



EDITORIAL

Rational monitoring of COPD: where do current clinical guidelines stand?

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The Global Initiative for Chronic Obstructive Lung Disease (GOLD) guideline serves as an international reference for evidence-based management of patients with chronic obstructive pulmonary disease (COPD) [1]. Based on the available scientific evidence, recommendations for diagnosis and treatment are presented.

An important goal of the GOLD initiative is to counter the nihilistic attitude and to promote a proactive engagement of physicians and allied healthcare professionals with COPD patients over time [2]. In addition, GOLD, and also other guidelines, recommend regular surveillance of patients' respiratory health status [1, 3–19]. The rationale behind the regular follow-up of patients with chronic conditions, also referred to as "monitoring", is that it facilitates optimal outcome of patient care [20, 21]. However, care of COPD implicates large numbers of patients and, consequently, monitoring their health status would result in substantial use of healthcare resources. In the present paper, the authors reflect on monitoring, as currently recommended in COPD guidelines, and discuss the rationale behind it, including some pros and cons of the procedures involved.

A total of 18 clinical guidelines published or updated after the year 2000 that address the diagnosis, treatment and (end-of-life) care of COPD were analysed (table 1) [1, 3–19]. All but one of these guidelines [19] recommend regular monitoring, in particular of lung function, but also of respiratory symptoms, smoking habits, nutritional status, exercise tolerance and presence or progression of comorbid conditions (table 2) [1, 3–18]. However, none of the guidelines provided evidence for the recommended monitoring. This is not really surprising, as there is a complete lack of empirical studies that have addressed this particular issue. Consequently, recommended monitoring is almost exclusively expert opinion-based and, given the potential impact on costs and resources, this warrants at least some discussion.

In a number of cases the advice to monitor is self-evident, *e.g.* for smoking cessation, where individually tailored advice and

support require up-to-date information on current smoking status. However, this is not the case for the monitoring of lung function, the most often recommended monitoring routine for patients with COPD. Lung function testing is essential for the diagnosis of COPD and to stage its severity [22], but the progressive decline of lung function is resistant to treatment other than smoking cessation [23]. As a consequence, there is little value in monitoring a patient's lung function decline once the diagnosis has been made. However, as the disease progresses, periodic reassessment of the severity of airflow obstruction enables periodic re-staging and concomitant stage-specific treatment recommendations. An example is treatment with inhaled steroids to prevent exacerbations, which is only recommended for patients with a forced expiratory volume in one second <50% of the predicted value [1, 24].

Since the majority of patients with COPD suffer from mild-to-moderate disease [25] and progression to a more severe disease stage will often take several years, the cost of monitoring lung function in all patients should be offset against its limited yield. Monitoring of nutritional status can be looked at in a similar way: based on current knowledge, monitoring of nutritional status provides information on prognosis in patients with severe-to-very severe COPD [26, 27], but for patients with mild-to-moderate disease the prognostic value of poor nutritional status has not been established. As long as there is no sound evidence that patient outcomes or prognosis can be improved by nutritional intervention, there is no clear purpose for collecting information on nutritional status in patients with mild-to-moderate disease [28, 29].

From this, it can be inferred that monitoring in COPD may serve different goals: grading the severity of the disease [1, 26]; selecting applicable treatment options, *i.e.* inhaled corticosteroids [24] or oxygen therapy [1]; or predicting the prognosis of the disease. These goals should be reflected in the application of monitoring routines: while assessment of symptoms and initiated treatment may be relevant in every contact with a particular patient, disease severity and prognosis may only require occasional reassessment. This adds relevance to the basic concept of GOLD, which has made disease staging the starting point of treatment recommendations [1]. Compared with patients with more severe COPD, it seems that the majority of patients with mild-to-moderate disease do not yet exhibit reduced exercise tolerance, loss of

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TABLE 1 Clinical practice guidelines for chronic obstructive pulmonary disease

