

What's the Problem?

Initial predictions on COVID-19 showed a shortage of ventilators across the nation. We have an adequate supply of ventilators for high volume periods, but it was impossible to predict the need during the surge. All earlier predictions supported higher ventilator usage.

Acute care ventilators were not available to rent in Philadelphia or neighboring states since New York and New Jersey were surging and was in need of ventilators. We were able to acquire ventilators with standard settings. These devices do not have advanced modes of ventilation and other features required to manage complex respiratory patients.

Cause analysis

Root causes of this problem included:

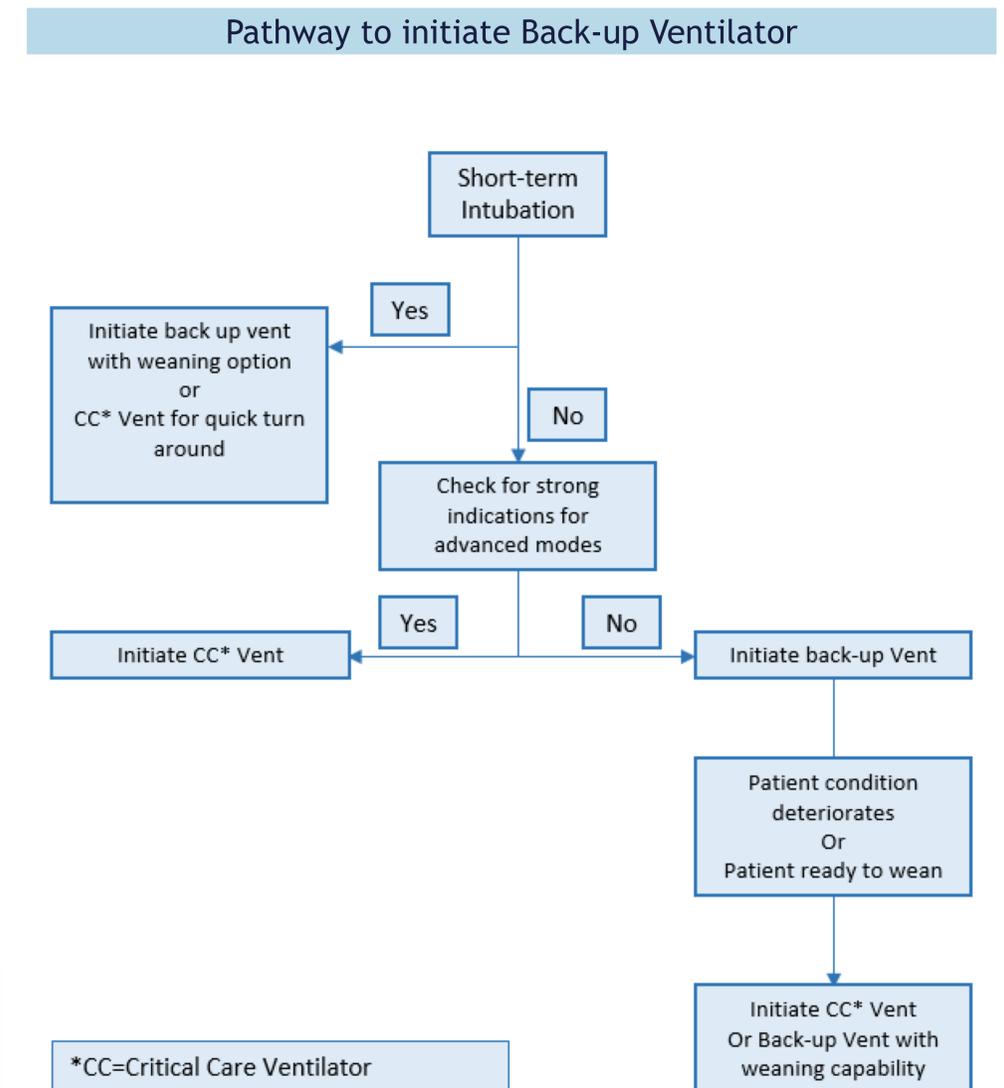
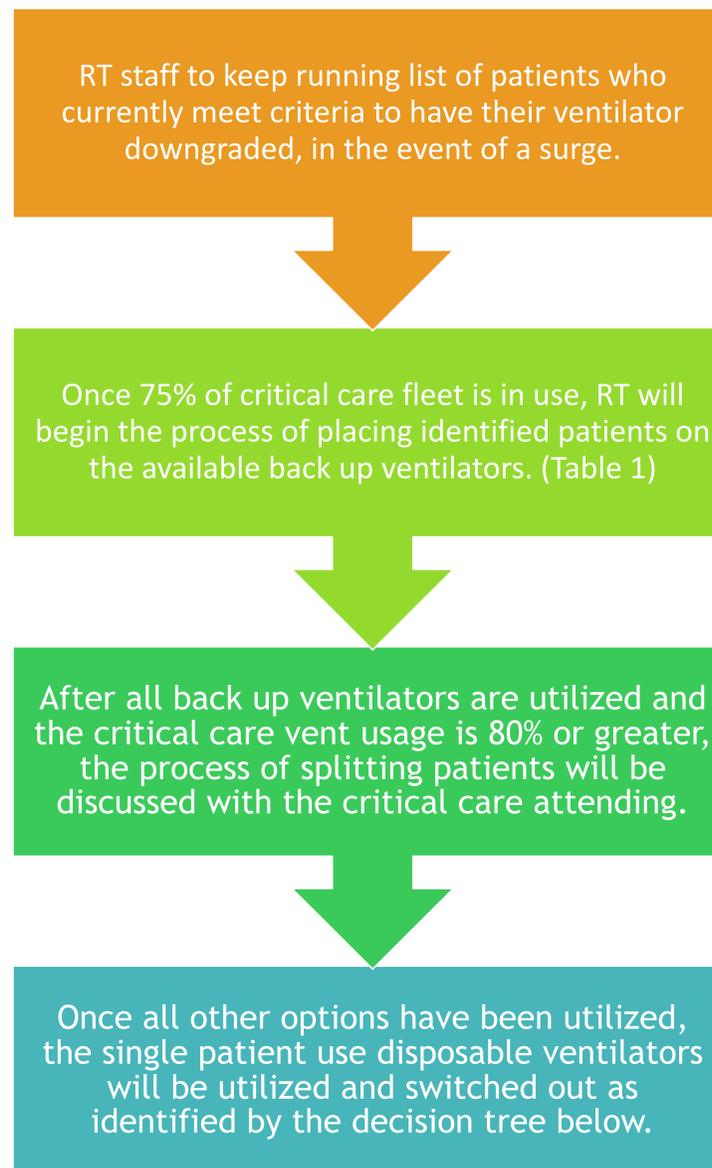
- Inability to predict ventilator needs during the surge.
- Acute care ventilators were not available to rent in the region.
- COVID-19 patients require acute care ventilators with advanced modes and settings.

Definitions:

- Acute Care/Critical Care Ventilator: Primacy fleet of ventilators at the location
- Anesthesia Ventilator: Ventilators primarily managed by the anesthesia department.
- Back-up Ventilator: Transport ventilators (owned and rentals).
- Rehab Ventilators: These machines at Magee are rolled up under 'Back-up Ventilator' Count.
- BIPAP (V60): These are non-invasive ventilators, that could be converted for invasive ventilation. These machines will be used for non-invasive ventilation also.
- Emergency Ventilator: Ventilators to be used when all other ventilators are in use. These devices have minimal capability

How Might We: Determine appropriate allocation and use of ventilator resources in surge conditions.

We created a deployment plan of the available ventilator fleet to be deployed during surge conditions. The plan includes appropriate allocation of acute care ventilators to manage complex respiratory patients, while a percentage of stable respiratory patients can be safely managed using a back-up ventilator.



*CC=Critical Care Ventilator

Table 1