

Supplementary Table 1 Comparison of characteristics between survivors and non-survivors in patients with AE-ILD

Variables	survivors (N=323)		non-survivors (N=83)		p
	n/X/M	%/S/Q1-Q3	n/X/M	%/S/Q1-Q3	
Baseline characteristics					
Men	191	59.10%	59	71.10%	0.046
Age	65	(60,73)	67	(61,74)	0.298
BMI	24.12	(21.93,26.96)	24.06	(22.51,25.83)	0.863
Smoker(current/ex)	168	52.01%	45	54.22%	0.720.
Duration of pre-existing ILD(m)	10	(0,36)	3	(0,24)	0.216
Exacerbation duration before admission(d)	20	(10,30)	10	(5,20)	<0.001
No former ILD diagnosis	91	28.17%	23	27.71%	0.933
Arterial hypertension	127	39.32%	35	42.17%	0.636
Diabetes mellitus	95	29.41%	28	33.73%	0.445
Coronary artery disease and/or heart failure	101	31.27%	44	53.01%	<0.001
PAH	82	25.39%	32	38.55%	0.017
Lung cancer	5	1.55%	3	3.61%	0.211
Tachyarrhythmia	18	5.57%	16	19.28%	<0.001
Family history of pulmonary fibrosis	9	2.86%	2	2.44%	1.000.
Symptoms					
Cough	299	92.57%	76	91.57%	0.759
Expectoration	226	69.97%	59	71.08%	0.843
Non-purulent	185	81.9%	51	86.4%	
Purulent	41	18.1%	8	13.6%	0.406
Chest pain	25	7.74%	6	7.23%	0.876
Dyspnea	266	82.35%	73	87.95%	0.220.
Fever	152	59.84%	30	50.85%	0.207
physical examination					
Respiratory rate	20	(20,22)	21	(20,28)	<0.001
Heart Rate	90	(80,100)	96	(82,110)	0.003
Bilateral basal crackles	214	66.67%	39	47.56%	0.001
Clubbing	60	18.58%	11	13.25%	0.255
laboratory data					
WBC	8.79	(6.765,10.98)	9.92	(7.26,13.32)	0.017
N%	72	(63.8,81.6)	83.6	(75.2,89.6)	<0.001
HGB	130	(119,146)	128	(114,141)	0.061
PLT	236	(190.5,299)	217	(153,312)	0.096
ALB	35.6	(32.65,37.9)	33.6	(29.8, 36.5)	<0.001
CHOL	4.235	(3.515,4.995)	3.99	(3.31, 4.83)	0.048
LDL	2.7	(2.1,3.468)	2.425	(1.8, 3.088)	0.022
CK	46	(32,70)	47	(31, 64.25)	0.551
LDH	296.6	97.57	436.14	247.16	<0.001
HBDH	228	(191,297.25)	326	(258,442.5)	<0.001
GGT	30	(20,46)	42	(27,66)	0.001
Urea	5.32	(4.033,6.933)	7.25	(5.17,10.25)	<0.001
CREA	60.8	(51.4,72.8)	60.7	(52,77.3)	0.34
CK-MB	0.9	(0.4, 1.688)	1.15	(0.6, 2.225)	0.041

CRP	1.54	(0.66,6)	7.67	(2.03, 13.5)	<0.001
D-dimer	(n=237)800	(357.295,1569.78)	1772	(622, 4550)	<0.001
Respiratory failure upon admission	219	68.65%	71	85.54%	0.002
Treatment and Prognosis					
ICU admission	19	6.25%	29	37.18%	<0.001
Bronchoscopy performed	69	24.21%	26	35.62%	0.049
Mechanic Ventilation	45	14.24%	67	80.72%	<0.001
Steroids	233	72.10%	170	79.50%	0.173
Antibiotics	171	52.94%	59	71.08%	0.003
Steroid dose and mortality					
none	233	72.10%	170	79.50%	0.173
<1mg/kg/d	145	44.90%	19	22.90%	<0.001
1-2mg/kg/d	73	22.60%	29	34.90%	0.021
>2mg/kg/d	15	4.60%	18	21.70%	<0.001
Hospitalization length	13	(9,17)	11	(7,21)	0.149

