What's different in prognosis of Korean heart failure patients?

KorHF study group

Seong Woo Han, Kyu-Hyung Ryu,
Dong-Ju Choi, Byung-Su Yoo

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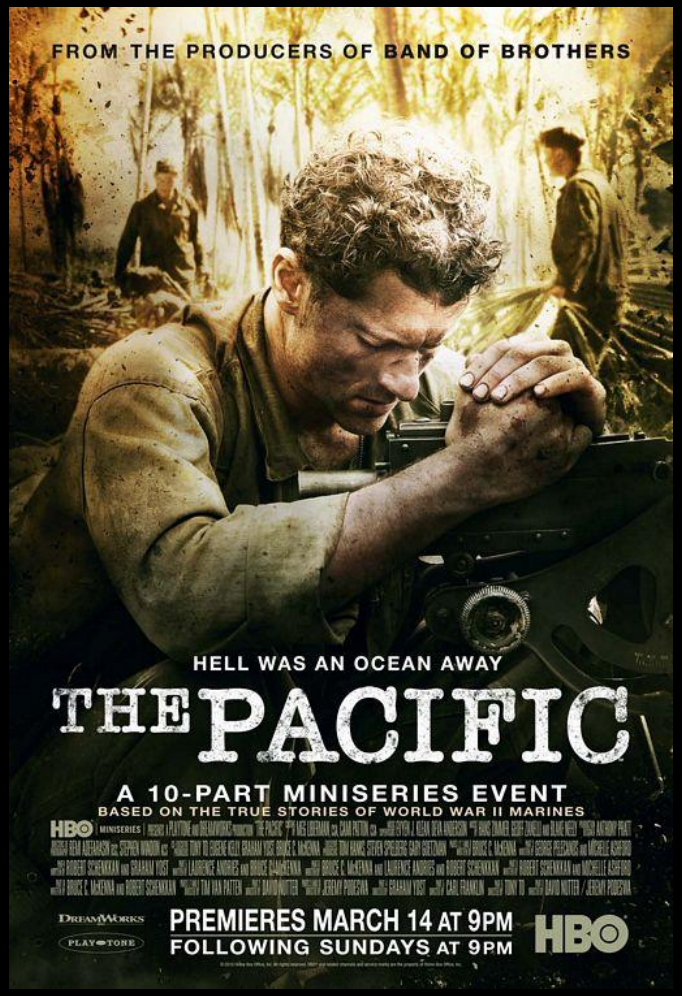
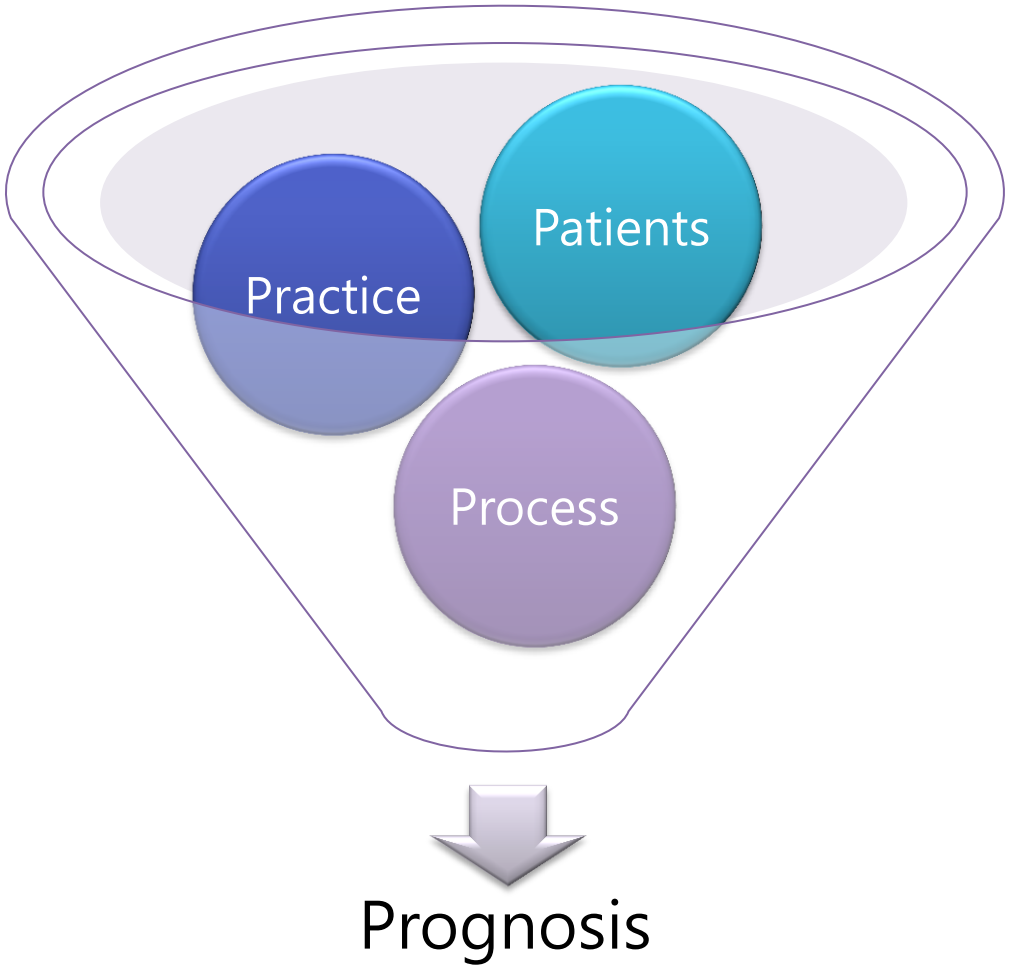
The power of enemy
The strength of defense



4P's in Heart Failure



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Registry data in Korea

- Hallym university registry
- KorHF phase 1
- KorHF phase 2
- KorAHF
- SUGAR

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Hallym university registry

1987~1997

Hallym univ. medical center

4 affiliated hospitals

2,941 patients

대한내과학회지 : 제 55 권 제 4 호 1998

한국인 울혈성 심부전의 특성

한림대학교 의과대학 내과학교실

이 영

Clinical Characteristics of Korean Patients with Congestive Heart Failure

Yung Lee, M.D.

Division of Cardiology, Department of Internal Medicine, Hallym University

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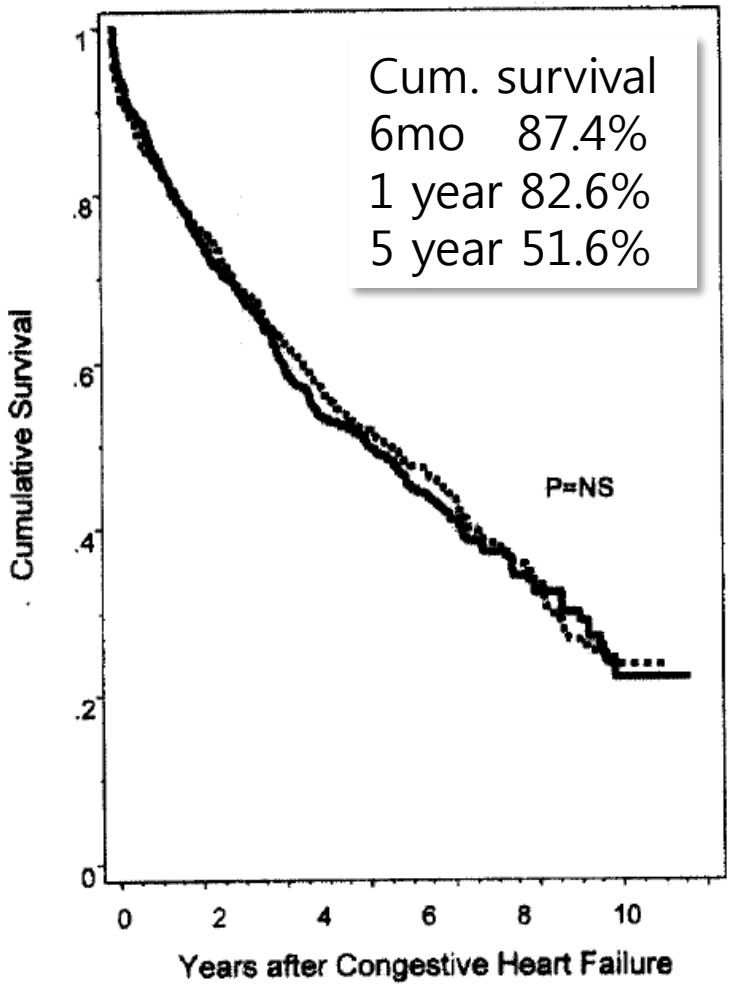
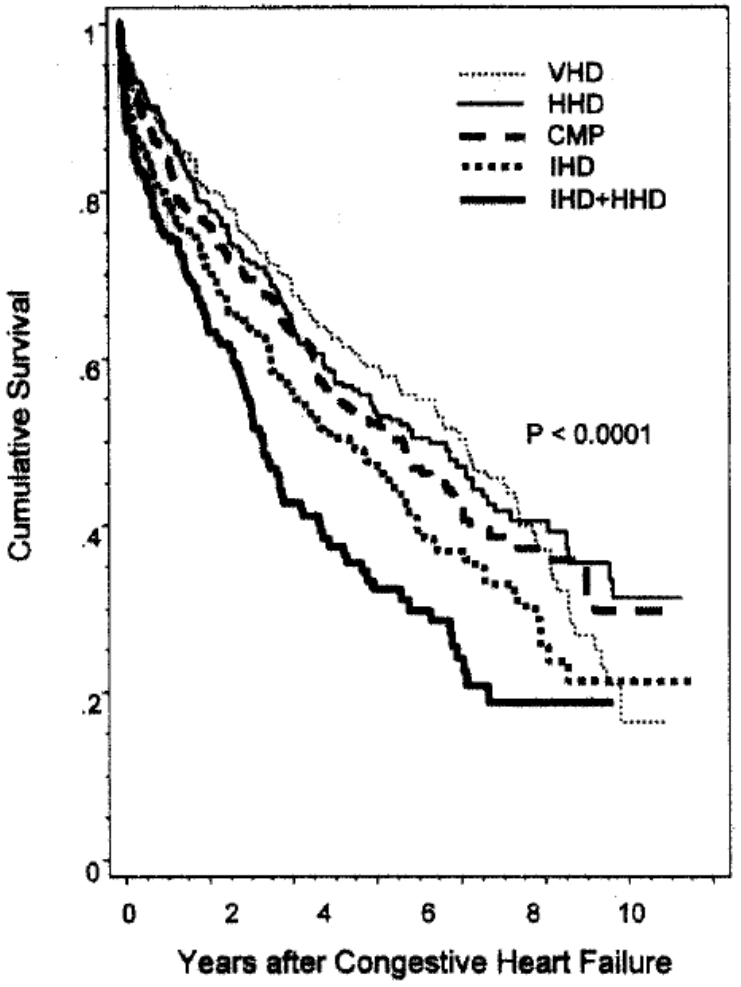
Hallym univ. registry (Cum. Survival)





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Hallym univ. registry (Prognostic factors)

Variables	Odd ratio	95% CI
Hyponatremia (Na^+<130)	1.61	1.15-2.25
Interruption of ACE inhibitor	1.45	1.07-1.98
Diabetes	1.34	1.12-1.59
Cerebrovascular disease	1.30	1.05-1.62
Smoking	1.26	1.06-1.49

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Korean HF registry : phase 1

