

Supplementary Online Content

Kitai T, Miyakoshi C, Morimoto T, et al. Mode of death among Japanese adults with heart failure with preserved, midrange, and reduced ejection fraction. *JAMA Netw Open*. 2020;3(5):e204296. doi:10.1001/jamanetworkopen.2020.4296

eFigure. Patient Flow Chart

eTable 1. Multivariable Analyses for Predicting Each Mode of Death in Whole Study Patients

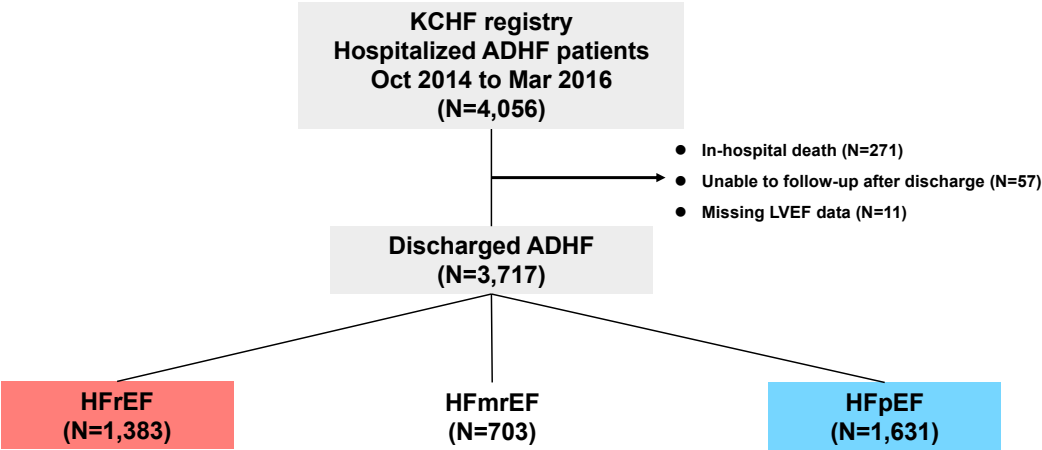
eTable 2. Multivariable Analyses for Predicting Each Mode of Death in Patients With HFrEF

eTable 3. Multivariable Analyses for Predicting Each Mode of Death in Patients With HFmrEF

eTable 4. Multivariable Analyses for Predicting Each Mode of Death in Patients With HFpEF

This supplementary material has been provided by the authors to give readers additional information about their work.

eFigure. Patient Flow Chart



KCHF = Kyoto Congestive Heart Failure; ADHF = acute decompensated heart failure;

HFrEF = heart failure with reduced ejection fraction; HFmrEF = heart failure with mid-range ejection fraction; and HFpEF = heart failure with preserved ejection fraction.

eTable 1. Multivariable Analyses for Predicting Each Mode of Death in Whole Study Patients

	adjusted HR (95%CI)	P value
All-cause death		
Age [*]	2.40 (2.01-2.87)	<0.001
Men	0.80 (0.69-0.93)	0.001
ACEI/ARB	0.61 (0.52-0.71)	<0.001
Anemia [†]	1.72 (1.39-2.15)	<0.001
Albumin [‡]	1.77 (1.51-2.07)	<0.001
BUN [§]	1.61 (1.35-1.92)	<0.001
eGFR	1.26 (1.06-1.51)	0.017
LVEF category		
HFrEF	reference	
HFmrEF	0.85 (0.69-1.04)	0.12
HFpEF	0.79 (0.67-0.94)	0.009
Cardiovascular death		
Age [*]	2.55 (2.04-3.22)	<0.001
Hypertension	0.78 (0.63-0.97)	0.025
ACEI/ARB	0.59 (0.49-0.72)	<0.001
Anemia [†]	1.63 (1.25-2.16)	<0.001
Albumin [‡]	1.47 (1.19-1.81)	<0.001
BUN [§]	1.80 (1.44-2.26)	<0.001
eGFR	1.42 (1.13-1.77)	0.002
LVEF category		
HFrEF	reference	
HFmrEF	0.75 (0.58-0.97)	0.031
HFpEF	0.62 (0.50-0.77)	<0.001
Non-cardiovascular death		
Age [*]	2.12 (1.61-2.83)	<0.001
Men	0.58 (0.45-0.75)	<0.001
ACEI/ARB	0.63 (0.49-0.81)	<0.001
Anemia [†]	1.85 (1.30-2.71)	<0.001
Albumin [‡]	2.38 (1.85-3.05)	<0.001
BUN [§]	1.35 (1.03-1.78)	0.031
LVEF category		