AE-ILD: acute exacerbation of interstitial lung disease; BMI, body mass index; ICU, intensive care unit; PAH, pulmonary hypertension; WBC, white blood cell; N, neutrophil; HGB, hemoglobin; PLT, platelet; ALB, albumin; CHOL, cholesterol; LDL, low-density lipoprotein; CK, Creatine kinase; LDH, Lactate dehydrogenase; HBDH, hydroxybutyrate dehydrogenase; GGT, γ -glutamyl transferase; Urea, urea nitrogen; CREA, serum creatinine; CK-MB, creatine kinase isoenzymes; CRP, C-reactive protein

Supplementary Table 2 Comparison of characteristics between survivors and non-survivors in patients with AE-IPF

Variables	survivors (N=69)		non-survivors (N=24)		p
	n/X/M	%/S/Q1-Q3	n/X/M	%/S/Q1-Q3	
Baseline characteristics					
Men	58	84.10%	23	95.80%	0.176
Age	64	(61,72)	65	(61,72)	0.775
BMI	23.81	(22,26)	23.53	(21,26)	0.817
Smoker	36	52.20%	6	25.00%	0.021
Duration of pre-existing ILD(m)	20	93,48)	15.5	(2,57)	0.951
Exacerbation duration before admission(d)	18	(10,30)	10	(5,20)	0.008
No former ILD diagnosis	7	10.10%	2	8.30%	1.000
Arterial hypertension	31	44.90%	12	50.00%	0.668
Diabetes mellitus	24	34.80%	8	33.30%	0.898
Coronary artery disease and/or heart failure	31	44.90%	15	62.50%	0.138
PAH	20	29.00%	16	66.70%	0.001
Lung cancer	2	2.90%	1	4.20%	1.000
Tachyarrhythmia	5	7.20%	3	12.50%	0.421
Family history of pulmonary fibrosis	4	5.80%	2	8.30%	0.646
Symptoms					
Cough	64	92.80%	23	95.80%	1.000
Expectoration	51	73.9%	19	79.2%	0.607
Non-purulent	45	88.2%	15	78.9%	
Purulent	6	11.8%	4	21.1%	0.443
Chest pain	6	8.70%	0	0.00%	0.333
Dyspnea	54	78.30%	20	83.30%	0.596
Fever	17	24.60%	15	62.50%	0.001
physical examination					
Respiratory rate	20	(20,22)	21.5	(20,28)	0.019

Heart Rate	90	(81,100)	99	(82,117)	0.023
Bilateral basal crackles	53	76.80%	12	50.00%	0.014
Clubbing	17	24.60%	5	20.80%	0.706
laboratory data					
WBC	8.3	(6,10)	13.09	(9.72,14)	<0.001
N%	67.55	(61.6,76.48)	85.85	(72.8,93.1)	<0.001
HGB	138.04	±19.55	133.08	±16.84	0.272
PLT	210.5	' (167,256)	202	' (146,323)	0.742
ALB	36.49	±3.36	34.93	±7.00	0.306
CHOL	4.22	±0.99	3.7122	±0.95	0.037
LDL	3.1	±3.13	2.25	±0.81	0.204
CK	53.35	±26.05	68.28	±77.08	0.362
LDH	282.08	±74.04	474.54	±383.52	0.023
HBDH	234	±60.83	382.63	±297.16	0.023
GGT	28	(21.5,41.5)	36.5	(22.25,53.5)	0.123
Urea	5.63	±1.78	8.03	±3.12	0.001
CREA	64.81	±15.66	76.4	±30.97	0.091
CK-MB	1	(0.4,1.55)	1.5	(0.6,2.7)	0.067
CRP	0.91	(0.51,3.02)	8.16	(2.19,13.73)	<0.001
D-dimer	544.3	' (320,1201)	2080	(703.3,4993)	0.009
Respiratory failure upon admission	54	78.30%	20	83.30%	0.596
Treatment and Prognosis					
ICU admission	2	2.90%	5	20.80%	0.012
Bronchoscopy performed	14	20.30%	4	16.70%	1.000
Mechanic Ventilation	10	14.50%	18	75.00%	<0.001
Steroids	43	62.30%	18	75.00%	0.260
Antibiotics	53	76.80%	22	91.70%	0.142
Steroid dose and mortality					
none	26	37.70%	6	25.00%	0.260
<1mg/kg/d	29	42.00%	6	25.00%	0.138
1-2mg/kg/d	13	18.80%	6	25.00%	0.519
>2mg/kg/d	1	1.40%	6	25.00%	0.001
Hospitalization length	13	(9,15)	10.5	(4,19)	0.215

