Heart Failure Management: From in-hospital to community

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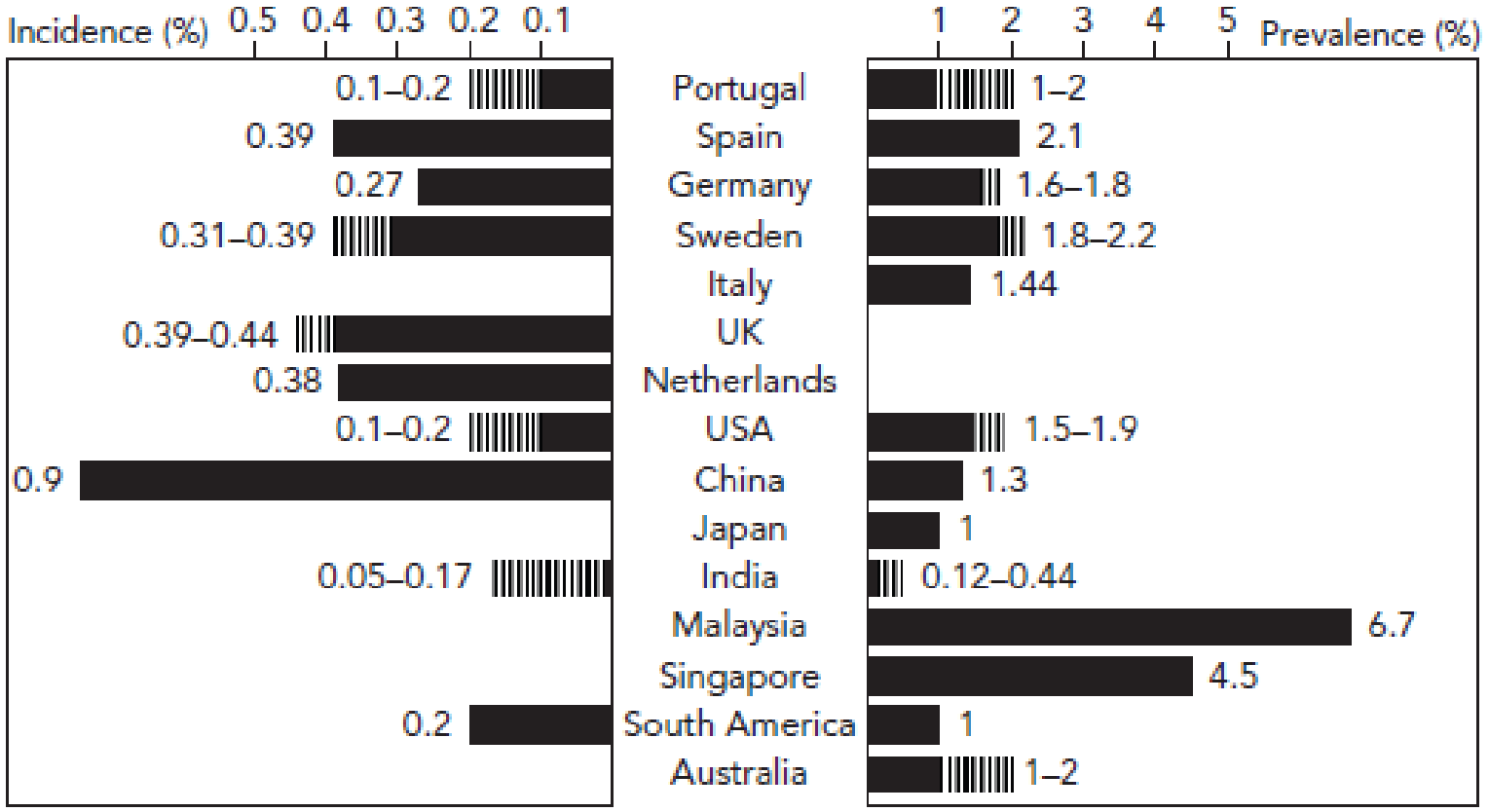
Assistant HCE and Chief of Cardiology, HKUSZH

Heart Failure, a worldwide disease

- 26 million heart failure patients worldwide
- 1-2% health care expenditure attributed to health failure in Europe and North America
- 74% Heart failure patients suffering from at least 1 comorbidity: more likely to worsen the patient’s overall health status

Figure 2: Prevalence and Incidence of Heart Failure Worldwide



Cardiac Failure Review 2017;3(1):7–11.

Main challenges:
heart failure hospitalization

>1 million

Annual hospitalizations in both the United States and Europe[1]

1-4%

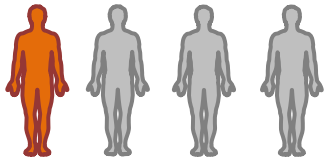
Heart failure hospitalizations as a percentage of total hospital admissions[2]

Up to 9/10 patients

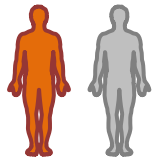
Hospitalized due to worsening chronic heart failure as compared with de novo heart failure[3]

5-10 days

Average length of hospital stay[3]

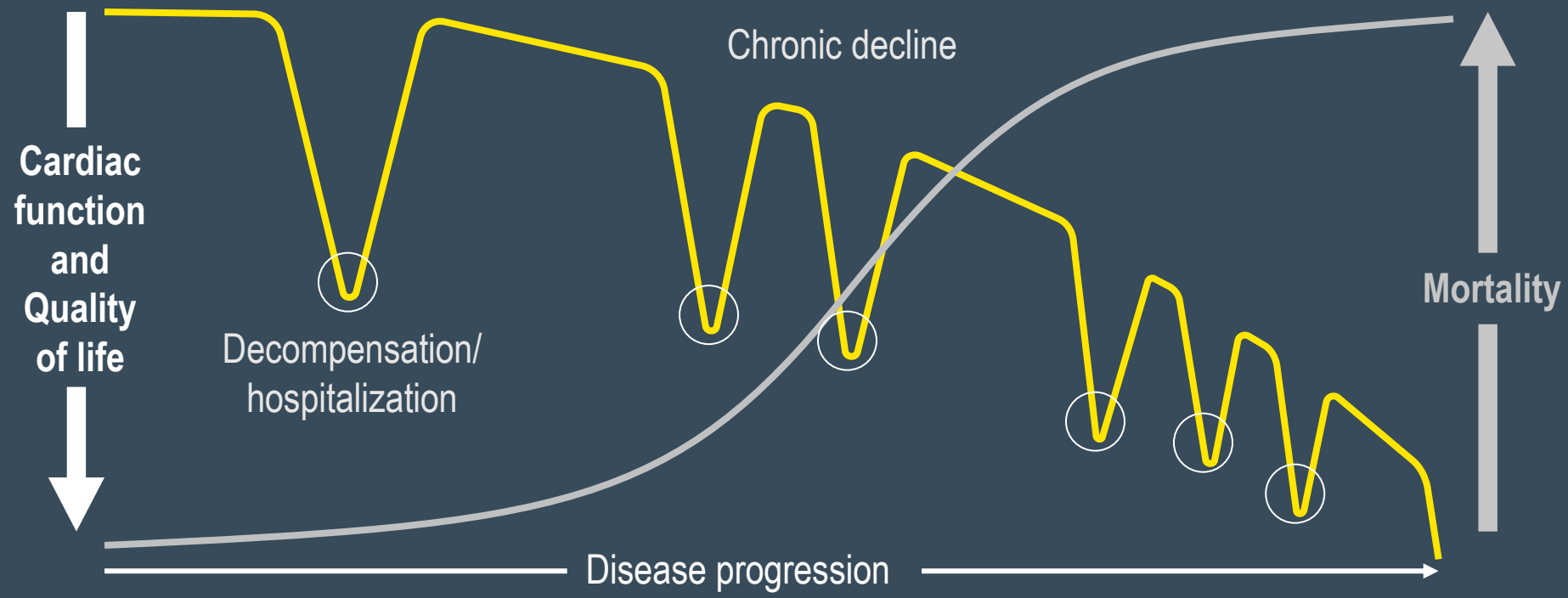


Almost 1 out of 4 hospitalized patients (24%) are rehospitalized for heart failure within the 30-day post discharge period[4]



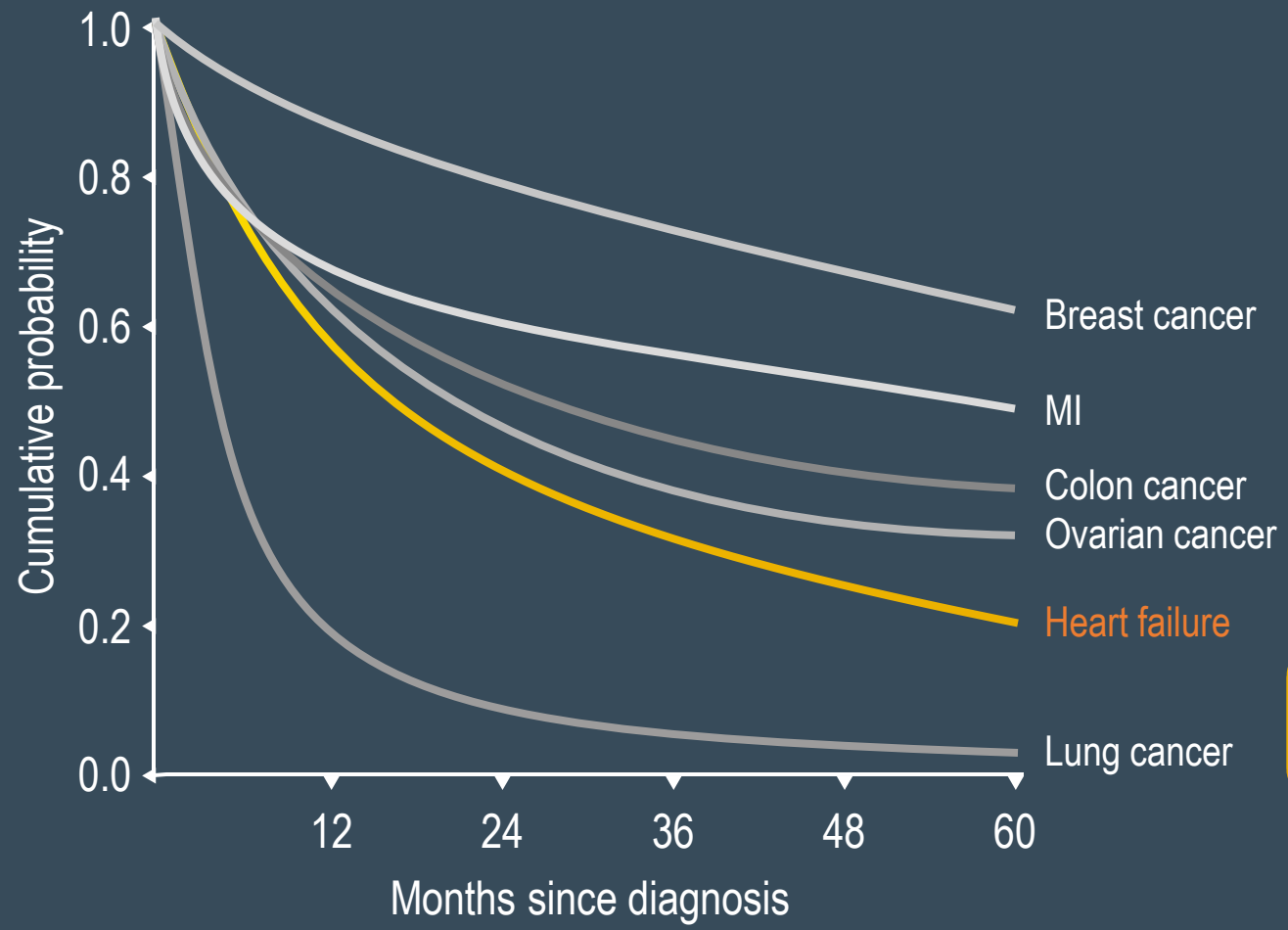
Nearly 1 out of 2 patients (46%) are rehospitalized for heart failure within the 60-day post discharge period[4]

Increasing frequency of acute events with disease progression leads to high rates of hospitalization and increased risk of mortality[1-5]



1. Ahmed et al. Am Heart J 2006;151:444–50; 2. Adapted from Gheorghiade et al. Am J Cardiol 2005;96:11G–17G; 3. Gheorghiade, Pang. J Am Coll Cardiol 2009;53:557–73; 4. Holland et al. J Card Fail 2010;16:150–6; 5. Muntwyler et al. Eur Heart J 2002;23:1861–6

Risk of mortality in systolic heart failure is higher than potentially many cancers in women [1]

