

Supplementary Table 1 The 45 frailty items and the coding rules

NO.	Item	Coding	
1	Body mass index (BMI)	BMI < 18.5 or ≥30.1: 1 30.1 < BMI≤18.5: 0	
2	Do you now have or have you ever had chronic lung diseases (COPD, asthma, bronchiectasis or ILD)?	Yes: 1	No: 0
3	Do you now have or have you ever had chronic respiratory failure?	Yes: 1	No: 0
4	Do you now have or have you ever had angina pectoris, myocardial infarction or recurrent chest tightness?	Yes: 1	No: 0
5	Do you now have or have you ever had cardiac arrhythmia/atrial fibrillation?	Yes: 1	No: 0
6	Do you now have or have you ever had heart failure?	Yes: 1	No: 0
7	Do you now have or have you ever had hypertension?	Yes: 1	No: 0
8	Do you now have or have you ever had the liver and biliary diseases (cirrhosis, abnormal liver function or biliary tract disease)?	Yes: 1	No: 0
9	Do you now have or have you ever had swallowing disorders?	Severe degradation or none: 1 Degradation: 0.5 Good: 0	
10	Do you now have or have you ever had the gastric diseases (symptomatic chronic gastritis, gastric ulcer or functional dyspepsia)?	Yes: 1	No: 0
11	Do you now have or have you ever had bowel diseases (Crohn's disease, ulcerative colitis or severe constipation, or fecal incontinence)?	Yes: 1	No: 0
12	Do you now have or have you ever had dysuria or urinary incontinence?	Yes: 1	No: 0
13	Do you now have or have you ever had kidney stones/CKD /recurrent urinary tract infections?	Yes: 1	No: 0
14	Do you now have or have you ever had renal failure with hemodialysis/abdominal dialysis/kidney transplantation?	Yes: 1	No: 0
15	Do you now have or have you ever had osteoporosis?	Yes: 1	No: 0
16	Do you now have or have you ever had diabetes mellitus?	Yes: 1	No: 0
17	Do you now have or have you ever had thyroid disease (needing medication)	Yes: 1	No: 0

18	Do you now have or have you ever had hyperlipidemia?	Yes: 1	No: 0
19	Do you now have or have you ever had gout?	Yes: 1	No: 0
20	Do you now have or have you ever had cerebral ischemia, stroke (bleeding or infarction), and sequelae?	Stroke and sequelae: 1	Ischemia (TIA): 0.5 No: 0
21	Do you now have or have you ever had a migraine or dizziness?	Yes: 1	No: 0
22	Do you now have or have you ever had Parkinson's disease?	Yes: 1	No: 0
23	Do you now have or have you ever had sleep disorders?	Very poor: 1	Fair and good (no medication needed): 0
24	Do you now have or have you ever had rheumatic diseases (CTD)?	Yes: 1	No: 0
25	Do you now have or have you ever had persistent knee problems?	Yes: 1	No: 0
26	Do you now have or have you ever had low back pain or cervical spondylosis?	Yes: 1	No: 0
27	Do you now have or have you ever had hip problems?	Yes: 1	No: 0
28	Do you now have or have you ever had an extremity disability?	Yes: 1	No: 0
29	Do you now have or have you ever had hematologic diseases (anemia and others)?	Yes: 1	No: 0
30	Do you now have or have you ever had a malignant tumor or cancer?	Yes: 1	No: 0
31	Do you now have or have you ever had other diseases(besides the diseases mentioned above )?	Yes: 1	No: 0
32	Have you ever fallen frequently?	Yes: 1	No: 0
33	Do you now have or have you ever had tinnitus?	Most of the time: 1	Sometimes: 0.5 Rarely: 0
34	How is your vision?	Severe degeneration or none: 1	Degeneration: 0.5 (presbyopia or vision loss) Good: 0
35	How is your hearing?	Severe degeneration or none: 1	Degeneration: 0.5 Good: 0
36	How is your dental chewing function?	Severe degeneration or none: 1	(loss of more than half of teeth) Degeneration: 0.5 (loss of 1/3-1/2 of teeth) Good: 0
37	Don't you have the ability to bathe independently?	Yes: 1	No: 0
38	Don't you have the ability to dress independently?	Yes: 1	No: 0

39	Don't you have the ability to get up and sit independently?	Yes: 1	No: 0
40	Don't you have the ability to go to the toilet independently?	Yes: 1	No: 0
41	Don't you have the ability to go up and down stairs independently?	Yes: 1	No: 0
42	Health self-assessment	Poor: 1	Fair: 0.5 Good: 0
43	How has your health changed from the previous period?	Getting worse: 1	Getting better or fair: 0
44	Did you feel depressed over 6 months?	Most of the time: 1	Sometimes: 0.5 Rarely: 0
45	Lost more than 9 pounds during this period.	Yes: 1	No: 0

Note. COPD: chronic obstructive pulmonary disease; ILD: Interstitial Lung Disease; CKD: Chronic Kidney Disease; TIA: Transient Ischemic Attacks; CTD: Connective Tissue Disease.

Supplementary Table 2 CAT scores in different frail statuses categorized using the three frailty instruments [median(IQR)]

	No-frail	Pre-frail	Frail	P-value
FI	8(5, 12)	12(8, 17) <sup>a</sup>	18(15, 23.5) <sup>b,c</sup>	0.001
FRAIL	9(6, 12)	16(11, 20) <sup>a</sup>	24.5(16.5, 31) <sup>b</sup>	< 0.001
CFS	3.5(0, 7)	12(9, 16) <sup>a</sup>	22(17, 31) <sup>b,c</sup>	< 0.001

P-values under 0.05 were statistically significant. IQR: interquartile range; FI: Frailty Index; FRAIL: frailty questionnaire; CFS: Clinical Frailty Scale.

"a" represents a statistically significant difference between "No-frail" and "Pre-frail"

"b" represents a statistically significant difference between "Pre-frail" and "Frail"

"c" represents a statistically significant difference between "No-frail" and "Frail"

Supplementary Table 3 The mMRC scores in different frail statuses using three frailty instruments [median(IQR)]

	No-frail	Pre-frail	Frail	P-value
FI	1(1, 2)	2(1, 3) <sup>a</sup>	3(2, 3) <sup>b,c</sup>	< 0.001
FRAIL	2(1, 2)	2(1, 3) <sup>a</sup>	3(2.5, 4) <sup>b,c</sup>	< 0.001
CFS	1(0, 1)	2(1, 3)	3(2, 4) <sup>b,c</sup>	< 0.001

P-values under 0.05 indicate statistical significance. IQR: interquartile range; FI: Frailty Index; FRAIL: frailty questionnaire; CFS: Clinical Frailty Scale;

"a" represents a statistically significant difference between "No-frail" and "Pre-frail"

"b" represents a statistically significant difference between "Pre-frail" and "Frail"

"c" represents a statistically significant difference between "No-frail" and "Frail"

Supplementary Table 4 Results of receiver operating characteristic curve analysis showing the ability of FI, FRAIL and CFS to predict acute exacerbations within 1 year in stable COPD patients

	sensitivity	specificity	Youden's index	cut-off
FI	0.747	0.560	0.307	0.106
FRAIL	0.295	0.960	0.255	1.500
CFS	0.579	0.800	0.379	4.500

FI: Frailty Index; FRAIL: frailty questionnaire; CFS: Clinical Frailty Scale.