

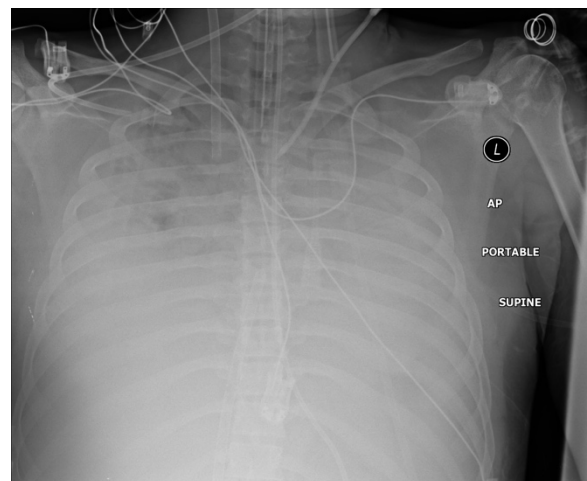


– ARDS ALLIANCE –

Acute Respiratory Distress Syndrome (ARDS) is a condition which affects the lungs, causing the alveoli (the small air sacs in the lungs) to become filled with fluid. This makes it extremely difficult for the lungs to carry out their normal function (to put oxygen into the blood and remove carbon dioxide). When this cannot happen, the lungs may fail (respiratory failure) and can become life threatening.

You may have been told you or your loved one has ARDS, however there are also other terms for the condition. This includes but is not limited to: 'wet lung', 'ECMO lung' (as ECMO may be used as a supportive measure in patients with ARDS), 'shock lung' or 'white lung' (as the lungs can appear completely white on a chest radiograph, as shown to the right).

There are many different causes of ARDS which may include lung infection (which may be caused by viruses, bacteria, or fungi), the body's overwhelming response to infections elsewhere (sepsis and septic shock), trauma, drowning, inhalational injuries (such as vomit, toxins, or smoke) and adverse reactions to blood transfusions.



*Figure 1 - A chest radiograph (X-Ray) of a patient with severe ARDS on a ventilator and ECMO (provided with full, informed consent of the patient)*

### Prevalence

Following a large international multicenter study in over 400 ICUs from over 50 countries, 10.4% of patients admitted to intensive care units were found to meet ARDS criteria. This means approximately 1 in 10 patients in an ICU will have ARDS.<sup>1</sup>

### Treatment of ARDS

Regardless of the cause of ARDS, the treatment and management follow a common principle: give the lungs time to heal / recover and address the underlying cause. The latter will be specific to whatever has initially led to ARDS (for example, treatment of an underlying infection).

ARDS can range in severity; however, sufferers will be given support to breathe. The intensity of this support is on a spectrum which is delivered according to the needs of the patient (often directed by blood tests taken from the artery, to get an accurate picture of lung function).

Non-invasive methods of ventilation include high flow oxygen delivery devices or, for example, BiPAP, and are typically delivered while the patient is awake.

Where these are not enough, patients may be placed on a ventilator (with a breathing tube), which takes over the work of breathing. Settings on the ventilator can be altered dependent on the patient and what support the lungs require. When initially placed on the ventilator, it is common for patients to be given general anaesthesia (put 'to sleep' / in a 'medically induced coma'). As time progresses, the medical team may decide to 'lower the sedation' (i.e., make them a little more awake) which may still be whilst they are on the ventilator. They may (but not always) be given a tracheostomy (a tube which goes in the neck and goes directly into the windpipe) to assist with this and help with recovery.

To improve the lung function, patients may also be 'proned' (i.e., put onto their front) – which can often look very daunting given the number of tubes and lines that they will be connected to. This is evidence-based and helps the lungs to inflate and work more effectively. It can also help to clear any secretions which may be in the lungs. This may be done manually (with people turning them over and positioning them), or by using a special bed, which allows this to happen.

Should the above methods be insufficient for the severity of ARDS, a machine known as ECMO (extra-corporeal membrane oxygenation) may be used. This can completely take over the function of the lungs (to add oxygen and remove carbon dioxide from the blood), although patients are still typically on the ventilator at the same time. This device can be set up in multiple ways, however as the lungs are being supported in ARDS (it can also be set up to support the heart too), it is usually set up to remove blood from one of the large veins going to the heart, the blood flows through the ECMO circuit, and is returned to another large vein.

It may be deemed that the lungs have little to no chance of recovery. When this is the case, a lung transplant may be necessary. This is a very difficult decision to make on multiple levels: they must be a good candidate, there are long-term considerations to make (for example, use of immunosuppressants to prevent rejection) and there is a scarcity of organs available. However, this is a lifeline for ARDS patients should they be resistant to all other treatments.

### **Immediate Recovery**

In the immediate phase whilst recovering from ARDS, patients may be 'stepped down' from the intensive care unit to a high dependency area, or to a ward. It is also not uncommon for patients to be repatriated back to the original hospital they were referred from if they required more intensive ventilatory support and / or ECMO. Understandably, the recovery may take a while as an inpatient. Individuals have a long road ahead of them, which may include, but is not limited to physical therapy (occupational therapy / physiotherapy), ongoing medical treatments, cognitive recovery and coming to terms with the event they have gone through. Given the medications, environment and invasiveness of treatments provided, it is also not uncommon for patients to experience 'post-ICU delirium', where they are extremely confused, terrified and struggle with piecing together what has happened. Research into this area is ongoing, and ICU professionals are working hard to reduce the impact this has on patients and their loved ones (such as using awake ventilation, lowering sedation, using music, and helping with reorientation to the current date, time, and place).

## Long Term Recovery

ARDS recovery is not just limited to what occurs in the hospital. There may be changes in functioning which make it difficult to reintegrate with day-to-day life. Everyone's ARDS recovery journey is different and unique to the individual, however there are some common issues people may experience once discharged. These can be broken down to the physical, mental, and emotional aspects of recovery. It is understandable that as the body has been through such a trauma, there is a physical recovery to be made: to gain strength, function and adapt to life outside of the hospital. However, it is important not to invalidate or understate the mental and emotional recovery: the trauma can take its toll. This can affect both the patient themselves, but also the loved ones around them. It is not unusual for patients to develop PTSD, struggle with nightmares, flashbacks, low mood, anxiety and to struggle cognitively.

The ARDS Alliance is here to provide support and information to patients, relatives, loved ones, professionals and anyone who has had their lives touched by ARDS. We regularly update our website and will be providing more detailed resources and articles for all elements related to ARDS and recovery.

If you have a suggestion, or have any questions, please do not hesitate to contact us on: [contact@ardsalliance.org](mailto:contact@ardsalliance.org).

<sup>1</sup>Bellani G, Laffey JG, Pham T, et al. Epidemiology, Patterns of Care, and Mortality for Patients With Acute Respiratory Distress Syndrome in Intensive Care Units in 50 Countries. *JAMA*. 2016;315(8):788–800. doi:10.1001/jama.2016.0291

