

1 APPENDIX 1

2
3 Among all NCDs Chronic Obstructive Pulmonary disease (COPD) is responsible for a conspicuous
4 amount of deaths and years of life lost (YLL) causing each year more than 3 million deaths and
5 more than 50 million YLLs [1,2]. In COPD the management is also based on empowerment of the
6 patient and his/her caregivers [3], i.e. education about own disease, decisions shared with own
7 physician and, overall, self-monitoring of symptoms [4]. COPD early symptoms can be
8 indeterminate and not rarely confused with the normal evolution of ageing or linked with some
9 other conditions (e.g. obesity) or manifesting themselves only during sleep [5]. Symptoms like pain,
10 dyspnea or fatigue are particularly important, since they can generate anxiety and depression and
11 lead patients to reduce and even give up physical activities, so progressively decreasing their
12 personal fitness [6]. Objective measures, the easier to be carried out the better, can help in
13 understanding what symptoms herald and if and how they are actually related to a specific disease.

14 Episodes of acute exacerbation (i.e. sudden worsening of conditions) punctuate, for instance,
15 the history of COPD; they can induce a faster decline of respiratory function and increase the risk of
16 cardiovascular complications leading patients to seek medical consultations and hospital admissions
17 [7-11]. More acute exacerbations per year leads to a greater risk of subsequent exacerbations and
18 death [12,13] and can be followed by cardiac complications with hospitalization and death. [14,15].
19 Most of these patients also present critical respiratory failure with the need for long-term continuous
20 oxygen therapy (LTOT) and in the most severe cases non-invasive mechanical ventilation (NIV).
21 Dyspnea also is a peculiar symptom of COPD, presenting first for strenuous efforts, then also for light
22 exercises. Sometimes dyspnea is out of proportion to clinical and functional conditions and it should
23 be investigated to reveal possible causes, not rarely of cardiovascular origin, also using continuous
24 monitoring of patient's status [16,17].

25 Idiopathic pulmonary fibrosis (IPF) and other interstitial lung diseases (ILD) also cause a
26 serious reduction in respiratory function and alter patient's health status, characterized by dyspnea
27 following minimal physical strain, marked respiratory insufficiency, and very severe prognosis
28 despite the currently available pharmacological treatments; an early diagnose is mandatory if possible
29 [18,19].

30 Sleep-related breathing disorders and particularly Obstructive sleep apnea syndrome (OSAS)
31 are very prevalent in the adult population. OSAS can cause significant diseases and need to be
32 diagnosed and monitored strictly, since it causes daily sleepiness (and increased risk of road and other
33 accidents), cardio-vascular diseases and greatly reduces quality of life [20,21].

34 All these conditions have been included in the Global Alliance against Chronic Respiratory
35 Diseases (GARD) of the World Health Organization (WHO) as an urgent global health problem [22].
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