

Winning the Battle Against Heart Failure Readmissions and Regional Reflections

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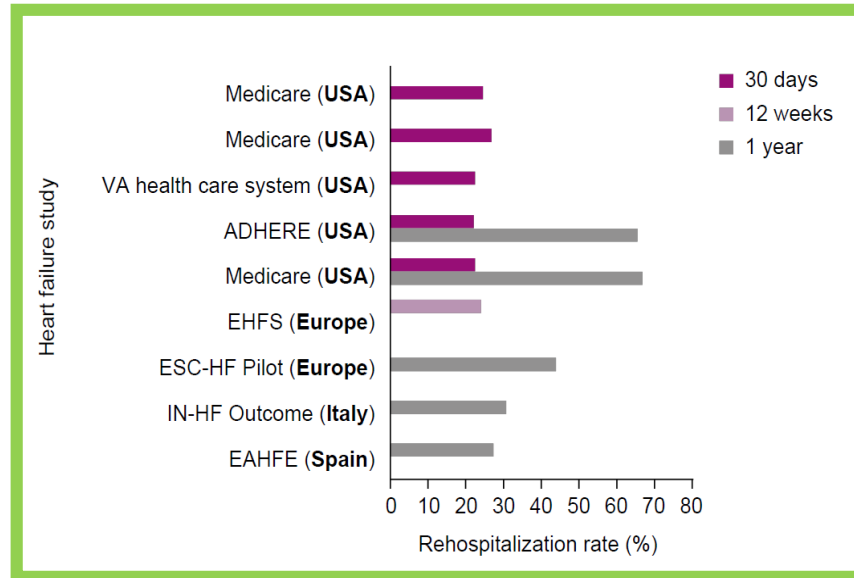
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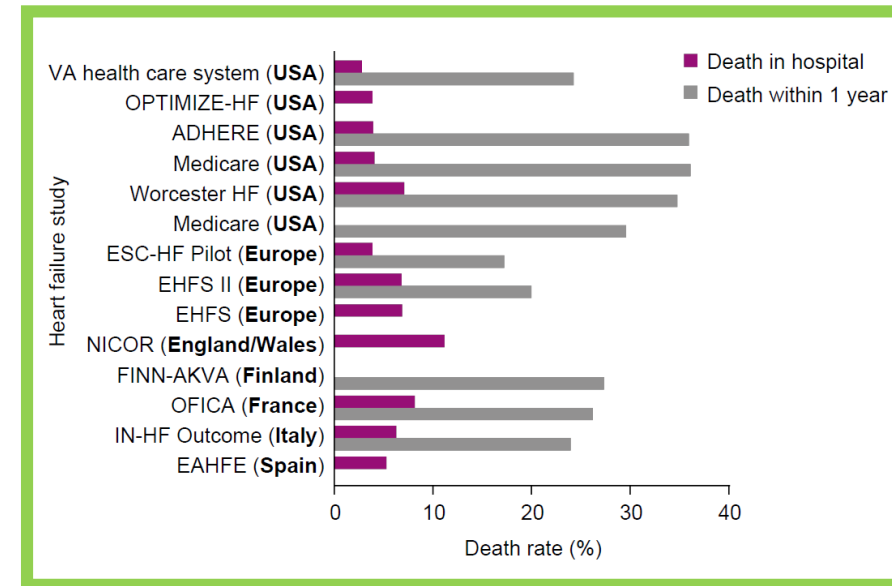
Chairman, Heart Failure Working Group of Emirates Cardiac Society

- Why is this a problem?
- The cycle of admission-readmission.
- Breaking the cycle:
 - Medications
 - Devices and Remote Monitoring
 - Education
- Regional Reflections