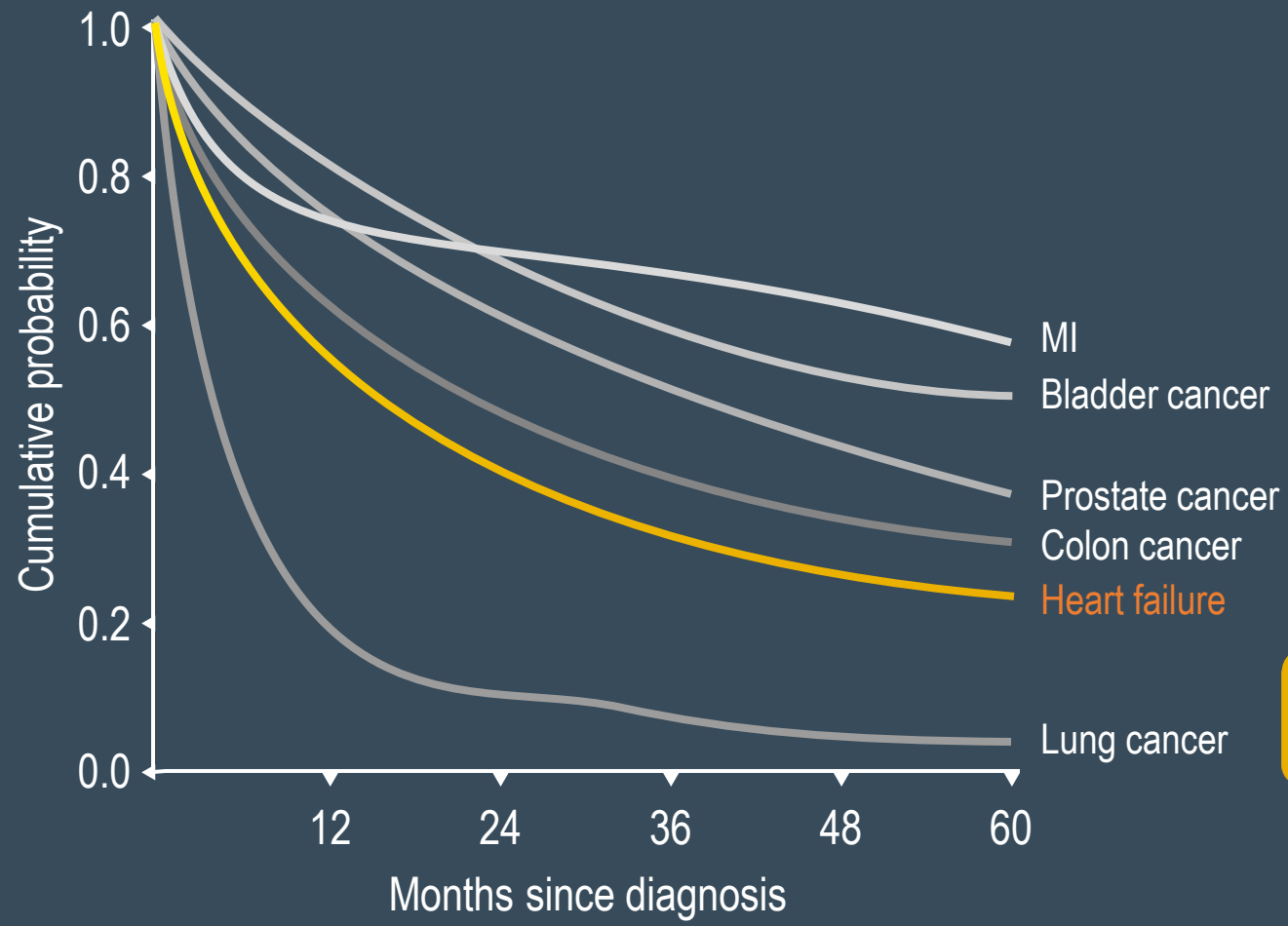


Survival rate of **WOMEN**, 5 years after diagnosis [2]

1. Roger et al. JAMA 2004;292(3):344–350; 2. Stewart et al. Eur J Heart Fail 2001;3(3):315–322

Entresto® sacubitril/valsartan

Risk of mortality in systolic heart failure is higher than potentially many cancers in men [1]

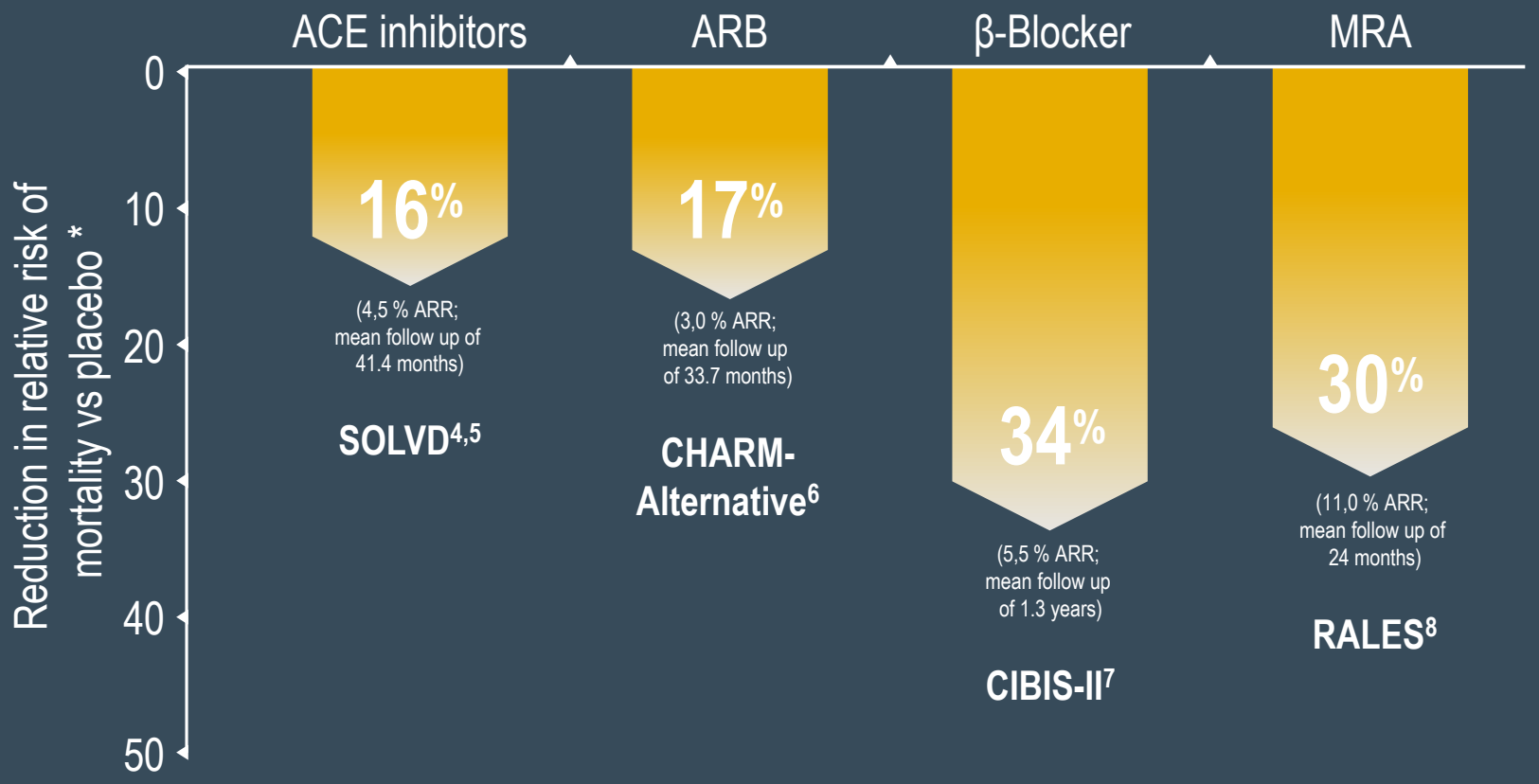


Survival rate of **MEN**, 5 years after diagnosis [2]

1. Roger et al. JAMA 2004;292(3):344–350; 2. Stewart et al. Eur J Heart Fail 2001;3(3):315–322

Entresto® sacubitril/valsartan

Mortality in HFrEF remains high despite the current therapies that improve survival[1-4]



1. Levy et al. N Engl J Med 2002;347(18):1397–1402; 2. Go et al. Circulation 2014;129(3):e28–e292;
3. Yancy et al. Circulation 2013;128(16):e240–e327; 4. McMurray et al. Eur Heart J 2012;33(14):1787–1847;
5. SOLVD Investigators. N Engl J Med 1991;325(5):293–302; 6. Granger et al. Lancet 2003;362(9386):772–776;
7. CIBIS-II Investigators. Lancet 1999;353(9146):9–13; 8. Pitt et al. N Engl J Med 1999;341(10):709–717

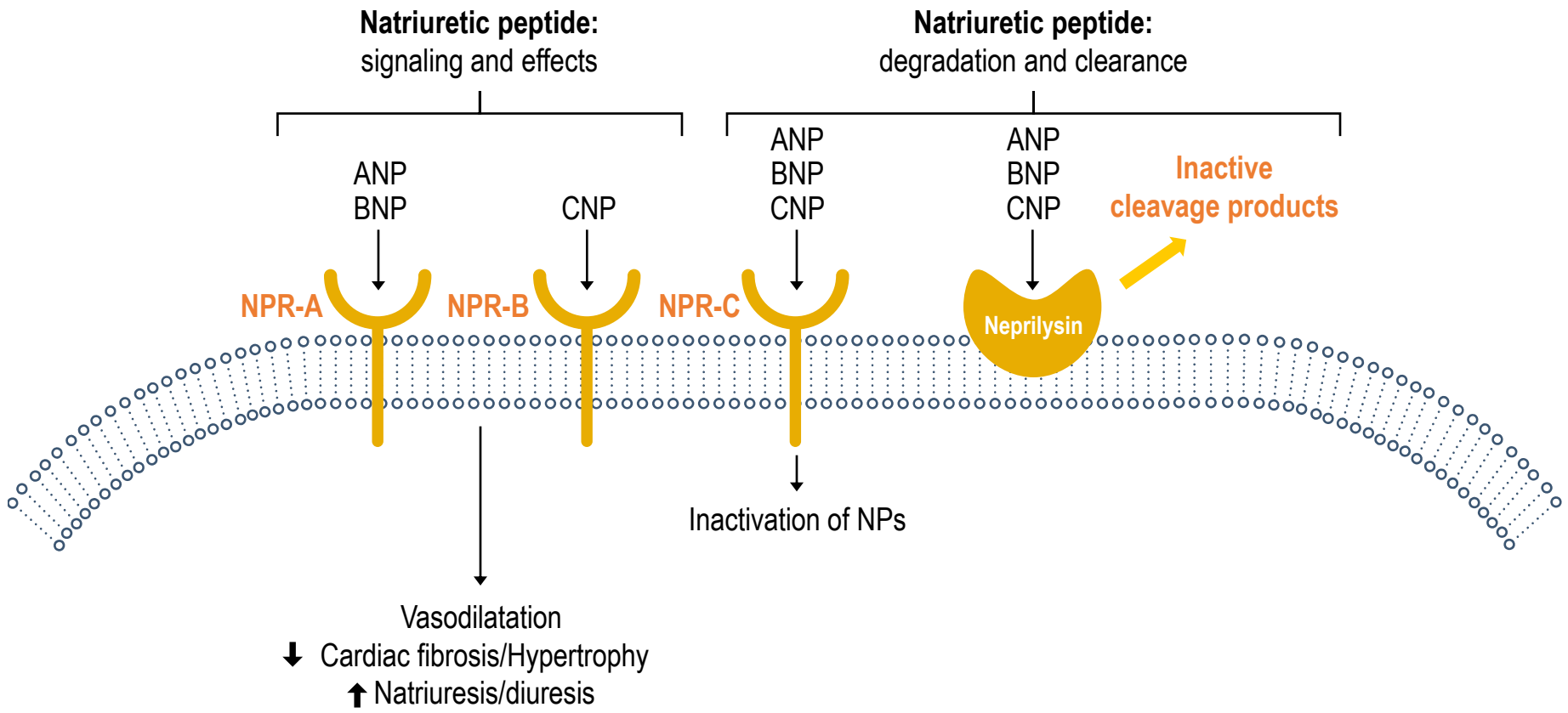
Entresto® sacubitril/valsartan

Conventional treatment

- RAAS system
  - ACEI/ARB
  - Aldosterone antagonist
- Sympathetic nervous system
  - Beta-blocker
- Heart rate
  - Ivabradine
- Device therapy

The role of natriuretic peptides in heart failure

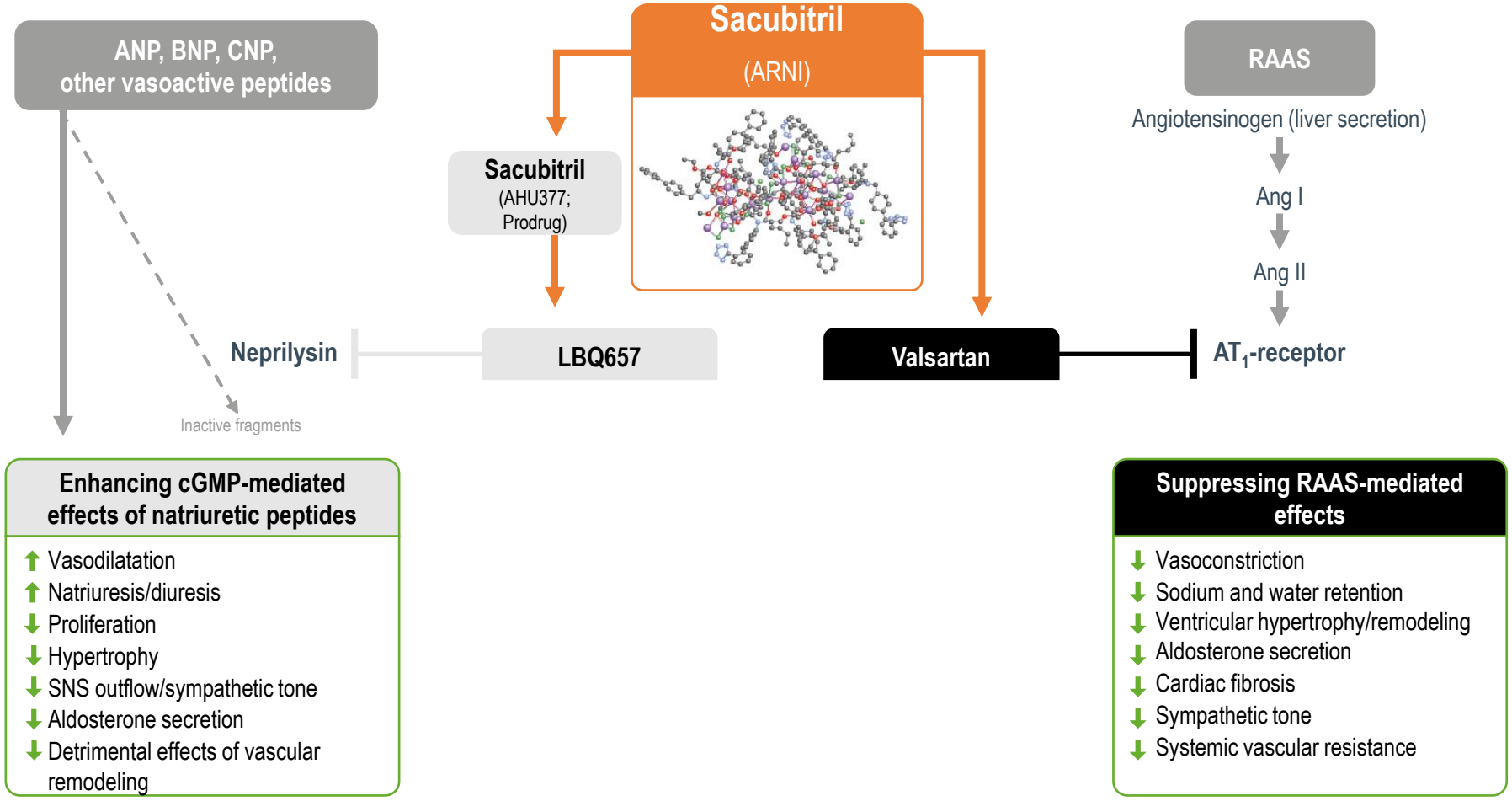
Natriuretic peptides are cleared by NPR-C and neprilysin[1-6]



