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Editorial

COPD: Challenges in Primary Care

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Introduction

Chronic obstructive pulmonary disease is a progressive disease characterized by persistent airflow limitation [1] that it is estimated to be the third leading cause of death worldwide [2]. The challenges for Primary Care (PC) are known to be immense and among them include, primary prevention with reduction of risk factors, secondary prevention with early detection and monitoring of COPD and tertiary prevention to improve health status, decrease disease progression and reduce exacerbations rate [1,3].

Prevention

In PC, general preventive strategies are influenced by time, cost, availability and practice capacity that makes it a challenge to manage behavioral risk factors [4]. Undoubtedly, cigarette smoking is by far the most important risk factor for COPD [1]. Fletcher and Peto demonstrated that smoking cessation abated the lung function decline that is characteristic of COPD [5]. Effective smoking cessation interventions in primary care are based on an awareness of which strategies have been shown to work and on making the most of available resources [6,7]. To that direction the International Primary Care Respiratory Group (IPCRG) has published a practical guidance for PC [6]. Despite that it is well known that smoking cessation in PC is feasible [6,7], physicians are not always prepared to deliver effective interventions for smoking cessation to their patients [8]. Furthermore, education and awareness to patients that pharmacological treatment as well as behavioural support for smoking cessation is available at a PC clinic is needed [9]. However, the preventive role of PC regarding COPD should not be limited to smoking. The Copenhagen City Heart Study highlighted that moderate to high levels of regular physical activity are associated with reduced lung function decline and COPD risk among smokers [10]. Additionally, a systematic review by the PRO active consortium showed that the physical activity level in COPD is consistently associated with mortality and exacerbations, yet there is poor evidence about determinants of physical activity [11]. Therefore, it is obvious that health-care providers should promote physical activity. Moreover data indicate that an increase in consumption of vegetables, fruit and (although with less evidence) fibre may contribute to the prevention of COPD [12].

When designing prevention strategies for COPD, a variety of risk factors should be considered; host factors (i.e; atopy), perinatal factors (i.e; maternal smoking, maternal exposure to air pollution), childhood exposures (i.e; respiratory tract infections, indoor-outdoor air pollution, obesity) and adult exposures (i.e; occupational, indoor-outdoor air pollution) [13]. Therefore efforts to prevent COPD should also focus on optimization of lung health in the early years of life, before birth, and possibly even before conception [13]. Provider education, raising community awareness and the support and capacity building may improve the uptake of lifestyle modification interventions [4].

Challenging Mis and Under Diagnosis- The Role of Spirometry

The PLATINO [14] and the IBEPROC [15] study showed that 88.7% and 78.2% respectively, of patients with COPD had not been diagnosed while in the USA, more than 50% of patients with COPD have been either undiagnosed or misdiagnosed [16]. Patients with COPD may experience respiratory symptoms that are often disregarded by patients who do not always report them to their PC physicians [17].

Misdiagnosis of COPD and asthma is common [18]. Tinkelman et al. have developed a symptom-based questionnaire to differentiate between asthma and COPD that could potentially be used extensively in PC in the future [19]. Spirometry is an important tool for the

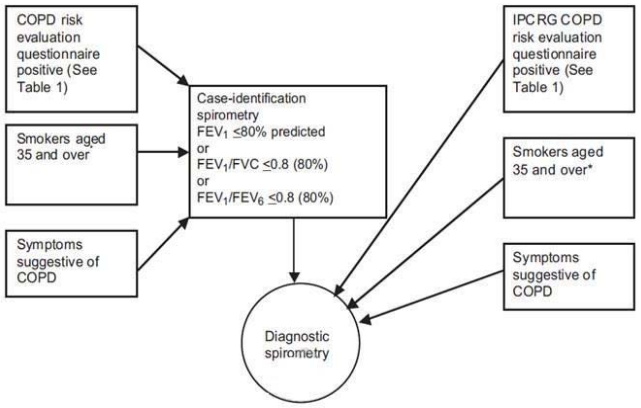

Figure 1: An approach to COPD case-identification in primary care [23]. *Patients aged 30 and over if high risk (e.g. family history of COPD, occupational or environmental risk, smoker since childhood). The possibility of COPD should be considered in all patients with a long-term history of exposure to risk factors, all those with a clinical history suggestive of COPD, and all those with a positive questionnaire result. Multiple protocols for investigating the possibility of COPD in at-risk patients are appropriate in primary care, depending on the setting and resources available. Where a full spirometry service is readily available, immediate diagnostic spirometry might be appropriate. In other settings, opportunistic case-identification spirometry may enable the primary care health professional to identify those who require further investigation. Regardless of the initial steps taken to rule out COPD, patients with abnormal findings on spirometry or symptom questionnaire will require full diagnostic spirometry, performed to internationally acceptable standards. Diagnostic spirometry must include post-bronchodilator testing.