High Hospital readmission rates



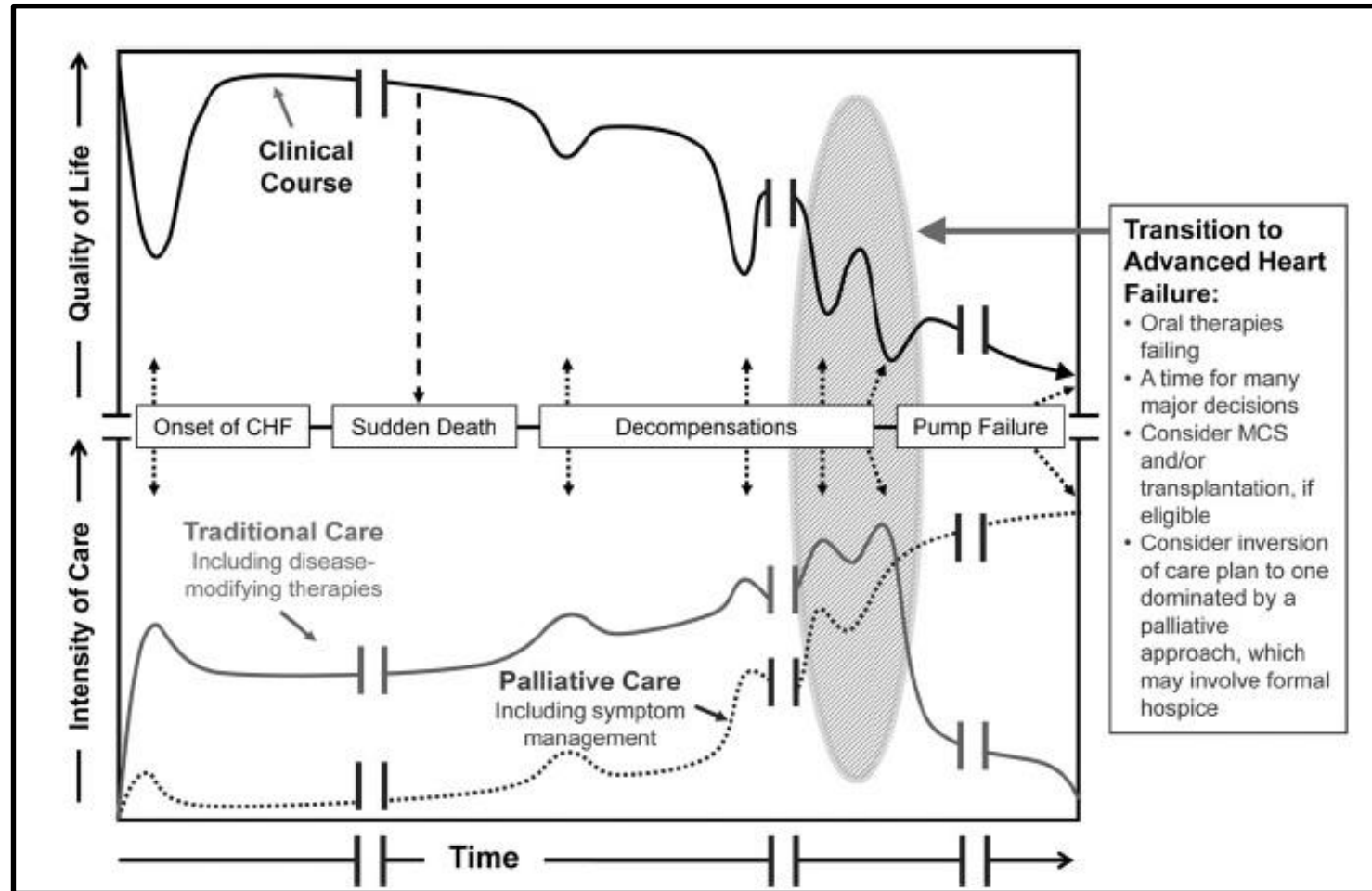
Death rates of patients admitted to hospital with Heart Failure



