

## What's the Problem?

COVID-19 is a predominantly respiratory disease and Philadelphia is a city with a myriad of pulmonary comorbidities such as asthma and COPD.

Use of bronchodilator medications through a nebulizer machine is considered an 'Aerosol Generating Procedure' (AGP), and increases risks to staff who and complicates the cleaning and processing of rooms and equipment where AGPs are performed. Additionally, there is a severe limitation in availability of negative pressure rooms, which mitigate these AGPs.

With the COVID pandemic causing supply chain problems across the country, a multidisciplinary approach was required to appropriately ration available inhalers (MDI), the alternatives to nebulized treatments, while still treating patients who arrive with the need for these medications while maintaining maximal safety to staff.

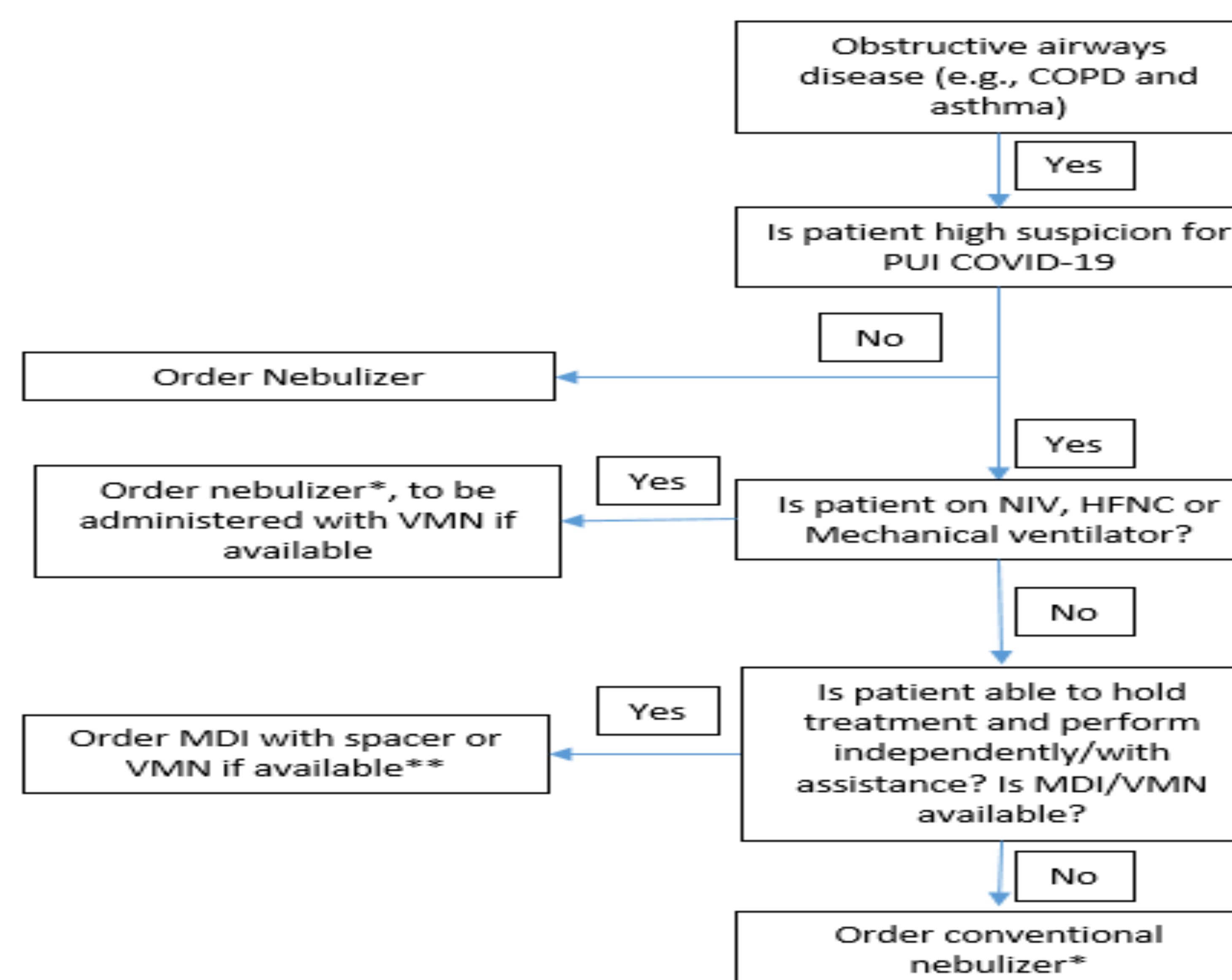
## Cause analysis

Root causes of this problem included:

