INTUITIVE

Ion robotic-assisted bronchoscopy could enable early lung cancer diagnosis, UK-first study finds

READING, UK, 15 December 2025. New clinical study results in the NHS show that shape-sensing robotic-assisted bronchoscopy using Intuitive's Ion endoluminal system (Ion) could help patients with suspected lung cancer to receive an early diagnosis,[1] potentially accelerating clinical intervention, referral to treatment, and improving patient outcomes.

The UK-first study, which is also Europe's first multi-centre clinical study evaluating Ion, demonstrated that the technology can enable physicians to safely and effectively reach and biopsy small nodules in difficult-to-access areas of the lung,[2] with a high rate of diagnostic accuracy provided to patients.

Ion features an ultra-thin, shape-sensing catheter designed to navigate deep into the lung. This advanced technology enables physicians to access small, complex nodules and precisely position biopsy tools to sample potentially cancerous tissue with stability not available with manual bronchoscopy techniques.

The study enrolled 200 NHS patients at Royal Brompton Hospital and St Bartholomew's Hospital with small, suspicious nodules to undergo biopsy using Ion in combination with cone-beam CT scan.

Published in *Thorax*, the study reported:[1]

- 99% tool in lesion rate (198/200 patients), meaning physicians precisely placed a biopsy tool within the suspicious nodule using the Ion system
- 92% diagnostic accuracy (184/200 patients), meaning patients had an accurate diagnosis from the biopsy tissue sample taken using Ion[3]

Lung cancer is the most common cause of cancer death in the UK.[4] Every year, around 49,000 people in the UK are diagnosed with lung cancer, and over half of cases are diagnosed at a late stage of the disease.[5]

Due to challenges in securing effective biopsies for small nodules, some patients with suspected lung cancer may undergo long periods of 'watchful waiting' where their nodule is monitored but not definitively diagnosed. This can cause related anxiety and delays in accessing earlier treatment options. [6]

Professor Pallav Shah, Consultant Respiratory Physician at Royal Brompton Hospital, said: "Lung screening is driving up the detection of suspicious, small lung nodules at an earlier stage – but without the means to access these nodules, it can raise questions rather than answers, and most patients are left to 'watch and wait' without a diagnosis.

"Now, by using Ion to reach and biopsy these nodules, we're more likely to give patients a clear diagnosis sooner, making screening more meaningful than before. Most importantly, we can increase the chance of being able to provide curative treatment."

Mr Kelvin Lau, Clinical Director and Consultant Thoracic Surgeon at St Bartholomew's Hospital, said: "While lung cancer screening has made a huge impact in detecting nodules, this is

only half the story – we need to know which of these nodules are cancerous so we can act on them quickly and efficiently, before the disease progresses.

"The use of Ion marks a paradigm shift in our approach to lung cancer, offering a highly accurate, less invasive method to biopsy suspicious lung nodules. At St Bartholemew's Hospital, my patients no longer need to wait months for a repeat scan. Instead, they have a biopsy, go home on the same day, and return to normal activities almost immediately, avoiding unnecessary operations and accessing the right treatment sooner."

Oliver Wagner, Vice President and Medical Officer, Endoluminal Division at Intuitive, said: "We know that early diagnosis is critical to helping lung cancer patients achieve the best clinical outcomes, and these study results highlight the significant impact Ion could deliver for patients across the UK and Europe as access increases. Our aim is to increase equity of access to minimally invasive care and support the positive transformation of the lung cancer pathway, helping patients get answers sooner, ultimately leading to better clinical outcomes."

Paula Chadwick, Chief Executive of Roy Castle Lung Cancer Foundation, said: "Early and accurate diagnosis is one of the most important factors in improving lung cancer survival, yet too many people still face anxious months of uncertainty while waiting to find out if a small nodule is cancer. These findings show the real potential of robotic-assisted bronchoscopy to change that experience for patients.

"By enabling clinicians to safely reach and biopsy small, hard-to-access nodules, this technology could help people get the answers they need much sooner – and, crucially, access curative treatment at the earliest possible opportunity. Innovation like this is vital as we work to diagnose lung cancer earlier and save more lives."

There are currently more than 900 Ion systems installed in hospitals globally.[7] The latest study adds to a growing body of evidence on Ion robotic-assisted bronchoscopy, with more than 100 abstracts and publications describing the potential value delivered to patients.[8]

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Notes to editors

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Patient information

For patient information on robotic-assisted bronchoscopy, please visit Roy Castle Lung Cancer Foundation at https://roycastle.org/our-support/lung-cancer-booklets/

About the study

Title: A Prospective Investigation to Assess the Accurate Tool Placement in Pulmonary Nodule(s) Using a Robotic Navigational Bronchoscopy System With Adjunct Real-time Imaging.