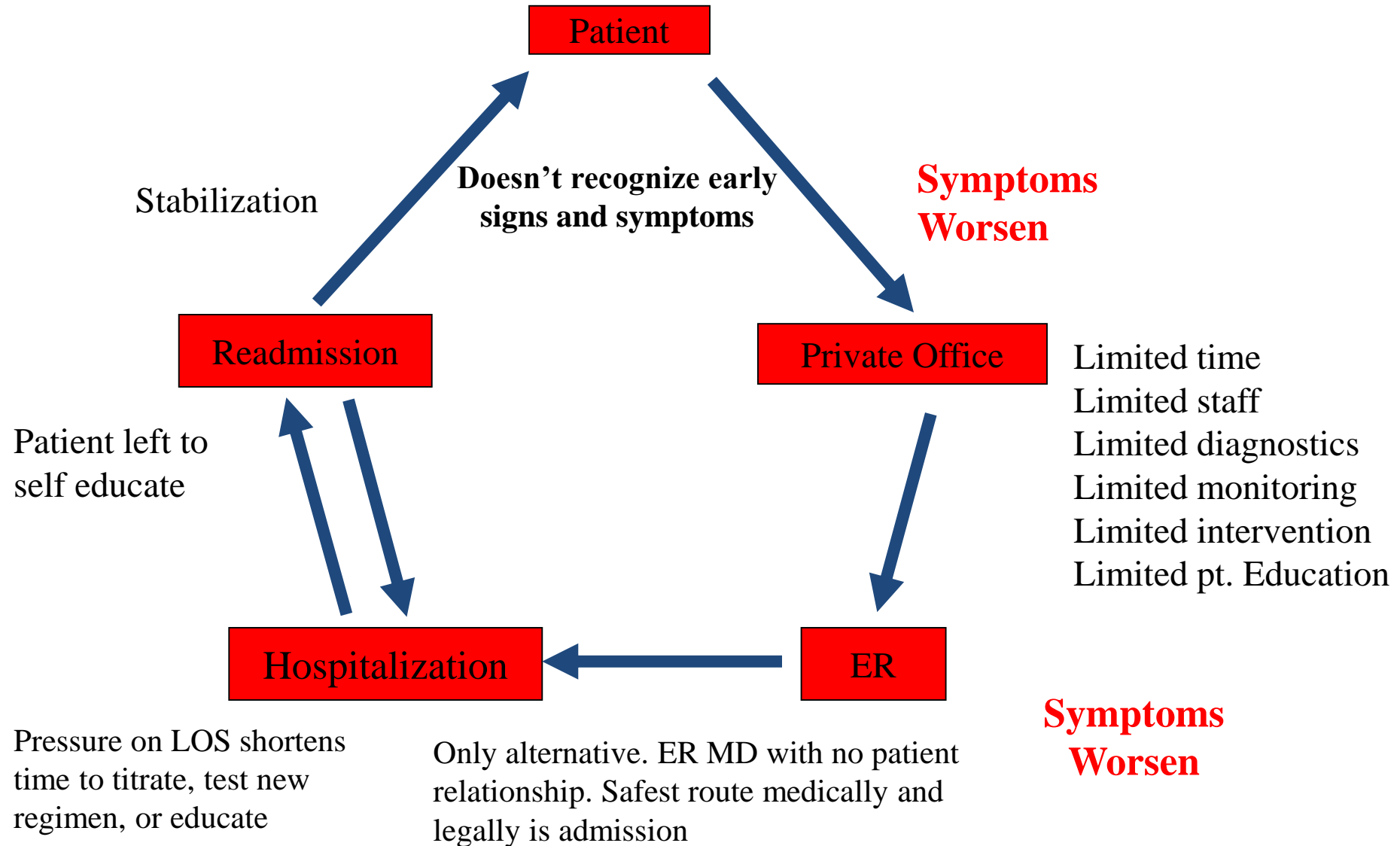
Global HF Awareness program HFA-2014

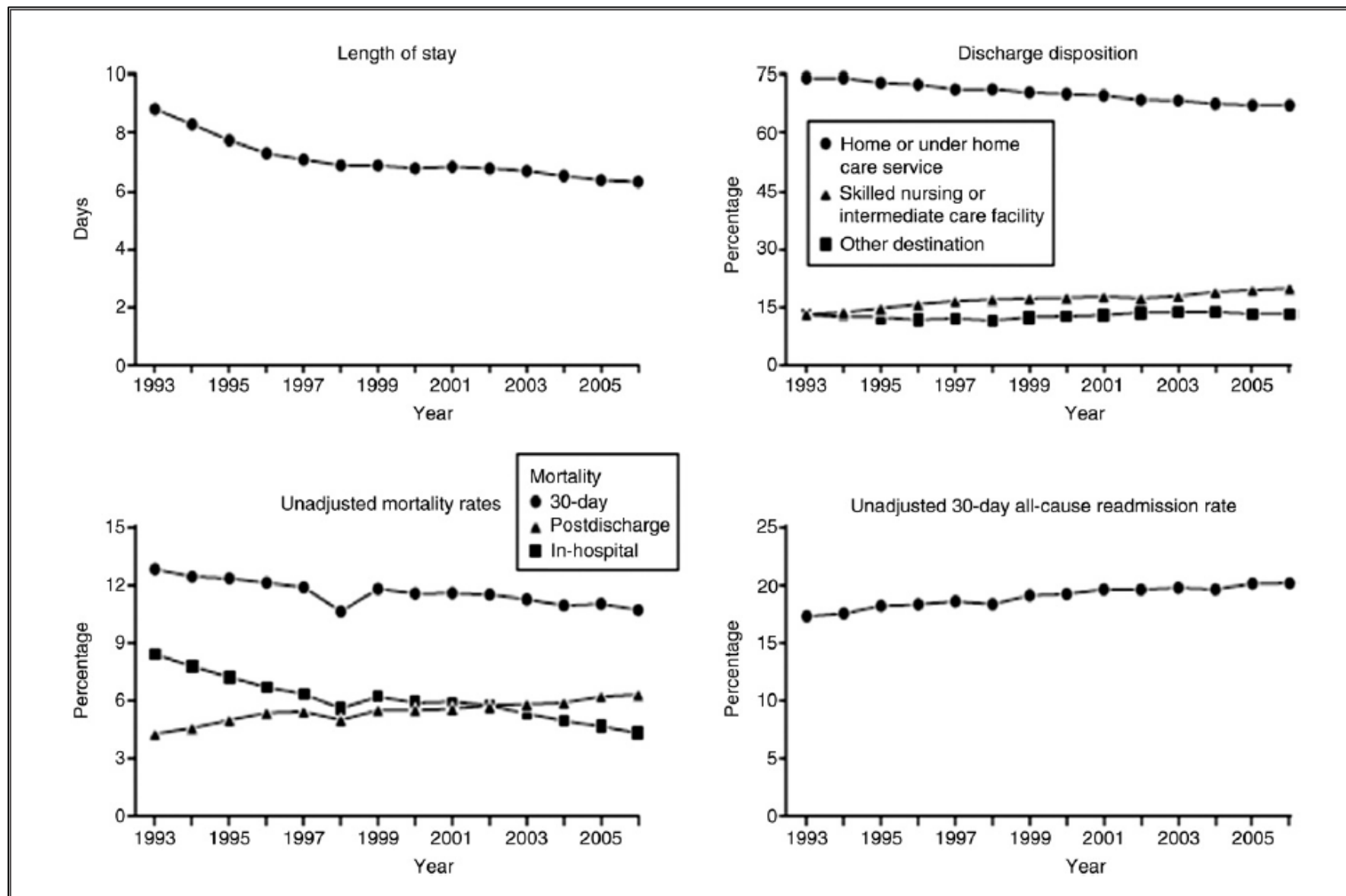
Courtesy, Hadi Skouri, MD

Clinical Course of HF



Limitations of the Current Model of Care





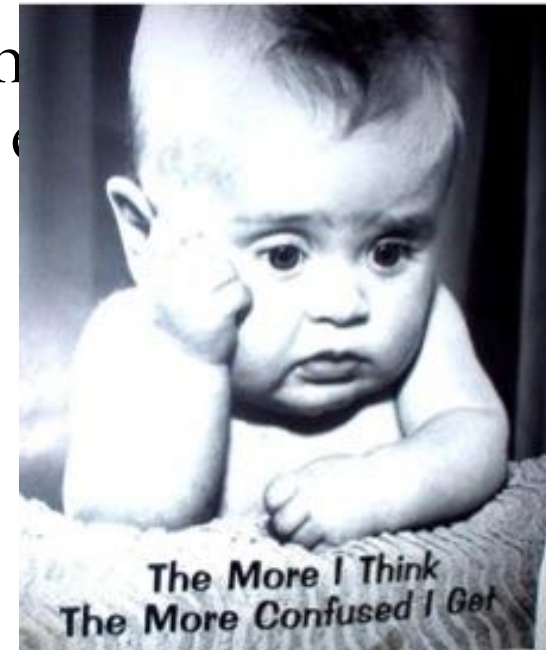
The highest rate of death & up to 24% of hospital readmissions occur during the **first month after discharge**




