



## Improving Patient Safety in Patients with Indeterminant Pulmonary Nodules: An Integrated Clinical Care Team in China Wins Distinction



Members of the winning team from China get honored, with the following representatives pictured above:  
(L-R) Sullin Mo, Min Liu, Wen Xie, Yanbin Zhou, Lixia Huang, Tingfei Chen

When a nodule is identified on the lung of a patient, physicians must determine the most appropriate course of action to pursue. Thus, a cascade of investigations and tests begins. The goal of nodule evaluation is to improve patient outcome by safely diagnosing and quickly treating malignant nodules, while minimizing testing and invasive procedures for patients with benign nodules.

With the introduction of widespread screening programs, coupled with the effectiveness of low-dose

computed tomography (CT) for identifying nodules, the prevalence of newly identified lung nodules has been increasing. Most patients require multiple investigations and potentially invasive procedures to confirm their diagnosis. As such, delays in care can happen for patients with malignant disease. Moreover, unnecessary invasive procedures are possible for patients with benign nodules, creating potential safety risks. Thus, any opportunity to enhance pre-operative decision-making can profoundly impact patient care.

In an effort to expedite care for patients with malignant disease and to avoid unnecessary procedures/investigations for patients with benign nodules, an integrated clinical care team at The First Affiliated Hospital in Guangdong Province, China, led a best practice for streamlining diagnosis and treatment. This cross-divisional team collaborated to implement a ‘Nodule Risk Model’ into clinical care to enable safe and expedited care for patients with indeterminate lung nodules found by CT.

This novel diagnostic pathway combines the use of clinical data, including CT, age, sex and smoking with results of a lung cancer biomarker panel (LCBP) to determine the likelihood of malignancy, without using invasive procedures. The LCBP includes Progastrin-releasing peptide (ProGRP), Carcinoembryonic antigen (CEA), Squamous cell carcinoma antigen (SCC), Cytokeratin 19 fragment (CYFRA21-1).

Implementation of the nodule risk model at The First Affiliated Hospital, Sun Yat-Sen University has yielded significant benefits for patients, clinicians, the health system and payors. Of note, their work enabled a 24.1% increase in accuracy of preoperative diagnosis, resulting in substantial opportunities for protected patient health. Invasive thoracic surgeries were avoided in 27% of patients with benign lung nodules whose CT was not definitive of disease. The latter reduced surgical risks and potential complications. Additionally, it is equally important that 36% of patients with malignant lung nodules had expedited surgical intervention that would not have been triggered by CT alone.

Thus, strategic implementation of the lung nodule risk model substantially improved overall accuracy of preoperative diagnosis, maximizing safety and health outcomes, while reducing overall healthcare costs.

To make such an impact on patient care, collaboration across key stakeholders has been a paramount for success. Leaders, representing key departments at The First Affiliated Hospital include Yanbin Zhou, MD, PhD, Vice Director, Respiratory Department and Respiratory Disease Institute, Lixia Huang, MD, Specialist, Pulmonary and Critical Care Medicine, Min Liu, MD, Director, Core Laboratory, Honghe Luo, MD, Vice Director, Lung Cancer Institute, Suilin Mo, MD, Director, Physical Examination Center. In recognition for their success, this care team was awarded ‘Merit of Distinction’ for the 2020 UNIVANTS of Healthcare Excellence Award.

### THREE KEY TAKEAWAYS:

1. ProGRP (progastrin-releasing peptide), CEA (carcinoembryonic antigen), SCC (squamous cell carcinoma antigen), and CYFRA21-1 (cytokeratin 19 fragment) are key biomarkers with collective predictive value in the evaluation of patients with lung nodules.
2. Predictive risk models that combine lung cancer biomarker panels (LCBP) in addition to clinical parameters (patient age, history, smoking status, nodule size, etc.) can improve the efficacy of CT screening for determining malignancy without invasive procedures.
3. Real-time clinical implementation of a validated pulmonary nodule risk model can lead to improved outcomes including earlier diagnosis of malignant tumors and mitigating the need for invasive procedures for patients with benign tumors.

For more details on this best practice and/or other best practices that received recognition by the UNIVANTS of Healthcare Excellence Award program, please visit [www.UnivantsHCE.com](http://www.UnivantsHCE.com).