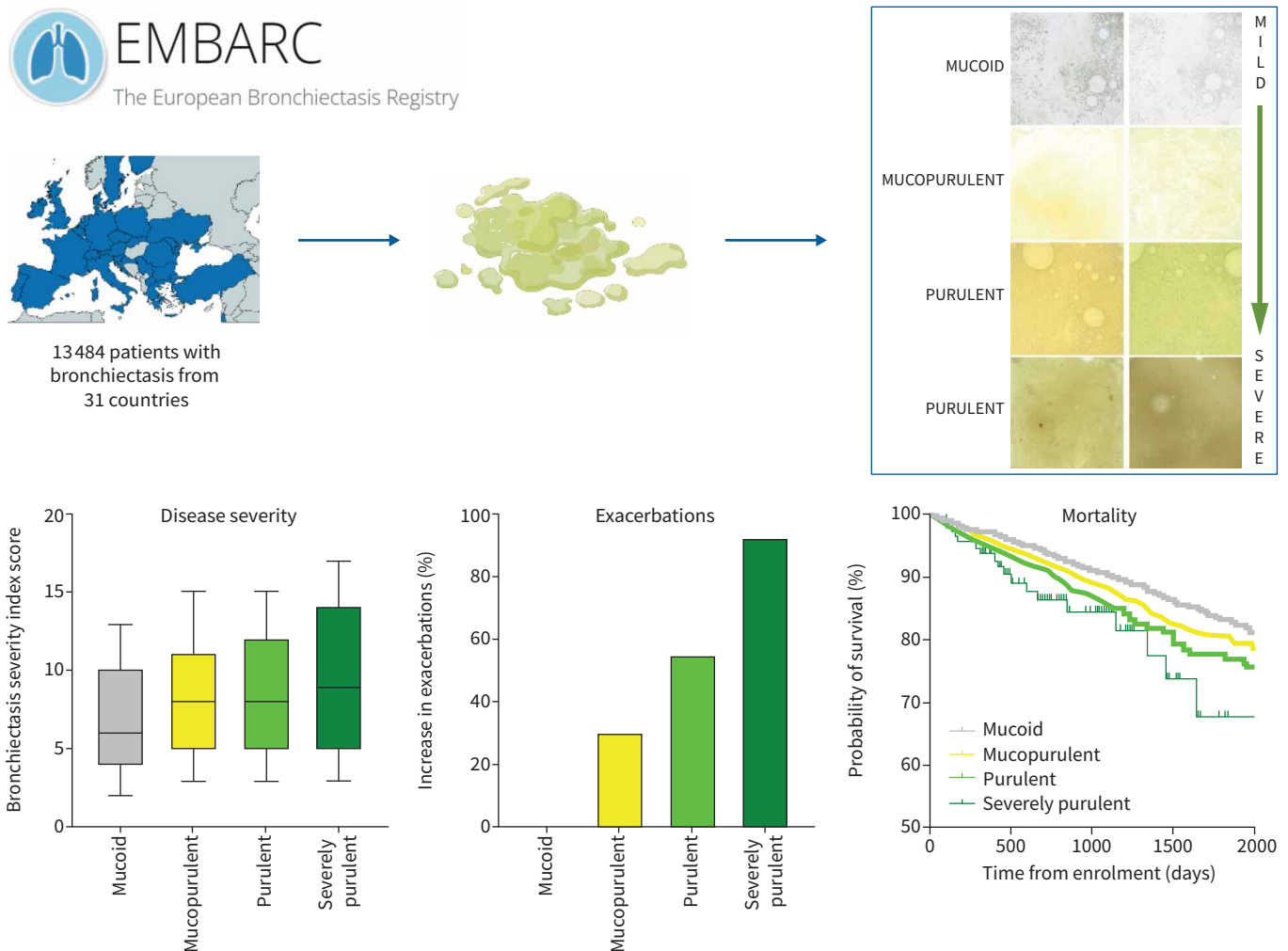




Objective sputum colour assessment and clinical outcomes in bronchiectasis: data from the European Bronchiectasis Registry (EMBARC)

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GRAPHICAL ABSTRACT We enrolled 13 484 patients with bronchiectasis from 31 countries. Assessment of sputum colour at baseline was used to investigate the relationship with disease severity and outcomes. We show a strong relationship between sputum colour and exacerbations and hospitalisation for severe exacerbations. Increasing sputum purulence is a marker of disease outcome in bronchiectasis.



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Sputum colour is a simple non-invasive marker of airway inflammation that identifies patients with bronchiectasis at higher risk of exacerbation, hospitalisation and mortality <https://bit.ly/3HczGxO>

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Abstract

Background A validated 4-point sputum colour chart can be used to objectively evaluate the levels of airway inflammation in bronchiectasis patients. In the European Bronchiectasis Registry (EMBARC), we tested whether sputum colour would be associated with disease severity and clinical outcomes.

Methods We used a prospective, observational registry of adults with bronchiectasis conducted in 31 countries. Patients who did not produce spontaneous sputum were excluded from the analysis. The Murray sputum colour chart was used at baseline and at follow-up visits. Key outcomes were frequency of exacerbations, hospitalisations for severe exacerbations and mortality during up to 5-year follow-up.

Results 13 484 patients were included in the analysis. More purulent sputum was associated with lower forced expiratory volume in 1 s (FEV₁), worse quality of life, greater bacterial infection and a higher bronchiectasis severity index. Sputum colour was strongly associated with the risk of future exacerbations during follow-up. Compared to patients with mucoid sputum (reference group), patients with mucopurulent sputum experienced significantly more exacerbations (incident rate ratio (IRR) 1.29, 95% CI 1.22–1.38; $p < 0.0001$), while the rates were even higher for patients with purulent (IRR 1.55, 95% CI 1.44–1.67; $p < 0.0001$) and severely purulent sputum (IRR 1.91, 95% CI 1.52–2.39; $p < 0.0001$). Hospitalisations for severe exacerbations were also associated with increasing sputum colour with rate ratios, compared to patients with mucoid sputum, of 1.41 (95% CI 1.29–1.56; $p < 0.0001$), 1.98 (95% CI 1.77–2.21; $p < 0.0001$) and 3.05 (95% CI 2.25–4.14; $p < 0.0001$) for mucopurulent, purulent and severely purulent sputum, respectively. Mortality was significantly increased with increasing sputum purulence, hazard ratio 1.12 (95% CI 1.01–1.24; $p = 0.027$), for each increment in sputum purulence.

Conclusion Sputum colour is a simple marker of disease severity and future risk of exacerbations, severe exacerbations and mortality in patients with bronchiectasis.