1. O'Connor et al. Causes of death and rehospitalization in patients hospitalized with worsening heart failure and reduced left ventricular ejection fraction: results from Efficacy of Vasopressin Antagonism in Heart Failure Outcome Study with Tolvaptan (EVEREST) program. Am Heart J. 2010;159:841-849.e1.
2. Marti NC, Fonarow GC, Gheorghiade M, Bulter J. Circ Heart Fail 2013;6:1095-1101

How do we break the cycle?

- HF hospitalization has been acknowledged as an important surrogate of poor outcome for a long time.
- HF hospitalization is an endpoint in all major clinical trials.
- HF hospitalization is reduced by virtually all medications included in practice management guidelines; devices don't improve mortality.
- However, HF hospitalizations are rising!





Perhaps, we need to
customize strategies
according to patient
backgrounds and clinical
profiles!

HFSA 2010 Practice Guideline

Disease Management

Recommendation 8.8 (1 of 2)

- **It is recommended** that HF disease management programs include the following components based on patient characteristics and needs.
 - Comprehensive education and counseling individualized to patient needs
 - Promotion of self care, including self-adjustment of diuretic therapy in appropriate patients (or with family member/caregiver assistance)
 - Emphasis on behavioral strategies to increase adherence

Strength of Evidence = B

HFSA 2010 Practice Guideline

Disease Management

Recommendation 8.8 (2of 2)

- It **is recommended** that HF disease management programs include the following components based on patient characteristics and needs.
 - Vigilant follow-up after hospital discharge or after periods of instability
 - Optimization of medical therapy
 - Increased access to providers
 - Early attention to signs and symptoms of fluid overload
 - Assistance with social and financial concerns

Strength of Evidence = B

HFSA 2010 Practice Guideline

Disease Management

Recommendation 8.9

- It **is recommended** that HF disease management include integration and coordination of care between the primary care physician and HF care specialists and with other agencies, such as home health and cardiac rehabilitation.

