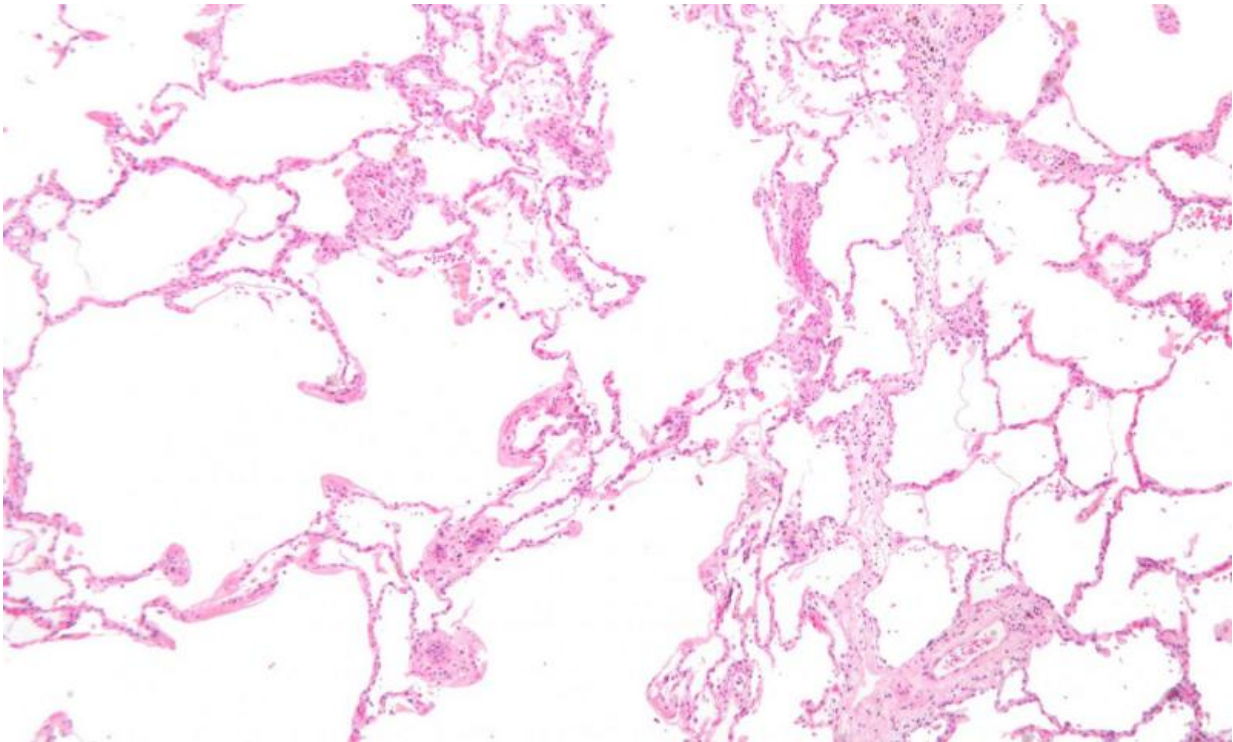


Simple screening for COPD could relieve millions globally

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Micrograph showing emphysema (left – large empty spaces) and lung tissue with relative preservation of the alveoli (right). Credit: Wikipedia, CC-BY-SA 3.0

The global burden of Chronic Obstructive Pulmonary Disease (COPD), a group of common lung conditions that affects more than 300 million people, could be significantly reduced with a simple health assessment, concludes a large-scale international study led by UCL researchers.

COPD includes serious lung conditions, such as emphysema and chronic bronchitis, and is the world's third leading cause of morbidity with more than three million deaths a year. The greatest burden on COPD is in low- and [middle-income countries](#) (LMIC), which account for around 90% of COPD related deaths. Globally, COPD has also been a major risk factor associated with COVID-19 outcomes.

In high-income countries, COPD is typically caused by smoking tobacco and is diagnosed using a spirometer, where an individual blows into a device that measures how much air a person can breathe out in one forced breath. Diagnosis is straightforward and symptoms can be effectively treated.

However, in LMICs the primary cause of COPD is more varied and includes household air pollution in the form of biomass smoke for cooking and heating; other causes include impaired lung growth, chronic asthma and post-tuberculosis lung damage. And diagnosis in LMICs is hindered as spirometry—the 'gold-standard' for diagnosing COPD—is often not available. There is a shortage of clinicians needed to perform and interpret the tests, therefore rolling these out is costly. As a result, COPD is commonly undiagnosed in LMICs.