ANP: atrial natriuretic peptide; **BNP:** B-type natriuretic peptide; **CNP:** C-type natriuretic peptide; **NPR:** natriuretic peptide receptor

1. Mangiafico et at. Eur Heart J 2013;34:886-893; 2. Levin et al. N Engl J Med 1998;339;321-328;
3. Gardner et al. Hypertension 2007;49:419-426; 4. Horio et al. Hypertension 2000;35:19-24; 5.
D'Souza et al. Pharmacol Ther 2004:101:113-129; 6. Cao & Gardner. Hypertension 1995;25:227-234

Sacubitril – the first angiotensin receptor neprilysin inhibitor (ARNI)[1-9]



ANP: atrial natriuretic peptide; **BNP:** B-type natriuretic peptide; **CNP:** C-type natriuretic peptide; **AT_1:** angiotensin II type1; **RAAS:** renin-angiotensin aldosterone system; **ARNI:** Angiotensin-Receptor-Neprilysin-Inhibitor

1. ENTRESTO®Prescribing Information, Februar 2016; 2. Langenickel & Dole. Drug Discov Today: Ther Strateg 2012;9(4):e131–e139;
3. Gu et al. J Clin Pharmacol 2010;50(4):401–414; 4. Levin et al. N Engl J Med 1998;339 (5):321–328; 5. Gardner et al. Hypertension 2007;49(3):419–426;
6. Molkentin. J Clin Invest 2003;111(9):1275–1277; 7. Nishikimi et al. Cardiovasc Res 2006;69(2):318–328; 8. Volpe et al. Int J Cardiol 2014; 176(3):630–639;
9. Von Lueder et al. Circ Heart Fail 2013;6(3):594–605

Prospective comparison of ARNI with ACEI to Determine Impact on Global Mortality and morbidity in Heart Failure

PARADIGM-HF – Key inclusion criteria

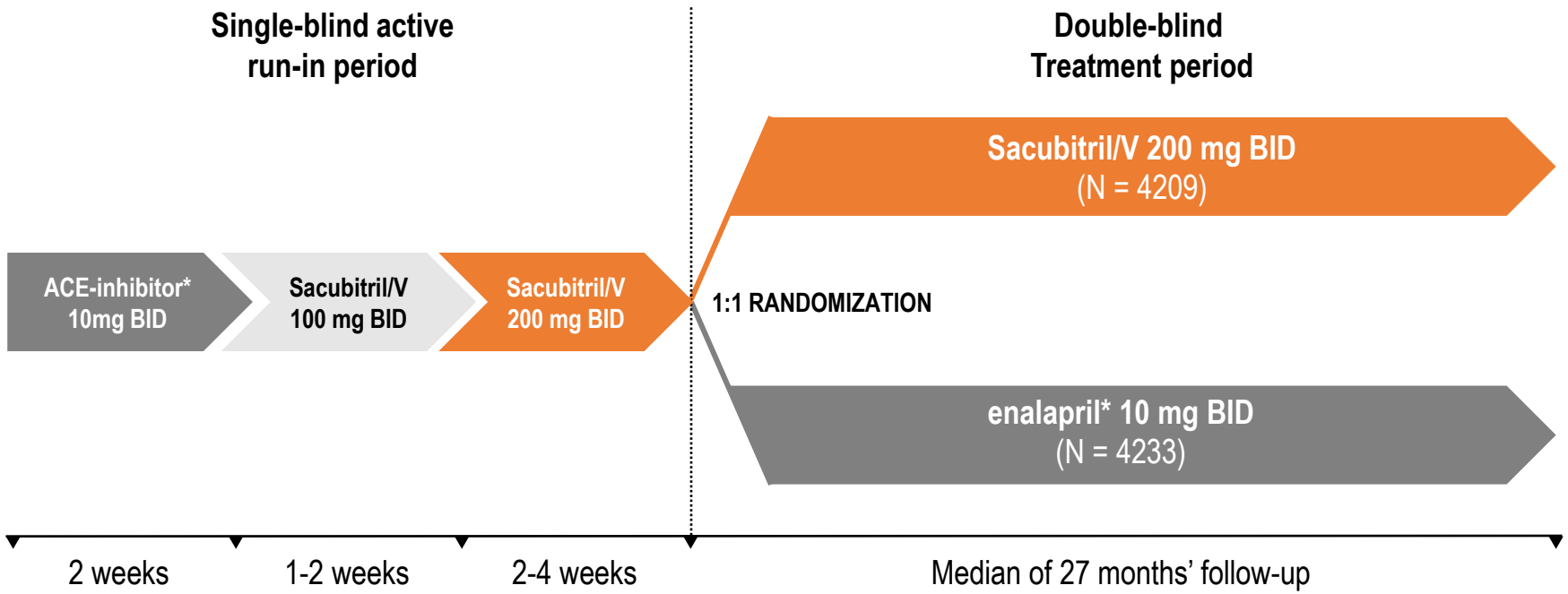
- Chronic HF NYHA FC II–IV with LVEF ≤40%*
- BNP (or NT-proBNP) levels as follows:
- ≥150 (or ≥600 pg/mL), or
- ≥100 (or ≥400 pg/mL) and a hospitalization for HFrEF within the last 12 months
- ≥4 weeks' stable treatment with an ACEI or an ARB#, and a β-blocker
- Aldosterone antagonist should be considered for all patients (with treatment with a stable dose for ≥4 weeks, if given)

*The ejection fraction entry criteria was lowered to ≤35% in a protocol amendment. **NYHA:** New York Heart Association; **LVEF:** left ventricular ejection fraction; **NT-proBNP:** N-terminal pro-brain natriuretic peptide; **ACE:** angiotensin-converting enzyme; **ARB:** angiotensin-receptor-blocker; **BNP:** B-type natriuretic peptide

1. McMurray et al. Eur J Heart Fail 2013;15(9):1062–1073


NDC 0078-0659-20
Entresto™
(sacubitril/valsartan) tablets
24 mg / 26 mg
Rx only
60 Tablets
NOVARTIS
NDC 0078-0777-20
Entresto™
(sacubitril/valsartan) tablets
49 mg / 51 mg
Rx only
60 Tablets
NOVARTIS
NDC 0078-0696-20
Entresto™
(sacubitril/valsartan) tablets
97 mg / 103 mg
Rx only
60 Tablets
NOVARTIS
NVR
NVR
NVR

PARADIGM-HF: study design



*Enalapril 5 mg BID (10 mg TDD) for 1–2 weeks followed by enalapril 10 mg BID (20 mg TDD) as an optional starting run-in dose for those patients who are treated with ARBs or with a low dose of ACEI

.

ACE: angiotensin-converting enzyme; **NYHA:** New York Heart Association; **LVEF:** left ventricular ejection fraction; **ARB:** angiotensin-receptor-blocker

1. McMurray et al. Eur J Heart Fail 2013;15(9):1062–1073

PARADIGM-HF
study results

Sacubitril/V is significantly superior to enalapril* regarding mortality and morbidity [1]

Primary and secondary endpoints of the PARADIGM-HF study

	Sacubitril/V (N=4187)	enalapril (N=4212)	HR (95% CI)	RRR (%)	p-value	NNT
Primary composite endpoint N (%)						
Death from CV causes or first hospitalization for worsening of HF	914 (21.8)	1117 (26.5)	0.8 (0.73-0.87)	20%	<0.001	21
Death from CV causes	558 (13.3)	693 (16.5)	0.8 (0.71-0.89)	20%	<0.001	32
First hospitalization for worsening of HF	537 (12.8)	658 (15.6)	0.79 (0.71-0.89)	21%	<0.001	
Secondary endpoints N (%)						
All-cause mortality	711 (17.0)	835 (19.8)	0.84 (0.76-0.93)	16%	<0.001	-
Change in KCCQ clinical summary score at 8 months, mean ± SD**	-2.99 ±0.36	-4.65 ±0.36	1.64 (0.63-2.65)	-	0.001	-
New onset atrial fibrillation¶, n (%)	84 (3.1)	83 (3.1)	0.97 (0.72–1.31)	-	0.83	-
Decline in renal function§, n (%)	94 (2.2)	108 (2.6)	0.86 (0.65–1.13)	-	0.28	-

- enalapril 10 mg 2x daily as comparator vs. ENTRESTO® 200 mg 2x daily in the PARADIGM-HF study (in addition of standard therapy). **§KCCQ scores range from 0 to 100 – higher scores indicate fewer symptoms and physical limitations associated with HF; **ACE:** angiotensin-converting enzyme; **HF:** heart failure; **ARR:** absolute risk reduction; **HR:** Hazard Ratio; **RRR:** relative risk reduction

¶2670 patients in the ENTRESTO® and 2638 in the enalapril group who did not have atrial fibrillation at randomization were evaluated

§Defined as: (a) ≥ 50% decline in eGFR from randomization; (b) > 30 mL/min/1.73 m2 decline in eGFR from randomization or to a value of <60 ml/min/1.73 m2, or (c) progression to end-stage renal disease

1. McMurray et al. N Engl J Med 2014;371(11):993–1004

Sacubitril/V reduced the frequency and severity of hospitalization compared to enalapril*

30%

LESS VISITS
TO THE EMERGENCY UNIT FOR HEART FAILURE [1]

p=0.017

18%

SHORTER STAYS
IN INTENSIVE CARE UNITS [1]

p=0,005

16%

LOWER RISK
FOR ALL-CAUSE HOSPITALIZATION [1]

p<0,001

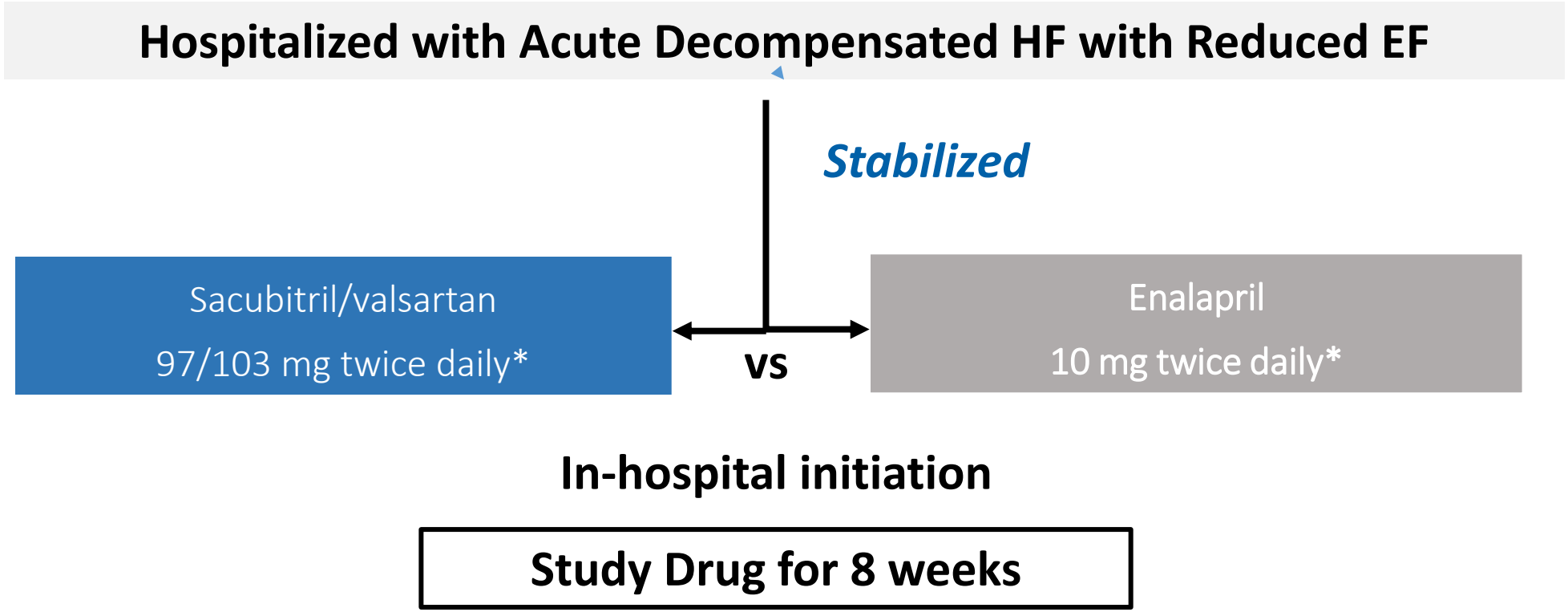
* enalapril 10 mg 2x daily as comparator vs. ENTRESTO® 200 mg 2x daily in the PARADIGM-HF study (in addition of standard therapy).