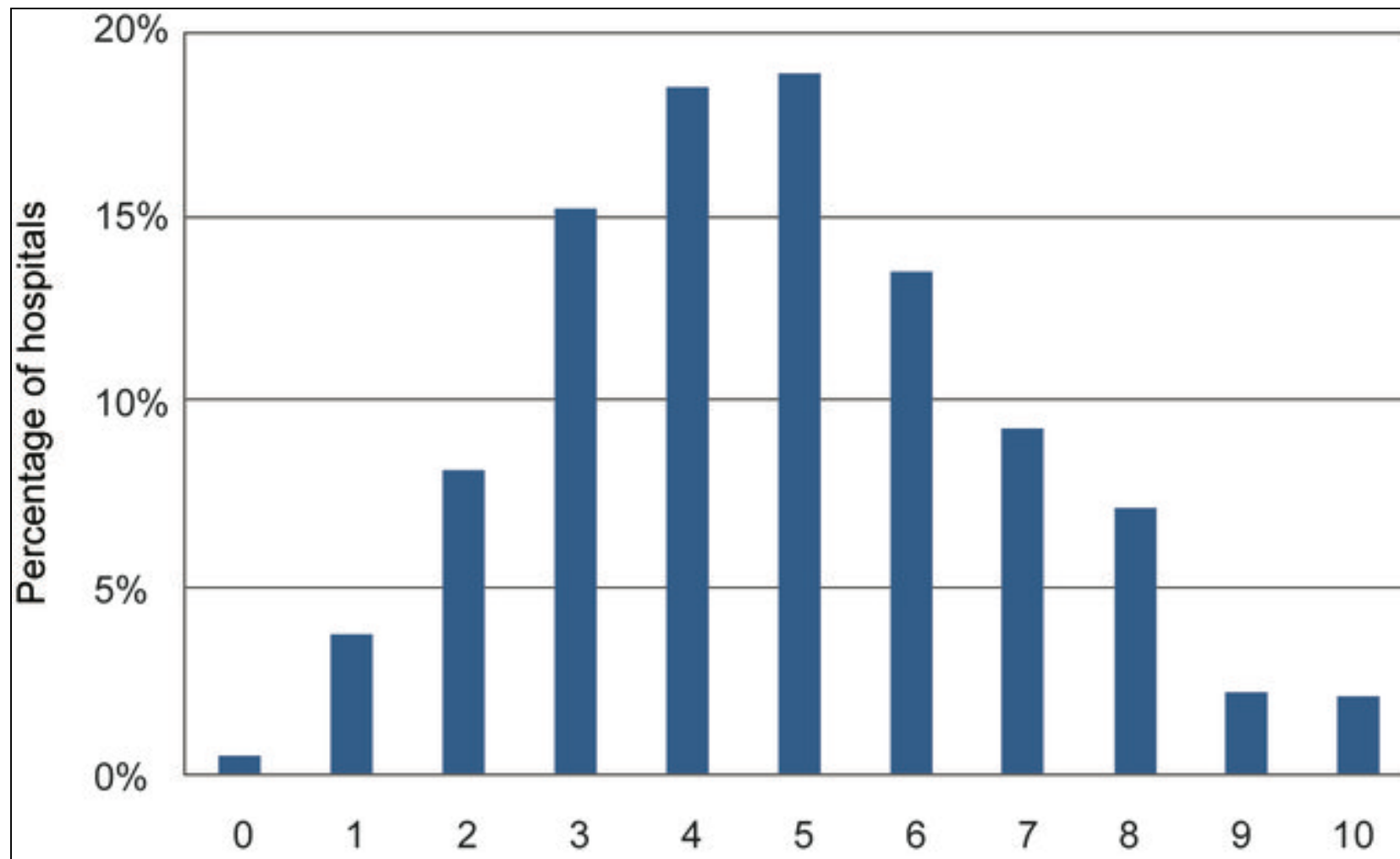
Strength of Evidence = C

Contemporary Evidence about Hospital Strategies for Reducing 30- Day Readmissions: A National Study

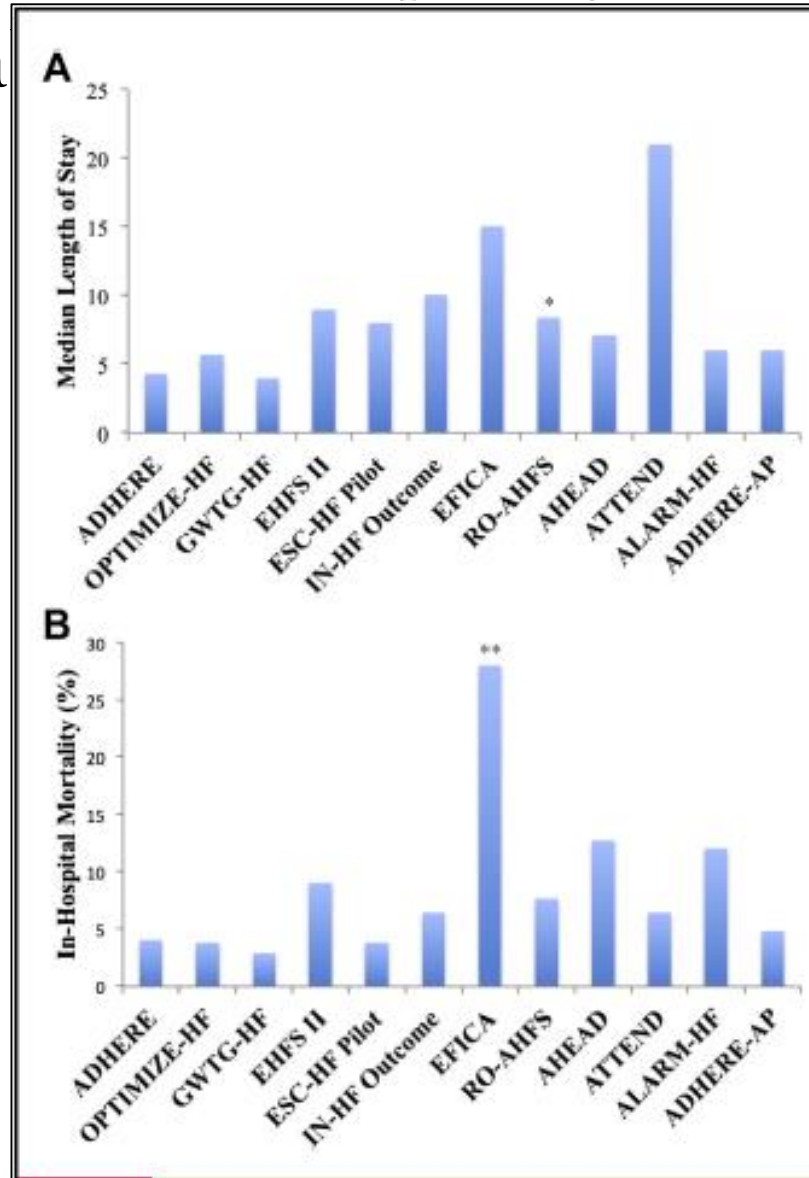
Elizabeth H. Bradley; PhD, Leslie Curry, MPH, PhD; Leora I.
Horwitz, MD; Heather Sipsma, PhD; Jennifer W. Thompson,
MPP; Mary Anne Elma, MPH; Mary Norine Walsh, MD;
Harlan M. Krumholz, MD