1998~2003
10 university hospitals
Hospitalized HF
1,845 patients

ORIGINAL ARTICLE
Korean Circulation J 2005;35:357-361

한국인 심부전 환자의 임상특성 및 예후인자에 관한 다기관 연구

건국대학교 의과대학 내과학교실,[1] 경북대학교 의과대학 내과학교실,[2] 가천의과대학교 내과학교실,[3]
성균관대학교 의과대학 내과학교실,[4] 서울대학교 의과대학 내과학교실,[5]
서울대학교 의과대학 분당서울대병원 내과학교실,[6] 울산대학교 의과대학 내과학교실,[7]
영남대학교 의과대학 내과학교실,[8] 연세대학교 원주의과대학 내과학교실,[9] 전남대학교 의과대학 내과학교실[10]

한성우[1] · 유규형[1] · 채성철[2] · 양동헌[2] · 신비승[3] · 이상훈[4] · 전은석[4]
오병희[5] · 최동주[6] · 김재중[7] · 신동구[8] · 유병수[9] · 안영근[10]

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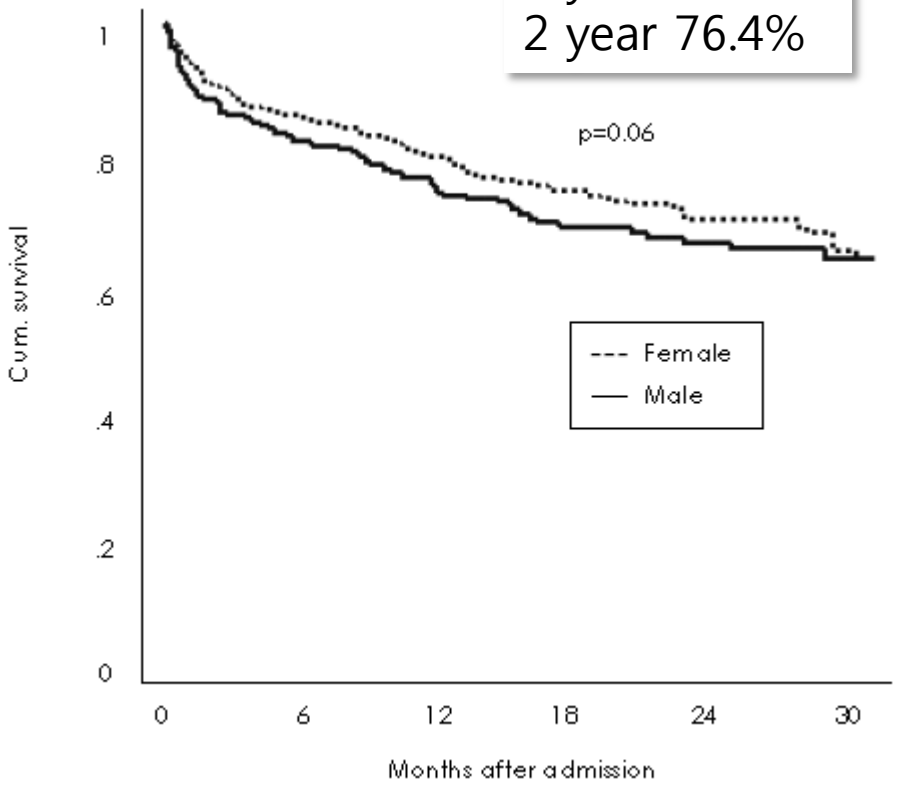
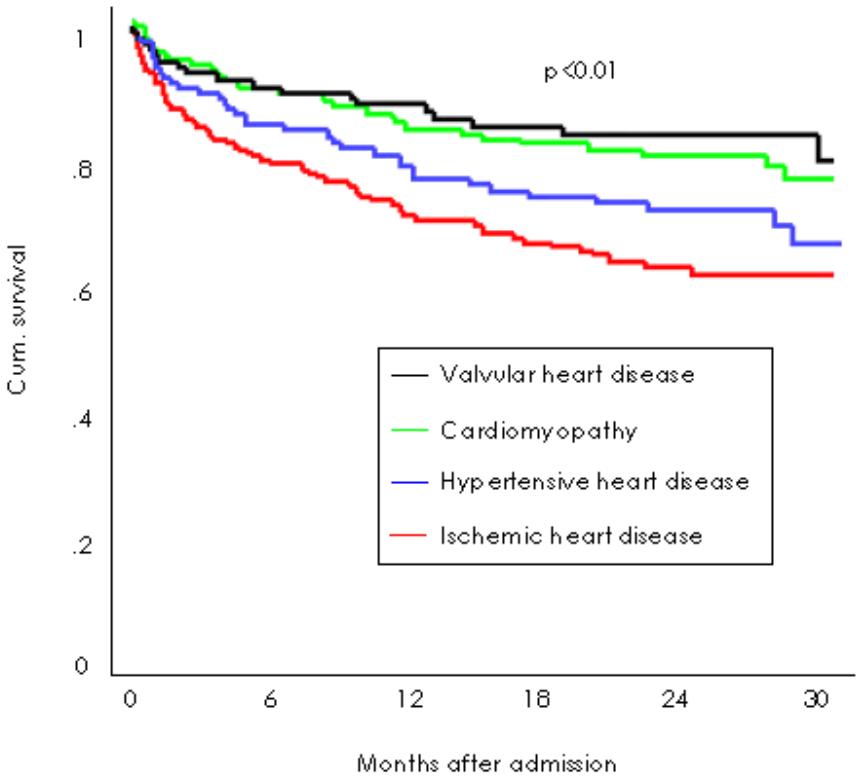
Korean HF registry phase 1 (1998-2003)

Cum. survival
6mo 90.5%
1 year 80.1%
2 year 76.4%





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KorHF phase 1 (Prognostic factors)

- Previous history of MI
- Stroke
- Diabetes
- Renal dysfunction
- Anemia
- Hyponatremia

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Korean HF registry : phase 2

2004~2009
24 university hospitals
3,200 patients

Open Access

Characteristics, Outcomes and Predictors of Long-Term Mortality for Patients Hospitalized for Acute Heart Failure: A Report From the Korean Heart Failure Registry

Dong-Ju Choi, MD[1,14], Seongwoo Han, MD[2], Eun-Seok Jeon, MD[3], Myeong-Chan Cho, MD[4], Jae-Joong Kim, MD[5], Byung-Su Yoo, MD[6], Mi-Seung Shin, MD[7], In-Whan Seong, MD[8], Youngkeun Ahn, MD[9], Seok-Min Kang, MD[10], Yung-Jo Kim, MD[11], Hyung Seop Kim, MD[12], Shung Chull Chae, MD[13], Byung-Hee Oh, MD[14], Myung-Mook Lee, MD[15], and Kyu-Hyung Ryu[16] on behalf of the KorHF Registry

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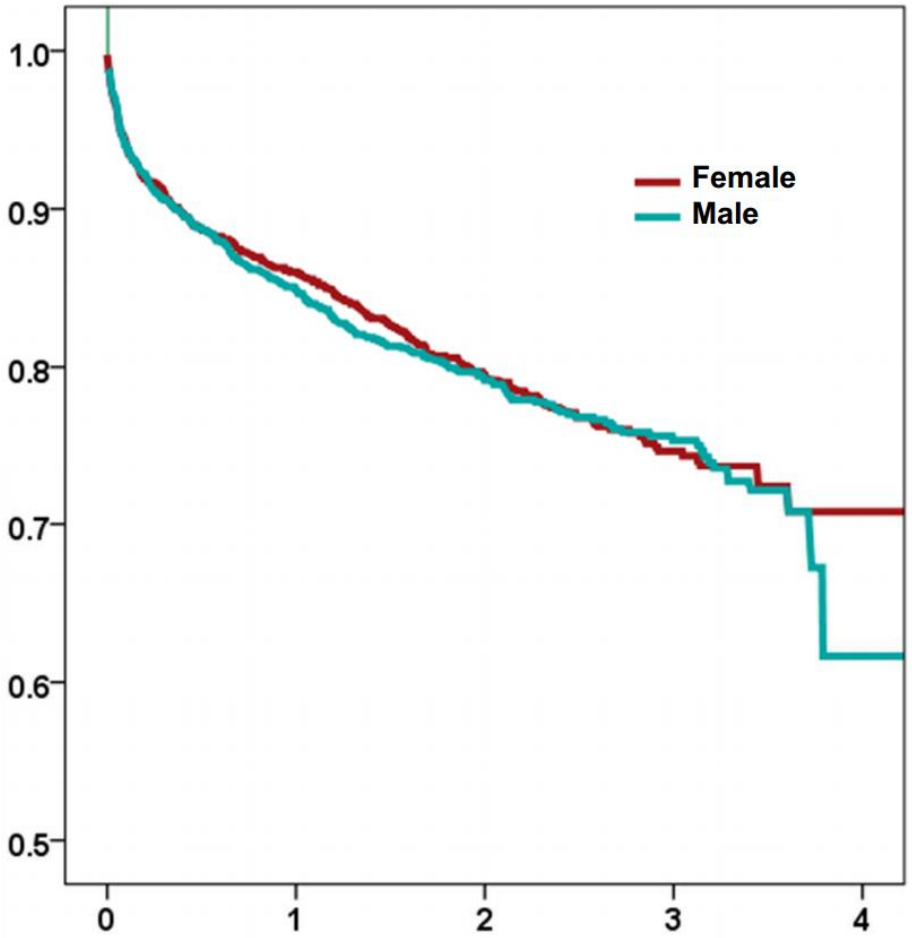
KorHF phase 2 (Cum. Survival)



In-hospital death 6.4%

Cum. survival

1 year 85%

2 year 79%

3 year 74%

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Comparison with other countries

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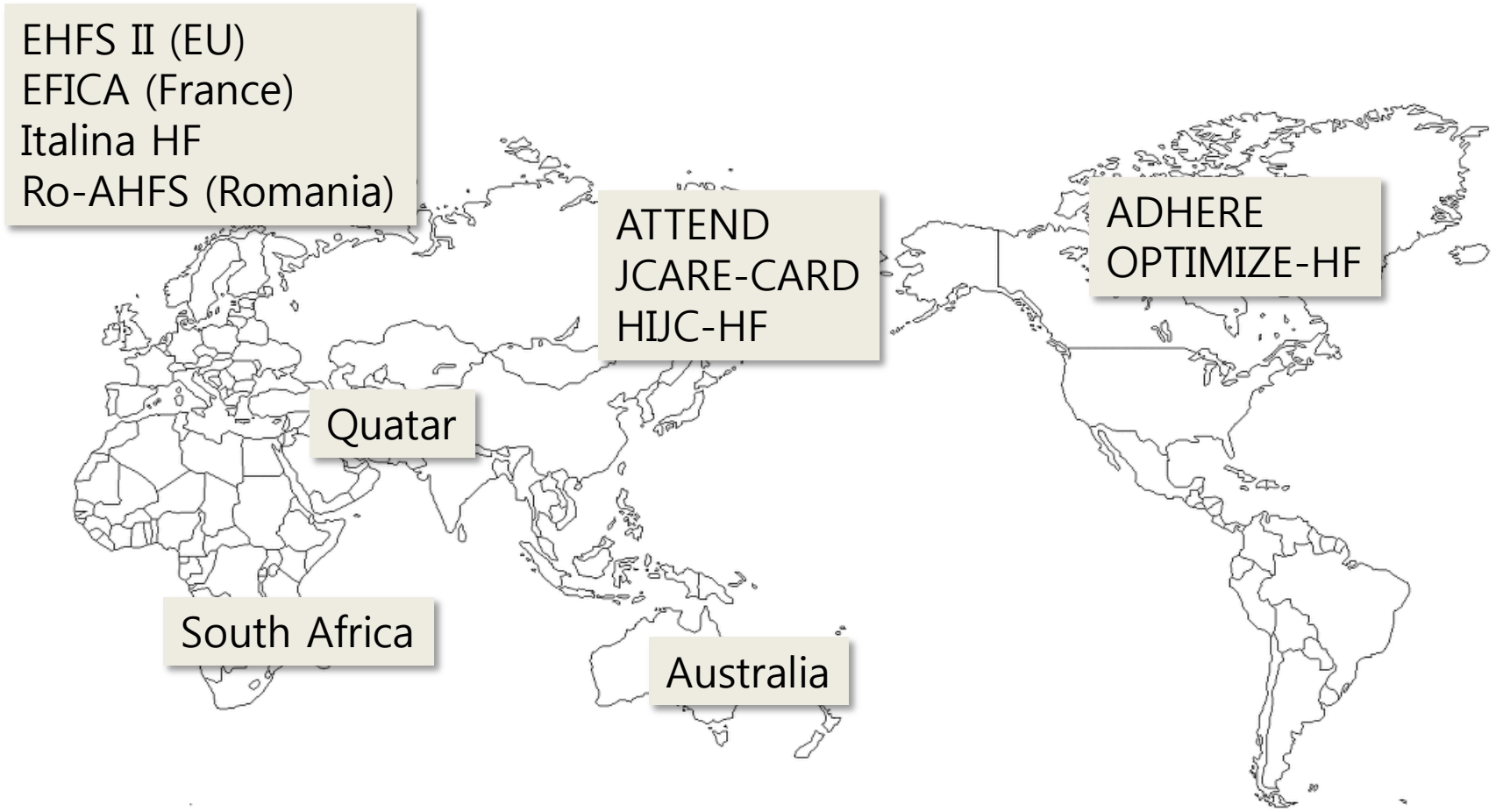
(Acute) Heart Failure Registries