1. Packer et al. Circulation 2015;131(1):54–61

ACUTE HEART FAILURE

PIONEER-HF

Study Design



In-hospital initiation

Study Drug for 8 weeks

- Evaluate biomarker surrogates of efficacy
- Evaluate safety and tolerability
- Explore clinical outcomes

*Target Dose
HF, Heart Failure. EF, Ejection Fraction

Velazquez EJ et al. NEJM 2019

PIONEER-HF

Key Entry Criteria

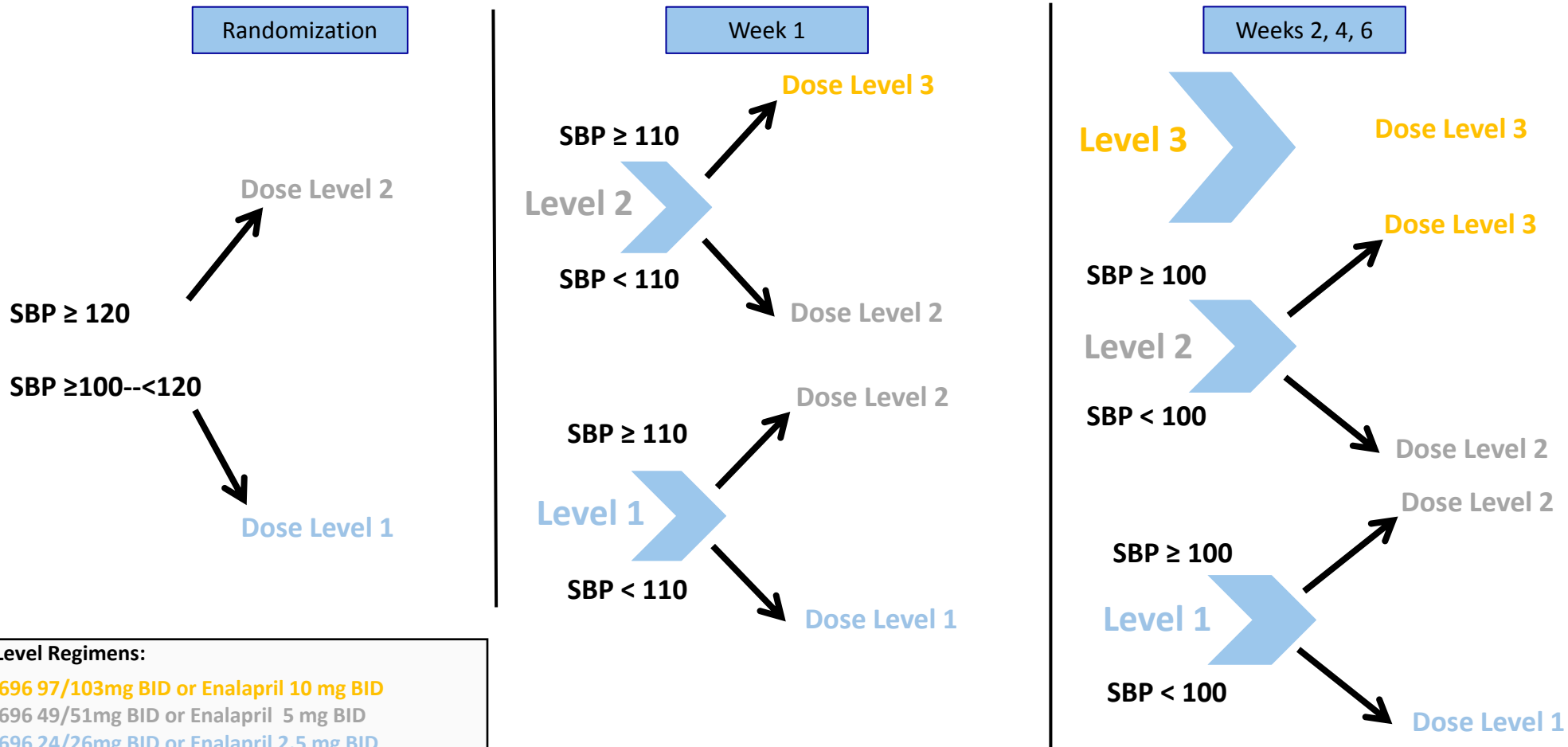
- Hospitalized for **Acute Decompensated Heart Failure (ADHF)**
- LVEF ≤40% within the last 6 months
- NT-proBNP ≥1600pg/mL or BNP ≥400 pg/mL*
- Stabilized while hospitalized
  - SBP ≥100 mmHg in prior 6h; no symptomatic hypotension
  - No increase in IV diuretics in prior 6h
  - No IV vasodilators in prior 6h
  - No IV inotropes in prior 24h

*At screening
A complete list of inclusion and exclusion criteria has been previously published at Velazquez et al. Am Heart J 198 (2018) 145-151
LVEF, Left Ventricular Ejection Fraction. NT-proBNP N-terminal pro–Brain Natriuretic Peptide. BNP, Brain Natriuretic Peptide. SBP, Systolic Blood Pressure. IV, Intravenous

Velazquez EJ et al. NEJM 2019

PIONEER-HF

Patient Treatment – Dose Titration



Dose Level Regimens:

3) LCZ696 97/103mg BID or Enalapril 10 mg BID
2) LCZ696 49/51mg BID or Enalapril 5 mg BID
1) LCZ696 24/26mg BID or Enalapril 2.5 mg BID

Patients taking low dose or no ACEi/ARB at randomization were initiated on Entresto 49/51 mg if their SBP was ≥120. Similarly, patients were up-titrated as early as Week 1 and again at Week 2 based on their blood pressure. Follow label dosing recommendations

Velazquez EJ et al. NEJM 2019

PIONEER-HF

*Study Endpoints**

Primary endpoint:

- Time-averaged proportional change in NT-proBNP from baseline at 4 and 8 weeks

Safety

- Worsening renal function
- Hyperkalemia
- Symptomatic hypotension
- Angioedema

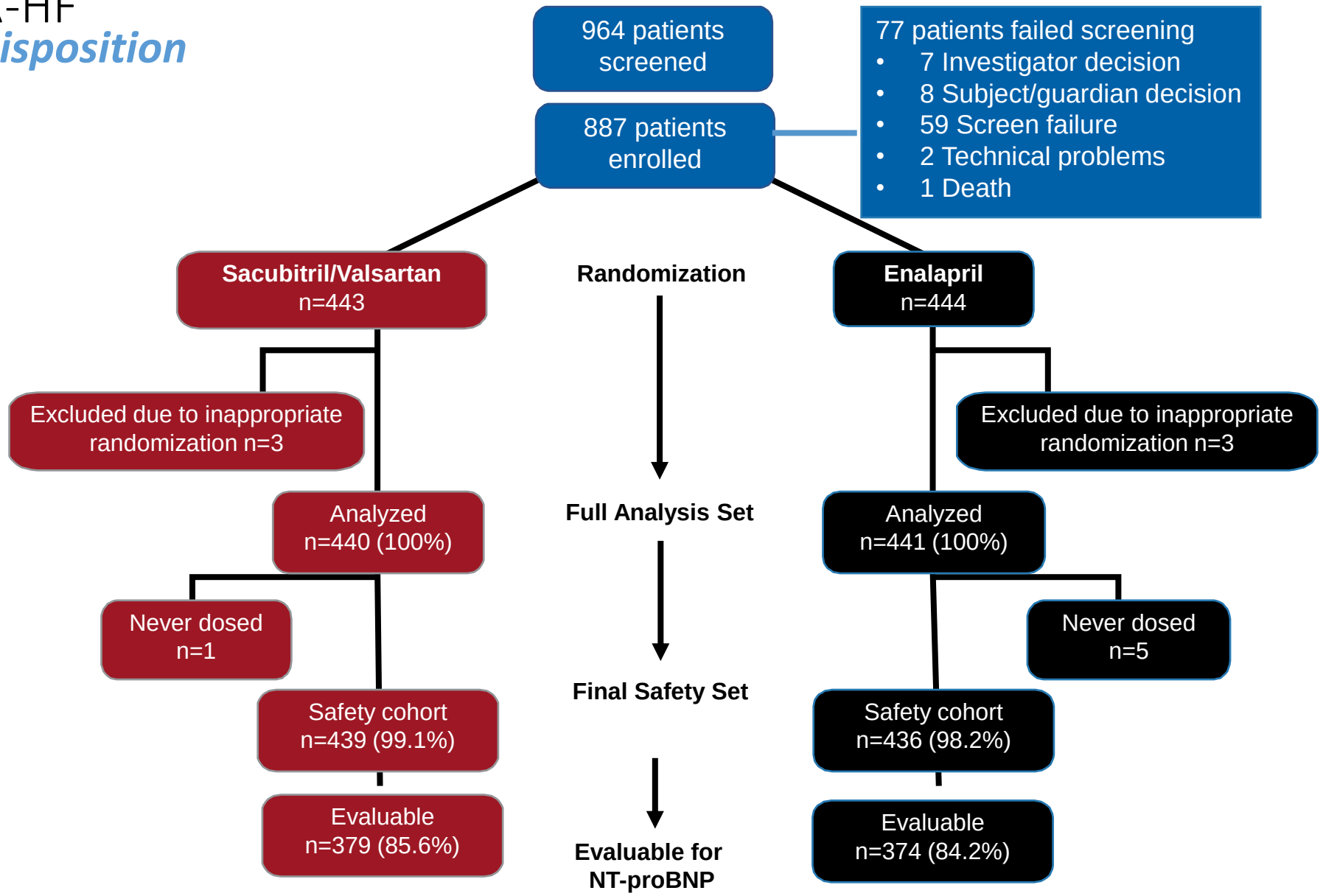
Exploratory Clinical Outcomes

- Serious Clinical Composite: Death, Hospitalization for HF, LVAD or listing for cardiac transplant

*A more complete list of PIONEER study endpoints has been previously published at Velazquez et al. Am Heart J 198 (2018) 145-151
NT-proBNP N-terminal pro–Brain Natriuretic Peptide. HF, Heart Failure. LVAD, Left Ventricular Assist Device. HF, Heart Failure
Data on File: PIONEER-HF Protocol, Novartis Pharmaceutical Corp; October 2018

Velazquez EJ et al. NEJM 2019

PIONEER-HF
Patient Disposition



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PIONEER-HF

Baseline Characteristics

	Sacubitril/Valsartan (n=440)	Enalapril (n=441)
Age (years)	61 (50.5, 71)	63 (54, 72)
Women (%)	25.7	30.2
Black (%)	35.9	35.8
Prior HF diagnosis (%)	67.7	63.0
LVEF, median (25th, 75th)	0.24 (0.18, 0.30)	0.25 (0.20, 0.30)
Systolic pressure, median (25th, 75th) mm Hg	118 (110, 133)	118 (109, 132)
NT-proBNP median (25th, 75th) pg/mL at randomization	2883 (1610, 5403)	2536 (1363, 4917)
ACEi/ARB therapy (%)	47.3	48.5
Beta-adrenergic blockers (%)	59.6	59.6

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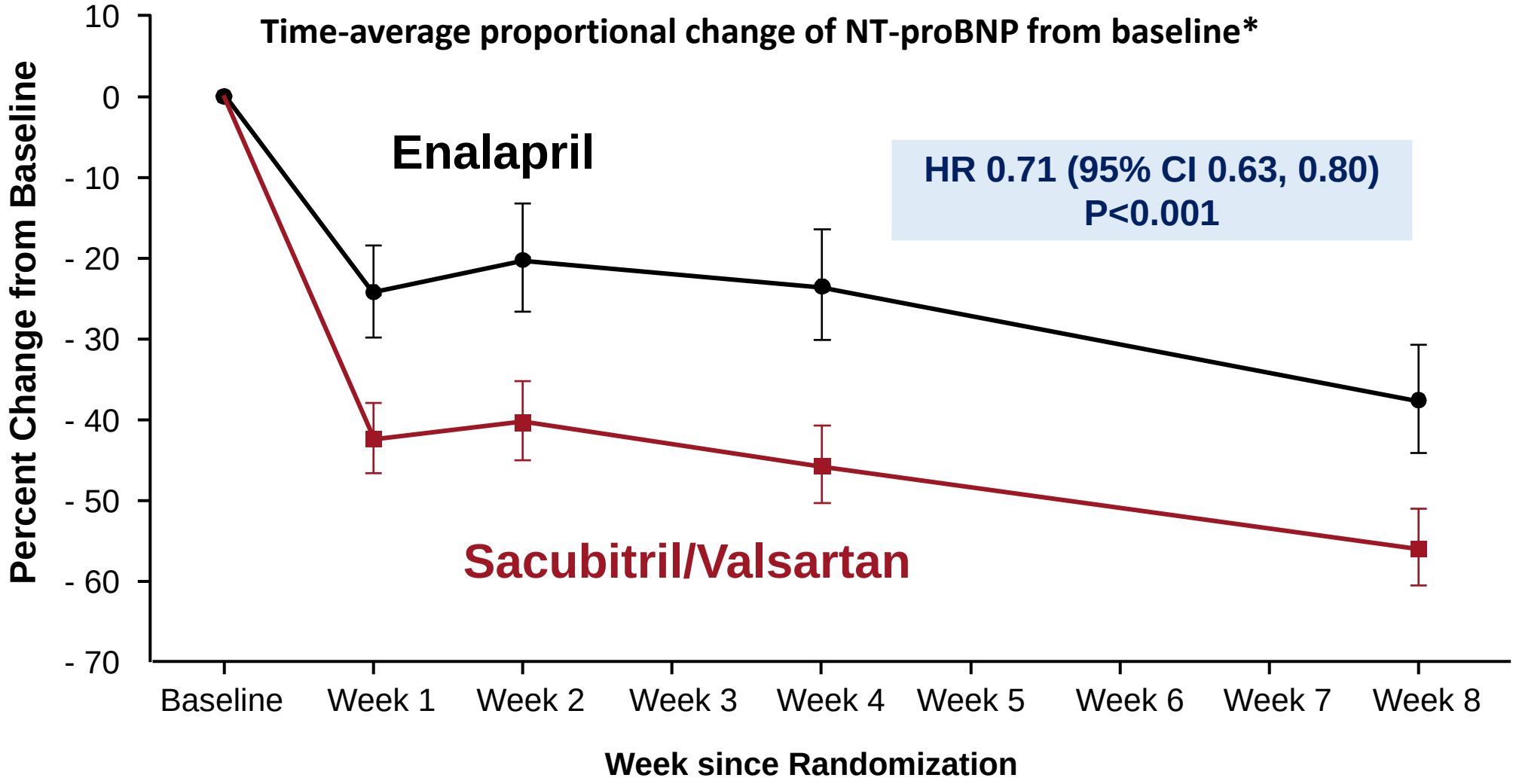
Primary Endpoint



