Potential for personalised and biomarker-guided COPD self-treatment approaches

In this Correspondence, we use the paper of Sanjay Ramakrishnan and colleagues[1] as a starting point to discuss the potential use of blood eosinophil-guided exacerbation action plans integrated in personalised chronic obstructive pulmonary disease (COPD) self-treatment approaches.

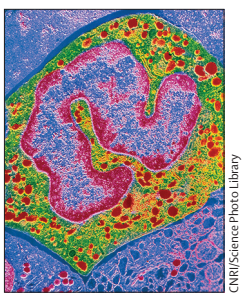
Ramakrishnan and colleagues conclude that blood eosinophil-guided prednisolone therapy at the time of an acute exacerbation of COPD is non-inferior to standard care and can be used to safely reduce systemic glucocorticoid use in clinical practice.[1] They briefly discuss their results in the light of current practices of COPD rescue pack use, and conclude that underlying inflammatory endotypes should be taken into account when considering the use of these packs. It is important to acknowledge that, whereas there is a growing body of evidence regarding the effectiveness of using self-treatment exacerbation action plans combined with the provision of patient training in formalised self-management interventions,[2] there is no evidence regarding effectiveness and safety to support handing out rescue packs without any training and support.

The paper of Ramakrishnan and colleagues states that no other field of medicine advocates for self-treatment of potential life-threatening events.[1] Self-treatment is, however, common in the fields of chronic diseases, such as diabetes and asthma, ideally in combination with ongoing patient training, support, and regular review, embedded in a personalised self-management intervention, rather than as a standalone approach.[2] In addition to tailoring COPD self-treatment approaches to the patient's individual symptom levels, exacerbation risk, needs of support in self-treatment, health beliefs, capabilities, medication use, smoking cessation, literacy level, and comorbidities,[3] we believe that the integration of a self-treatment approach guided by blood eosinophil count should be considered to safely reduce the systemic exposure and toxicity of universal prednisolone therapy. However, there are still some important features that need to be defined before blood eosinophil-guided exacerbation action plans can be integrated in clinical practice.

Defining an acute exacerbation of COPD to be eosinophilic is crucially dependent on the chosen cutoff values and the eosinophil expression as an absolute or relative count. There is, however, still no consensus regarding the optimal cutoff value to guide steroid treatment in general, let alone in a self-treatment approach.[4] Ramakrishnan and colleagues used a 2% blood eosinophil count as a threshold to guide steroid treatment, and reported that in their COPD population 65% of the acute exacerbations of COPD were eosinophilic.[1] However, in other studies the percentage of acute exacerbations of COPD that were eosinophilic was much lower (10–30%).[4,5]

Although different phenotypes and various biological clusters for acute exacerbation of COPD in different populations have been identified previously,[5] both the phenotypes and clusters can differ in subsequent acute exacerbation of COPD[4] and influence personalised treatment decisions. A large prospective COPD cohort study showed that, when using the 2% cutoff for defining an eosinophilic acute exacerbation of COPD in patients with severe acute exacerbation of COPD, only 38% of subsequent severe acute exacerbation of COPD were defined as eosinophilic.[6] This variability in eosinophil count (ie, absolute *vs* relative counts for different cutoff values) necessitates establishment of the eosinophil count at every new acute exacerbation of COPD. For patients with acute exacerbation of COPD who are visiting the hospital or primary care (as in the study by Ramakrishnan and colleagues)[1], it will be relatively easy to establish eosinophil count with point-of-care testing during each acute exacerbation of COPD. We recognise that for integration of blood eosinophil measurements within self-treatment approaches, patients should have easy access to a point-of-care tool establishing their eosinophil count at acute exacerbation of COPD onset, without delaying treatment. Since the benefits from the use of self-treatment exacerbation action plans arise mainly from earlier initiation of appropriate treatment, it must be ensured that adding a tool will not become a hurdle for timely treatment of an acute exacerbation of COPD. Additionally, as the majority of the acute exacerbations of COPD are expected to have an eosinophil count below the steroid treatment threshold, alternative treatment strategies need to be defined for these acute exacerbations of COPD. Moreover, developments in biomarker-guided antibiotic treatment in acute exacerbation of COPD might require even more adjustments in acute exacerbation of COPD self-treatment approaches (eg, integration of rapid point-of-care tests to guide antimicrobial therapy of acute exacerbations of COPD with a bacterial origin and reduce antimicrobial resistance). The use of patient-friendly digital technology will probably be crucial to enable the use of complicated underlying decision models, and optimise the quality, accessibility, and efficiency of self-treatment of acute exacerbation of COPD.

The integration of necessary refinements and tailoring of self-treatment approaches will be an ongoing and evolving process, with practical and logistical challenges to overcome. We believe that the study by Ramakrishnan and colleagues[1] will not



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be the end of self-treatment for COPD, it will rather be the beginning of more personalised and biomarker-guided COPD self-treatment approaches that are embedded in self-management interventions.

We declare no competing interests.

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