

Supplemental Table 1. 42 variables included in the prediction algorithms

Clinical history (N = 34)
• *Age • *Sex • *Race • Body mass index (kg/m²) • Smoking status (Former/current) • Smoking pack-year history • Frequent respiratory exacerbation (Respiratory exacerbation > 2 per year) • Heart rate (bpm) • Pneumothorax (Self-report) • Congestive heart failure (Self-report) • Diabetes (Self-report) • Hypertension (Self-report) • Hyperlipidemia (Self-report) • Pulmonary embolism or Deep vein thrombosis (Self-report) • Peripheral vascular disease (Self-report) • Vertebral compression fracture (Self-report) • Hip fracture (Self-report) • Osteoarthritis (Self-report) • Osteoporosis (Self-report) • Rheumatoid arthritis (Self-report) • Chronic bronchitis (Chronic cough and phlegm for at least 3 months a year for at least 2 consecutive years) • Cognitive disorder (Self-report) • Anemia (Self-report) • Kidney disease (Self-report) • Liver disease (Self-report) • Lung cancer (Self-report) • Cardiovascular disease (A composite of self-reported diagnoses of angina, coronary artery disease, heart attack, or atrial fibrillation, or self-reported history of coronary artery bypass grafting or angioplasty) • Cerebrovascular disease (A composite of self-reported diagnoses of stroke or transient ischemic aneurysm) • GERD/ulcer (A composite of self-reported diagnoses of gastroesophageal reflux disease or stomach ulcer) • Depression (HADS-D > 7) • Anxiety (HADS-A > 7) • Hemoglobin (g/dL) • Eosinophil (k/uL) • Neutrophil-to-lymphocyte ratio (NLR)
Spirometry (N = 3)
• Pre-bronchodilator FEV1 (L) • Pre-bronchodilator FEV1/FVC, predicted • Pre- and post-bronchodilator FEV1, % change
Chest CT imaging (N = 5)

- CT quantified total emphysema, %LAA-950
- Emphysema distribution (Upper over lower lung third %LAA-950 ratio)
- Pi10 (Square root of the wall area of a hypothetical airway of 10-mm internal perimeter)
- Segmental airway wall thickness (Obtained along the center line of the lumen, in the middle third of the airway segment, for one segmental airway of each lung lobe)
- Expiratory CT-measured estimated mass of the lung (as opposed to the CT scan obtained after full inspiration)

* The basic clinical model includes age, sex, and race, while the extensive clinical model incorporates 34 variables from clinical history.

Abbreviations: BMI = body mass index; bpm = beats per minute; COPD = chronic obstructive pulmonary disease; CT = computed tomography; FEV1 = forced expiratory volume in 1 second; FVC = forced vital capacity; GERD = gastroesophageal reflux disease; Hgb = hemoglobin; HADS-A = hospital anxiety and depression scale – anxiety; HADS-D = hospital anxiety and depression scale – depression; N = number; NLR = neutrophil-to-lymphocyte ratio; NS = not significant; LAA = low attenuation areas; Pi10 = square root of airway wall area of hypothetical airway with internal perimeter of 10 mm