HFrEF	reference	
HFmrEF	1.06 (0.74-1.51)	0.75
HFpEF	1.19 (0.89-1.59)	0.25

A total of 3,202 patients' data was available in this analysis.

* Age >80 years; † Defined by the World Health Organization criteria (hemoglobin <12 g/dL for women and <13 g/dL for men); ‡ Serum albumin level <3.0 g/dL; § BUN >25 mg/dL; || eGFR <30 mL/min/1.73m². HFrEF=heart failure with reduced ejection fraction; HFmrEF= heart failure with mid-range ejection fraction; HFpEF= heart failure with preserved ejection fraction; HR = hazard ratio; CI = confidence interval; ACEI = angiotensin converting enzyme inhibitor; ARB = angiotensin receptor blocker; MRA = mineralocorticoid receptor antagonist; BUN = blood urea nitrogen; and eGFR = estimated glomerular filtration

eTable 2. Multivariable Analyses for Predicting Each Mode of Death in Patients With HFrEF

	adjusted HR (95%CI)	P value
All-cause death		
Age [*]	2.85 (2.15-3.81)	<0.001
Beta blocker	0.70 (0.53-0.92)	0.011
ACEI/ARB	0.58 (0.45-0.75)	<0.001
Anemia [†]	1.90 (1.35-2.74)	<0.001
Albumin [‡]	1.51 (1.14-1.99)	0.004
BUN [§]	1.63 (1.21-2.20)	0.001
Cardiovascular death		
Age [*]	2.70 (1.93-3.81)	<0.001
Hypertension	0.72 (0.82-0.99)	0.045
Beta blocker	0.70 (0.53-0.92)	0.011
ACEI/ARB	0.58 (0.45-0.75)	<0.001
MRA	0.70 (0.51-0.96)	0.028
Anemia [†]	2.08 (1.36-3.26)	0.001
BUN [§]	1.52 (1.06-2.20)	0.007
eGFR	1.65 (1.15-2.37)	<0.001
Non-cardiovascular death		
Age [*]	3.17 (1.89-5.44)	<0.001
Atrial fibrillation	1.75 (1.05-3.07)	0.032
ACEI/ARB	0.60 (0.38-0.95)	0.031
Albumin [‡]	2.67 (1.66-4.25)	<0.001
BUN [§]	1.88 (1.13-3.13)	0.014

A total of 1,177 patients' data was available in this analysis.

* Age >80 years; † Defined by the World Health Organization criteria (hemoglobin <12 g/dL for women and <13 g/dL for men); ‡ Serum albumin level <3.0 g/dL; § BUN >25 mg/dL; || eGFR <30 mL/min/1.73m². HFrEF=heart failure with reduced ejection fraction; HFmrEF= heart failure with mid-range ejection fraction; HFpEF= heart failure with preserved ejection fraction; HR = hazard ratio; CI = confidence interval; ACEI = angiotensin converting enzyme inhibitor; ARB = angiotensin receptor blocker; MRA = mineralocorticoid receptor antagonist; BUN = blood urea nitrogen; and

eGFR = estimated glomerular filtration

eTable 3. Multivariable Analyses for Predicting Each Mode of Death in Patients With HFmrEF

