Michael Silsbury Here are some standard settings used with a hospital ventilator when a patient is intubated:

INITIAL SETTINGS

**\* Volume per Breath = no less than 6 ml/kg of predicted body weight; no** more than 8 ml/kg of predicted body weight

Predicted body weight is based on a patients height.

This is the chart to calculate predicted body weight:

http://www.ardsnet.org/files/pbwtables\_2005-02-02.pdf

Volume per breath must be configurable by health care provider; increments of 100 ml is probably acceptable as long as volume per breath falls within 6-8 ml/kg

**\* Breaths per minute = 10 - 20 breaths/ minute**

The must be configurable by health care provider. Increments of 1 breath per minute is required

Note: practioner’s goal is to deliver a total volume per minute (volume per breath x breaths per minute).

If the volume per breath is on the high end, the breaths per minute can be dropped to achieve the target volume per minute objective.

In other words there is some wiggle room that’s acceptable in both these settings for a particular patient because the other setting can compensate for it.

**\* Minimum air pressure provided to patient at trough of breathing** (exhalation): 0 - 25 cmH2O (most common setting for Covid 19 appears to be starting at 5 cm H2O working up to 15 cm h2O)

Must be medical provider configurable, ideal would be in 1 cm H20 increments, 2.5 cm H2O would be the largest acceptable increment.

(This setting keeps “lungs” from “collapsing” during exhalation)

**\* need an oxygen intake port that can handle 40 - 60L oxygen at 100%** concentration which is usually delivered from the hospital wall.

Oxygen at the source is always 100%.

100% oxygen can be mixed with atmospheric air, which is 21% oxygen, in ratio to get desired level of oxygen that the patient needs.

Oxygen concentration that the patient receives usually starts at 100% and dropped to the lowest level possible that provides adequate oxygen in the blood and adequate carbon dioxide range in the blood. A medical provider will draw blood approximately every 30 minutes when tweaking ventilator settings to get the settings right for the patient.

Hospital ventilators have two modes:

**Mode 1: Dr sets the desired volume per breath, ventilator uses as much** pressure as needed to deliver the volume. (A compromised lung will require more pressure to “inflate” than a healthy one). This is known as “volume mode”

**Mode 2: Dr sets target pressure for ventilator to reach, regardless of** volume per breath. This is known as “pressure mode”

volume based mode is used more often than pressure based mode.

A ventilator that delivers a fixed volume of air per breath must also have a **sensor to indicated how much pressure was needed to deliver the breath.**

This is important as both a safety and diagnostic tool.

This peak pressure used to deliver the inhalation breath if too high for too long can damage the lungs. If pressure needed to deliver a set volume is increasing this has diagnostic relevance to the doctor and is key to monitoring the patient

In volume based mode, the pressure needed to deliver the inhalation is a reporting feature.

In pressure based mode, the pressure level is a user configurable setting.

Safe level of peak pressure is general less than 35 cm H2O.

When pressure exceeds this level, it’s a sign to the practitioner that patient has too much volume per minute; and prompts practioner to verify this by X-ray and usually to reduce volume per breath, or breaths per minute.

Finally it is useful for practioner to know how much pressure the system has when the system is on hold. A system pause button is useful to pause the ventilator and to determine the pressure at the end of exhalation coming from the patient. This is a nice to have feature. The other features are more important.