# Large-scale investigation supports modified classification system for pulmonary adenocarcinomas

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A modified adenocarcinoma classification approach significantly enhances reproducibility and may be an improvement on the existing

World Health Organization classification system, according to research unveiled at the [International Association for the Study of Lung Cancer](#) (IASLC) 2023 World Conference on Lung Cancer in Singapore.

The study, led by Dr. Erik Thunnissen, Department of Pathology, Amsterdam UMC, VU Medical Center, Amsterdam, The Netherlands, was born out of the IASLC Pathology Committee's acknowledgment of challenges in accurately assigning invasion status based on the criteria outlined in the World Health Organization (WHO) classification of pulmonary adenocarcinomas. The objective was to establish a baseline and investigate the potential for an improved classification system, aided by biomarker analysis.

Dr. Thunnissen and colleagues conducted a case-control study involving resected adenocarcinomas measuring up to 3cm (n=70), the research evaluated the potential of a modified classification system. The modified classification factored in iatrogenic collapsed [adenocarcinoma](#) in situ, identified through elastin and cytokeratin 7 staining.

Pathologists initially assessed the cases according to the WHO criteria and then underwent a tutorial, after which they scored the cases based on the modified classification. A heatmap analysis was conducted to identify areas commonly or less frequently identified as invasive.

The study drew participation from 42 [pathologists](#) across 13 countries who scored the cases in three rounds. The kappa values for the three rounds were 0.27, 0.45, and 0.62, respectively. These results indicated that the standard WHO criteria for determining invasion faced challenges in achieving consistent and reproducible results.

However, the modified classification exhibited notably higher reproducibility. Pathologists displayed a more significant increase in competence, reflected by a higher kappa score, both when evaluated

blindly (0.45) and with guidance (0.62). The outcomes suggested that the revised classification overcomes the limitations of the WHO criteria, thereby addressing concerns about inconsistent assessments.

Importantly, the research revealed that cases scored with "no-invasion" consensus in the second and third rounds achieved a 100% recurrence-free survival (RFS) rate. The diagnosis of adenocarcinoma in situ after resection with the modified classification implies that the patient is cured. In contrast, with the diagnosis of invasive adenocarcinoma in these cases based on the WHO classification, the patient has to bear the anxiety of a chance of recurrence.

Further bolstering the modified classification, biomarker analyses associated with invasion and poor outcomes were conducted. These analyses unveiled intriguing correlations, including a low proliferation rate in adenocarcinoma in situ compared to invasive adenocarcinomas and the presence of TP53 mutations in invasive adenocarcinomas, underscoring their role as late-stage events.

"Our findings suggest that the modified adenocarcinoma classification significantly enhances reproducibility and aligns better with the clinical reality. These results open new avenues for refining our understanding of these cancers and improving patient care," Dr. Thunnissen reported.

"These findings could enable a more confident diagnosis and treatment decisions for patients with pulmonary adenocarcinomas," he said.

Provided by International Association for the Study of Lung Cancer