What two frontline COVID doctors see as case numbers rise

September 14 2021, by Peter Wark, Lucy Morgan

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The latest figures available show there are 1,189 people admitted with COVID-19 to hospitals in New South Wales, with 222 of them in intensive care units (ICU), 94 needing ventilation.

This week there were over 9,700 people with new COVID infections. That means about one in every 10 people with COVID are sick enough to need admission to hospital.

Recently released modeling predicts COVID admissions in NSW will rise steeply over the coming weeks and will peak in mid-October. NSW has also just announced plans for some restrictions to ease once 70% of adults in the state are fully vaccinated, a date also expected to land in October.

Here's what this will look like for patients admitted with COVID and for hospital staff caring for them.

Here's what happens to the lungs

Healthy lungs are like soft, fresh sponge cake, wrapped in two layers of cling wrap (the pleura), all sealed in the cake tin of the chest wall.

But with severe COVID, people develop pneumonia. This is when the spongey lung fills with fluid and becomes stiff and the muscles we use to breathe are weakened by inflammation that rages in all tissues of the body. The major consequence of this is an inability to breathe properly, a reduction in oxygen levels and inadequate oxygen supply to the body.

Severe pneumonia is usually managed in the ICU. In this pandemic, the sheer number of critically breathless patients means the intensive level of respiratory care they require is being delivered outside ICU, in wards designed for patients with other health problems.

So most of the patients admitted to hospital with COVID are actually managed by lung specialists and infectious diseases physicians with a huge input from our junior doctors in training.

COVID pneumonia is what kills patients who develop severe COVID.

About one in five develop severe breathlessness. This is when the stiffened lungs are full of fluid and every breath requires extra effort.

This severe breathlessness is hard to explain until you experience it. But it's relentless, exhausting and frightening. Patients describe it as like "an elephant on your chest," "a suffocation," or there not being "enough air in the room."

People with COVID pneumonia need oxygen but oxygen alone isn't enough to help with severe breathing difficulties and COVID pneumonia. Those who are most unwell may need intubation. This is when we insert a tube into the lungs connected to a machine that does the work of breathing, via mechanical ventilation. This happens in the ICU.

Expert care in an acute COVID ward is critical. Patients successfully managed will have better odds of a shorter hospital stay and not needing intubation, with its increased risk of dying.

We're also worried about filling up the available ICU beds—a clearly finite resource.

We want to avoid intubation

As the pandemic has swept across the globe, we've rapidly learnt from our colleagues overseas about supporting the breathing of patients with COVID pneumonia.

Our treatments are aimed at helping patients recover more quickly and reduce the need for mechanical ventilation. Measures include:

- delivering warm and humid oxygen, which is more comfortable for patients, and protects the lining of the airways from further inflammation
- lying patients on their belly or "proning", aims to prevent fluid from pooling at the bottom of the lungs. This improves oxygen levels and makes breathing more comfortable. It also reduces the need for mechanical ventilation. This is safe and cheap, and is comfortable for most people even those who are very overweight, and pregnant women
- continuous positive airway pressure or CPAP can also be used to help reduce the work of breathing for people with severe breathlessness. These machines are used to deliver oxygen via a mask and help by opening up fluid-filled, stiff lungs.

These treatments are labor intensive and have long been available in the ICU where nursing to patient ratios are higher.

However, in NSW, hospitals with the highest current numbers of patients with severe COVID (such as Liverpool, Nepean and Westmead) have had to rapidly adapt their wards to deliver this treatment outside the ICU.

> ICU nurse manager at Liverpool Hospital says COVID-19 taking enormous toll on families and healthcare workers https://t.co/lmIvsKFuGX
>
> — Sir Geoff—member "Median Age of 72' (@nanoview) August 31, 2021

The published modeling predicts such treatments will spill further into the COVID wards of every hospital in NSW.

We need the staff to manage this

Treatments like proning and CPAP are time-consuming and require experienced doctors, nurses and support staff.

Ideally, every patient with severe COVID pneumonia should have at least one nurse each for every hour of the day—a 1:1 nursing ratio.

Staff need to know when to start these treatments. They also need to know how to read the signs of deterioration that signal the patient, who despite everyone's best efforts, will need intubation.

Fitting the CPAP mask and adjusting the oxygen requires experience and training. Staff help patients to eat and drink, go to the toilet. They administer complex medications, comfort the grieving, frightened and confused.

They do this while dressed in a hot gown, wearing goggles and gloves and a tight, fitted N95 mask. Every single clinical interaction is stressful and intense.

Plans are under way

Plans are under way to manage the expected surge in cases.

Staff are being trained and we are preparing to get enough equipment where it's needed. The problem is this will go on for many more weeks, staff will get tired, physically and emotionally, and we don't want this to be any worse than it must be.

If you want to help, get vaccinated and stay at home. Please put up with the restrictions and lockdowns for a little longer.

Now is the time for everyone to come together so we come out of this in

one piece and can continue to offer the best of medical care.

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Provided by The Conversation

Citation: What two frontline COVID doctors see as case numbers rise (2021, September 14) retrieved 21 June 2024 from https://medicalxpress.com/news/2021-09-frontline-covid-doctors-case.html

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