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Acute heart failure registries

Acronym	Country	No of pt	Mean age	LVEF
KorHF	Korea	3,200	68	38.5
ADHERE	USA	107,365	75	34.4
OPTIMIZE-HF	USA	48,612	73	39.0
EURO-HF II	EU	3,580	70	38.0
EFICA	France	581	73	38.0
JCARE-CARD	Japan	2,675	71	38.8
HIJC-HF	Japan	3,578	70	42.1
ATTEND	Japan	4,841	73	NA
RO-AHFS	Romania	3,224	69	37.7
IN-HF	Italy	5,610	73	NA

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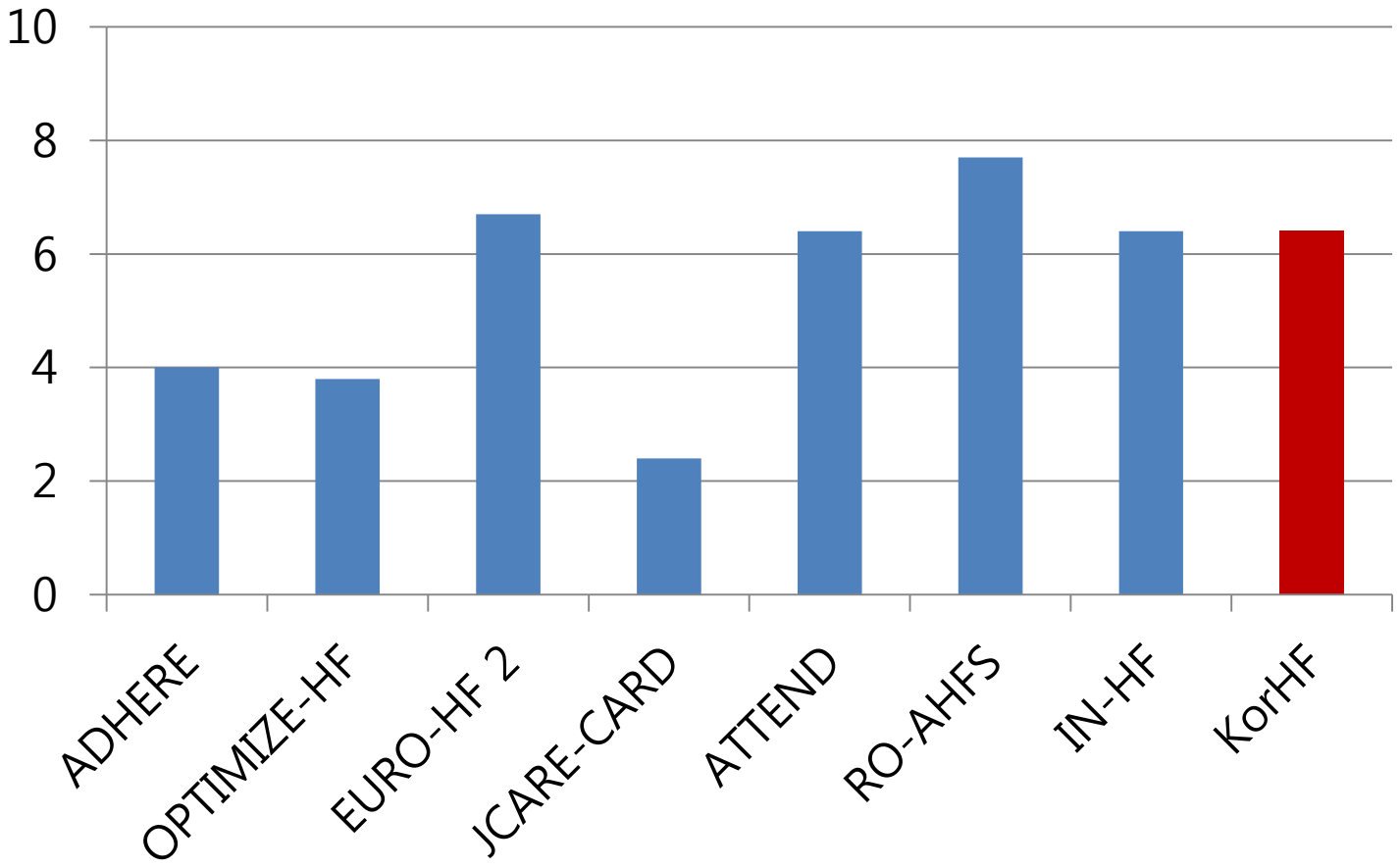
In-hospital mortality



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Long term outcome

Acronym	F/U mortality (time)	Re-hospitalization
KorHF	15% (1yr), 21% (2yr)	24.6%
ADHERE	NA	NA
OPTIMIZE-HF	5.4-14.0% (60-90 d)	27.6-30.6%
EURO-HF II	15.1% (1yr)	NA
EFICA*	46.5% (1 yr)	NA
JCARE-CARD	19.4% (2.4yr)	23.7% (HFREF) 25.7% (HFPEF)
HIJC-HF	11.4% (1yr) 20.4 %(2yr) 29.2% (3yr)	22.0% (1yr) 30.8 %(2yr) 35.8% (3yr)

* Only ICU/CCU patients

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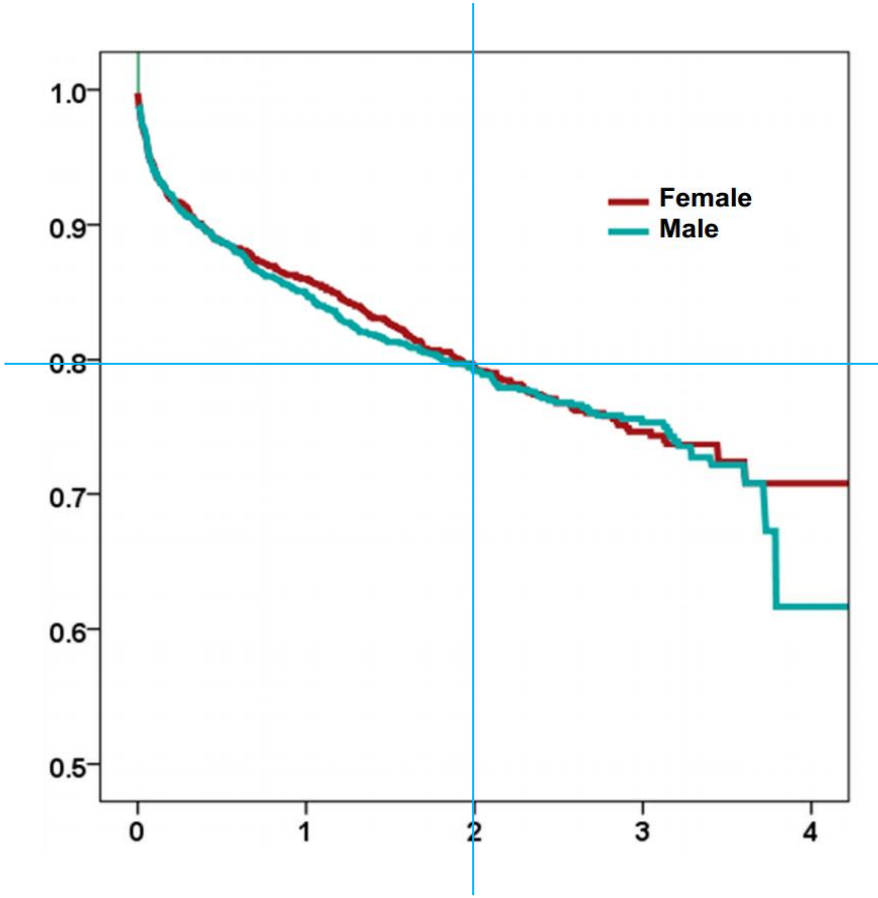
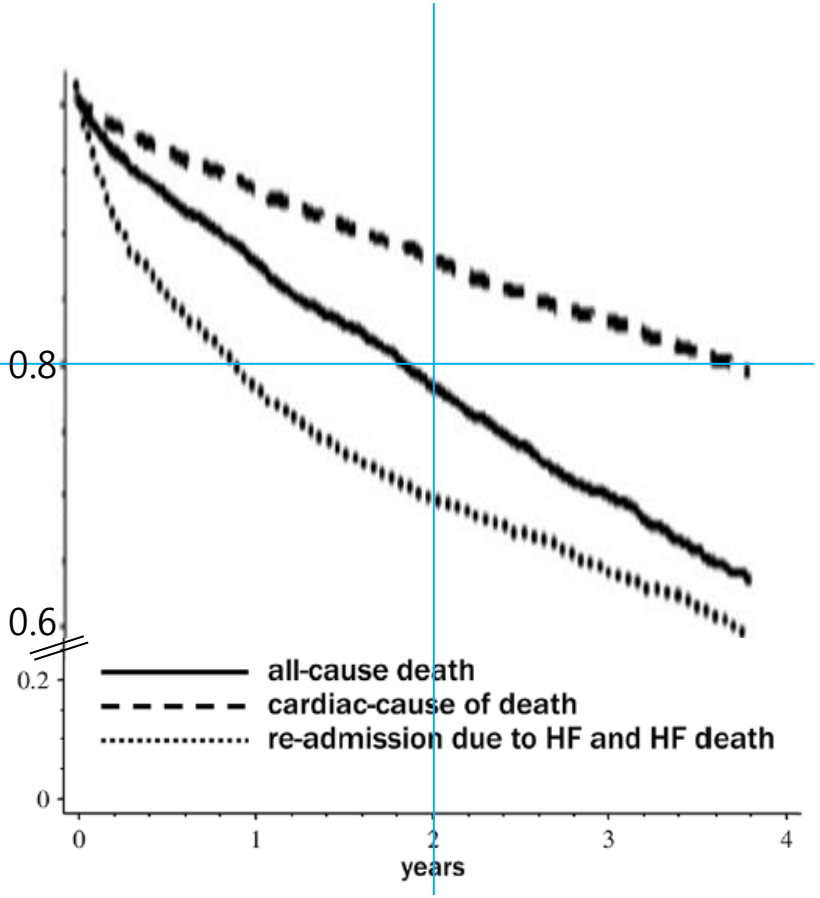
The same prognosis

KorHF (2004-2009)



HIJC-HF (2001-2002)