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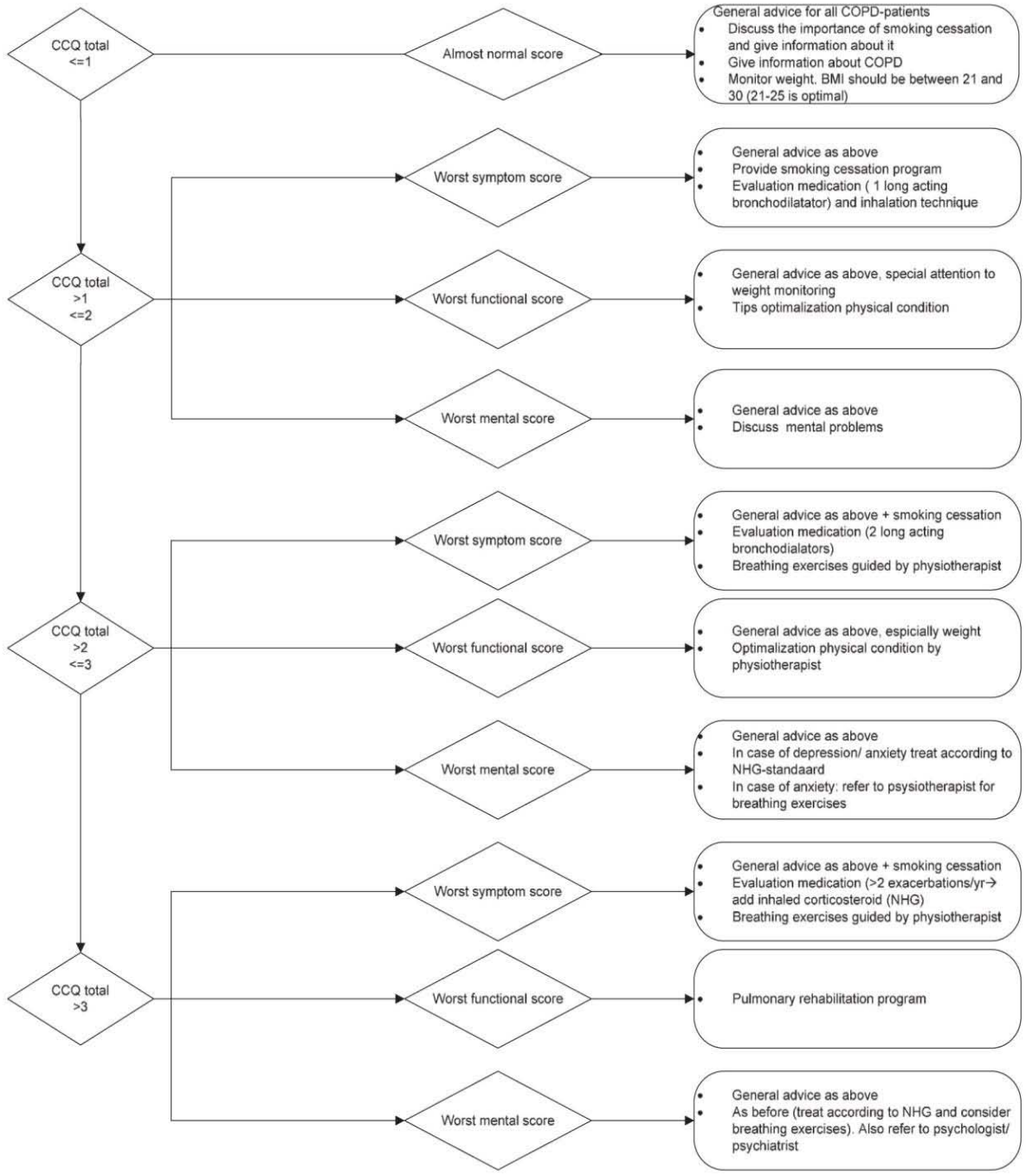

Figure 2: CCQ based treatment algorithm [39].

accurate diagnosis of COPD [1,3] and lack of routine spirometry [20] is a key cause of this misdiagnosis. The DIDASCO study illustrated a high accuracy with the use of a portable spirometer when PC physicians received training in performance and interpretation [21]. Despite that, spirometry is still underused in PC [22,23] due to barriers such as, lack of access to calibrated spirometers and inadequate training and interpretation skills [22-24]. However it is promising to assure the quality of spirometry in PC settings [25] and solutions to overlap technical interpretation barriers have been extensively proposed [23]. Some examples are [23] basic training, operators that practice performing the man oeuvre to reinforce and improve skills, automatic feedback and technical error messages from the machine, use of IPCRG opinion sheets for spirometry [26],financial incentives for PC physicians to offset the cost of training, etc [23]. Increased use of spirometry in PC is a significant challenge as it is expected not only to increase rate of detection of COPD but also reporting to smokers their lung age (the age of the average healthy individual who would perform similar to them on spirometry), which is found to be

effective to significantly improve the likelihood of someone to quit smoking [27].

