Steps hospitals can take if coronavirus leads to a shortage of beds

March 24 2020, by Gerard Fitzgerald

Credit: Jonas Guttler/dpa

The number of COVID-19 cases in Australian continues to grow with new cases confirmed each day.

Of those who get ill, about 20% will have moderate or severe illness that requires hospitalization.

Based on experience in China, of those admitted, about 26% will require

a stay in an intensive care unit (ICU) and 17% mechanical ventilation.

So what happens if we run out of hospital beds for patients with COVID-19?

Overwhelmed health systems

The epidemic is currently under control in Hubei but continuing to expand rapidly in Italy which is currently overwhelmed by this disease and its health system floundering.

A report this month in the *New England Journal of Medicine* describes the impact of this outbreak in Italy: operating rooms turned into ICUs, patients admitted for other reasons contracting the disease and health workers falling ill.

In Australia, as of this morning there were more than 1,800 confirmed cases of COVID-19, with 344 new cases since 6am yesterday.

We have an extensive health capability in Australia with around 94,000 hospital beds (61,000 in public hospitals) including 2,200 ICU beds. We also have about 800,000 people working in health services including 350,000 nurses and 90,000 doctors.

At present in Australia, the number of cases is not at a level that would challenge our health treatment capability.

But health personnel are stretched undertaking contact tracing to understand how the infection is spreading, data collection and analysis, and implementing enhanced infection control procedures.

Similarly the laboratory system is being challenged by increased testing rates and primary care services are likely to be stretched by responding

to considerable community concern.

So, if demand continues to increase, what can our health system do to surge the response?

As the numbers grow

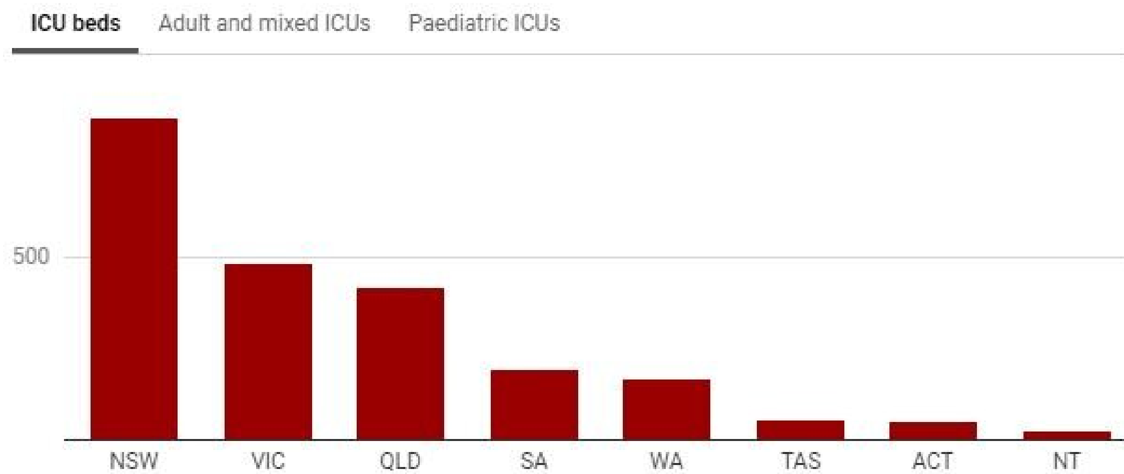
The surge requirements are not one-dimensional. People often speak about the capacity of the system to surge the amount of space, staff and stuff. Each of these has limitations.

The space must be appropriate to need.

The surge in staff must take into consideration the impact this event has on staff availability and the risk they are taking on.

Surging consumables and equipment depends on supply chains. The domains are complementary. Increasing ventilators alone without having sufficient staff to operate them is futile.

In addition, people will continue to get sick from other causes. Indeed, there is often a danger in disaster response in which all of the attention is focused on those with the disease and other patients including some who are serious and critically ill are relatively ignored.



There were a total of 2,229 ICU beds in Australia in 2018, which was roughly equivalent to 8.9 beds per 100,000 population. Credit: ANZICS 2018 CORE Annual Report

A four tier response

Health system responses will escalate as demands increase and may be broadly categorized into four tiers.

The first tier is when there is a relatively small epidemic. Health systems will seek to concentrate the care into a small number of facilities, thus concentrating the expertise and maximizing the infection control. This is what is happening now.

The second level of response occurs when health facilities need to create

additional internal capacity or to refocus existing capacity. Common strategies involve canceling elective surgery, early discharge and relocation of patients to other facilities.

The third tier of response occurs when additional capacity has to be created. Options include recommissioning purpose-built facilities (closed hospitals) or by taking over suitable alternatives such as hotels.

Hotels can be useful for recuperating patients who require mainly observation and support. They are facilities that can be easily and rapidly converted to include appropriate levels of infection control.

Victoria has announced funding for an extra 269 hospital beds, including 84 at Melbourne's old Peter Mac Hospital, and the former Baxter House Hospital in Geelong will be recommissioned.

In South Australia, new facilities will be set up at the recently decommissioned ECH College Grove and Wakefield hospitals providing an extra 188 beds.

Additional space and equipment is one thing, but not helpful as we need people to care for the patients and run the ventilators. We need to protect the existing staff wherever possible.

Additional staff can be found among recently retired practitioners and students, and by redirecting personnel from other (particularly non-clinical) areas.

But a word of caution. This is not a time to learn new skills. Familiarity leads to efficiency and so unfamiliar staff can be best used to help and support and to undertake non-technical roles.

Hard decisions at tier four

The fourth tier occurs when a system is overwhelmed, as in Italy and other European countries at present. This is when the demand for care exceeds any possibility of providing that care equally to all.

In this case, very difficult decisions have to be made involving triage of patients and the allocation of resources.

We have not had to implement such responses in this country since perhaps the Spanish Flu pandemic of 1918/1919. But such decisions based on risk and possible benefit are not unusual.

Decisions about whether to resuscitate or operate are made commonly but mostly focused on the likely benefit to the individual and are made in partnership with the patient and their carers.

In this circumstance, very hard decisions will have to made about relative benefit to preserve the health system's capacity for people who are more likely to survive.

To support this, we would need to identify and communicate what is known as "Crisis standards of care" so that there is a consistent, system-wide approach. The legal and ethical aspects of this will need agreement not only by medical authorities but more broadly in the community.

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