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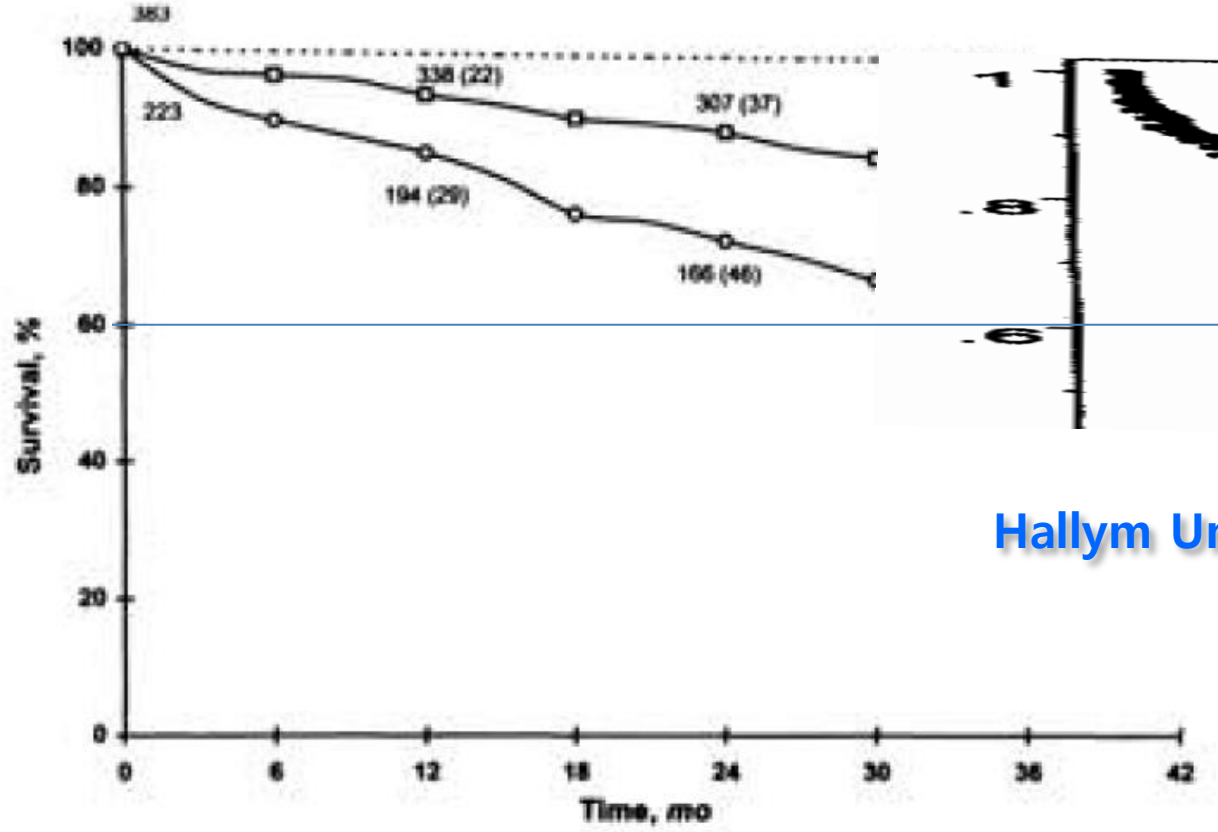
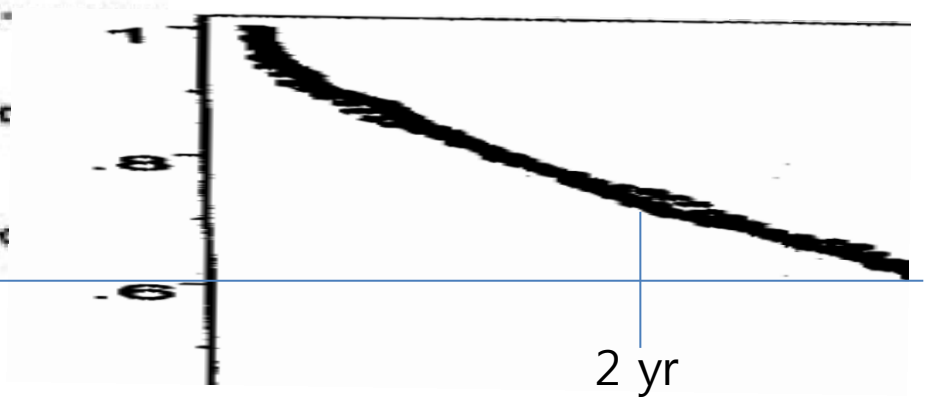
Early registry data vs USA (1986-1995)

Clinical, Hemodynamic, and Cardiopulmonary Exercise Test Determinants of Survival in Patients Referred for Evaluation of Heart Failure

Jonathan Myers, PhD; Lars Gullestad, MD; Randall Vagelos, MD; Dat Do, BS; Daniel Bellin, BS; Heather Ross, MD; and Michael B. Fowler, MD





Hallym Univ Registry (1987-1997)

Ann Int Med 1998

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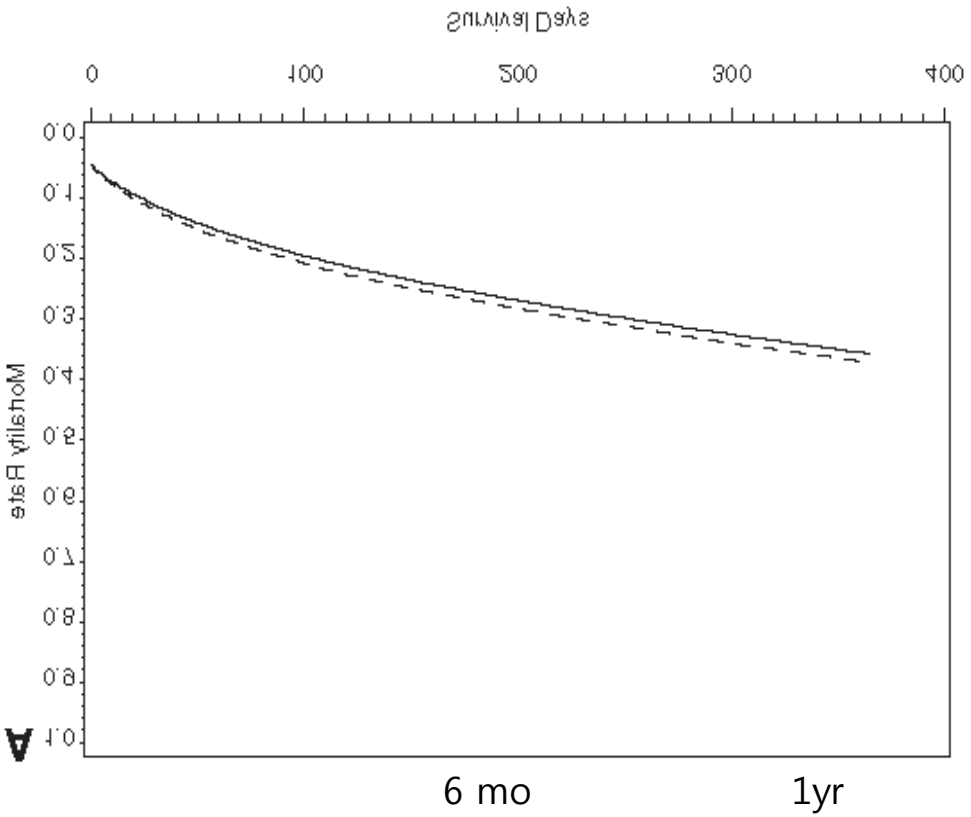
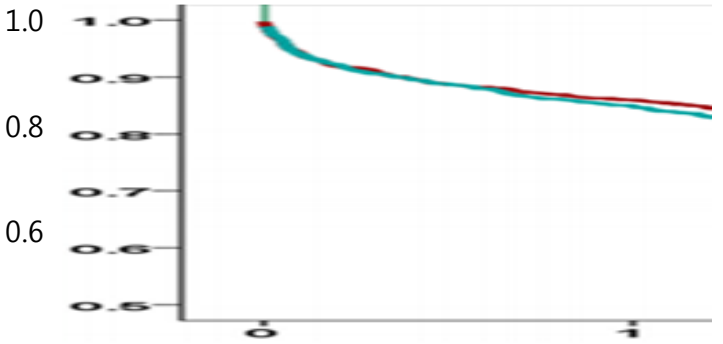
Recent registry data (OPTIMIZE HF 2003-2004)



KorHF phase 2 (2004-2009)



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KorHF phase 2 Prognostic factors

Characteristics of the patients	HR	95% CI	p*
Age (mean)	1.023	1.004-1.042	0.020
Previous heart failure	1.735	1.150-2.618	0.009
Anemia (Hb<12 mg/dL)	1.973	1.271-3.063	0.002
Hyponatremia (Na < 135 mM)	1.861	1.184-2.926	0.007
NT-proBNP≥1,000 ng/L	3.152	1.450-6.849	0.004
Beta-blocker at discharge	0.599	0.360-0.997	0.049

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Prognostic factors in Korean registries

Hallym HF Registry	KorHF phase 1	KorHF phase 2
Hyponatremia	Hyponatremia	Hyponatremia
Diabetes	Previous MI	Previous HF
Stroke	Diabetes	Anemia
Smoking	Renal dysfunction	High NT-proBNP
Interruption of ACE i	Anemia	Beta-blocker (favor)

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Comparison of prognostic factors

KorHF phase 2	HIJC-HF	EFFECT risk tool	IN-HF
Hyponatremia	Prior HF admission	Low SBP	SBP
Previous HF	Low BMI	High resp rate	Confusion
Anemia	Low SBP	High BUN	Serum Cr
High NT-proBNP	Renal dysfunction	Hyponatremia	Serum Na^+
Beta-blocker*	Anemia	Stroke	Shock
	High BNP	COPD	Pulmonary edema
	Diabetes		

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What did we get from registry data?

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Drug therapy

Circulation Journal
Official Journal of the Japanese Circulation Society
http://www.j-circ.or.jp

ORIGINAL ARTICLE
Heart Failure

Treatment Performance Measures Affect Clinical Outcomes in Patients With Acute Systolic Heart Failure

– Report From the Korean Heart Failure Registry –

Young Jin Youn, MD; Byung-Su Yoo, MD, PhD; Jun-Won Lee, MD; Jang-Young Kim, MD, PhD; Seong Woo Han, MD, PhD; Eun-Seok Jeon, MD, PhD; Myeong-Chan Cho, MD, PhD; Jae-Joong Kim, MD, PhD; Seok-Min Kang, MD, PhD; Shung Chull Chae, MD, PhD; Byung-Hee Oh, MD, PhD; Dong-Ju Choi, MD, PhD; Myung Mook Lee, MD, PhD; Kyu-Hyung Ryu, MD, PhD on behalf of the KorHF Registry

Background: There is a paucity of data on the effects of adherence to treatment on outcomes for patients with acute heart failure (HF) in Korea. We used HF performance measures to evaluate overall adherence and whether this affects clinical outcomes.

Methods and Results: Among 3,466 patients in the Korean Heart Failure Registry, 1,527 patients with left ventricular systolic dysfunction (LVSD) who survived hospitalization were evaluated. Modified validated performance measures were defined as follows: use at discharge of angiotensin-converting enzyme inhibitor (ACEI), angiotensin-receptor II blocker (ARB), β-blocker or aldosterone receptor antagonist. Adherence to performance measures were as follows: ACEI or ARB at discharge, 68.0%; β-blocker at discharge, 40.9%; aldosterone receptor antagonist at discharge, 37.5%. On multivariate analysis, adherence to the measure of ACEI or ARB use at discharge was significantly associated with mortality (odds ratio (OR), 0.344; 95% confidence interval (CI), 0.123–0.964), readmission (OR, 0.180; 95%CI, 0.062–0.522) and mortality/readmission (OR, 0.297; 95%CI, 0.125–0.707) at 60 days and that for β-blocker with mortality (OR, 0.337; 95%CI, 0.147–0.774) at 1 year.

