to provide critical care expertise to largest number of patients. In this model, proposed by Society of Critical Care Medicine, a physician who is trained or experienced in critical care and who regularly manages ICU patients, oversees the care of four groups of 24 patients each. A non-ICU physician (eg, anesthesiologist, pulmonologist, hospitalist etc.), who ideally has some ICU training but who does not regularly perform ICU care, is managing each 24 patients group, augmenting ability to deliver high quality critical care to more patients (<https://sccm.org/Blog/March-2020/United-States-Resource-Availability-for-COVID-19>). Retired faculty can be another resource. Making a plan for allocation of work will allow for a sense of equity among the providers. Providing enough protective equipment is critical. If not enough protective equipment is available, inventing a plan to conserve the existing ones is a solution, or come out with alternatives. Teaching the staff basic precautions in handling infected patients and create the contingency plan in case of breaches for the future is paramount. Above all, clear communication is the key to win hearts and minds. Pandemic presents an institutional challenge. There should be no doubt in honesty and goodwill of leadership even if not all problems should be solvable. Development and dissemination of triaging, treatment protocols and standard operating procedures reduces variation in patients management and potentially can improve compliance with best practice recommendations. Equipment can be gathered in advance. Inventory is immensely helpful. Purchasing or repurposing equipment is another way to augment. Innovative approaches to obtain equipment are essential. Repurposing on anesthesia delivery units for ICU ventilators is an example of creative way to provide ventilator support for increasing number of patients in respiratory distress, when available supply of ICU ventilators is in short supply. Perhaps the engineering department can provide some solutions to augment the critical equipment? If so checking the usability of the proposal is essential. Redesigning the existing technological solution to lower the staff exposure is an important facet of preparation. For example, using the long MRI intravenous line to limit entry in the room may be a solution. All these ideas are best to solicit from grassroots. Staff on the ground has inextricable knowledge on how to get the job done. Soliciting their ideas is the best way to go innovative. However, the novel ideas have to be tested before the onset of the surge.

Medications can be stockpiled. The significant part of preparation is using medications, which are less frequently given to minimize staff exposure. Also, planning at using alternative medication regimen may mitigate some shortages. Creating a plan for shortages and deep inventory is yet another way to prepare. Space and time are complex planning of workflow for the COVID patients. Where the patients will be located? What are the triage criteria? What is the protocol for admission? How will be patient transfer to the destination unit? These are the essential elements of the plan which need to include the infection control and staff availability prospects. Planning at expanding the ICU into other non-ICU locations will become reality so early preparations make more sense. Having increased bed demand equals more demand on staff which may enforce creative thinking about employing non-ICU to perform intensivists tasks.

Another important aspect which came to light with COVID-19 pandemic is the fact that demand may cause an imbalance between the clinical needs of the population and the availability of intensive care resources. In such situation allocation of the medical resources should aim at guaranteeing intensive treatments to patients with greater chances of therapeutic success. This distributive justice and proportionality of care approach may be ethically and morally difficult to accept by some healthcare providers.

There is a multitude of problems were not touched here. However, each hospital can be prepared better to serve more patients before reaching the breaking point.