- Nationwide shortage of MDIs; on day #1 of unstructured practice, ED depleted total institutional supply of MDIs by 30% with a 1 week backorder and potential for longer.
- ED utilizes MDIs once on discharged patients, meaning remaining doses are either under or unutilized and essentially wasted.
- Not providing bronchodilator medications can lead to unnecessary admissions and overall bed capacity issues.

How Might We: Balance the need for bronchodilator medications with supply chain limitations while keeping staff safe and limiting Aerosol Generating Procedures.

Using a multidisciplinary committee, we determined that a process map that limits (but does not eliminate) ED utilization of MDIs by use of the Vapor Mesh Nebulizer Device with a Viral Filter, which limits the AGP substantially.

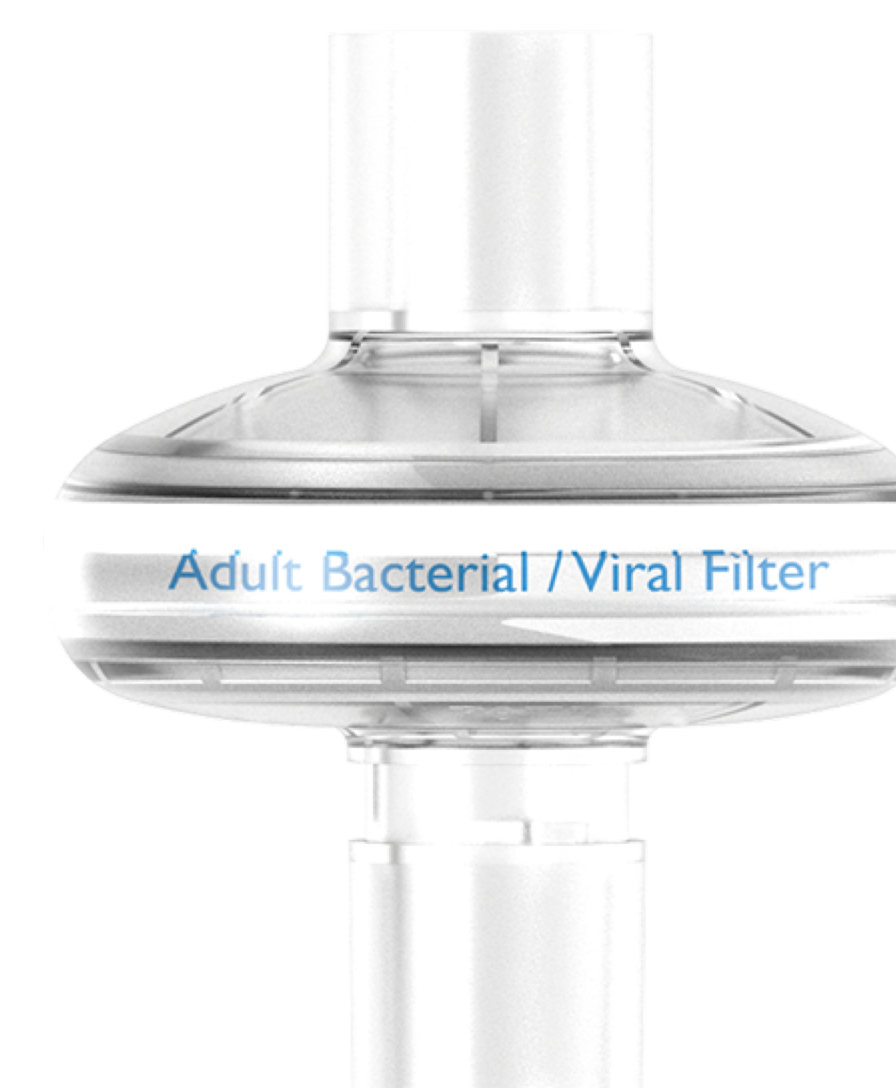


\*Nebulizer treatments require airborne precautions due to risk of aerosolization of respiratory particles. Refer to institutional guidance on airborne PPE.

