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 ventilation¹

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.

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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

REFERENCES


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