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Title: The predictive value of the COPD assessment test (CAT) for acute exacerbations in patients with chronic obstructive pulmonary disease (COPD)

Dimitar 772 Sajkov dimitar.sajkov@health.sa.gov.au MD ¹, Ming-Shyan 773 Huang shyang@cc.kmu.edu.tw MD ², Jian 817 Kang kangjian58@163.com MD ³, Ching-Hsiung 818 Lin 47822@cch.org.tw MD ⁴, Myung Jae 819 Park parkmj1@gmail.com MD ⁵, Namhee 820 Kwon namhee.n.kwon@gsk.com MD ⁶ and Sang-Do 821 Lee sdlee@amc.seoul.kr MD ⁷. ¹ Australian Respiratory and Sleep Medicine Institute, Flinders Medical Centre, Adelaide, Australia ; ² Department of Internal Medicine, Kaohsiung Medical University Hospital, School of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan ; ³ The Institute of Respiratory Diseases, The First Affiliated Hospital of China Medical University, Shenyang, China ; ⁴ Division of Chest Medicine, Department of Internal Medicine, Changhua Christian Hospital, Changhua, Taiwan ; ⁵ Division of Respiratory and Critical Care Medicine, Kyung Hee University Hospital, Seoul, Republic of Korea ; ⁶ Asia Pacific Medical, GlaxoSmithKline, Singapore, Singapore and ⁷ Division of Pulmonary and Critical Care Medicine, Asan Medical Centre, Seoul, Republic of Korea .

Body: Acute exacerbations significantly impair health-related quality of life (QoL) and productivity of patients with COPD. Predicting the probability of exacerbation may help in optimising COPD management. We evaluated whether the COPD Assessment Test (CAT™) could predict the risk of future exacerbations of COPD. COPD patients with a history of exacerbation were recruited from 19 sites in four Asia Pacific countries. CAT score, Medical Research Council (MRC) dyspnea score, spirometry data, medical history, and exacerbation episodes were prospectively collected over six months. In 495 evaluable patients with a mean age of 69.4±8.8 years, 68% had at least one exacerbation over the study period. The baseline CAT score categorised into four severity groups showed a strong predictive value for time to first exacerbation (Area under the curve [AUC]=0.83). Time to first exacerbation was shorter with worsening category of CAT score (p=0.001; mean 19.9, 15.8, 10.9 and 4.5 weeks for CAT scores categories of 0–9, 10–19, 20–29 and 30–40 respectively; adjusted hazard ratios of 1.0, 1.53, 2.08 and 3.41 respectively). CAT score category, however, had a modest predictive ability for at least one exacerbation (AUC=0.64). The risk of future exacerbations was higher with worsening category of CAT score (p=0.004; adjusted relative risks: 1.0, 1.26, 1.33 and 1.45 respectively). The uncategorised CAT scores, used as a continuous variable, found predictions of similar magnitude. In outpatients with COPD, the baseline CAT score showed a strong predictive value for time to first exacerbation. It also provided modest prediction of exacerbations in the following six months.