AE-IPF: acute exacerbation of idiopathic pulmonary fibrosis; BMI, body mass index; ICU, intensive care unit; PAH, pulmonary hypertension; WBC, white blood cell; N, neutrophil; HGB, hemoglobin; PLT, platelet; ALB, albumin; CHOL, cholesterol; LDL, low-density lipoprotein; CK, Creatine kinase; LDH, Lactate dehydrogenase; HBDH, hydroxybutyrate dehydrogenase; GGT, γ -glutamyl transferase; Urea, urea nitrogen; CREA, serum creatinine; CK-MB, creatine kinase isoenzymes; CRP, C-reactive protein.

Supplementary Table 3 Comparison of characteristics between survivors and non-survivors in patients with AE-non-IPF ILD

Variables	survivors (N=254)		non-survivors (N=59)		<i>p</i>
	n/X/M	%/S/Q1-Q3	n/X/M	%/S/Q1-Q3	
Baseline characteristics					
Men	133	52.40%	36	61.00%	0.230
Age	66	(59,73)	67	(59,76)	0.325
BMI	24.16	(21.72,27.13)	24.16	(22.46,25.56)	0.907
Smoker	118	47.00%	27	46.00%	0.923
Duration of pre-existing ILD(m)	6	(0,36)	2	(0,24)	0.095
Exacerbation duration before admission(d)					
	20	(10,30)	13	(5,30)	0.003
No former ILD diagnosis	84	33.10%	21	35.60%	0.712

Arteria hypertension	96	37.80%	23	39.00%	0.866
Diabetes mellitus	71	28.00%	20	33.90%	0.365
Coronary artery disease and/or heart failure	70	27.60%	29	49.20%	0.001
PAH	62	24.40%	16	27.10%	0.665
Lung cancer	3	1.20%	2	3.40%	0.239
Tachyarrhythmia	13	5.10%	13	22.00%	<0.001
Family history of pulmonary fibrosis	5	2.00%	0	0.00%	0.588
Symptoms					
Cough	235	92.50%	53	89.80%	0.492
Expectoration	176	69.3%	41	69.5%	0.976
Non-purulent	142	80.7%	37	90.2%	
Purulent	34	19.3%	4	9.8%	0.176
Chest pain	19	7.50%	6	10.20%	0.492
Dyspnea	212	83.50%	53	89.80%	0.222
Fever	102	40.20%	29	49.20%	0.207
physical examination					
Bilateral basal crackles	20	(20,22)	21	(20,27)	0.001
Heart Rate	90	980,100)	94	(83,110)	0.034
Velcro rales	162	63.80%	32	54.20%	0.174
Clubbing	43	16.90%	6	10.20%	0.198
laboratory data					
WBC	9.37	±3.64	9.63	±4.61	0.641
N%	72.6	±12.331	80.61	±12.36	<0.001
HGB	134.02	±66.52	123.66	±22.17	0.239
PLT	256.96	±94.38	229.71	±113.29	0.056
ALB	35.1	(32.4,37.3)	32.3	(28.6, 35.45)	<0.001
CHOL	4.27	(3.515,5.10)	4.22	(3.27, 4.96)	0.290.
LDL	2.7	(2.1,3.4)	2.51	(2.05, 3.2)	0.236
CK	46	(31,73)	45.5	(28.8, 65.75)	0.588
LDH	281	(226,357)	405	' (310, 518.50)	<0.001
HBDH	228	(191,300)	335	(262.5,449)	<0.001
GGT	31	(20,49)	49	(27,81)	0.001
Urea	5.29	(3.99,6.96)	7.22	(4.98,10.58)	<0.001
CREA	59.9	(50.4,70.9)	58.3	(49.7,75.3)	0.749
CK-MB	0.9	(0.4, 1.8)	1.1	(0.6, 2.2)	0.164
CRP	1.87	(0.6875,6.95)	7.24	(1.99, 13.5)	<0.001
D-dimer	884.885	(364.57,1582)	1005.62	' (600, 3217)	0.016
Respiratory failure upon admission	165	65.00%	51	86.40%	0.001
Treatment and Prognosis					
ICU admission	17	6.70%	24	40.70%	<0.001
Bronchoscopy performed	55	21.70%	22	37.30%	0.012
Mechanic Ventilation	27	10.60%	31	52.50%	<0.001
Steroids	190	74.80%	48	81.40%	0.288
Antibiotics	201	79.10%	58	98.30%	<0.001
Steroid dose and mortality					
none	190	74.80%	48	81.40%	0.288
<1mg/kg/d	113	73.40%	13	22.00%	<0.001
1-2mg/kg/d	60	23.60%	23	39.00%	0.016