Conclusions: For patients with LVSD in Korea, adherence to treatment performance measures, including prescription of an ACEI/ARB and β-blocker use at discharge, is associated with improved clinical outcomes. (*Circ J* 2012; **76:** 1151–1158)

Key Words: Left ventricular systolic dysfunction; Mortality; Performance measures

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Guideline adherence is important!

Table 3. Relationships Between Performance Measures and Patient Outcomes

	Unadjusted		Adjusted*	
	HR (95% CI)	P value	HR (95% CI)	P value
Mortality at 60 days, n=58 (3.8%)				
ACEI or ARB at discharge	0.561 (0.330–0.952)	0.032	0.344 (0.123–0.964)	0.042
β-blocker at discharge	0.748 (0.431–1.298)	0.301	0.291 (0.079–1.077)	0.064
Aldosterone receptor antagonist at discharge	0.871 (0.501–1.511)	0.622	0.839 (0.286–2.458)	0.749
Readmission at 60 days, n=47 (3.1%)				
ACEI or ARB at discharge	0.475 (0.265–0.850)	0.012	0.180 (0.062–0.522)	0.002
β-blocker at discharge	0.734 (0.398–1.354)	0.323	0.680 (0.229–2.020)	0.488
Aldosterone receptor antagonist at discharge	0.773 (0.415–1.441)	0.418	0.732 (0.243–2.202)	0.578
Mortality or readmission at 60 days, n=71 (4.6%)				
ACEI or ARB at discharge	0.520 (0.322–0.840)	0.008	0.297 (0.125–0.707)	0.006
β-blocker at discharge	0.822 (0.502–1.348)	0.437	0.546 (0.213–1.399)	0.207
Aldosterone receptor antagonist at discharge	0.788 (0.474–1.310)	0.359	0.850 (0.343–2.107)	0.726
Mortality at 1 year, n=141 (9.2%)				
ACEI or ARB at discharge	0.631 (0.442–0.900)	0.011	0.575 (0.280–1.182)	0.575
β-blocker at discharge	0.647 (0.445–0.940)	0.022	0.337 (0.147–0.774)	0.010
Aldosterone receptor antagonist at discharge	1.062 (0.742–1.519)	0.742	1.050 (0.516–2.137)	0.893
Readmission at 1 year, n=150 (9.8%)				
ACEI or ARB at discharge	0.738 (0.521–1.046)	0.088	0.635 (0.342–1.177)	0.149
β-blocker at discharge	0.851 (0.601–1.206)	0.365	0.815 (0.443–1.498)	0.510
Aldosterone receptor antagonist at discharge	0.899 (0.632–1.279)	0.899	1.053 (0.572–1.938)	0.869
Mortality or readmission at 1 year, n=216 (14.1%)				
ACEI or ARB at discharge	0.739 (0.547–0.997)	0.047	0.616 (0.354–1.073)	0.087
β-blocker at discharge	0.812 (0.602–1.097)	0.175	0.659 (0.379–1.144)	0.138
Aldosterone receptor antagonist at discharge	0.946 (0.701–1.277)	0.718	0.972 (0.562–1.682)	0.920

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ECG findings

Clinical implication of right bundle branch block in hospitalized patients with acute heart failure: Data from the Korean Heart Failure (KorHF) Registry

Sung-Jin Hong [a], Jaewon Oh [a], Seok-Min Kang [a,b,*], Jong Chan Youn [a], Seongwoo Han [c], Eun-Seok Jeon [d], Myeong-Chan Cho [e], Jae-Joong Kim [f], Byung-Su Yoo [g], Shung Chull Chae [h], Byung-Hee Oh [i], Dong-Ju Choi [i], Myung-Mook Lee [j], Kyu-Hyung Ryu [k] on behalf of the KorHF Registry

[a] Cardiology Division, Severance Cardiovascular Hospital and Cardiovascular Research Institute, Yonsei University College of Medicine, Seoul, Republic of Korea
[b] Brain Korea 21 Project for Medical Science, Yonsei University College of Medicine, Seoul, Republic of Korea
[c] Division of Cardiology, Korea University Hospital, Seoul, Republic of Korea
[d] Division of Cardiology, Sungkyunkwan University Samsung Medical Center, Seoul, Republic of Korea
[e] Division of Cardiology, Chungbuk National University Hospital, Cheongju, Republic of Korea
[f] Division of Cardiology, Ulsan University Asan Medical Center, Seoul, Republic of Korea
[g] Division of Cardiology, Yonsei university Wonju Christian Hospital, Wonju, Republic of Korea
[h] Division of Cardiology, Kyungpook National University Hospital, Daegu, Republic of Korea
[i] Division of Cardiology, Seoul National University Hospital, Seoul, Republic of Korea
[j] Division of Cardiology, Dongguk University Ilsan Hospital, Goyang, Republic of Korea
[k] Division of Cardiology, Konkuk University Medical Center, Seoul, Republic of Korea

ARTICLE INFO

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Available online 11 April 2012

square test. Survival curves were constructed using the Kaplan–Meier method and compared with the log-rank test by the BBB patterns. Cox proportional hazard analysis was used to adjust clinical and laboratory variables identified from the previous studies as risk factors for mortality [4,5], and the hazard ratio (HR) and a 95% confidence interval (CI) were estimated. Subgroup

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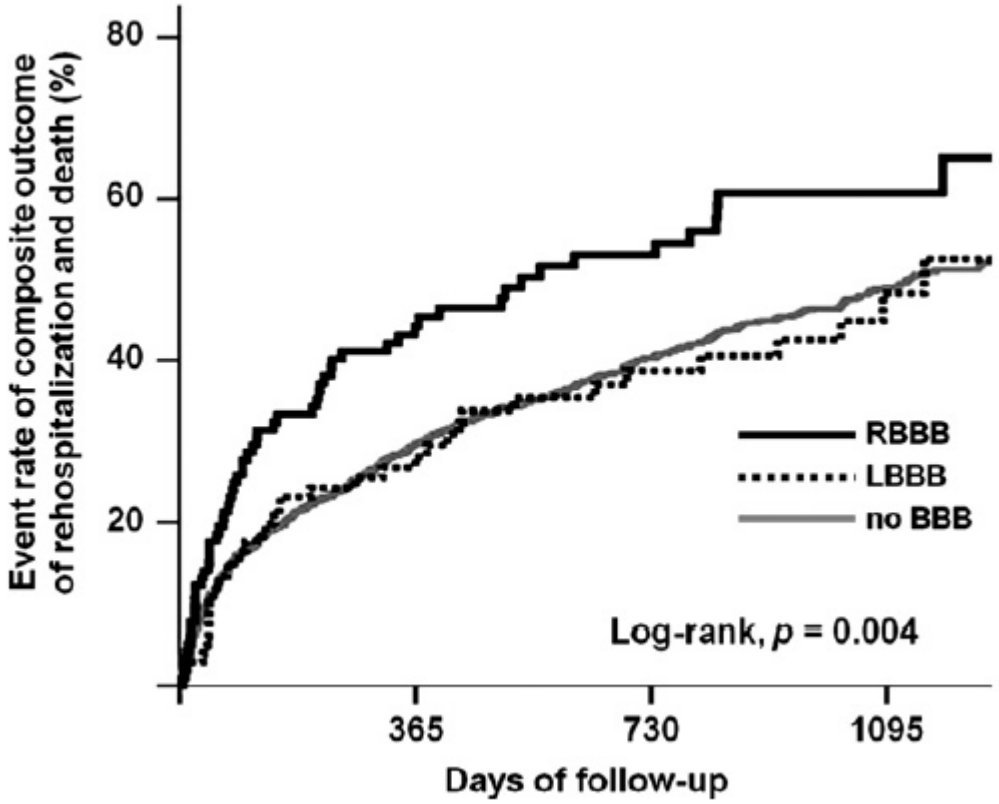
RBBB was a bad sign in Korean AHF patients



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Electrical dyssynchrony

Congestive Heart Failure

Short- and long-term outcomes depending on electrical dyssynchrony markers in patients presenting with acute heart failure: Clinical implication of the first-degree atrioventricular block and QRS prolongation from the Korean Heart Failure registry

Seung-Jung Park, MD, PhD,[a,d] Young Keun On, MD, PhD,[a,d] Kyeongmin Byeon, MD, PhD,[a,d] June Soo Kim, MD, PhD,[a,d] Jin-Oh Choi, MD, PhD,[a,d] Dong-Ju Choi, MD, PhD,[b,d] Kyu Hyung Ryu, MD, PhD,[c,d] and Eun-Seok Jeon, MD, PhD[a,d] *Seoul, and Gyeonggido, South Korea*

Background Prolongations of PR interval and QRS duration on 12-lead electrocardiogram are associated with atrioventricular and interventricular/intraventricular dyssynchrony, respectively. However, their clinical significance remains unclear in real-world heart failure (HF) population. We assessed whether the presence of first-degree atrioventricular block and/or QRS prolongation (≥120 ms) is associated with worse short- and long-term outcomes in patients with acute HF.

Methods The Korean Heart Failure is a nationwide registry of 3,200 consecutive patients presenting with acute HF at 24 centers in South Korea between June 2004 and April 2009. We selected 1,986 patients with sinus rhythm and divided them into 4 groups depending on the presence of first-degree atrioventricular block and/or QRS prolongation; ED_Neither (n = 1,347), ED_PR (n = 217), ED_QRS (n = 329), and ED_Both (n = 93) groups, respectively.

Results During the median follow-up of 18.2 months, overall death rate (17%, 22%, 20%, and 29%, $P < .01$) tended to rise with increasing number of electrical dyssynchrony markers. Patients in ED_Both group showed worst outcomes regarding the requirement of invasive managements during the index admission, in-hospital mortality, postdischarge death/rehospitalization, and cardiac device implantation. In time-dependent Cox regression analyses, presence of both PR >200 ms and QRS ≥120 ms was independently associated with in-hospital death ($P < .01$), postdischarge death/rehospitalization ($P = .03$), cardiac device implantation ($P < .01$), and overall death ($P < .01$).

Conclusions A combined analysis of electrical dyssynchrony markers (PR prolongation and QRS widening) might be useful for short- and long-term risk stratifications of patients with acute HF. (Am Heart J 2013;165:57-64.e2.)