*Percentage (%) change from baseline to mean of weeks 4 and 8

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PIONEER-HF

Safety

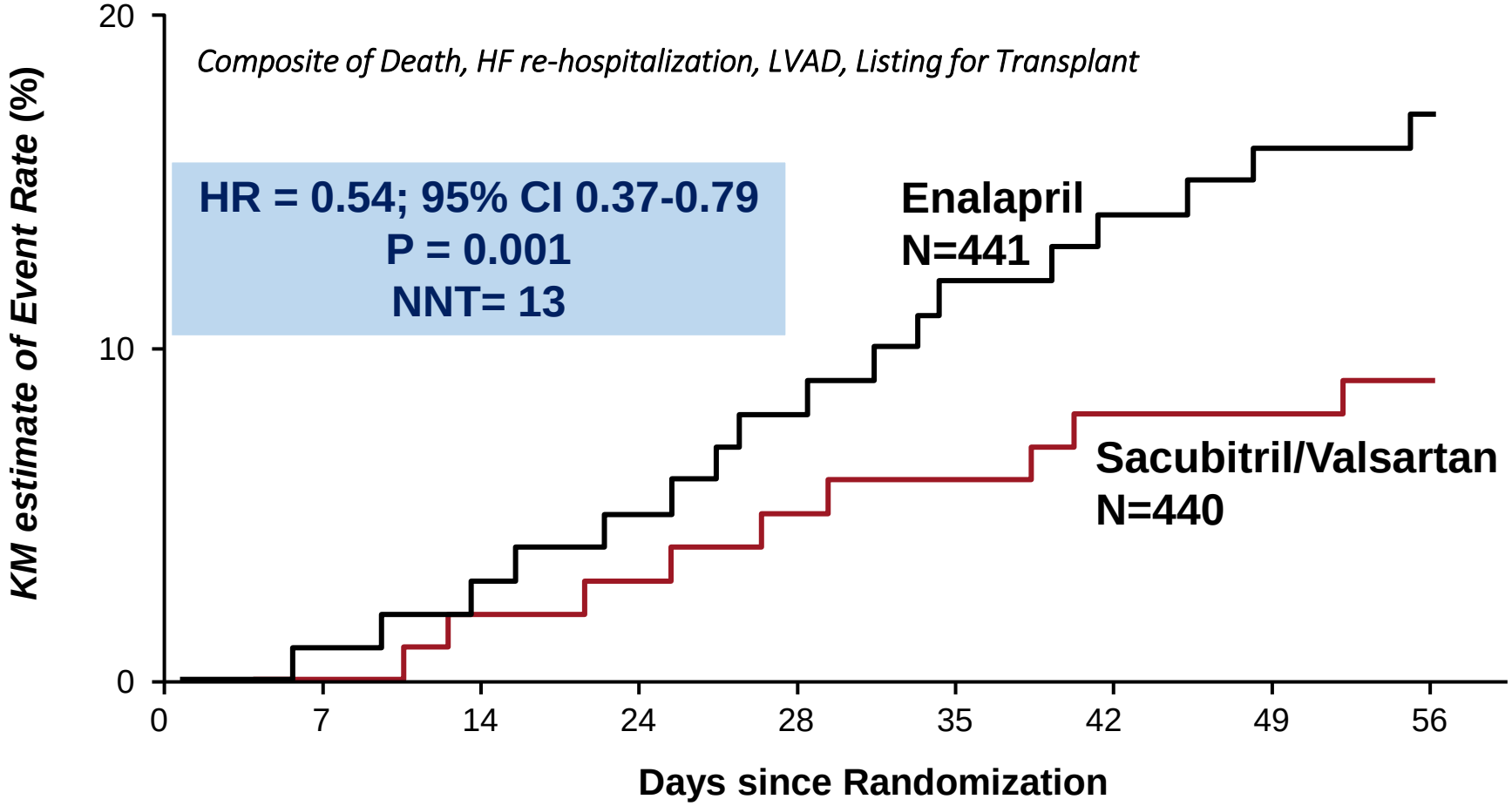
Safety Events (%)	Sacubitril/ Valsartan (n=440) (%)	Enalapril (n=441) (%)	RR (95% CI)
Worsening renal function[a]	13.6	14.7	0.93 (0.67-1.28)
Hyperkalemia	11.6	9.3	1.25 (0.84-1.84)
Symptomatic hypotension	15.0	12.7	1.18 (0.85-1.64)
Angioedema events[b]	0.2	1.4	0.17 (0.02-1.38)

[a] SCr ≥0.5 with simultaneous eGFR reduction of ≥25%
[b] Positively adjudicated angioedema cases.
RR, Relative risk

Data on File: PIONEER-HF Protocol, Novartis Pharmaceutical Corp; October 2018

PIONEER-HF

Exploratory Serious Clinical Composite Endpoint



- Exploratory Serious Clinical Composite endpoint was driven by the reduction of risk of death and HF re-hospitalizations

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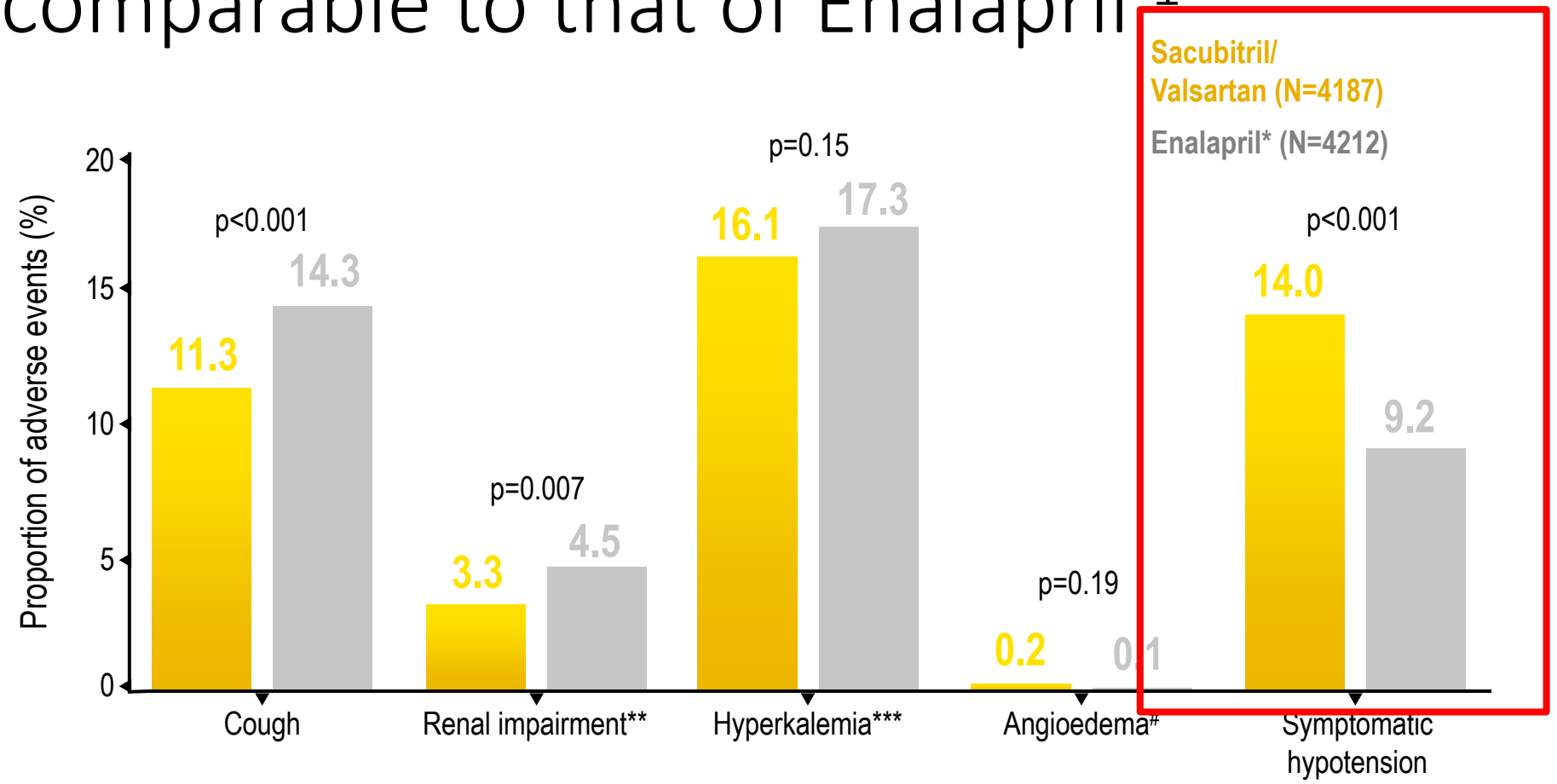
Sacubitril/
Valsartan
safety and tolerability

Sacubitril/Valsartan has a safety and tolerability profile comparable to that of Enalapril [1]

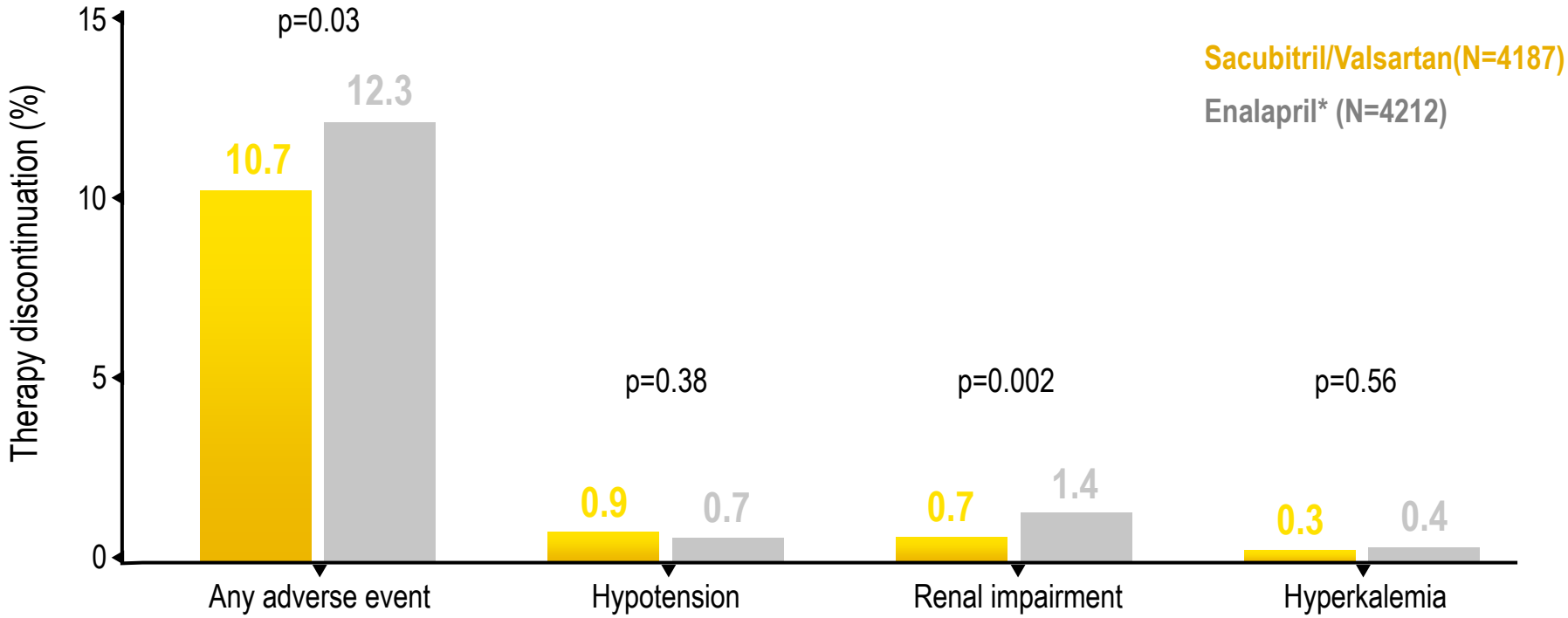


* enalapril 10 mg 2x daily as comparator vs. ENTRESTO® 200 mg 2x daily in the PARADIGM-HF study (in addition of standard therapy).
**Elevated serum creatinine ≥2,5 mg/dl. ***Elevated serum potassium >5,5 mmol/l. #Angioedema with no treatment or use of antihistamines only.
ACE: angiotensin-converting enzyme

1. McMurray et al. N Engl J Med 2014;371:993–1004

Sacubitril/Valsartan had less adverse events leading to permanent study drug discontinuation[1]

76 % of patients stayed until the end of the study with the 200 mg 2x daily target dose of ENTRESTO®



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ACE: angiotensin-converting enzyme

1. McMurray et al. N Engl J Med 2014;371(11):993–1004

PIONEER-HF

Additional Clinical Endpoints

	Sacubitril/ Valsartan (n=440)	Enalapril (n=441)	HR	P-value
Serious Composite, %	**9.3**	**16.8**	**0.54**	**0.001**
Death, %	2.3	3.4	0.66	0.311
Re-hospitalization for HF, %	8.0	13.8	0.56	0.005
Requirement of LVAD, %	0.2	0.2	0.99	0.999
Cardiac Transplant, %	0	0	-	-

- Exploratory Serious Clinical Composite endpoint was driven by the reduction of risk of death and HF