Abbreviations	Organisation	Year [#]	Country/ region	Evidence grading of monitoring recommendations	Separate paragraph on monitoring/ follow-up
GOLD[†]	Collaboration of many organisations, including American Thoracic Society, European Respiratory Society and WHO	2006	Global	No	Yes
ATS/ERS	American Thoracic Society and European Respiratory Society	2004	Global	NA [§]	Yes
IPAG[§]	International Primary Care Airway Group	2004	Global	NA	Yes
IPCRG^{†, +}	International Primary Care Respiratory Group	2006	Global	Yes	Yes
EBM[†]	Duodecim Medical Publications Ltd	2004	Global	No	No
COPD-X[†]	Thorax Society for Australia and New Zealand, and Australian Lung Foundation	2006	Australia/New Zealand	No	Yes
CTS[†]	Canadian Thoracic Society	2004	Canada	No	No
BCMA	British Columbia Medical Association	2005	Canada	NA	No
India	WHO (India)	2003	India	NA	No
CBO[†]	Collaboration of many organisations, including Dutch College of General Practitioners and Dutch Institute for Health Care	2005	The Netherlands	Yes	Yes
NHG	Dutch College of General Practitioners	2001	The Netherlands	NA	Yes
PA	Palestinian Ministry of Health	2003	Palestinian region	NA	Yes
SA	South African Thoracic Society	2004	South Africa	NA	No
SRS[†]	Swiss Respiratory Society	2002	Switzerland	No	No
Prodigy[†]	National Health Service and Department of Health UK	2006	UK	No	Yes
NICE[†]	National Collaborating Centre for Chronic Conditions	2004	UK	Yes	Yes
ISCI[†]	Institute for Clinical System Improvement USA	2005	USA	No	Yes
ABFP	American Board of Family Practice	2001	USA	NA	Yes

GOLD: Global Initiative for Chronic Obstructive Lung Disease; WHO: World Health Organization; EBM: Evidence-Based Medicine Guidelines; CBO: Dutch Institute for Healthcare Improvement; NA: not applicable. #: year of initial publication or, in the case of periodic revision of the guideline, the year of the most recent update; †: evidence grading for at least one recommendation in the guideline; †: guidelines developed by the same group of experts; §: not applicable since the guideline did not use systematic evidence grading.

body mass [30] or frequent exacerbations [31]. For this reason, it would make sense to recommend some monitoring procedures, especially the monitoring of symptoms and smoking status, as routine for every patient with COPD, and apply additional surveillance on the basis of disease severity stage. This would not only help to tailor care to the individual patients, but also prevent a lot of effort and resources being used for the routine collection of information that has no direct relevance to the management of the patient. A baseline severity staging at the time of diagnosis followed by reassessment once every few years in patients with mild-to-moderate disease may well be sufficient. Based on the disease stage and other patient-related factors (*e.g.* the presence of comorbid conditions), monitoring of exercise tolerance, loss

of fat-free body mass or frequent exacerbations could be adjusted.

This will preserve time, equipment and facilities for those individuals in greatest need, an aspect that is particularly relevant given the fact that the number of patients with chronic obstructive pulmonary disease will continue to increase in years to come [32]. At the same time, researchers should take up the challenge to establish further evidence of the benefits and cost of monitoring patients with chronic obstructive pulmonary disease in well-designed studies. After all, if monitoring chronic obstructive pulmonary disease is crucial for facilitating optimal patient care, do evidence-based chronic obstructive pulmonary disease guidelines not deserve an evidence-based paragraph on monitoring?

TABLE 2 The most frequently recommended monitoring routines in clinical practice guidelines for chronic obstructive pulmonary disease

Monitoring routines	Guidelines mentioning monitoring routine
Total	18
Lung function	15 (83)
Symptoms/dyspnoea	14 (78)
Smoking habits	12 (67)
Exercise tolerance	10 (56)
Comorbidity/complications	10 (56)
Exacerbations	9 (50)
Inhaler technique	8 (44)
Side-effects of treatment	8 (44)
Effect of drug treatment	7 (39)
Nutritional condition	7 (39)
Compliance with treatment	7 (39)

Data are presented as n or n (%). Only routines that are recommended in seven or more of the guidelines are shown.

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