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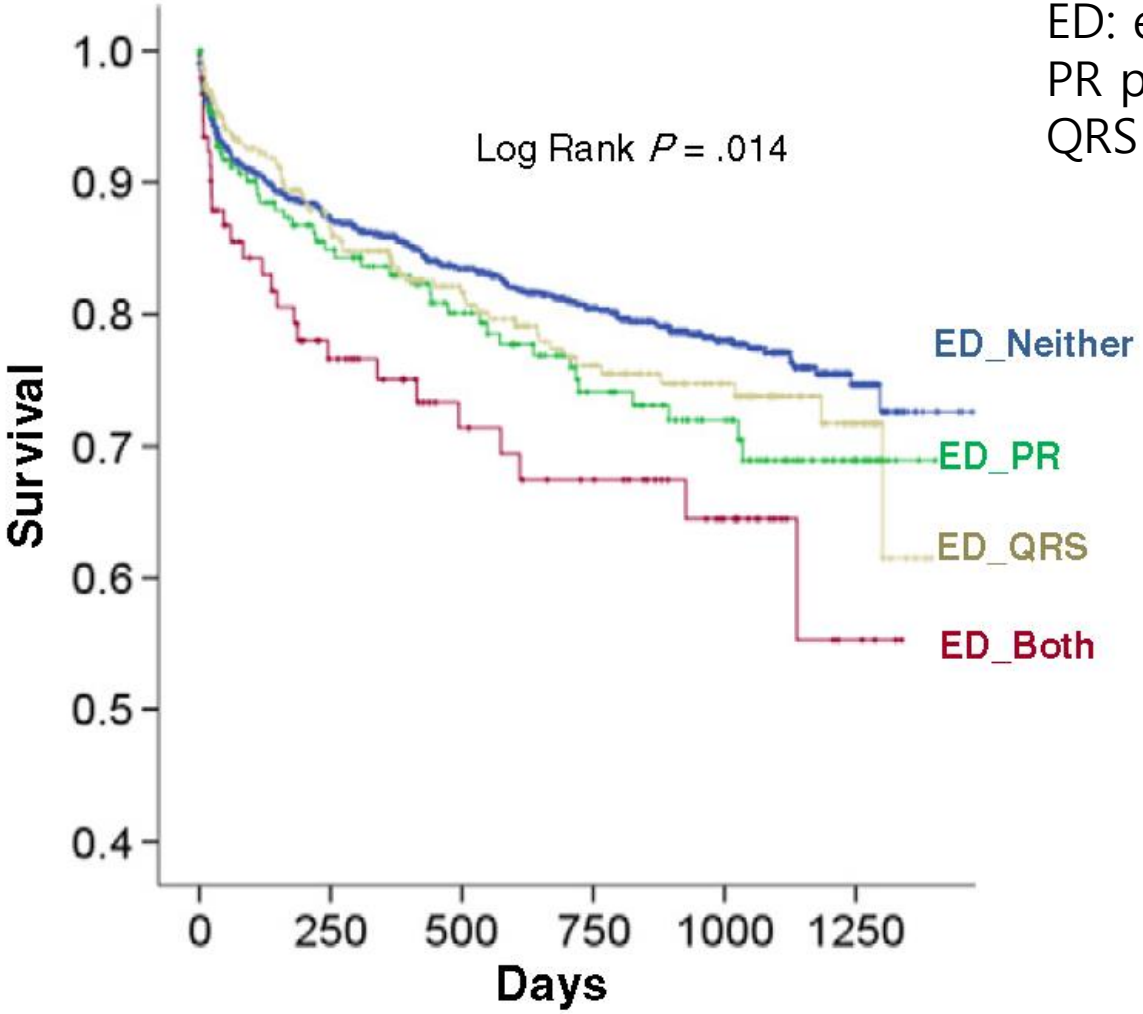
ED was a important prognostic factor



ED: electrical dyssynchrony
PR prolongation or
QRS widening

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The Korean Society of Heart Failure

Low cholesterol and prognosis

Journal of Cardiac Failure Vol. 18 No. 3 2012

Low Serum Total Cholesterol Level is a Surrogate Marker, But Not a Risk Factor, for Poor Outcome in Patients Hospitalized With Acute Heart Failure: A Report From the Korean Heart Failure Registry

CHANG-HWAN YOON, MD,[1] TAE-JIN YOUN, MD,[1] SOYEON AHN, PhD,[2] DONG-JU CHOI, MD,[1] GOO-YOUNG CHO, MD,[1] IN-HO CHAE, MD,[1] JI CHOI, MS,[3] HYUNGJUN CHO, PhD,[3] SEONGWOO HAN, MD,[4] MYEONG-CHAN CHO, MD,[5] EUN-SEOK JEON, MD,[6] SHUNG CHULL CHAE, MD,[7] JAE-JOONG KIM, MD,[8] KYU-HYUNG RYU, MD,[9] AND BYUNG-HEE OH, MD,[10]
ON BEHALF OF THE KOREAN HEART FAILURE REGISTRY

Seoul, Seongnam, Cheongju, and Daegu, South Korea

ABSTRACT

Background: Hypercholesterolemia is a major risk factor for incident coronary artery disease and the prevalence of heart failure (HF). The causal relationship between low total cholesterol (TC) levels and poor clinical outcome in patients with acute HF has not been investigated. This study evaluated the effect of cholesterol levels on the long-term outcome in patients hospitalized due to acute HF.
Methods and Results: We analyzed a cohort of 2,797 HF patients who were eligible for analysis in 3,200 patients of the Korean Heart Failure Registry. Patients were stratified into quartiles of TC (Q1 <133, Q2 133–158, Q3 159–190, and Q4 >190 mg/dL). Propensity score matching was performed with the patients in Q1 and Q4. Patients with lower serum TC had lower blood pressure, lower hemoglobin, lower serum sodium, and higher natriuretic peptide levels than patients with higher TC levels. Low TC was associated with increased risks for death and readmission due to HF; the adjusted hazard ratio (HR) of Q1 compared with Q4 was 1.57 (95% confidence interval [CI] 1.30–1.90). However, propensity score matching analysis revealed that low cholesterol itself did not affect outcome (HR 1.12, 95% CI 0.85–1.48).
Conclusions: Low TC is strongly associated with mortality and morbidity in patients with HF. However, low TC seemed to be a secondary result of the patient's state rather than an independent risk factor for poor outcome. (*J Cardiac Fail 2012;18:194–201*)
Key Words: Heart failure, hypercholesterolemia, risk factors, prognosis.

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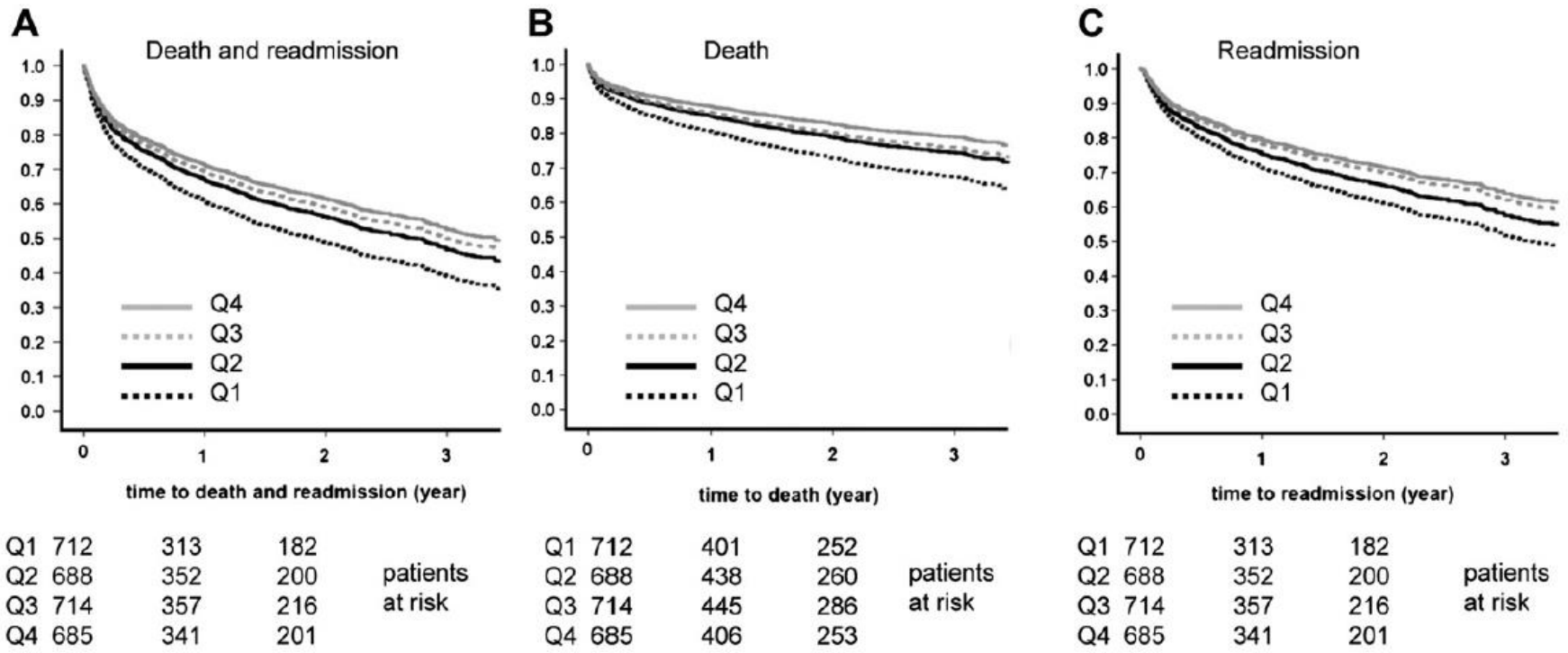
Low cholesterol was poor prognostic factor?



Q1	712	313	182	patients at risk
Q2	688	352	200	
Q3	714	357	216	
Q4	685	341	201	

Q1	712	401	252	patients at risk
Q2	688	438	260	
Q3	714	445	286	
Q4	685	406	253	

Q1	712	313	182	patients at risk
Q2	688	352	200	
Q3	714	357	216	
Q4	685	341	201	

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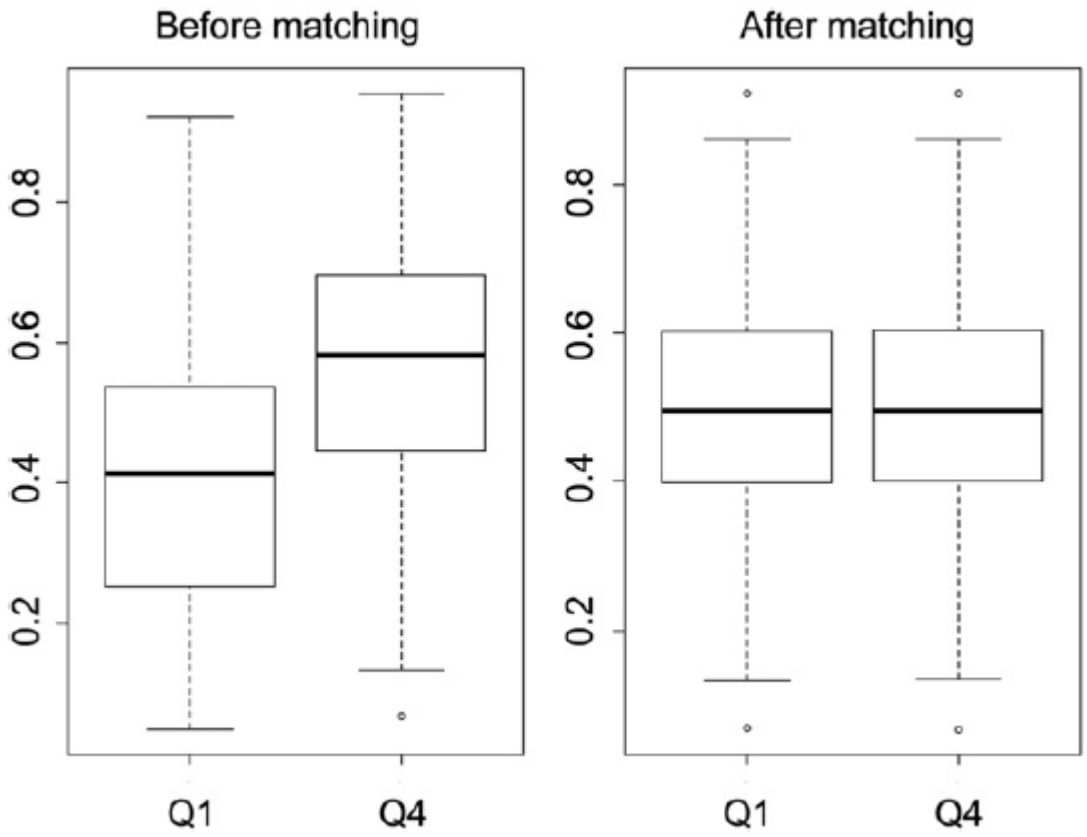
Not a prognostic factor, just a surrogate marker



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Assessment of kidney function