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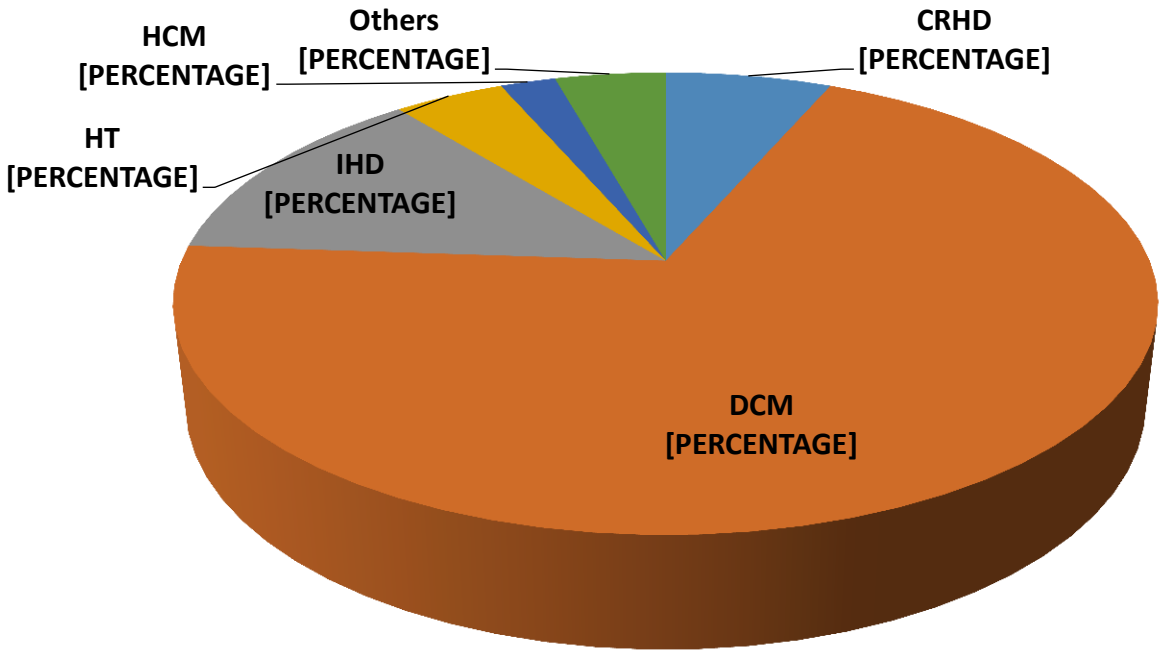
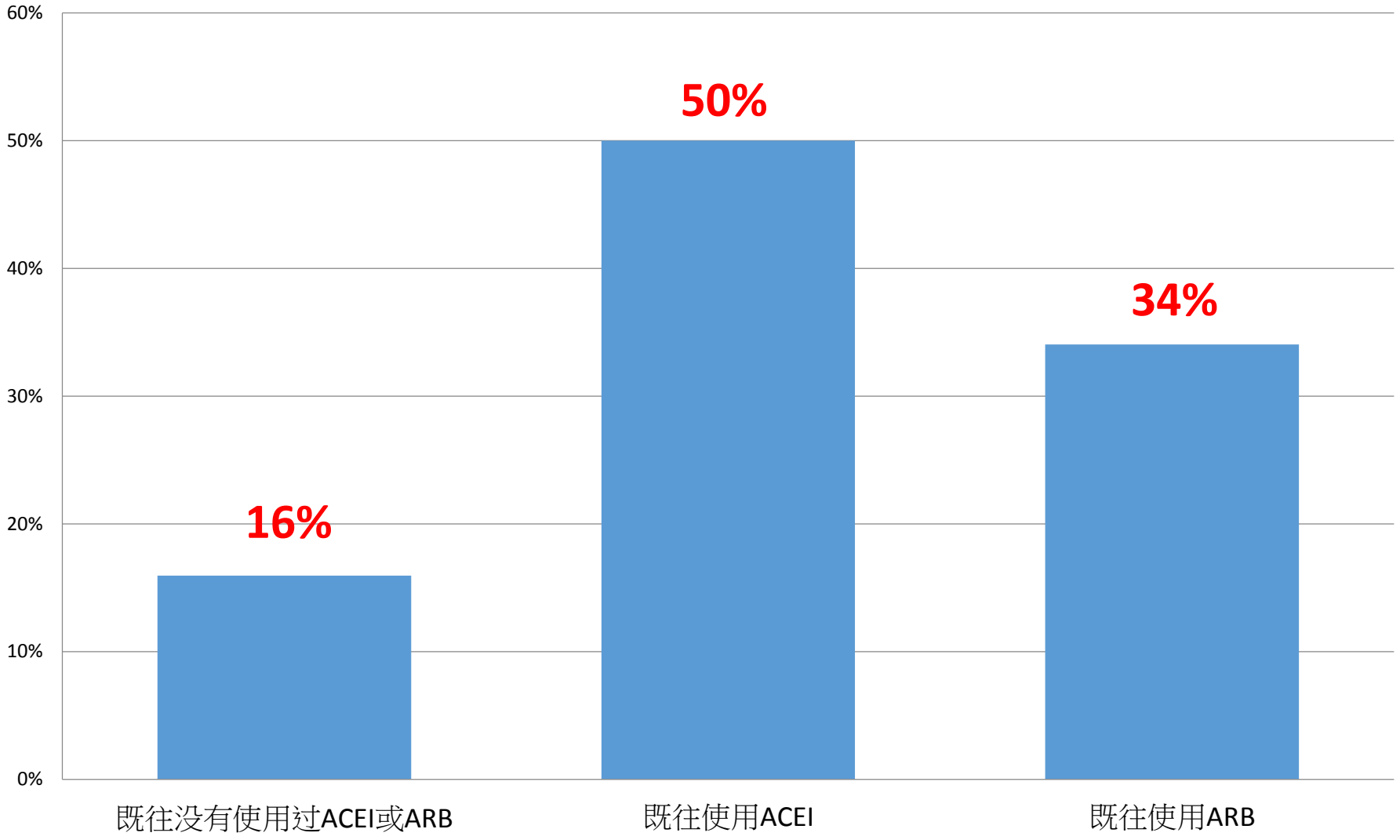
Our experience sharing

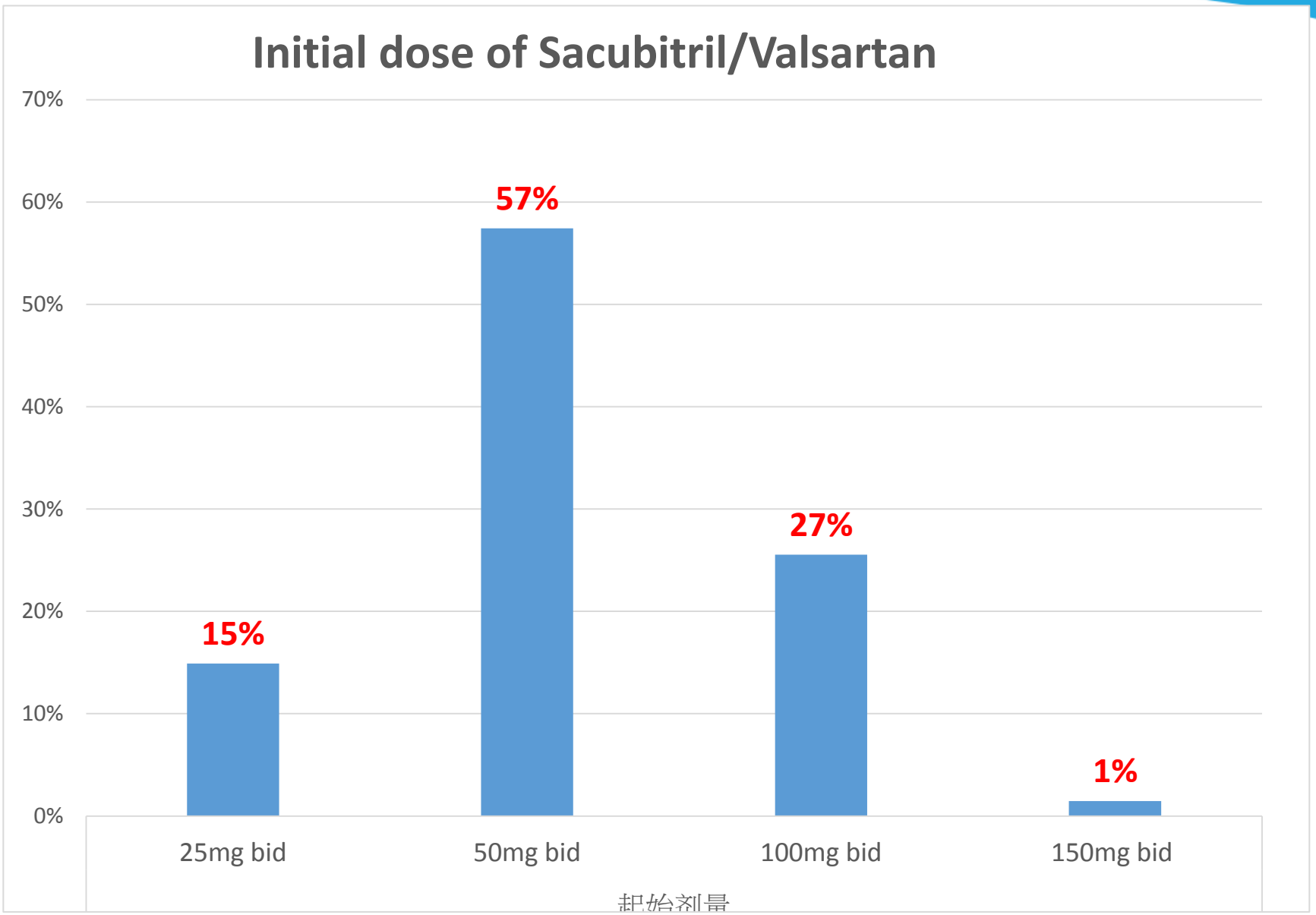
Sacubitril/Valsartan at the HKUSZH

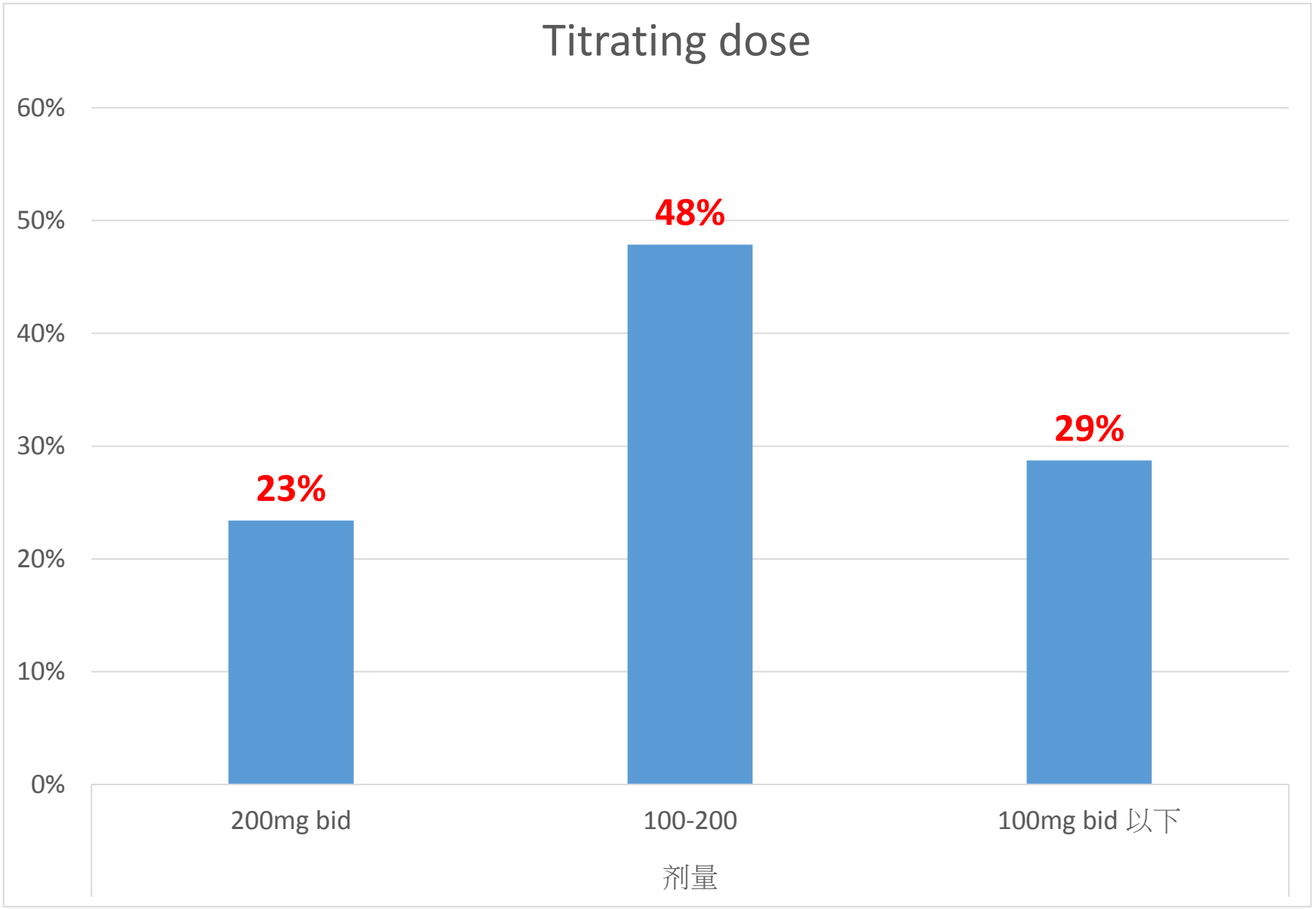
- Started from Jan 2017
- N=94，Male 63%，Mean age 56



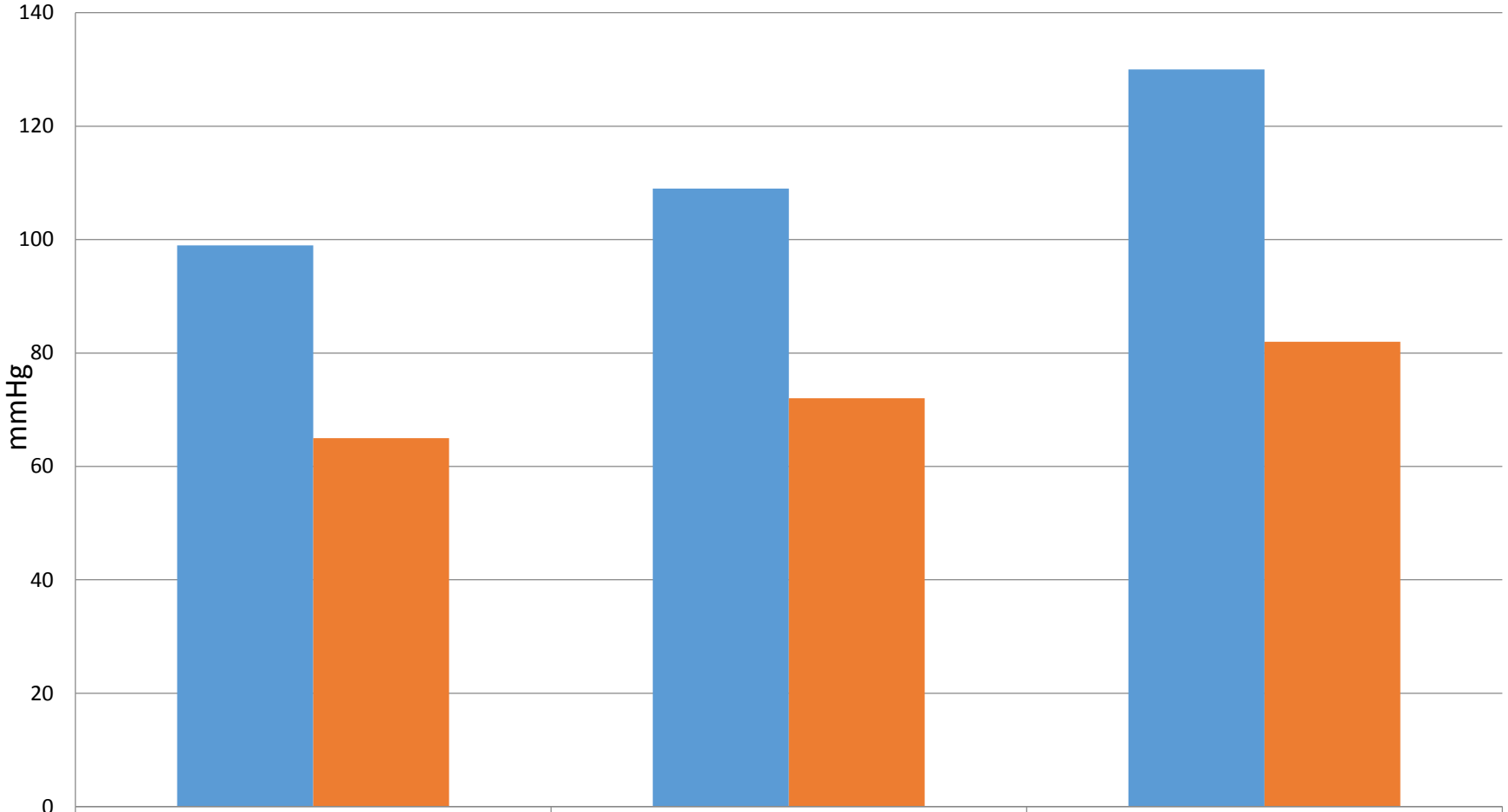
Prescription Before Sacubitril/Valsartan use