	adjusted HR (95%CI)	P value
All-cause death		
Age [*]	2.62 (1.75-4.00)	<0.001
Beta blocker	0.69 (0.49-0.99)	0.045
ACEI/ARB	0.52 (0.36-0.74)	<0.001
Albumin [‡]	2.09 (1.45-2.99)	<0.001
BUN [§]	1.86 (1.24-2.82)	0.003
Cardiovascular death		
Age [*]	2.19 (1.33-3.74)	0.002
ACEI/ARB	0.52 (0.33-0.82)	0.004
Albumin [‡]	1.80 (1.11-2.85)	0.018
BUN [§]	2.09 (1.25-3.57)	0.005
Non-cardiovascular death		
Age [*]	3.58 (1.85-7.29)	0.001
Men	0.37 (0.19-0.68)	0.001
ACEI/ARB	0.50 (0.27-0.89)	0.019
Albumin [‡]	2.68 (1.50-4.75)	0.001

A total of 618 patients' data was available in this analysis.

* Age >80 years; † Defined by the World Health Organization criteria (hemoglobin <12 g/dL for women and <13 g/dL for men); ‡ Serum albumin level <3.0 g/dL; § BUN >25 mg/dL; || eGFR <30 mL/min/1.73m². HFmrEF=heart failure with reduced ejection fraction; HFmrEF= heart failure with mid-range ejection fraction; HFpEF= heart failure with preserved ejection fraction; HR = hazard ratio; CI = confidence interval; ACEI = angiotensin converting enzyme inhibitor; ARB = angiotensin receptor blocker; MRA = mineralocorticoid receptor antagonist; BUN = blood urea nitrogen; and eGFR = estimated glomerular filtration

eTable 4. Multivariable Analyses for Predicting Each Mode of Death in Patients With HFpEF

	adjusted HR (95%CI)	P value
All-cause death		
Age [*]	1.94 (1.49-2.54)	<0.001
Men	0.78 (0.63-0.97)	0.028
ACEI/ARB	0.68 (0.54-0.85)	<0.001
Anemia [†]	1.67 (1.20-2.37)	0.002
Albumin [‡]	1.87 (1.48-2.36)	<0.001
BUN [§]	1.53 (1.19-1.97)	0.001
eGFR	1.41 (1.08-1.83)	0.011
Cardiovascular death		
Age [*]	2.56 (1.76-3.80)	<0.001
Hypertension	0.75 (0.61-0.93)	0.008
ACEI/ARB	0.68 (0.54-0.85)	<0.001
MRA	0.64 (0.47-0.86)	0.003
Albumin [‡]	1.68 (1.22-2.29)	0.002
BUN [§]	2.01 (1.42-2.87)	<0.001
eGFR	1.50 (1.07-2.11)	0.020
Non-cardiovascular death		
Men	0.60 (0.43-0.84)	0.003
ACEI/ARB	0.68 (0.54-0.85)	<0.001
MRA	0.64 (0.47-0.86)	0.003
Anemia [†]	2.17 (1.28-3.93)	0.003
Albumin [‡]	2.19 (1.54-3.09)	<0.001

A total of 1,407 patients' data was available in this analysis.

* Age >80 years; † Defined by the World Health Organization criteria (hemoglobin <12 g/dL for women and <13 g/dL for men); ‡ Serum albumin level <3.0 g/dL; § BUN >25 mg/dL; || eGFR <30 mL/min/1.73m². HFrEF=heart failure with reduced ejection fraction; HFmrEF= heart failure with mid-range ejection fraction; HFpEF= heart failure with preserved ejection fraction; HR = hazard ratio; CI = confidence interval; ACEI = angiotensin converting enzyme inhibitor; ARB = angiotensin receptor blocker; MRA = mineralocorticoid receptor antagonist; BUN = blood urea nitrogen; and eGFR = estimated glomerular filtration