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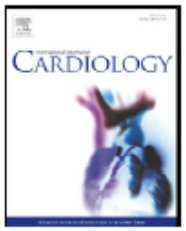

Letter to the Editor

The CKD-EPI is more accurate in clinical outcome prediction than MDRD equation in acute heart failure: Data from the Korean Heart Failure (KorHF) Registry

Jaewon Oh [a], Seok-Min Kang [a,b,*], Namki Hong [a], Jong-Chan Youn [a], Seongwoo Han [c], Eun-Seok Jeon [d], Myeong-Chan Cho [e], Jae-Joong Kim [f], Byung-Su Yoo [g], Shung Chull Chae [h], Byung-Hee Oh [i], Dong-Ju Choi [j], Myung-Mook Lee [k], Kyu-Hyung Ryu [l], and on behalf of the KorHF Registry

[a] Division of Cardiology, Severance Cardiovascular Hospital and Cardiovascular Research Institute, Yonsei University College of Medicine, Seoul, Republic of Korea
[b] Brain Korea 21 Project for Medical Science, Yonsei University College of Medicine, Seoul, Republic of Korea
[c] Division of Cardiology, Korea University Hospital, Seoul, Republic of Korea
[d] Division of Cardiology, Sungkyunkwan University Samsung Medical Center, Seoul, Republic of Korea
[e] Division of Cardiology, Chungbuk National University Hospital, Cheongju, Republic of Korea
[f] Division of Cardiology, Ulsan University Asan Medical Center, Seoul, Republic of Korea
[g] Division of Cardiology, Yonsei University Wonju Christian Hospital, Wonju, Republic of Korea
[h] Division of Cardiology, Kyungpook National University Hospital, Daegu, Republic of Korea
[i] Division of Cardiology, Seoul National University Hospital, Seoul, Republic of Korea
[j] Division of Cardiology, Seoul National University Bundang Hospital, Seongnam, Republic of Korea
[l] Division of Cardiology, Dongguk University Ilsan Hospital, Goyang, Republic of Korea
[l] Division of Cardiology, Konkuk University Medical Center, Seoul, Republic of Korea

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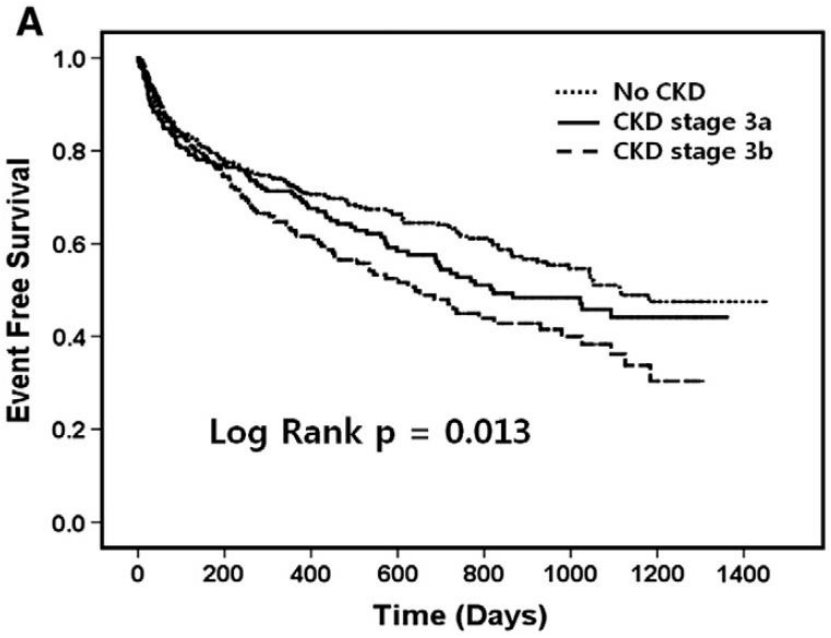
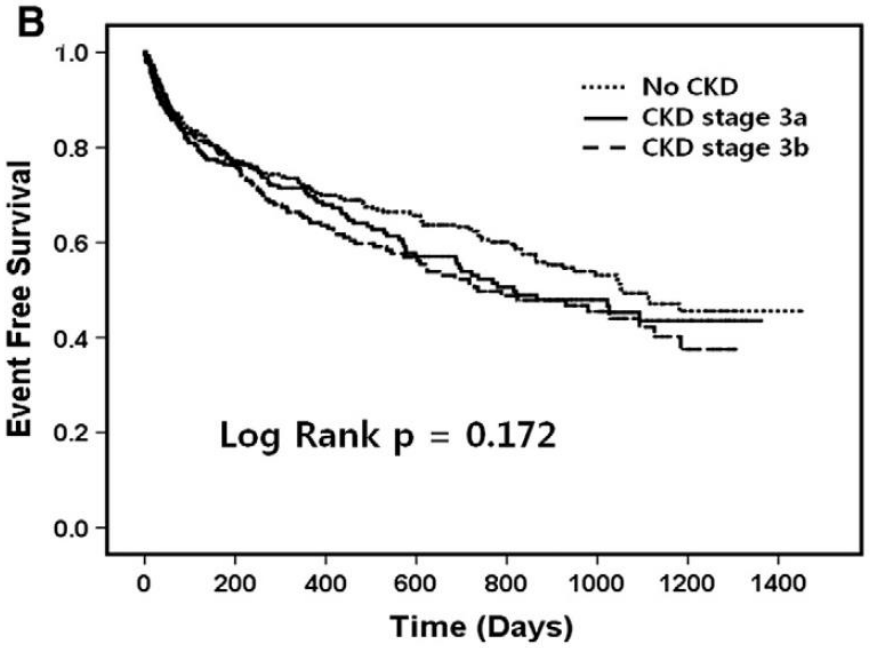
CKD-EPI formula is better than MDRD

CKD-EPI fomula



MDRD fomula



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Hyponatremia

ORIGINAL ARTICLE

Improvement of hyponatraemia during hospitalisation for acute heart failure is not associated with improvement of prognosis: an analysis from the Korean Heart Failure (KorHF) registry

Sang Eun Lee,[1,2] Dong-Ju Choi,[1] Chang-Hwan Yoon,[1] Il-Young Oh,[1] Eun-Seok Jeon,[3] Jae-Joong Kim,[4] Myeong-Chan Cho,[5] Shung Chull Chae,[6] Kyu-Hyung Ryu,[7] Byung-Hee Oh,[2] and on behalf of the KorHF Registry

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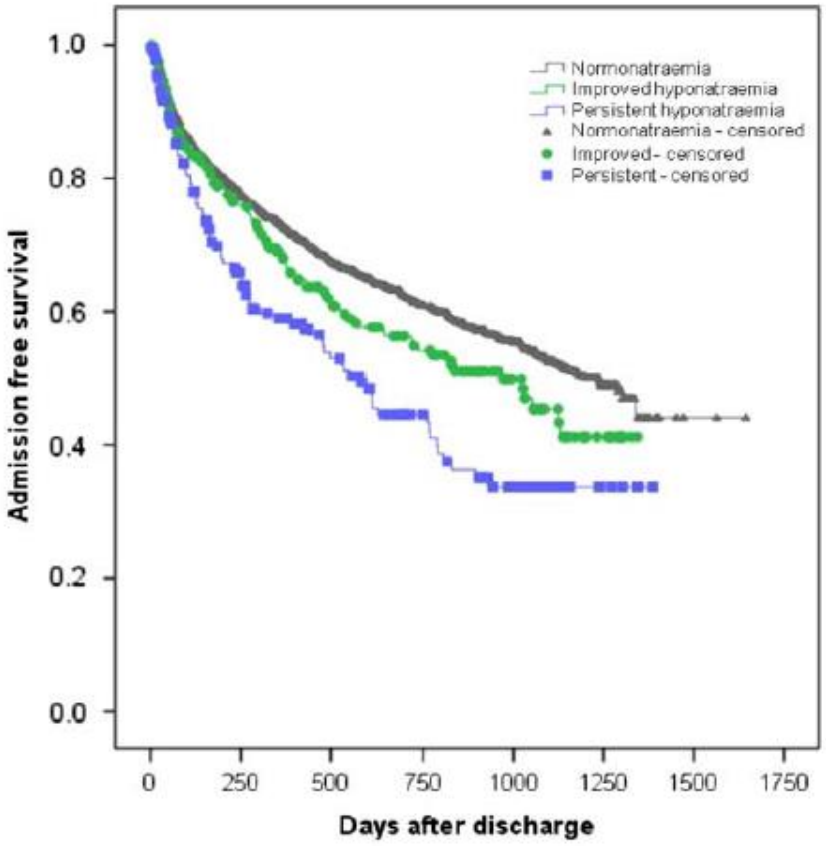
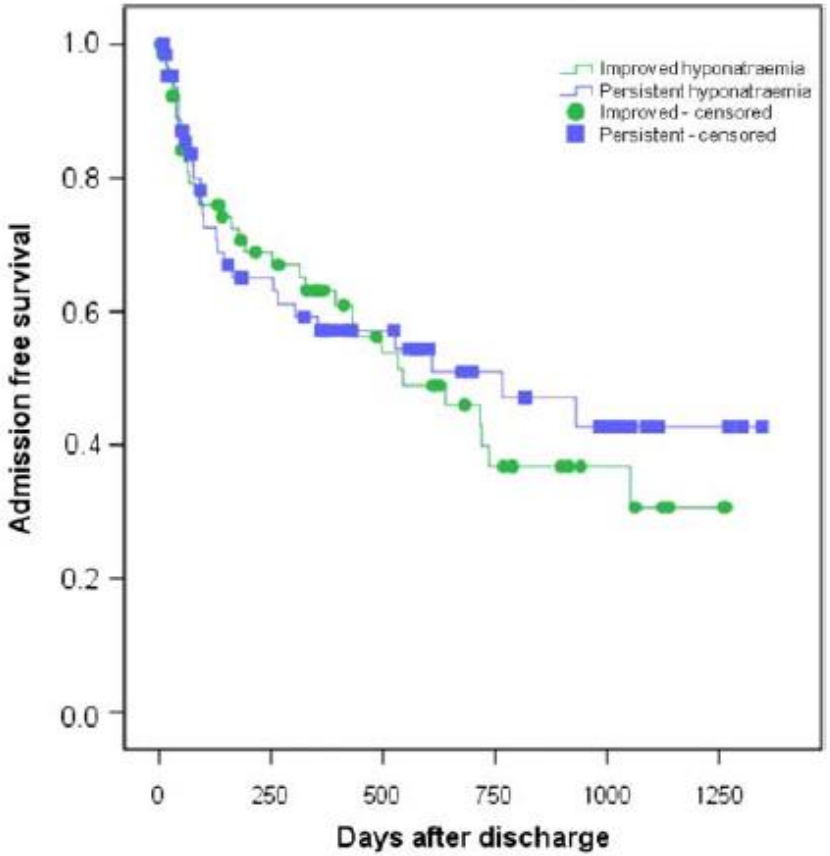
Correction only is not enough