Results

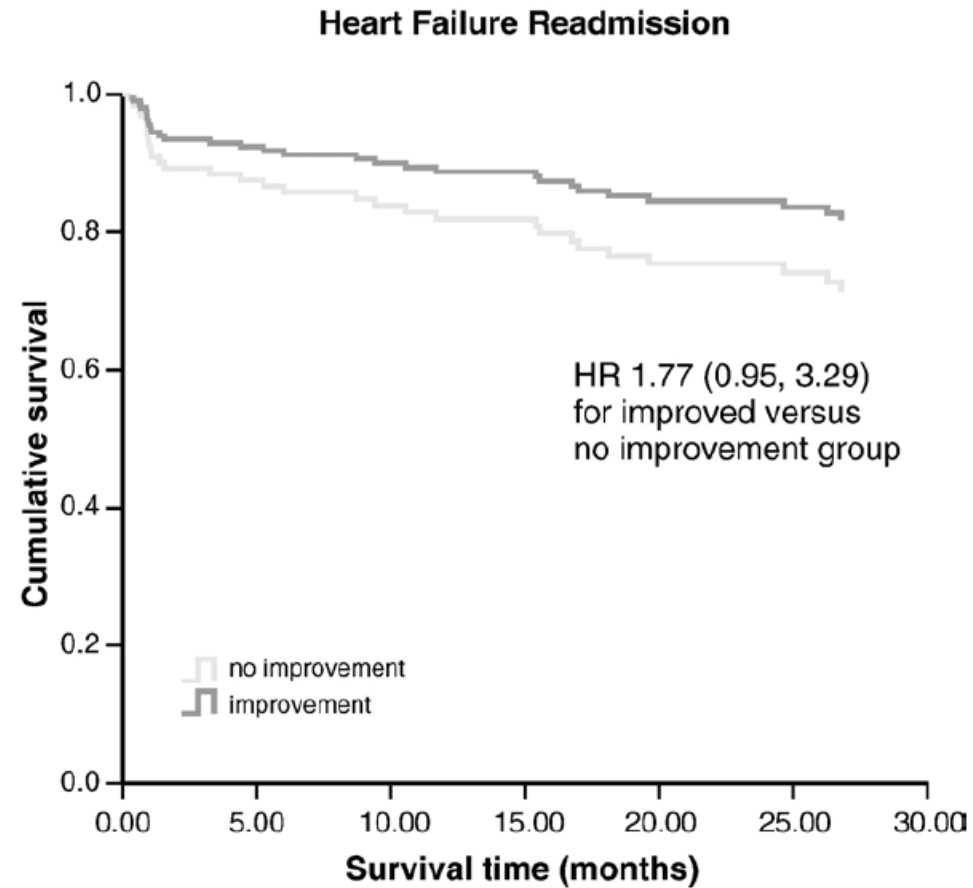
- Nearly 90% of hospitals agreed or strongly agreed that they had a written objective of reducing preventable readmission for patients with heart failure or AMI.
- More hospitals reported having quality improvement teams to reduce preventable readmissions for patients with heart failure (87%) than for patients with AMI (54%).
- On average, hospitals used 4.8 of 10 key practices; fewer than 3% of hospitals utilized all 10 practices.



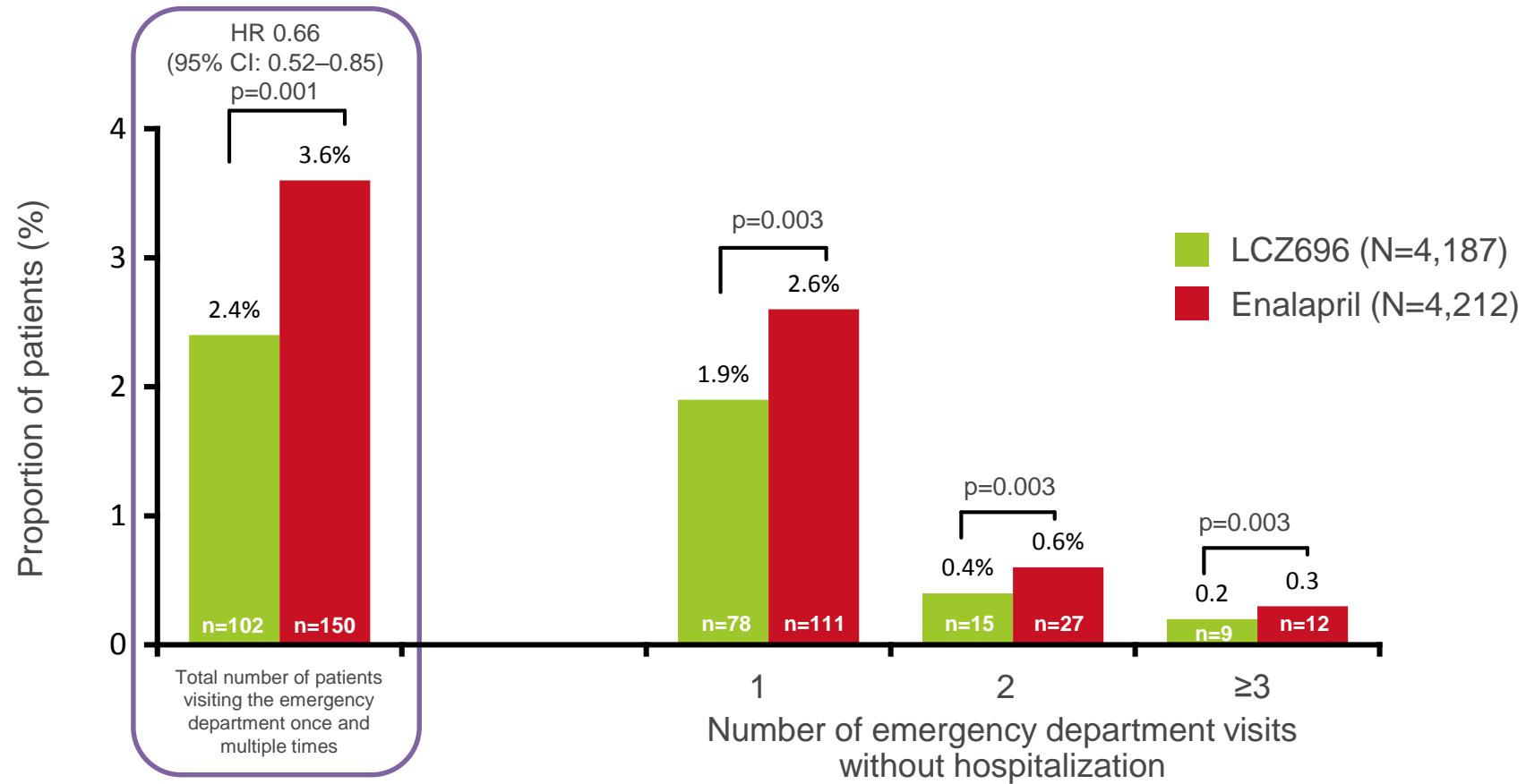
Patients are not adequately managed during hospital stay. Why longer?



