

Supplement Table 1: Characteristics of patients in cohort 1

Variable	
Number of patients, n	247
Female, n (%)	138 (56)
Ethnicity, n (%)	
New Zealand European	201 (81)
Maori / Other	46 (19)
Age, mean in years (SD)	72.2 (10.6)
Smoking status, n (%)	
Current smoker	66 (27)
Ex-smoker	172 (70)
Never	9 (3)
Post-bronchodilator spirometry, mean (SD)	
FEV <sub>1</sub> (litres)	0.80 (0.33)
FEV <sub>1</sub> (% predicted)*	36 (15)
COPD Severity, n (%)	
Mild (FEV <sub>1</sub> % predicted >80)	1 (0.4)
Moderate (FEV <sub>1</sub> % predicted 50-79)	41 (16.9)
Severe (FEV <sub>1</sub> % predicted 30-49)	108 (44.4)
Very Severe (FEV <sub>1</sub> % predicted <30)	93 (38.3)
COPD treatment pre-admission, n (%)	
Inhaled long-acting beta-agonist ± inhaled corticosteroid	111 (45)
Inhaled long-acting anti-muscarinic	63 (26)
Long-term oxygen therapy	74 (30)
BMI – mean in kg/m <sup>2</sup> (SD)	25.2 (6.2)
Comorbidities, n (%)	
Chronic kidney disease	21 (9)
Malignancy	22 (9)
Cardiac disease	74 (30)
Cerebrovascular disease	28 (11)
Liver disease	2 (1)
None of the above	141 (57)
CURB-65 score, n (%)	
0-1	89 (36)
2-3	138 (56)
4-5	20 (8)
Blood gases, n (%)	
pH <7.30	40 (17)
PaCO <sub>2</sub> >45 mmHg	113 (48)
PaO <sub>2</sub> <60 mmHg	105 (45)
Treatment, n (%)	
Systemic corticosteroids	243 (98)
Antimicrobial therapy	238 (96)
Bronchodilator	246 (99)
Intravenous fluids	61 (25)
Non-invasive ventilation	24 (10)
Ventilation via endotracheal tube	2 (1)
Intensive/high dependency care admission	16 (6)

BMI = body mass index, COPD = chronic obstructive pulmonary disease, CURB-65 = (confusion, urea >7 mmol/L, respiratory rate ≥30/min, <90 mmHg systolic or <60 mmHg diastolic blood pressure, age ≥65 years), FEV<sub>1</sub> = forced expiratory volume in

one second,  $\text{PaCO}_2$  = arterial partial pressure of carbon dioxide,  $\text{PaO}_2$  = arterial partial pressure of oxygen, SD = standard deviation.

\*European Respiratory Society recommended reference equations

Supplement Table 2: Characteristics of patients in cohort 2

<b>Variable</b>	
Number of patients, n	176
Female, n (%)	95 (54)
Ethnicity, n (%)	
New Zealand European	127 (72)
Maori / Other	49 (28)
Age, mean in years (SD)	69.5 (10.4)
Smoking status, n (%)	
Current smoker	60 (34)
Ex-smoker	116 (66)
BMI (kg/m <sup>2</sup> ), mean (SD)	25.6 (7.9)
Post-bronchodilator spirometry, mean (SD)	
FEV <sub>1</sub> (litres)	0.95 (0.4)
FEV <sub>1</sub> (% predicted)*	39.3 (16.5)
COPD Severity, n (%)	
Mild (FEV <sub>1</sub> % predicted >80)	3 (1.7)
Moderate (FEV <sub>1</sub> % predicted 50-79)	42 (24)
Severe (FEV <sub>1</sub> % predicted 30-49)	76 (43)
Very Severe (FEV <sub>1</sub> % predicted <30)	55 (31)
MRC dyspnoea scale prior to exacerbation, n (%)	
1-2	16 (9)
3	17 (10)
4	39 (22)
5	104 (59)
St. George's Respiratory Questionnaire COPD score, mean (SD)	
Symptoms component	35 (10)
Activity component	85 (19)
Impacts component	54 (20)
Total score	56 (14)
COPD treatment pre-admission, n (%)	
Inhaled long-acting beta-agonist ± inhaled corticosteroid	123 (70)
Inhaled long-acting anti-muscarinic	107 (61)
Long-term oxygen therapy	19 (11)
Comorbidities, n (%):	
Cardiac disease	74 (42)
Ischemic heart disease	37 (21)
Heart failure	33 (19)
Atrial fibrillation / flutter	33 (19)
Peripheral vascular disease	15 (9)
Cerebrovascular disease	15 (9)
Malignancy	21 (12)
Hypertension	84 (48)
Dyslipidaemia	44 (25)
Diabetes	24 (14)
Chronic kidney disease	6 (3)
Obesity (BMI>30)	40 (23)
Obstructive sleep apnoea	7 (4)
Charlson Comorbidity Index, n (%)	
1-2	122 (69)