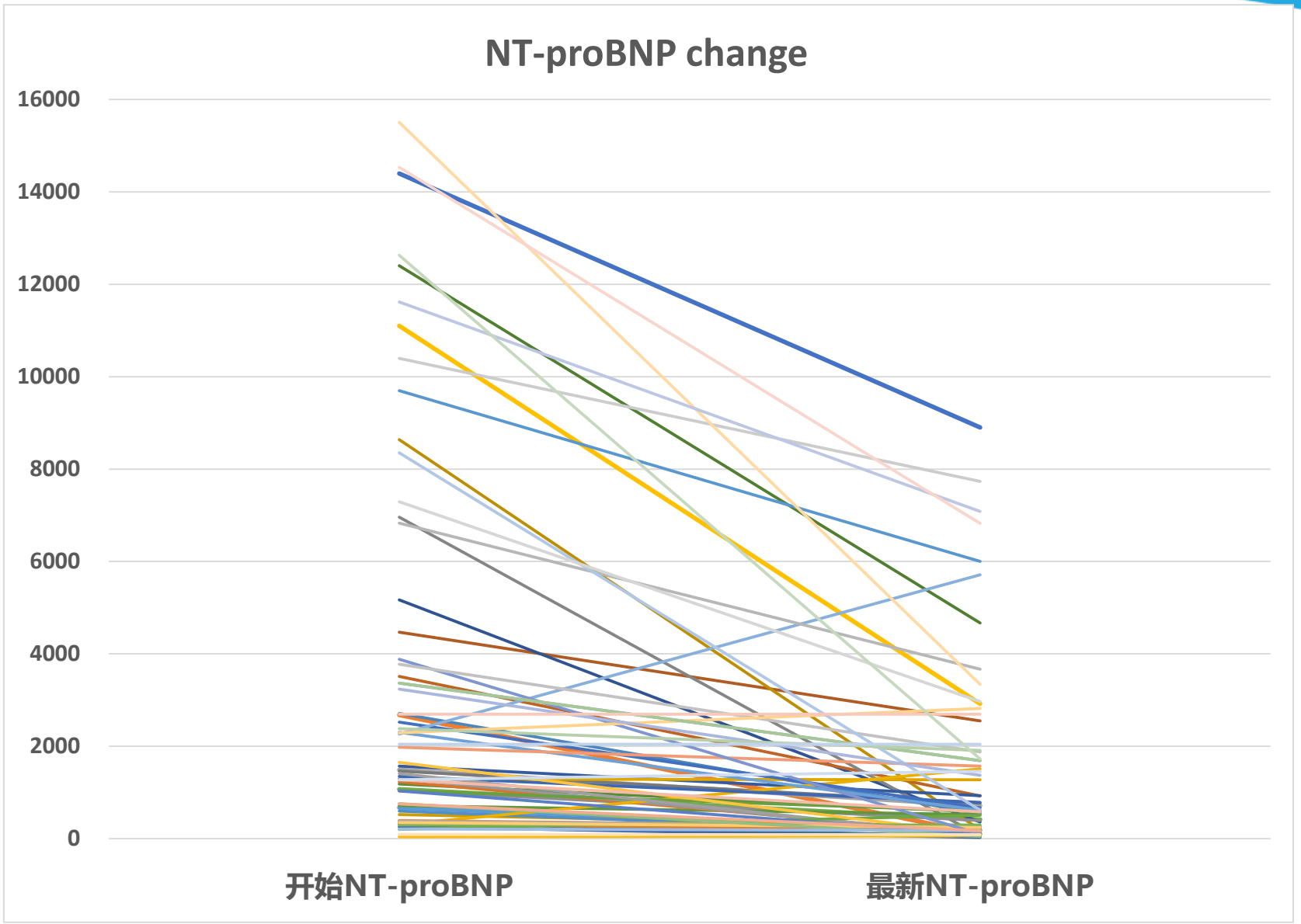

Initial dose of Sacubitril/Valsartan
70%
60%
50%
40%
30%
20%
10%
0%
57%
27%
15%
1%
25mg bid
50mg bid
100mg bid
150mg bid
起始剂量

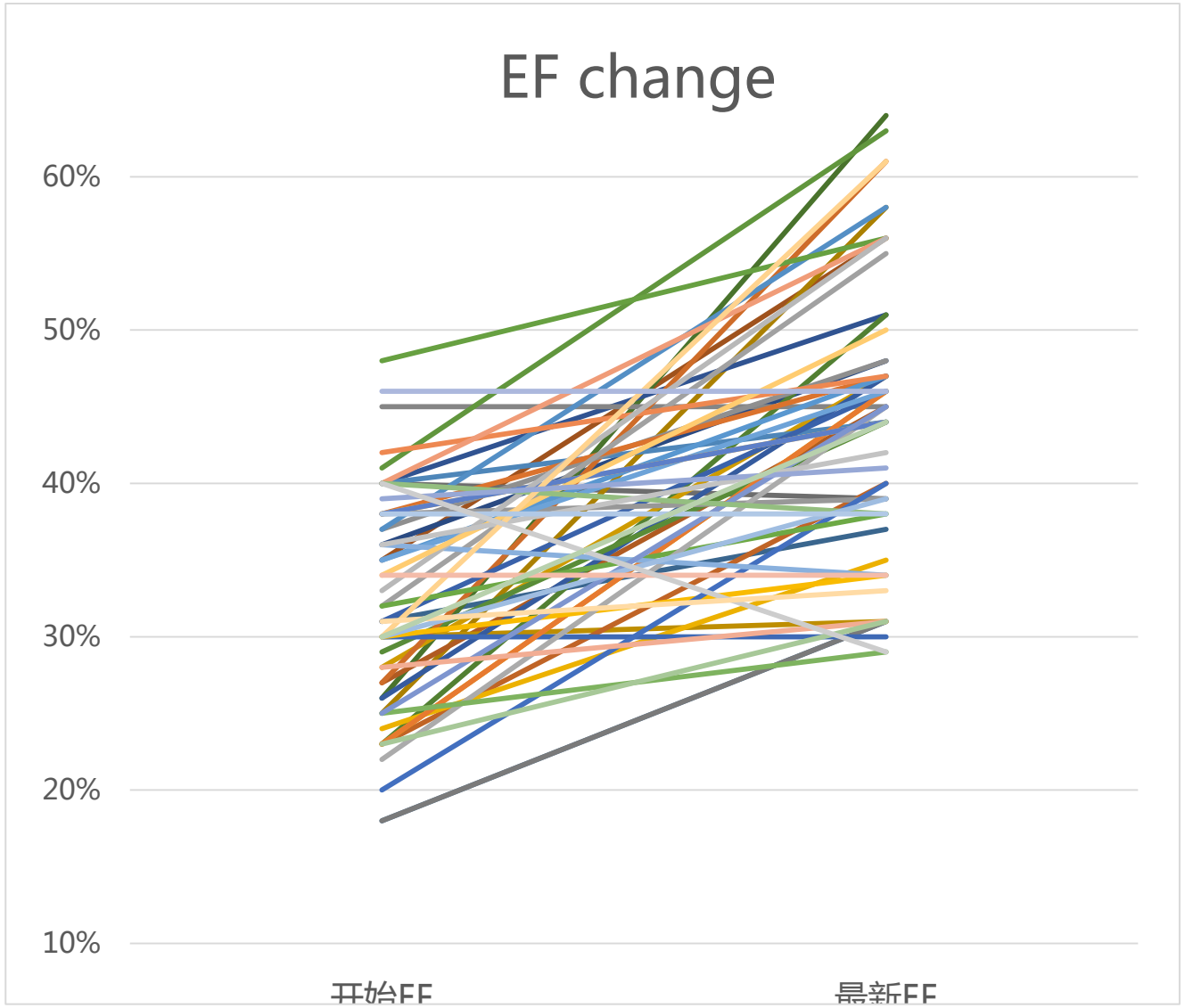

Titrating dose
60%
50%
40%
30%
20%
10%
0%
23%
48%
29%
200mg bid
100-200
100mg bid 以下
剂量

Initial blood pressure



	起始25mg bid	起始50mg bid	起始100mg bid
收缩压	99	109	130
舒张压	65	72	82


NT-proBNP change
16000
14000
12000
10000
8000
6000
4000
2000
0
开始NT-proBNP
最新NT-proBNP


EF change
60%
50%
40%
30%
20%
10%
开始EF
最新EF

When to use Sacubitril/Valsartan

- Newly diagnosed HFrEF
- Symptomatic patients despite ACEI/ARB
- Low EF despite ACEI/ARB

What follows discharge?

Health Care team

The primary care doctor
A cardiologist diagnoses and treats heart problems.
Other doctors include surgeons and other specialists, if recommended by the primary care doctor or cardiologist.
Clinical nurse specialists, nurse practitioners and physician assistants may perform tests and provide care, education and counseling.
Physical and occupational therapists assist with cardiac rehabilitation and help develop an appropriate plan for regular physical activity.
Dietitians share heart-healthy eating guidelines and help develop meal plans.
Mental health professionals help patients and families deal with emotional stress, anxiety or depression.
Social workers and case managers can help with complex financial, legal and other issues, such as insurance coverage, developing an advance directive and finding social support services.
Pharmacists are an excellent resource for information about your medications. They can advise you if one of your drugs interacts badly with certain foods or with other drugs, including nonprescription ones.

Transition Care

Designed to prevent readmissions among populations transitioning from one care setting to another

- Home visit
- Telemonitoring
- Telephone call
- Multidisciplinary clinic

Effect of Nurse-Implemented Transitional Care for Chinese Individuals with Chronic Heart Failure in Hong Kong: A Randomized Controlled Trial

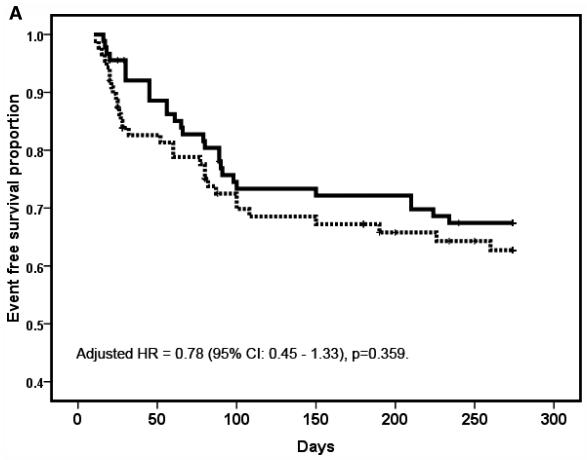
Doris S. F. Yu, RN, PhD, Diana T. F. Lee, RN, RM, PhD,* Simon Stewart, RN, PhD,†‡ David R. Thompson, RN, PhD, MBA,§ Kai-Chow Choi, PhD,* and Cheuk-Man Yu, MD‖*

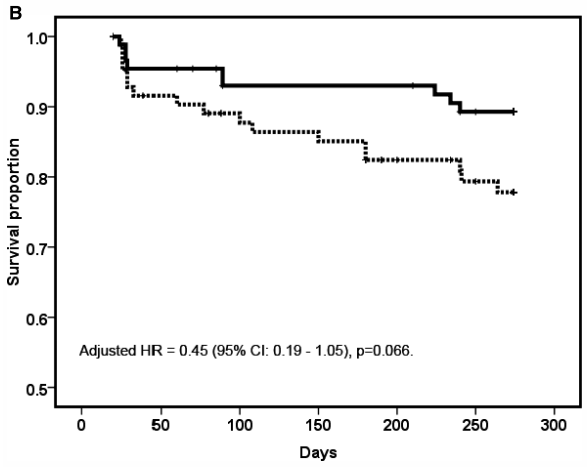
Table 1. Details of Nurse-Implemented Transitional Care (TC) Program

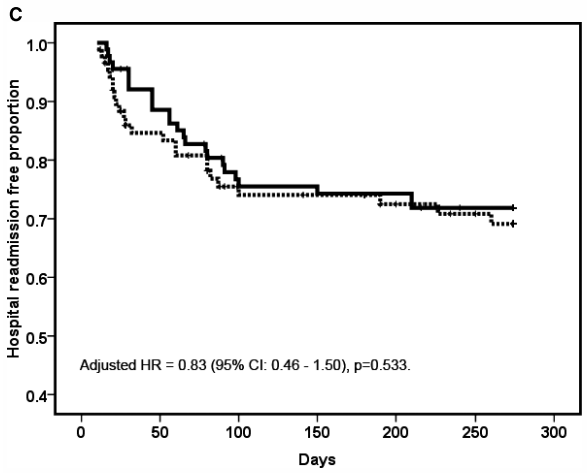
TC Program Component	Nursing Activities
Predischarge visit	Assessing health status (past and current medical history, reasons for admission, treatment regimen), cultural beliefs and self-care practices, and personal concerns about impending discharge
Two weekly home visits after discharge	Assessing disease progress (blood pressure, body weight, heart and lung auscultation, symptom assessment) and psychosocial assessment
	Assessing self-care implementation at home and identifying environmental barriers, if any
	Conducting customized educational and supportive interventions
	Developing partnership relationships
	Providing education and skill training on disease monitoring and management
	Creating personal self-care goals and action plan that best match participant cultural and personal preferences
	Matching community support service to participant needs according to an algorithm, (developed in a way to match the potential problems of individuals with CHF to the most relevant and accessible community support services)
Intensive telephone follow-up	Monitoring CHF symptom severity (e.g., dyspnea, fatigue, activity level) and providing advice on self-care decision-making
	Conducting health counseling for goal attainment
	Assessing implementation of action plan
	Identifying environmental, psychosocial, cultural barriers to self-care and related methods to resolve
	Providing positive reinforcement
	Reviewing and adjusting self-care goal if necessary
Telephone access to cardiac nurse	Providing prompt advice to participant inquiries

CHF = congestive heart failure.