In the new study, published in *JAMA*, researchers found that people at high-risk of COPD could be identified in 7-8 minutes using either a questionnaire on its own or a questionnaire combined with a Peak Expiratory Flow (PEF) assessment, a [low-cost device](#) that tests how fast a person can exhale.

Explaining the study, Principal Investigator Professor John Hurst (UCL Division of Medicine) said: "Chronic Obstructive Pulmonary Disease is one of the world's major public health issues, causing both individual and economic harm: there is a clear and pressing need to find better ways to identify people early, in all manner of settings.

"Screening tools for COPD have been shown to have reasonable diagnostic accuracy in high-income countries, but due to better population health and treatment in these settings, this has tended to identify milder disease, not requiring much intervention.

"Up until now the performance of these screening tools has not been adequately studied in LMICs; we aimed to test both the diagnostic accuracy and feasibility of simple screening tools."

For the study researchers assessed three COPD screening tools on populations in three distinct settings: semiurban Bhaktapur, Nepal, urban Lima, Peru and rural Nakaseke, Uganda.

Two of the screening tools (COLA 6 and CAPTURE) comprised a questionnaire and Peak Expiratory Flow (PEF). The other screening tool, LFQ, solely involved a questionnaire. All three screening tools were tested in all three settings.

To establish diagnostic accuracy of the tools, all participants were also given a spirometry test.

In total 10,709 male and female adults aged 40 years or older from the three communities took part. Participants were recruited irrespective of symptoms and/or a prior diagnosis of COPD, but needed to be able to perform spirometry.

Study findings

- Prevalence of COPD varied by site, from 3% in Lima (Peru) to 7% in Nakaseke (Uganda) and 18% in Bhaktapur (Nepal).
- 49% of COPD cases were clinically significant as defined by symptoms and or exacerbation burden, and 16% had severe or very-[severe disease](#) measured on spirometry. 95% of cases were

previously undiagnosed.

- The screening instruments performed similarly within each population setting and were feasible to deliver using trained research staff, taking an average of 7-8 minutes.

Commenting Professor Hurst said: "Our findings support the accuracy and feasibility of using simple screening tools to identify people affected by COPD living in diverse low- and middle-income settings.

"It is alarming that a high percentage of screen-identified COPD cases were clinically important, had severe or very severe changes in lung function, and that most were unaware of their diagnosis despite the high prevalence of symptoms and lower quality of life.

"In addition, only a minority of people had a history of smoking, further highlighting the poor conditions, exacerbated by biomass smoke, that people in low- and middle-income countries are living."

Professor Hurst added: "Action is needed: the global health community has neglected the burden of chronic respiratory diseases for too long. It is now time for people with chronic respiratory diseases such as COPD to be promptly identified, informed about their condition and treated—wherever they live in the world."

Siân Williams and Noel Baxter, Joint CEO of the International Primary Care Respiratory Group (IPCRCG) added: "This paper demonstrates that COPD can be feasibly identified in [primary care](#) in low-income settings, which is one of the top 10 questions for primary care in our respiratory research prioritization: 'How can we best educate healthcare professionals to improve early recognition and diagnosis of COPD?'

"It also reinforces the findings by colleagues in other recent studies in middle income countries such as China and Brazil. This is important if

we want communities at risk and primary care teams to know about COPD, to recognize it as a disease with defined characteristics, and to understand it is a disease with a sizeable impact on communities' health and wellbeing that can be mitigated through a range of non-pharmacological and pharmacological primary, secondary and tertiary prevention interventions."

Researchers say further studies will be required to assess if COPD screening can be implemented in routine LMIC healthcare settings; if screening for COPD is of benefit to those testing positive, and it is cost-effective, for a given population, to implement COPD [screening](#) in LMIC settings.

The Global Excellence in COPD Outcomes 1 Study was led by researchers at UCL with collaborators at University of Miami (US), Johns Hopkins University (US), Makerere University (Uganda), Universidad Peruana Cayetano Heredia (Peru) and Kathmandu Medical College (Nepal).

More information: Discriminative accuracy of Chronic Obstructive Pulmonary Disease screening instruments in 3 low- and middle-income settings, *JAMA* (2022). [DOI: 10.1001/jama.2021.23065](https://doi.org/10.1001/jama.2021.23065)

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