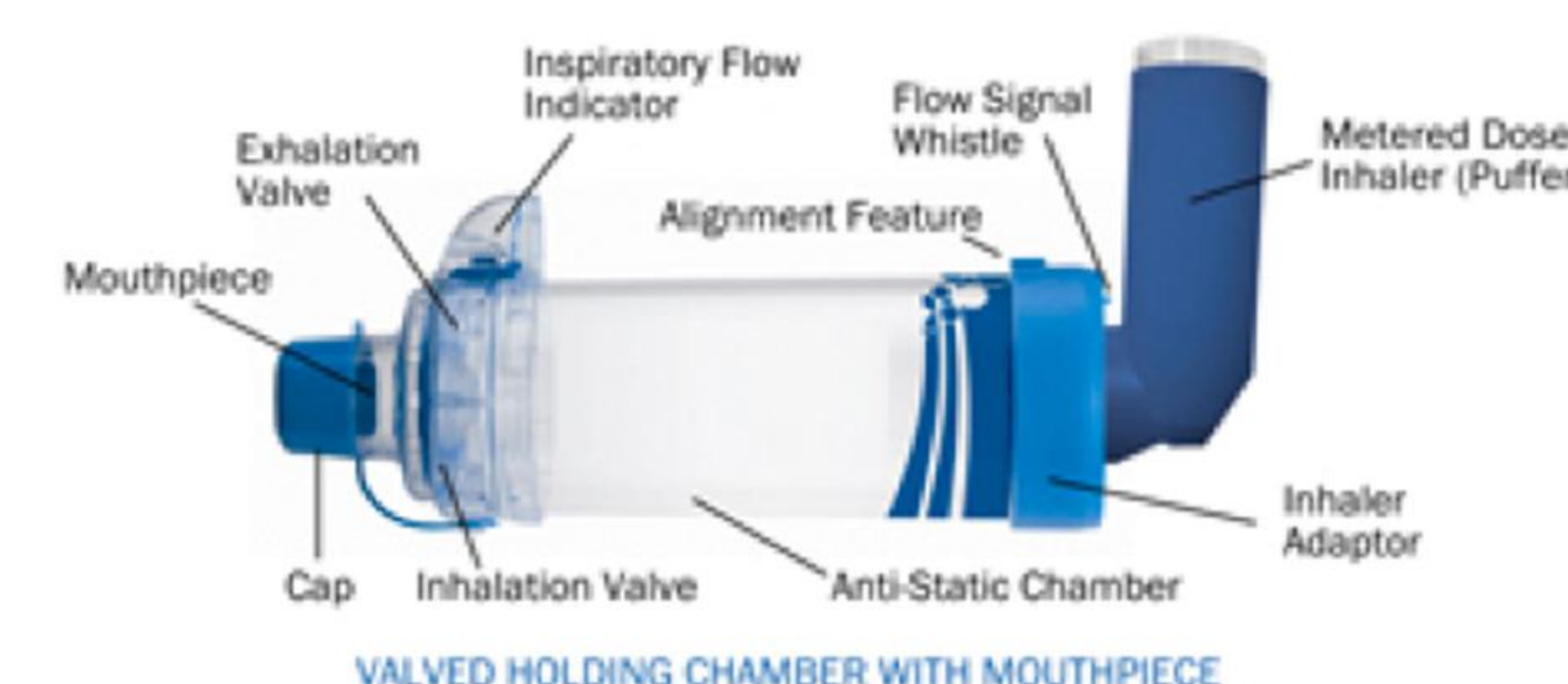
\*\*If Vibrating Mesh Nebulizer Handheld with Viral Filter is available, recommended without use of supplemental oxygen to provide both beta agonist and anticholinergic therapies with minimal aerosolization (though still requires airborne precautions).



<https://i.vimeocdn.com/video/633661327.webp?mw=1000&mh=562&q=70>



<https://solmed.com.au/products/flexicare-mini-bacterial-viral-filter>



<https://www.lung.ca/lung-health/get-help/how-use-your-inhaler>