Mass Population Screening or Case Finding?

The use of spirometry in mass population screening remains controversial and is not recommended however, its use in targeted case identification is more feasible [1]. Although when case-finding using full diagnostic spirometry is not possible in the PC setting in patients with symptoms, there are other approaches that could be useful. Such approaches are the use of questionnaires [28-31] designed to assess the risk for COPD and/or micro-spirometers such as copd-6 [32] PiKo-6 [33,34] as initial screening tools. All these studies [32-34] on microspirometry demonstrated a high negative predictive value meaning that they predict with a range of 91-98% accuracy level that the patient does not have COPD. In this direction, IPCRG has developed an algorithm driving GPs towards an effective case-finding (Figure 1) [23]. More studies are needed to confirm their role in PC.

COPD Management in Primary Care Daily Clinical Practice

Even if spirometry is performed and a diagnosis is established, COPD patients present with a large variety of symptoms and signs, and patients with a similar degree of airway obstruction report different performance and Quality of Life (QoL) scores [35,36]. In general, patients with COPD tend to underreport their symptoms and impairments thus leaving physician with the impression that the situation is better than it actually is [36]. Indeed, research on health-related QoL shows that physician's consistently assess their patients' QoL better than when measured by questionnaires [37]. Therefore GOLD suggests the COPD management tree to be based on A,B,C,D categories; a classification based on symptomatology (as assessed by CAT, or CCQ, or mMRC), spirometry and exacerbations [1]. However this classification has been criticized that 'these categories are too complex to be used in PC' and suggested that COPD severity assessment could be accomplished by using multi-component indices such as Body mass index, airflow Obstruction, Dyspnoea, and Exercise capacity (BODE), Age, Dyspnoea and airflow Obstruction (ADO), or the Dyspnoea, Obstruction, Smoking and the Exacerbation index (DOSE) [38]. PC has suggested management should follow an evidence-based algorithm involving smoking cessation, pulmonary rehabilitation, and drug treatment [38]. An example could be seen in figure 2 [39].

Therapeutic Challenges in Primary Care

There is strong evidence on which medications to suggest according to the A,B,C,D, categories in GOLD guidelines mainly based on large pharmaceutically sponsored COPD studies (LPCS) [1]. However PC COPD patients standout from patients enrolled in LPCS in terms of gender, lung function, quality of life and exacerbations [40]. More research is needed to determine the effect of pharmacological treatment in PC patients that often present a lot of co morbidities that are usually excluded from LPCS at the moment [40]. Therefore when developing future guidelines for COPD, it is encouraged to involve PC populations in their recommendations [40].

Phenotypes and Co Morbidities

COPD is a complex disease with many phenotypes and co morbidities. For example there is strong evidence that there is a specific phenotype characterized by an increased susceptibility to COPD exacerbations [41] and another characterized by eosinophil-related airway inflammation [42], and both may benefit from inhaled corticosteroids therapy. To what extent does PC use these phenotypes when managing patient's remains a challenge that should be established in the future as well as how PC could use these phenotypes towards the patients' benefit.

Multimorbidity in patients with COPD is common and a great challenge for PC [43]. Anecchino and colleagues conducted a large COPD cohort of 126,838 individuals in Italy and reported that the vast majority of them (98%) had at least one prescription for 'non-respiratory drugs' [44]. A Canadian, population study using data of more than >7 million adults showed that patients with COPD had more health service claims for comorbid disease than for COPD itself [45]. This could be used as a motivation to PC physicians to search for COPD when they present with another chronic condition, especially if they share common risk factors. Moreover GPs should search for some diseases that are quite prevalent in COPD patients and are outside the classical known co morbidities (cardiovascular diseases and diabetes) especially depression, anxiety and osteoporosis [43]. It is obvious that COPD medications can have a beneficial or harmful effect on other disease outcomes [43]. On the other hand, co administration of medications for co morbidities can have beneficial, neutral or harmful effects on COPD outcomes [43]. However, even if GPs are aware of single disease guidelines it may be that they are reluctant to use medications when a patient has more than two co morbidities. For example although the benefits of b-blockers in COPD are well known in reducing the risk of exacerbations and improving survival [46] they are still underused in COPD even if there is a clear need to use them ie; in concomitant cardiovascular diseases [47,48]. The above mentioned are challenges not only for COPD but also for other chronic diseases and this highlights the need for multimorbid guidelines and not single disease-centred clinical guidelines [49].

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