VENTILATOR STOCKPILING AND AVAILABILITY IN THE US AND INTERNATIONALLY

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The US Department of Health and Human Services (HHS) estimates that 865,000 US residents would be hospitalized during a moderate pandemic (as in 1957 and 1968) and 9.9 million during a severe pandemic (as in 1918).[1]

- Moderate (1958/68-like) = 64,875 would need mechanical ventilation
- Severe (1918-like) = 742,500 would need mechanical ventilation[1]

One study estimated that US acute care hospitals own approximately 62,000 full-feature mechanical ventilators.[2] Calculations suggest that around 28,883 of these ventilators (46.4%) can be used to ventilate pediatric and neonatal patients. The study also reported an additional 98,000 ventilators that are not full-featured but can still provide basic function.[2]

- Based on these numbers, the maximum number that can be potentially ventilated is around 160,000.
- US: 20.5 ICU beds with mechanical ventilation capability per 100,000 population
- Canada: 8.7 ICU beds with mechanical ventilation capability per 100,000 population
- Australia & New Zealand: 5.4 ICU beds with mechanical ventilation capability per 100,000 population
  - These numbers suggest that the capacity of other countries to provide ventilation therapy might be significantly lower than our own.[2]

In addition, the CDC Strategic National Stockpile has an estimated 8,900 ventilators as of 2010.[3] Ventilators are stored and kept as managed inventory. Malatino et al report that shipments from managed inventory "could arrive within 24-36 hours of the federal decision to deploy them."[4] The authors go on to describe the multistep process for requesting additional ventilators from the CDC Strategic National Stockpile.

- Local hospitals and treatment centers make their initial request using their incident command system.
- This request is then received by the local health department and emergency management agency.
- The governor's approval is sought before an official request is made to DHS or the CDC.

However, in times of crisis, the request can be initiated at the federal level.

Various other factors constrain the capacity of the US healthcare system from providing ventilation therapy. Using mathematical models, one study found that the limiting factor during a pandemic-level crisis would be the number of respiratory therapists—maxing our ventilator therapy capacity at around 135,000—significantly lower than the estimated 742,500 needed.[5]

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