NCT Number: NCT05867953.

The study was sponsored by Intuitive Surgical.

About Intuitive Surgical, Inc.

Intuitive (Nasdaq: ISRG), headquartered in Sunnyvale, California, with UK and Ireland headquarters in Winnersh Triangle, Reading, is a global leader in minimally invasive care and the pioneer of robotic-assisted surgery. Our technologies include the da Vinci surgical system and the Ion endoluminal system. By uniting advanced systems, progressive learning, and value-enhancing services, we help physicians and their teams optimise care delivery to support the best outcomes possible. At Intuitive, we envision a future of care that is less invasive and profoundly better, where disease is identified early and treated quickly, so that patients can get back to what matters most.

For more information, please visit: https://www.intuitive.com/en-gb

About Guy's and St Thomas' NHS Foundation Trust

Guy's and St Thomas' provides 3.05 million patient contacts in acute and specialist hospital services and community services every year. The Trust includes Guy's Hospital, St Thomas' Hospital, Evelina London Children's Hospital, Royal Brompton Hospital, Harefield Hospital, and adult and children's community services in Lambeth and Southwark.

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About Barts Health NHS Trust

With a turnover of £2.2 billion and a workforce of almost 21,000, Barts Health is a leading healthcare provider in Britain and one of the largest NHS trusts in the country. The Trust's five hospitals – St Bartholomew's Hospital in the City of London, The Royal London Hospital in Whitechapel, Newham Hospital in Plaistow, Whipps Cross Hospital in Leytonstone and Mile End Hospital – deliver high quality compassionate care to the 2.5 million people of east London and beyond, including treating more than 7,000 patients daily. St Bartholemew's Hospital performs over 500 robotic-assisted bronchoscopies and 400 robotic-assisted thoracic operations each year to help diagnose and treat lung cancer early.

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About the Ion Endoluminal System

The Ion Endoluminal System is a robotic-assisted, catheter-based platform that utilizes instruments and accessories for which the first cleared indication is minimally invasive biopsies in the lung. The system features an ultra-thin, ultra-maneuverable catheter that can articulate 180 degrees in all directions and allows navigation far into the peripheral lung and provides the stability necessary for precision in a biopsy.

Information provided by the Ion Endoluminal System or its components should be considered guidance only and not replace clinical decisions made by a trained physician.

For more information, please visit: https://www.intuitive.com/en-gb

Some products, features or technologies may not be available in all countries. Please contact your local Intuitive representative for product availability in your region. Refer to the product specific User Manual for indications, contraindications, warnings and other product information.

For risks, cautions, and warnings and full prescribing information, refer to the associated Ion System user manual(s) or visit https://manuals.intuitivesurgical.com/market. For summary of the risks associated with bronchoscopy refer to www.intuitive.com/safety.

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[1] Chan LT, Lau KKW, Orton CM, Temov K, Tana A, Baboolal I, Karir A, Agaoglu ES, Garner JL, Kalyal A, Lapuente M, Ttofia JF, Shah PL. Tool in lesion Verification of shape-sensing robotic-assisted bronchoscopy with cone beam CT in sampling peripheral pulmonary nodules. *Thorax*. 15 December 2025. doi: 10.1136/thorax-2025-223631

[2] Median size of the nodules was 13 mm. The mean nodule size ranged from 14 to 22.6 mm. Includes nodules located within 5 mm of the pleura (peripleural), fissure (perifissural) or a critical structure (eg, paramediastinal—heart, aorta or main pulmonary artery).

[3] Defined as patients with at least one true positive or true negative biopsy at 6 months, divided by the total number of procedures attempted

[4] Cancer Research UK. Lung Cancer Mortality. Available at: https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/lung-cancer#lung_stats1 Last accessed: December 2025

[5] Cancer Research UK. Proportion of Cancer Cases By Stage at Diagnosis. RCRD. 2025. Available at: https://crukcancerintelligence.shinyapps.io/EarlyDiagnosis/ Last accessed: December 2025

[6] Slatore. C et al. Pulmonary Nodules: A Small Problem for Many, Severe Distress for Some, and How to Communicate About It. *Chest*. 2018. Available at: https://www.sciencedirect.com/science/article/pii/S001236921732915X Last accessed: December 2025

[7] As of Q2 2025. Intuitive data on file.

[8] Intuitive data on file for more than 100 abstracts and/or publications.