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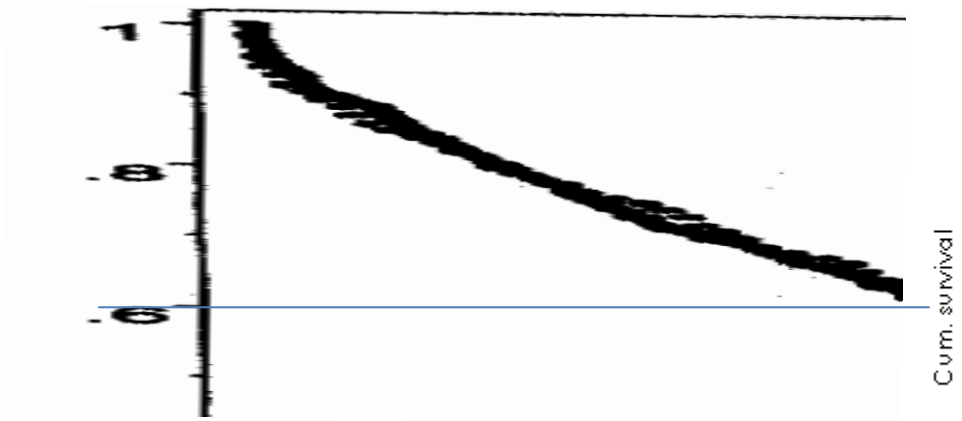
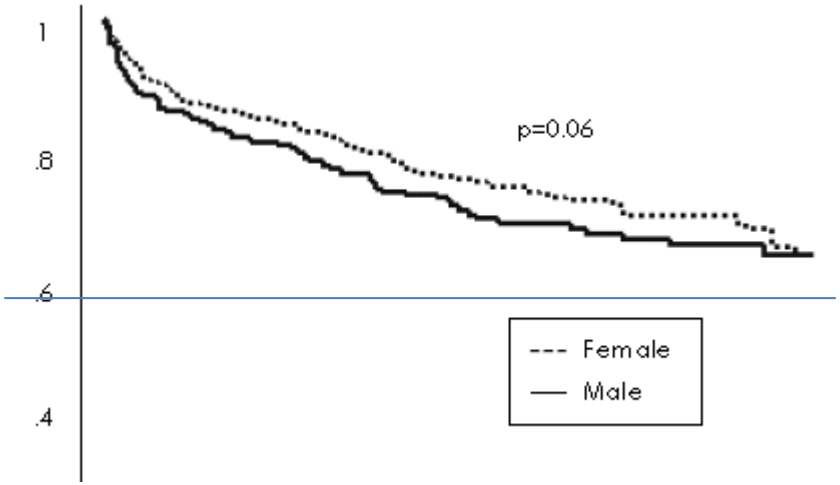
Improved survival in Korea

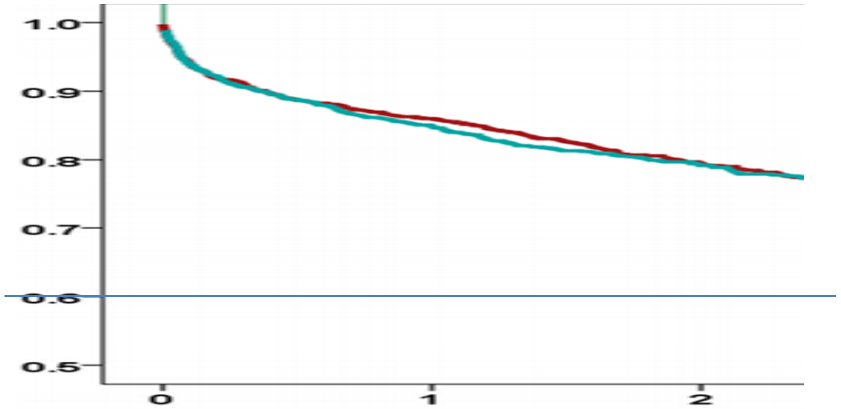
Hallym Univ Registry (1987-1997)



KorHF phase 1 (1998-2003)



KorHF phase 2 (2004-2009)



KorAHF(?)

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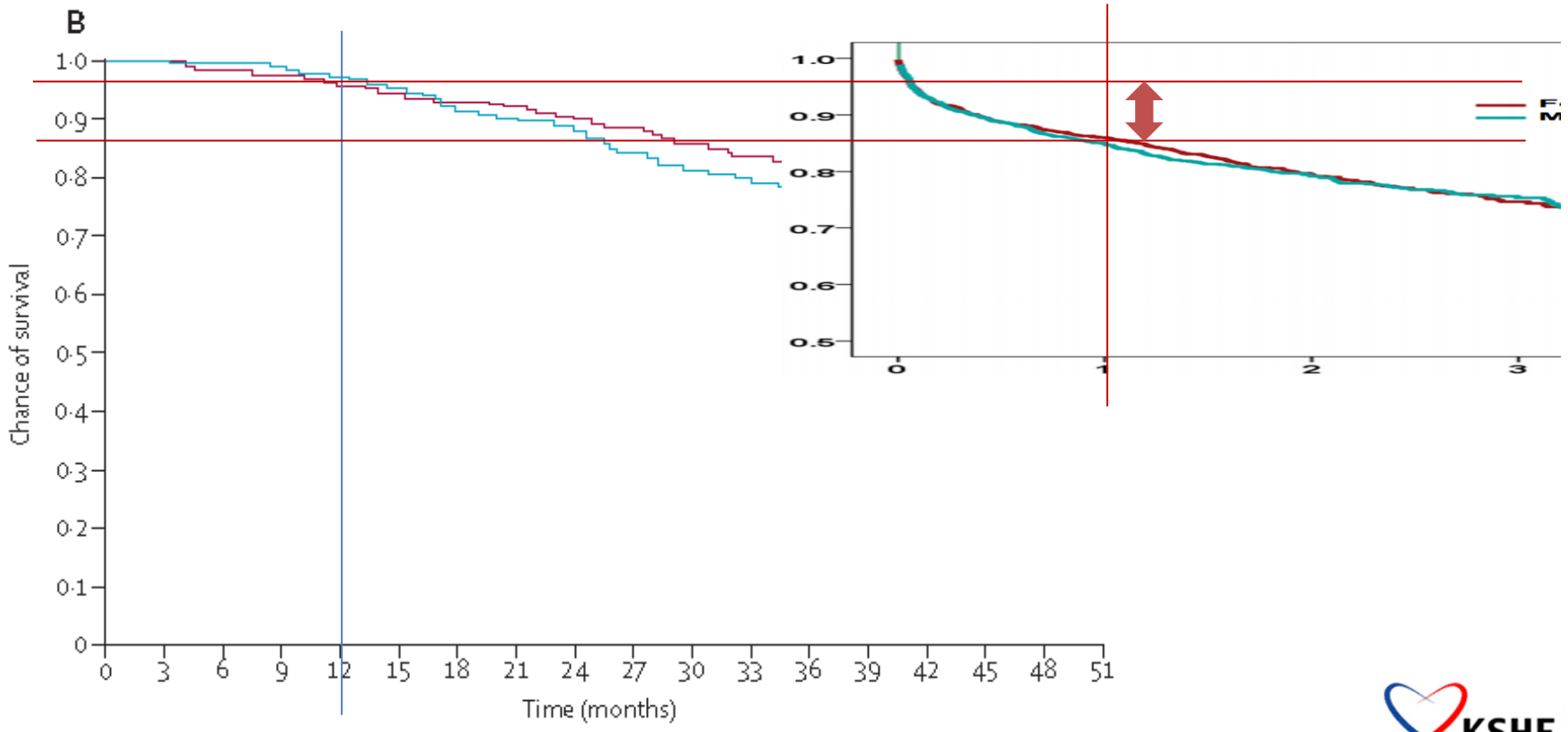
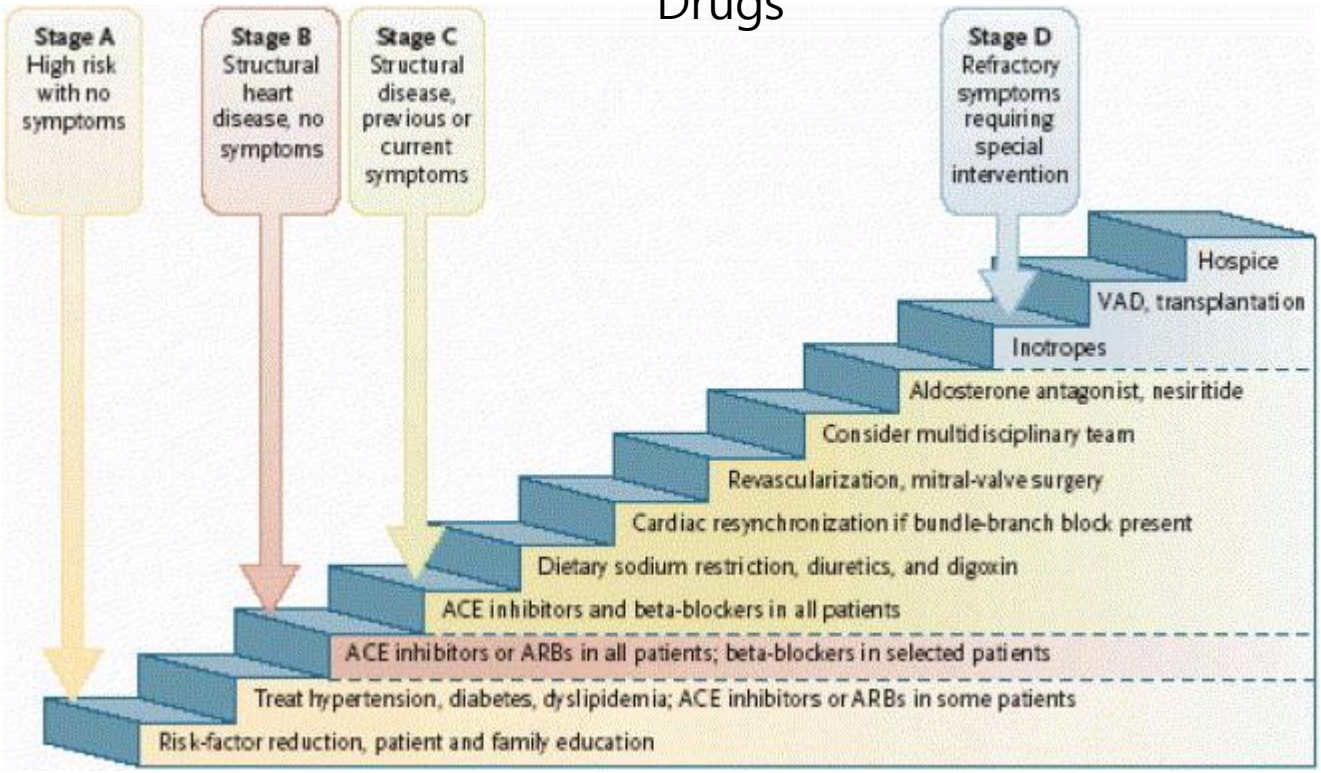
Adjuvant capecitabine and oxaliplatin for gastric cancer after D2 gastrectomy (CLASSIC): a phase 3 open-label, randomised controlled trial

Yung-Jue Bang*, Young-Woo Kim, Han-Kwang Yang, Hyun Cheol Chung, Young-Kyu Park, Kyung Hee Lee, Keun-Wook Lee, Yong Ho Kim, Sang-Ik Noh, Jae Yong Cho, Young Jae Mok, Yeul Hong Kim, Jiafu Ji, Ta-Sen Yeh, Peter Button, Florin Sirzén, Sung Hoon Noh*, for the CLASSIC trial investigators†



Approach as a malignancy

CPR education
Aggressive Tx of fatal arrhythmia
Assist device
Transplantation
Drugs



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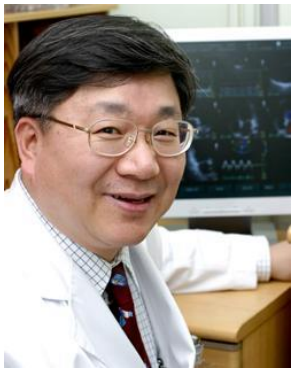



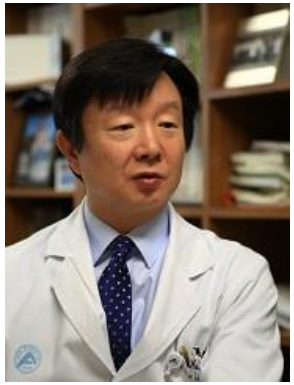



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