

► **Bronchoscopy Advances: Robot-Assisted Biopsy & Restored Airflow in COPD**

For assessment or intervention, peripheral areas of the lungs are difficult to reach. But new bronchoscopic technology is changing that, permitting remotely controlled access to tissue samples for cancer diagnosis and redirection of airflow to healthier lung tissue in COPD.

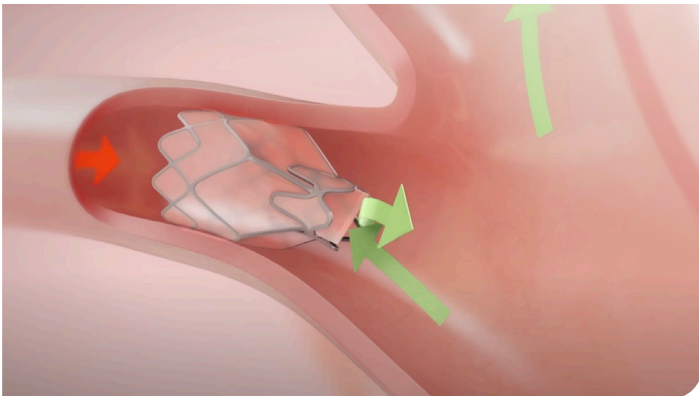
“Robotically controlled bronchoscopy that allows us to position our scope in small airways is a game changer,” said Virtua interventional pulmonologist Syed Riaz, MD. “Now our yield of targeted lung nodules for testing is higher.”

In a related advance, pulmonologists are able to use bronchoscopes to place small devices that redirect air to lung segments that are less decompensated by emphysema. These areas pick up respiratory through-put, and a reduction in compromised volume results.

Agile, Map-Guided Sampling of the Lungs

Most pulmonary nodules are located in the periphery of the lungs. But narrower distal airways with sharp-angled branches may be unreachable using standard bronchoscopy. By comparison, transthoracic needle biopsy with conventional image guidance has high complication rates.

The new system targets these lesions based on CT images, transposed by planning software for 3D modelling of the patient’s lung anatomy. Adding to visual navigation, the



Zephyr® valve illustration/image courtesy Pulmonx®

system uses electromagnetic sensors for positional data to follow a mapped route. A joystick-like controller and high-resolution scope give the operator unprecedented articulation, flexion, and vision with the instrument. Virtua is just the second site in New Jersey to offer this capability, which gets lung cancer patients into treatment sooner and aids individualized treatment through gaining known molecular characteristics of tumor type.

Sending Air to Healthy Lung

Pulmonology specialists are also now using bronchoscopy to place small, self-expanding nitinol-framed valves that redirect airflow to healthier parts of the lungs in patients with severe emphysema. This progressive form of COPD affects millions in the U.S. and causes a loss of elasticity in lung tissue and enlargement of the alveoli. Conventionally, thoracic surgery involving a long incision in the chest was needed to remove the diseased portion of the lung.

But now, a shorter, nonsurgical procedure places the new endobronchial devices in targeted, diseased portions of the lung to obstruct and reroute air. Relatively healthier sectors of the lung can inflate further and occupy more of the space in the chest cavity, as diseased areas deflate, achieving lung reduction and easing pressure in the diaphragm for better chest-respiration mechanics.



“We have admitted patients with shortness of breath despite oxygen supplementation, due to air trapped in hyperinflating lungs. After this procedure, some no longer need oxygen at discharge,” said Virtua pulmonologist Emilio Mazza, MD, PhD, medical director of the Intensive Care Unit at Virtua Mount Holly Hospital. “While not a cure for COPD,

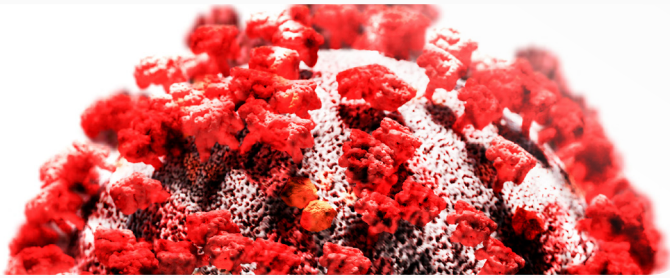
this intervention allows healthier lung tissue to function more effectively, with potential reduction in lung volume that helps patients breathe more easily and experience improvement in their quality of life.”

**For patient appointments, call 888-VIRTUA-3 (888-847-8823).
Online pulmonary medicine scheduling is now available at virtua.org/locations.**

Oral COVID Drugs: A Major Stride in Treatment Options

As of press time Thursday, Jan. 13, 2022:

News improves weekly on drug treatment for COVID-19 infection and exposure. Multiple companies are working rigorously on oral medications. Last month, the FDA gave emergency authorization (EUA) for use of Pfizer's Paxlovid (nirmatrelvir co-packaged with ritonavir) and Merck's Lageviro (molnupiravir) for high-risk adults with mild to moderate COVID-19. (Paxlovid is also authorized for patients age 12-18.) Other drugs in use for COVID have required IV administration or injection.



Both new oral antivirals appear to significantly reduce the risk of hospitalization and death. Paxlovid, now available in limited quantities, blocks a crucial enzyme that the COVID-19 virus needs to replicate. Lageviro, a nucleoside analogue, incorporates into and disrupts SARS-CoV-2 RNA strands. Like other antivirals, these are effective when taken within three to five days of symptom onset, thus challenging patient and provider to achieve prompt evaluation and administration. Differential efficacy for COVID strains and potential adverse reactions remain under evaluation.

"It's hard to overstate the tremendous difference an effective drug—available by prescription to take orally at home—will make," said Virtua pulmonologist and critical care medicine specialist Eric Szejman, MD. "These agents could also help to reduce the pandemic by hampering the ability of the virus to replicate in those infected."

Meanwhile, he and colleagues have been administering recombinant anti-COVID monoclonal antibodies by IV since this therapy gained EUA in 2020. These antibodies bind to nonoverlapping epitopes of the virus spike structural protein RBD, needed for virus-host cell-membrane fusion and viral entry. The team of infectious disease, critical care, and pulmonology specialists at Virtua has used Regeneron's REGEN-COV™ (casirivimab and imdevimab) with high-risk patients to significantly decrease COVID-related hospitalization and exposed persons' chances of developing an infection with symptoms. Recipients are mostly outpatients and those living closely with a person positive for COVID infection, when such individuals can be treated within seven to 10 days of contact or symptoms.

"New monoclonals are being developed and analyzed for use against COVID variants," said Martin Topiel MD, FSHEA, Virtua infection control officer. "Currently, GSK's sotrovimab, which was granted EUA in May 2021, appears to be highly active against the omicron strain."

On a case-by-case basis, the Virtua team has also been taking advantage of Genentech's tocilizumab (Actemra), an anti-inflammatory interleukin-6 (IL-6) receptor antagonist approved this past summer for severe COVID-19. "With more data, it does appear that this drug stops the cytokine storm—blocking the cascade of events that leads to COVID pneumonia," said Dr. Szejman. Actemra, as well as Veklury (remdesivir) from Gilead Sciences, can also be useful for patients with worsening symptoms.

Virtua's Care After COVID program coordinates care and connects patients with the specialists they need for recovery. Patients may call our dedicated navigators at 856-325-3200.