



Preventing readmissions of COPD patients: more prospective studies are needed

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Identifying risk factors for readmission will help in the management of severe COPD patients <https://bit.ly/2zFVU5j>

Cite this article as: Nuñez A, Miravittles M. Preventing readmissions of COPD patients: more prospective studies are needed. *Eur Respir Rev* 2020; 29: 200097 [<https://doi.org/10.1183/16000617.0097-2020>].

Fortunately, less than one-third of patients with COPD experience frequent exacerbations [1]; however, these patients are the ones with a worse prognosis and the most challenging management. Particularly, those who experience severe exacerbations that require hospital admission are at increased risk of mortality [2], and therefore prevention of exacerbations in general and admissions in particular is one of the main objectives of COPD treatment [3].

Identifying the risk factors for exacerbations and hospital admissions is crucial for designing strategies to reduce their frequency and impact on patients. In this issue of the *European Respiratory Review*, ALQAHTANI *et al.* [4] have reported the results of a systematic review and meta-analysis of risk factors for all-cause hospital readmission following an exacerbation of COPD. They analysed 32 studies, although the meta-analysis could only be performed on data from 14 studies, which included nearly four million patients. The all-cause readmission rate at 1 month ranged from 9% to 26% and from 17.5% to 39% at 3 months. It is important to consider that these numbers refer to all-cause readmissions and, therefore, are somewhat higher than those observed in studies analysing the frequency of readmissions for COPD. From the patient's perspective, it is clear that the key outcome is readmission, irrespective of the cause and thus, the article by ALQAHTANI *et al.* [4] provides very relevant clinical information.

The authors found that the presence of comorbidities, previous exacerbations and hospital admissions, and a prolonged length of stay during the initial admission were associated with an increased risk of all-cause readmission; whereas female sex was protective. Since the main outcome of their meta-analysis was all-cause readmissions, it is not surprising that the presence of comorbidities (heart or renal failure, depression and alcohol use) was one of the main risk factors identified. The impact of cardiovascular or renal comorbidities on the prognosis of COPD is well known, but it is important to recognise the role of depression and alcohol use (which may sometimes be related and which are seldom investigated) in the routine care of patients with COPD. Depression is very frequent in patients with COPD and especially in severe patients who experience frequent or severe exacerbations [5]. Therefore, an active search for signs of depression and alcohol intake must be part of the routine assessment of these patients, particularly because both factors are amenable to treatment.

Provenance: Commissioned article, peer reviewed.

Received: 14 April 2020 | Accepted: 27 April 2020

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The increased risk of readmission in patients with more frequent previous exacerbations and/or hospitalisations has been very well described in the literature and has generated the definition of the frequent exacerbator phenotype [1, 6]. More interesting is the relationship between length of initial hospital stay and the risk of all-cause readmission. In some healthcare systems there is pressure to reduce the length of stay in order to increase the efficiency of the system and reduce direct medical costs. However, there is the risk that this pressure could result in hasty discharge before the patient reaches real stability, with a subsequent increased risk of early readmission. It is reassuring that ALQAHTANI *et al.* [4] found the opposite, that is, an increased risk of readmission associated with increased length of initial hospital stay; suggesting that the severity of the initial episode may be an indicator for early readmission. However, it is interesting to see that in some of the studies analysed the relationship between length of stay and risk of readmission was not linear. The risk was higher when the initial admission was <4 days compared with 4–7 days, and the risk was the highest in those who were hospitalised for >8 days [7]. These data may suggest some effect of inadequate or hasty early discharge in some patients.

Finally, the authors found that female sex was protective for the risk of readmission. Differences between sex in the characteristics and outcomes of COPD have been well described, and these results concur with previous studies indicating that females may have more symptoms and mild or moderate exacerbations, but they usually have fewer hospital admissions [8].

It is disappointing that only five studies included in the meta-analysis were prospective. This limited the possibility of systematically collecting and analysing other functional and biological characteristics or biomarkers that could be useful as risk factors for early readmission. There is a lack of information about the usual markers of COPD severity, such as forced expiratory volume in 1 s, exercise capacity measured by the 6-min walking test or the diffusing capacity of the lung for carbon monoxide. Other well-known risk indices such as BODE (body mass index, obstruction, dyspnoea and exercise) could not be tested and neither could the different clinical phenotypes of COPD, namely emphysema, chronic bronchitis or asthma-COPD overlap.

There is increasing interest in biomarkers that may help to identify patients at increased risk of exacerbation, admission or readmission [9]. Fibrinogen has been recognised as a useful biomarker for risk of all-cause mortality and COPD exacerbations [10], and C-reactive protein has also been described as being associated with increased risk of death in severe exacerbations of COPD [11]. More recently, the use of the blood eosinophil count as a predictor of the risk of exacerbation has received increased attention [12]. Unfortunately, the retrospective design of most of the studies included in the systematic review of ALQAHTANI *et al.* [4] did not allow the authors to retrieve information about these or other systemic biomarkers of risk in COPD.

Another limitation, acknowledged by the authors, is the language restriction in the selection of the studies. In fact, two studies were excluded due to the restriction of the search to only include papers published in English. Although there is no doubt that the great majority of high-quality studies are published in English, language is not a scientific or a quality criterion and, therefore, should not be used to dismiss studies that may provide interesting additional information [13]. Furthermore, most non-English journals publish an abstract in English that could be used for screening and then only papers that may be useful for the analysis could be translated. It is really surprising that the stringent PRISMA guidelines permits language restrictions in the search for articles for carrying out systematic reviews.

Despite these limitations, the article by ALQAHTANI *et al.* [4] provides important information to help clinicians to identify a vulnerable population of patients with COPD that deserve a closer follow-up and to optimise and intensify therapy to prevent frequent episodes of readmission.

Conflict of interest: A. Nuñez reports grants from Rio Hortega contract in the 2019 Strategic Action Health Call from the Instituto de Salud Carlos III, outside the submitted work. M. Miravittles reports personal fees from AstraZeneca, Boehringer Ingelheim, Chiesi, Cipla, Menarini, Rovi, Bial, Zambon, Sandoz, CSL Behring, Grifols and Novartis; personal fees from AstraZeneca, Boehringer Ingelheim, Chiesi, GlaxoSmithKline, Bial, Gebro Pharma, CSL Behring, Laboratorios Esteve, Ferrer, Mereo Biopharma, Verona Pharma, Kamada, TEVA, Sanofi, Spin Therapeutics, pH Pharma, Novartis and Grifols; and grants from GlaxoSmithKline and Grifols, outside the submitted work.

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