Variable	
3-4	46 (26)
5-7	8 (5)
CURB-65 score, n (%)	
0-1	108 (61)
2-3	65 (37)
4-5	3 (2)
Blood gases, n (%)	
pH <7.30	16 (12)
PaCO <sub>2</sub> >45 mmHg	45 (54)
PaO <sub>2</sub> <60 mmHg	38 (47)
Treatment received, n (%)	
Systemic corticosteroids	174 (99)
Antimicrobial therapy	164 (93)
Oxygen therapy	109 (62)
Nebulised bronchodilator	77 (43)
Intravenous fluids	44 (25)
Furosemide	23 (13)
Non-invasive ventilation	22 (13)
Ventilation via endotracheal tube	2 (1)
Intensive/high dependency care admission	16 (9)

BMI = body mass index, COPD = chronic obstructive pulmonary disease, CURB-65 = (confusion, urea >7 mmol/L, respiratory rate  $\geq$ 30/min, <90 mmHg systolic or <60 mmHg diastolic blood pressure, age  $\geq$ 65 years), FEV<sub>1</sub> = forced expiratory volume in one second, MRC = medical research council, PaCO<sub>2</sub> = arterial partial pressure of carbon dioxide, PaO<sub>2</sub> = arterial partial pressure of oxygen, SD = standard deviation.

\*National Health and Nutrition Examination Survey (NHANES III) reference equations

Supplement Table 3: Univariate logistic regression analyses of risk factors for death at 5 years in patients hospitalised for acute exacerbation of COPD

Variable	n/N	5-year mortality		
		OR	95% CI	p-value
Age (in years)	409	1.06	1.04-1.09	<0.001
BMI (kg/m <sup>2</sup> )	401	0.95	0.92-0.98	0.001
Current smoker	126/409	0.51	0.33-0.77	0.002
CURB-65	409	1.48	1.22-1.79	<0.001
Acidaemia (pH<7.30)	56/364	2.91	1.44-5.84	0.003
FEV1 % predicted	404	0.99	0.97-0.99	0.024
Cardiac disease	152/409	2.26	1.47-3.48	<0.001
Cardiac medications	310/409	2.15	1.36-3.41	0.001
Beta-blocker	45/409	0.58	0.31-1.09	0.09
Calcium channel blocker	97/409	1.52	0.94-2.46	0.089
ACE inhibitor / Angiotension receptor blocker	158/409	1.31	0.87-1.98	0.198
Diuretics	152/409	2.37	1.54-3.66	<0.001
Antiplatelet	159/409	1.17	0.78-1.75	0.456
Anticoagulation	28/409	1.40	0.62-3.18	0.420
Statins	116/409	0.93	0.60-1.45	0.764
High NT-proBNP	98/405	3.73	2.13-6.51	<0.001
High troponin T	58/401	2.77	1.42-5.42	0.003

BMI = body mass index, CURB-65 = (confusion, urea >7 mmol/L, respiratory rate ≥30/min, <90 mmHg systolic or <60 mmHg diastolic blood pressure, age ≥65 years), FEV<sub>1</sub> = forced expiratory volume in one second, ACE = angiotensin converting enzyme.

Supplement Table 4: Five-year survival analysis of survivors of index admission (n=337) adjusted for CURB-65, acidaemia (pH<7.30), FEV<sub>1</sub>% of predicted, and history of cardiac disease.

	<b>Adjusted (CURB-65, acidaemia, FEV1% and cardiac disease)</b>		
	<b>HR</b>	<b>95% CI</b>	<b>p-value</b>
<b>Survival</b>			
- High troponin only	0.87	0.41-1.87	0.732
- High NT-proBNP only	1.72	1.15-2.55	0.008
- Both high	2.44	1.54-3.87	<0.001

CURB-65 = (confusion, urea >7 mmol/L, respiratory rate ≥30/min, <90 mmHg systolic or <60 mmHg diastolic blood pressure, age ≥65 years), FEV<sub>1</sub> = forced expiratory volume in one second, HR = Hazard ratio, CI = confidence interval.