



Ventilator Stockpiling and Availability in the US

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Editor's note: There has been no sustained human-to-human transmission observed in the United States, so this information is simply intended to help public health planners think through possible scenarios. However, because of the constraints of ventilator availability, public health planners may find this information useful when preparing hospitals for severe cases of COVID-19 that will require mechanical ventilation.

Mechanical ventilation is a vital component of critical services for patients exhibiting severe acute respiratory failure. Based on the most recent publicly available data (from 2010), 1 study estimated that US acute care hospitals own approximately 62,000 full-featured mechanical ventilators.¹ Calculations suggest that about 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 in an emergency during crisis standards of care.¹ However, the need for ventilation services during a severe pandemic could quickly overwhelm these day-to-day operational capabilities. During a severe influenza pandemic, it has been projected that the demand for assisted ventilation in hospitals could increase by 25% or more.²

To meet this potential surge in demand, the CDC Strategic National Stockpile (SNS) stores and maintains mechanical ventilators that can be deployed on request through appropriate channels.³ The SNS stockpiles 3 specific types of ventilators: the LP10 (Covidien), the LTV1200 (CareFusion), and the Uni-vent Eagle 754 (Impact Instrumentation).^{4,5} It is unclear whether these machines are manufactured in the United States or elsewhere. The CDC SNS has an estimated 8,900 ventilators as of 2010.⁴ Malatino reports that shipments from managed inventory “could arrive within 24-36 hours of the Federal decision to deploy them.”⁶

There are several steps that must be taken in order for the SNS to fulfill a hospital's request for additional ventilators.⁶ First, local hospitals and treatment centers must make their initial request through 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 HHS or CDC. However, in times of crisis, the request can be initiated at the federal level. During a national-level emergency, the CDC SNS would determine allocation strategies for ventilators, likely using criteria such as population size, number of patients, and standing capacity.⁷

Various other factors constrain the capacity of the US healthcare system to provide ventilation therapy. Using mathematical models, 1 study found that the limiting factor during a pandemic-level crisis would be the number of respiratory therapists rather than ventilators.^{8,9} To combat this problem, the American Association for Respiratory Care (AARC) has

partnered with the CDC SNS to train respiratory therapists on operating stockpiled mechanical ventilators during a public health emergency.⁵ The AARC also provides information on the SNS allocation process, training manuals for the 3 stockpiled mechanical ventilator types, and regular online learning sessions.¹⁰

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