Yu DS J Am Geriatr Soc. 2015







Transition care group

- had a lower hospital readmission rate at 6 weeks
- had a lower mortality at 9 months (4.1% vs. 13.8%)
- had a shorter hospital stay
- had better self-care and health related quality of life

Yu DS J Am Geriatr Soc. 2015

Review | Annals of Internal Medicine

Transitional Care Interventions to Prevent Readmissions for Persons With Heart Failure

A Systematic Review and Meta-analysis

Cynthia Feltner, MD, MPH; Christine D. Jones, MD, MS; Crystal W. Cené, MD, MPH; Zhi-Jie Zheng, MD, PhD, MPH; Carla A. Sueta, MD, PhD; Emmanuel J.L. Coker-Schwimmer, MPH; Marina Arvanitis, MD; Kathleen N. Lohr, PhD, MPhil, MA; Jennifer C. Middleton, PhD; and Daniel E. Jonas, MD, MPH

Background: Nearly 25% of patients hospitalized with heart failure (HF) are readmitted within 30 days.

Purpose: To assess the efficacy, comparative effectiveness, and harms of transitional care interventions to reduce readmission and mortality rates for adults hospitalized with HF.

Data Sources: MEDLINE, Cochrane Library, CINAHL, ClinicalTrials .gov, and World Health Organization International Clinical Trials Registry Platform (1 January 1990 to late October 2013).

Study Selection: Two reviewers independently selected randomized, controlled trials published in English reporting a readmission or mortality rate within 6 months of an index hospitalization.

Data Extraction: One reviewer extracted data, and another checked accuracy. Two reviewers assessed risk of bias and graded strength of evidence (SOE).

Data Synthesis: Forty-seven trials were included. Most enrolled adults with moderate to severe HF and a mean age of 70 years. Few trials reported 30-day readmission rates. At 30 days, a high-intensity home-visiting program reduced all-cause readmission and the composite end point (all-cause readmission or death; low SOE). Over 3 to 6 months, home-visiting programs and multidisciplinary heart failure (MDS-HF) clinic interventions reduced all-cause readmission (high SOE). Home-visiting programs reduced HF-specific readmission and the composite end point (moderate SOE). Structured telephone support (STS) interventions reduced HF-specific readmission (high SOE) but not all-cause readmissions (moderate SOE). Home-visiting programs, MDS-HF clinics, and STS interventions produced a mortality benefit. Neither telemonitoring nor primarily educational interventions reduced readmission or mortality rates.

Limitations: Few trials reported 30-day readmission rates. Usual care was heterogeneous and sometimes not adequately described.

Conclusion: Home-visiting programs and MDS-HF clinics reduced all-cause readmission and mortality; STS reduced HF-specific readmission and mortality. These interventions should receive the greatest consideration by systems or providers seeking to implement transitional care interventions for persons with HF.

Primary Funding Source: Agency for Healthcare Research and Quality.

Ann Intern Med. 2014;160:774-784. www.annals.org

For author affiliations, see end of text.

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Table 1. **Transitional Care Interventions**

Category	Definition
Home-visiting programs	Home visits by clinicians, such as a nurse or pharmacist, who educate, reinforce self-care instructions, perform physical examination, or provide other care (e.g., physical therapy or medication reconciliation). These interventions are often referred to as nurse case management interventions, but they also can include home visits by a pharmacist or multidisciplinary team.
STS	Monitoring, education, or self-care management (or various combinations) using simple telephone technology after discharge in a structured format (e.g., series of scheduled calls with a specific goal, structured questioning, or use of decision-support software).
Telemonitoring	Remote monitoring of physiologic data (e.g., electrocardiogram, blood pressure, weight, pulse oximetry, or respiratory rate) with digital, broadband, satellite, wireless, or Bluetooth transmission to a monitoring center, with or without remote clinical visits (e.g., video monitoring).
Outpatient clinic–based	Services provided in one of several types of outpatient clinics: multidisciplinary HF, nurse-led HF, or primary care. The clinic-based intervention can be managed by a nurse or other provider and may also offer unstructured telephone support (e.g., patient hotline) outside clinic hours.
Primarily educational	Patient education (and self-care training) delivered before or at discharge by various personnel or methods: in person, interactive CD-ROM, or video education. Interventions in this category do not feature telemonitoring, home visits, or STS and are not delivered primarily through a clinic-based intervention. Follow-up telephone calls may occur to ascertain outcomes (e.g., readmission rates) but not to monitor patients' physiologic data.
Other	Unique interventions or interventions that do not fit into any of the other categories (e.g., individual peer support for patients with HF).

HF = heart failure; STS = structured telephone support.

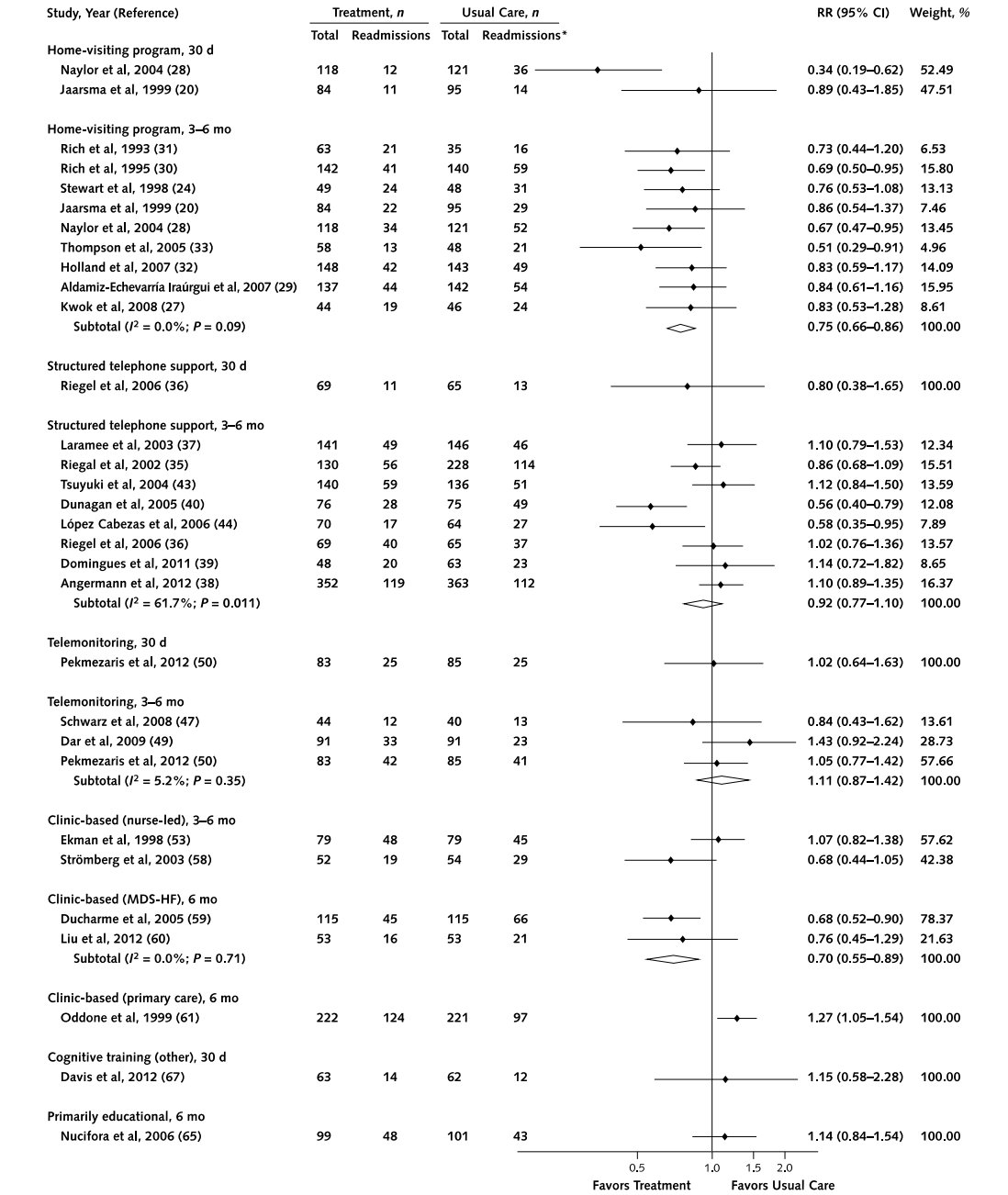
Home-visiting program

Telephone support

Telemonitoring

Clinic-based

Figure 1. **All-cause readmissions for transitional care interventions compared with usual care, by intervention category and outcome timing.**



European Journal of Heart Failure (2017) 19, 1427–1443
doi:10.1002/ejhf.765

RESEARCH ARTICLE

Comparative effectiveness of transitional care services in patients discharged from the hospital with heart failure: a systematic review and network meta-analysis

Harriette G.C. Van Spall[1,2]*, Tahseen Rahman[2], Oliver Mytton[3], Chinthanie Ramasundarahettige[1], Quazi Ibrahim[1], Conrad Kabali[4], Michiel Coppens[5], R. Brian Haynes[2], and Stuart Connolly[1]

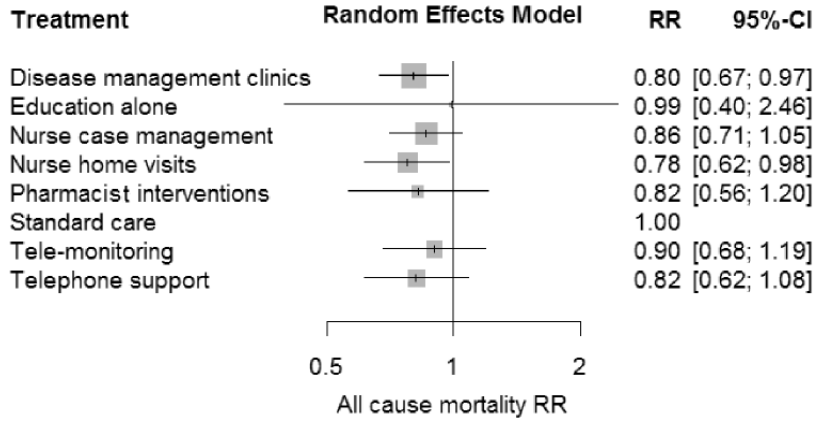


Figure 2 Comparative effectiveness of transitional care services in reducing all-cause mortality after hospitalization for heart failure. Results of the network meta-analysis are depicted in the forest plot. CI, confidence interval; RR, relative risk.

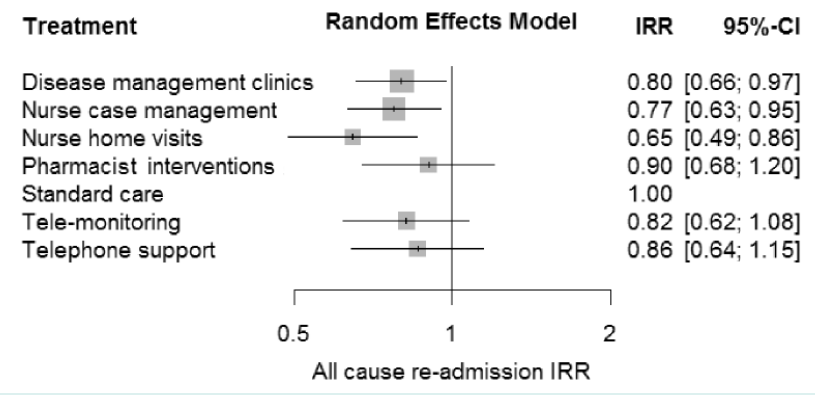
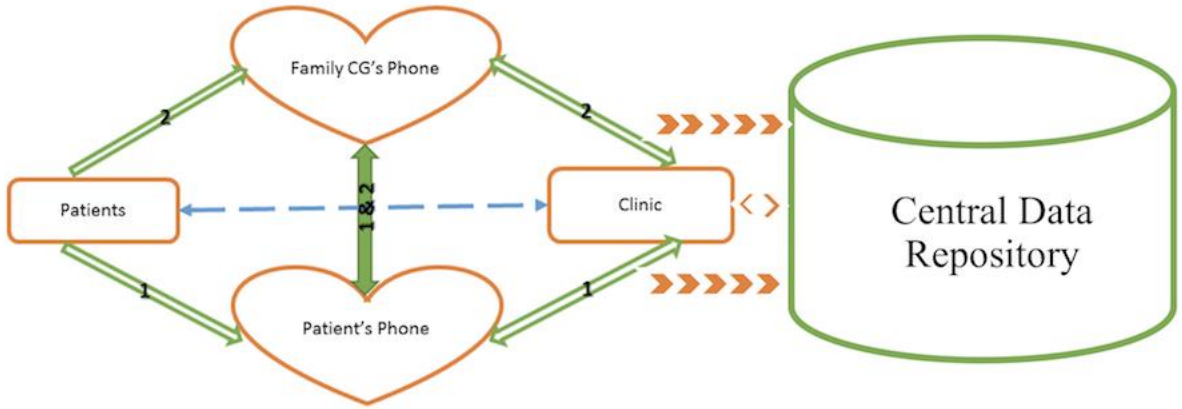


Figure 3 Comparative effectiveness of transitional care services in reducing all-cause readmissions after hospitalization for heart failure. Results of the network meta-analysis are depicted in the forest plot. CI, confidence interval; IRR, incident rate ratio.

Elements of interventions

- A multidisciplinary approach, recurrent face-to-face contact, education of patients, with an emphasis on self-care, weight monitoring, and pharmacotherapy, and proactive optimization of medications rather than sole reliance on patient triggers.

- Face-to-face assessments may be more effective than remote monitoring at addressing non-cardiovascular conditions that account for approximately 40% of readmissions .



Zhang et al. JMIR Res Protoc. 2019

Conclusion

- **HEART FAILURE** remains a chronic disease with unmet needs despite current available treatments.
- "…angiotensin receptor–neprilysin inhibition was superior to ACE inhibition alone in reducing the risks of death and of hospitalization for HF"
- "This robust finding provides strong evidence that combined inhibition of the angiotensin receptor and neprilysin is superior to inhibition of the RAS alone in patients with ***acute and chronic HF***."
- Transitional intervention is useful for reducing hospitalization burden in patients with HF.