>2mg/kg/d	14	5.50%	12	20.30%	<0.001
Hospitalization length	13	(9,17)	11	(7,26)	0.397

AE-non-IPF: acute exacerbation of interstitial lung disease other than idiopathic pulmonary fibrosis; BMI, body mass index; ICU, intensive care unit; PAH, pulmonary hypertension; WBC, white blood cell; N, neutrophil; HGB, hemoglobin; PLT, platelet; ALB, albumin; CHOL, cholesterol; LDL, low-density lipoprotein; CK, Creatine kinase; LDH, Lactate dehydrogenase; HBDH, Hydroxybutyrate dehydrogenase; GGT, γ -glutamyl transferase; Urea, urea nitrogen; CREA, serum creatinine; CK-MB, creatine kinase isoenzymes; CRP, C-reactive protein;

Supplementary Table 4 Prognostic values of in-hospital mortality-related risk factors by ROC assessment

variable	AUC	<i>p</i>	95CI		sensitivity	specificity
			lower	upper		
a AE-ILD(HBDH model)						
Coronary artery disease or heart failure	0.609	0.002	0.539	0.678	53.00%	68.70%
Respiratory failure upon admission	0.584	0.018	0.519	0.649	85.50%	31.30%
N%	0.734	<0.001	0.674	0.794	69.90%	66.30%
CHOL	0.577	0.031	0.509	0.645	72.30%	42.10%
HBDH	0.758	<0.001	0.7	0.817	85.50%	56.00%
combination	0.823	<0.001	0.77	0.876	77.10%	76.80%
b AE-ILD(LDH model)						
Coronary artery disease or heart failure	0.609	0.002	0.539	0.678	53.00%	68.70%
Respiratory failure upon admission	0.584	0.018	0.519	0.649	85.50%	31.30%
N%	0.734	<0.001	0.674	0.794	69.90%	66.30%
CHOL	0.577	0.031	0.509	0.645	72.30%	42.10%
LDH	0.733	<0.001	0.671	0.796	72.30%	62.20%
combination	0.809	<0.001	0.755	0.862	78.30%	72.40%
c AE-IPF						
PAH	0.688	0.006	0.562	0.814	66.70%	71.00%
Fever	0.689	0.006	0.561	0.817	62.50%	75.40%
N%	0.838	<0.001	0.738	0.933	62.50%	91.18%
combination	0.893	<0.001	0.813	0.972	83.30%	87.00%
d AE-non-IPF(HBDH model)						
HBDH	0.779	<0.001	0.717	0.841	86.40%	55.10%
Urea	0.682	<0.001	0.605	0.759	62.70%	69.70%
ALB	0.653	<0.001	0.575	0.732	52.50%	73.60%
combination	0.81	<0.001	0.751	0.87	72.90%	76.40%
e AE-non-IPF(LDH model)						
Respiratory failure upon admission	0.605	0.012	0.531	0.68	86.40%	34.60%
N%	0.704	<0.001	0.632	0.775	69.50%	63.00%
LDH	0.744	<0.001	0.674	0.815	57.60%	79.90%
Urea	0.682	<0.001	0.605	0.759	62.70%	69.70%
combination	0.808	<0.001	0.747	0.869	72.90%	76.00%

AE-ILD: acute exacerbation of interstitial lung disease; AE-IPF: acute exacerbation of idiopathic pulmonary fibrosis; AE-non-IPF: acute exacerbation of interstitial lung disease other than IPF; N%, neutrophil%; CHOL, cholesterol; HBDH, hydroxybutyrate dehydrogenase; LDH, Lactate dehydrogenase; PAH, pulmonary hypertension; ALB, albumin; Urea, urea nitrogen. 95%CI, 95% Confidence interval; AUC, area under the curve.