



A lifetime of specialist care

PRESS RELEASE

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First UK patient receives novel ‘freezing’ treatment for chronic bronchitis

- Procedure gives hope to former smokers with debilitating lung condition -

A pioneering treatment for patients with chronic bronchitis has been carried out for the first time in the UK as part of a trial led by experts at Royal Brompton Hospital and Chelsea and Westminster Hospital in London.

The 30-minute procedure, which uses liquid nitrogen to freeze diseased lung tissue from the upper layer of cells in the airways, was carried out by consultant respiratory physician and chief UK investigator, Dr Pallav Shah, as part of the RejuvenAir System clinical trial.

The minimally-invasive treatment targets the goblet cells, which are found in the top layer of airway tissue (the epithelium) and produce excessive amounts of mucus in patients with chronic bronchitis. The procedure aims to destroy these cells using liquid nitrogen whilst preserving the stem cells underneath. The stem cells allow new, healthy tissue to quickly form within a few days.

Chronic bronchitis is the most common form of chronic obstructive pulmonary disease (COPD), a condition that is thought to affect around three million people in the UK.

Dr Shah, consultant physician at Royal Brompton Hospital and Chelsea and Westminster Hospital, explained: “The main cause of chronic bronchitis is smoking because the immune system triggers the goblet cells to produce too much mucus. The excess mucus blocks the airways, causing cough and breathlessness, and attracts bacteria which can lead to infections. Even when these patients stop smoking, the cells still produce excess mucus – it is as though a switch is broken and is permanently turned on.

“While some medications available to patients can thin the mucus or open the airways, this new procedure is the only treatment that has the potential to stop excess mucus production and restore it to a normal level.”

During the procedure, a narrow tube with a light and camera at the tip – known as a bronchoscope – is inserted into the patient’s airways that lead to the lungs. A thin tube (catheter) is then manoeuvred into the part of the lung targeted for treatment. The catheter is connected to equipment that delivers liquid nitrogen at a carefully-controlled dose, which depends on the patient and the area being treated. The liquid nitrogen is about -196°C when applied to the cells and at this temperature the structures within the cells freeze and die.

Liquid nitrogen turns into nitrogen gas inside the body so the highly-skilled team must ensure that air can escape after each small area is treated. During the procedure patients are ventilated under general anaesthetic to maintain healthy oxygen levels.

In March, Jayne Hewitt, 49, from London, became the first patient in the UK to have the novel procedure. She was diagnosed with COPD around four years ago after suffering from breathlessness, a tight chest, frequent chest infections and a persistent cough. Her condition progressively worsened until it got to the point where simple daily tasks, such as having a bath, carrying shopping, talking and eating, were a struggle.

She said: “It’s amazing to be the first UK patient to have this treatment and I feel so privileged to be given this opportunity. Days later my chest already didn’t feel as tight, I was coughing less than before and breathing a bit better, even though only one part of my right lung had been treated. It used to feel like I had an elephant sitting on my chest and now it doesn’t. It has given me such a boost and I feel more hopeful about my future now.”

The clinical trial, which is taking place at Royal Brompton Hospital, in collaboration with Chelsea and Westminster Hospital NHS Foundation Trust, and at the University Medical Center Groningen in the Netherlands, aims to evaluate the safety and feasibility of the treatment. It is funded by CSA Medical, the company that manufactures the RejuvenAir System.

The first phase will involve 12 patients having the innovative treatment in the lower lobe of their right lung. Two months after the initial procedure, a biopsy, CT scan and bronchoscopy will be carried out to check that the number of goblet cells has decreased and that there are no adverse effects.

After this point the patients will undergo the same procedure in the rest of their right lung before also having the treatment in the left lung. Follow-up checks at regular points throughout the next three years will establish how effective the treatment is. A further 24 patients will then be recruited to the trial and will also have both lungs treated in two or three separate procedures.

Find out more about this clinical study and all ongoing trials at Royal Brompton & Harefield NHS Foundation Trust [here](#)

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