Improvement in LVEF is associated with lower risk of readmission for HF

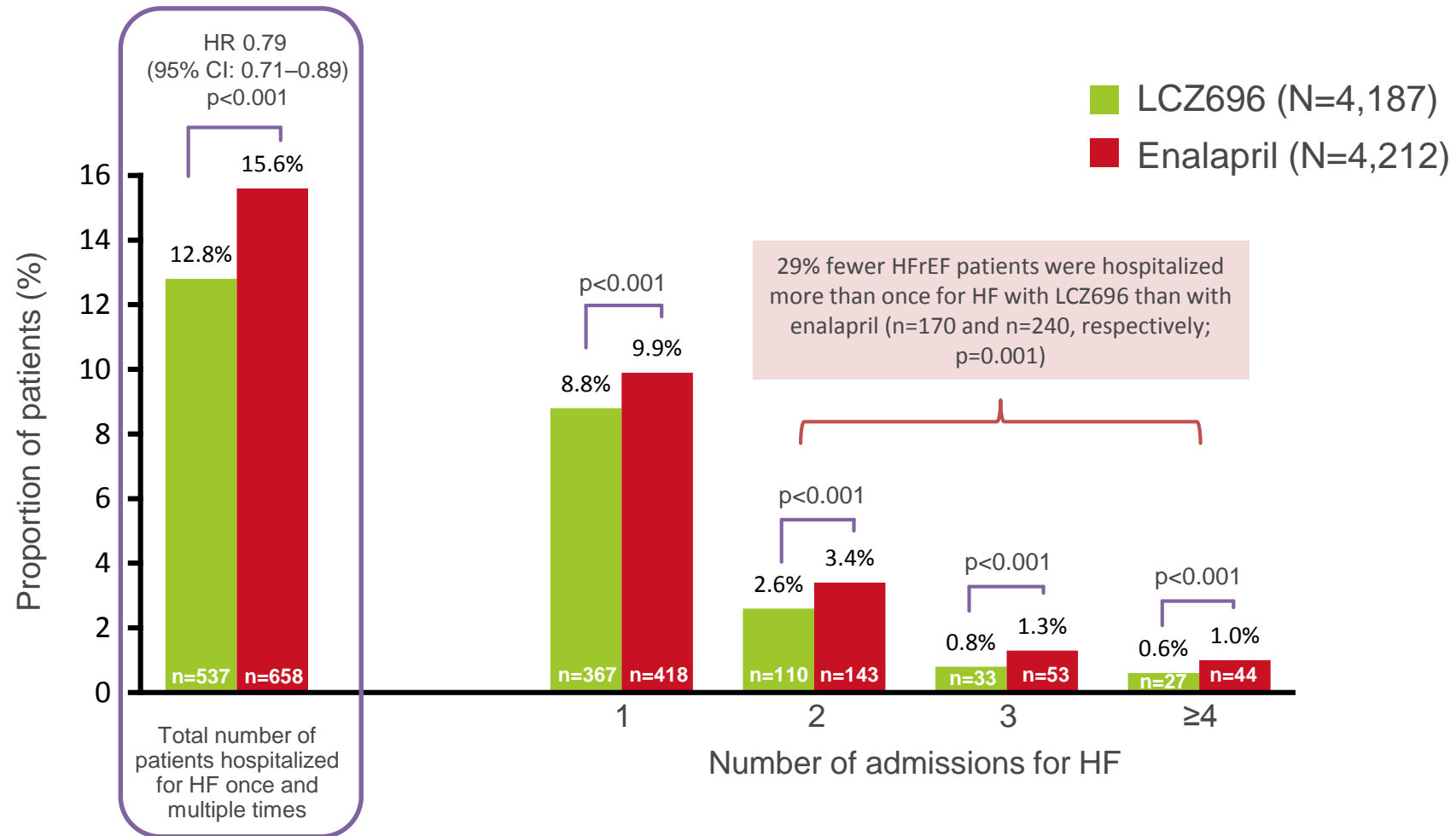


Lower proportion of HFrEF patients on LCZ696 were treated in the emergency department for worsening of HF (discharge without hospitalization)



- CI=confidence interval; HF=heart failure; HR=hazard ratio

Treatment with LCZ696 resulted in a lower likelihood of multiple hospitalizations for HF



- CI=confidence interval; HF=heart failure; HFrEF=heart failure with reduced ejection fraction; HR=hazard ratio

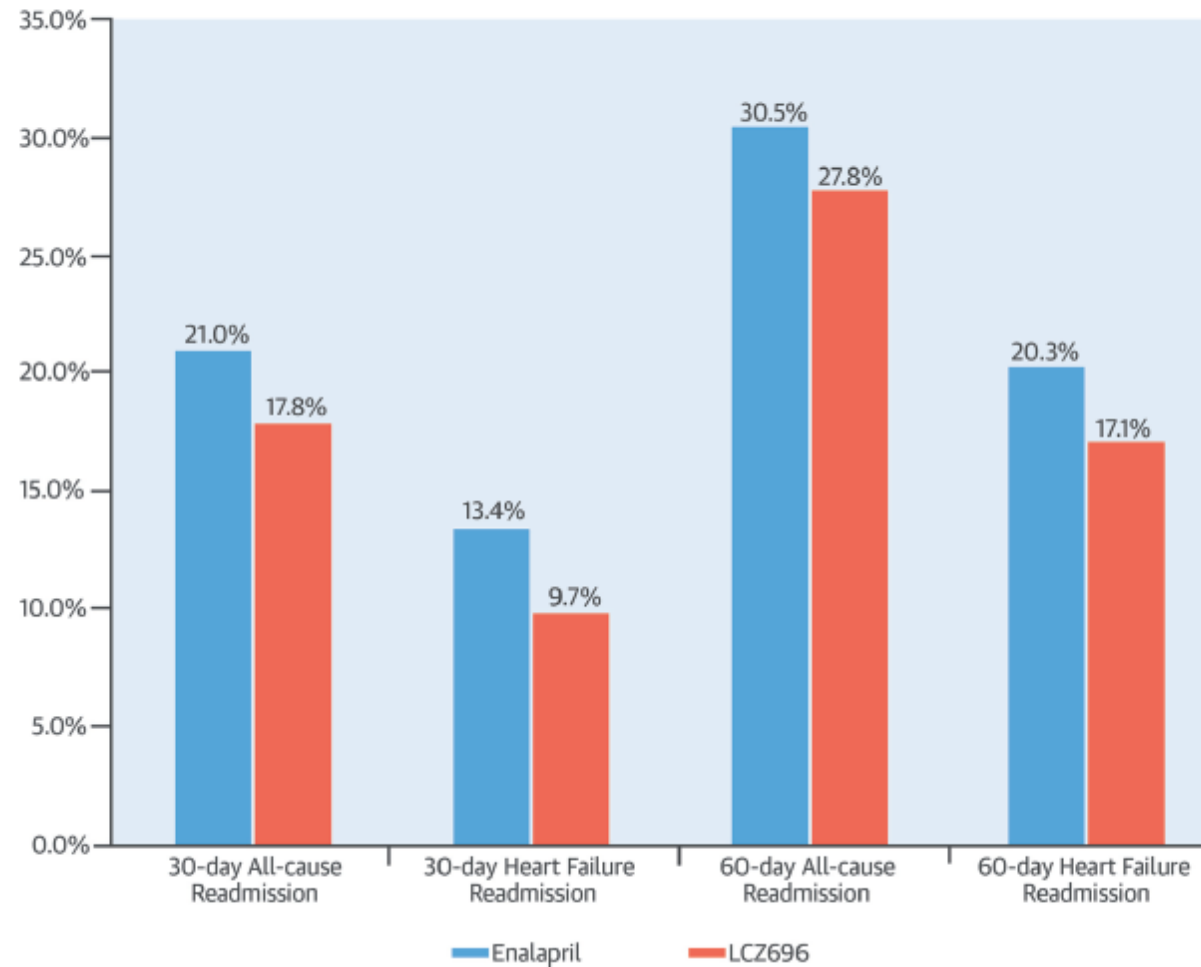
Influence of Sacubitril/Valsartan (LCZ696) on 30-Day Readmission After Heart Failure Hospitalization

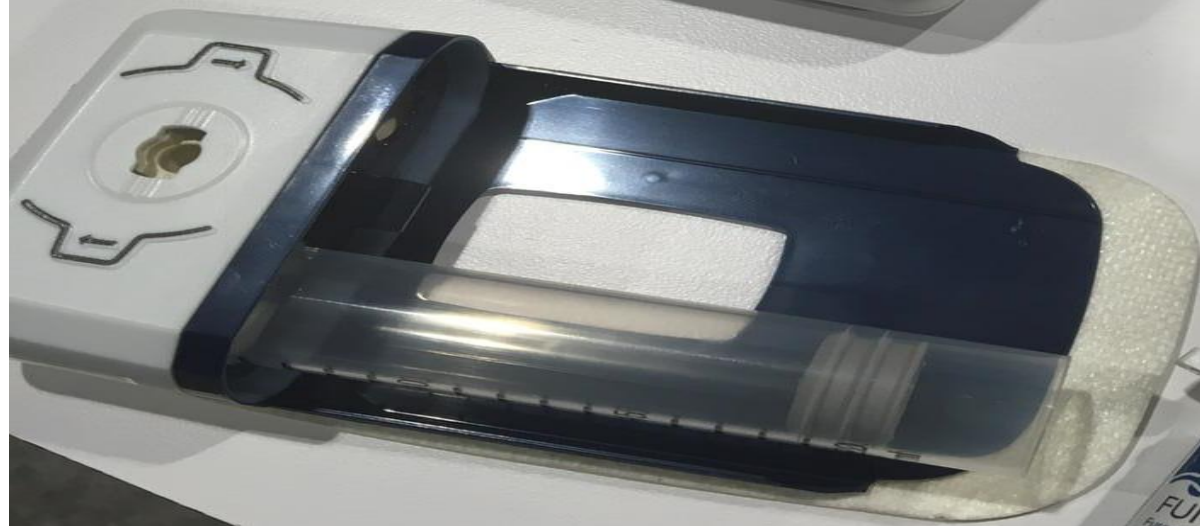
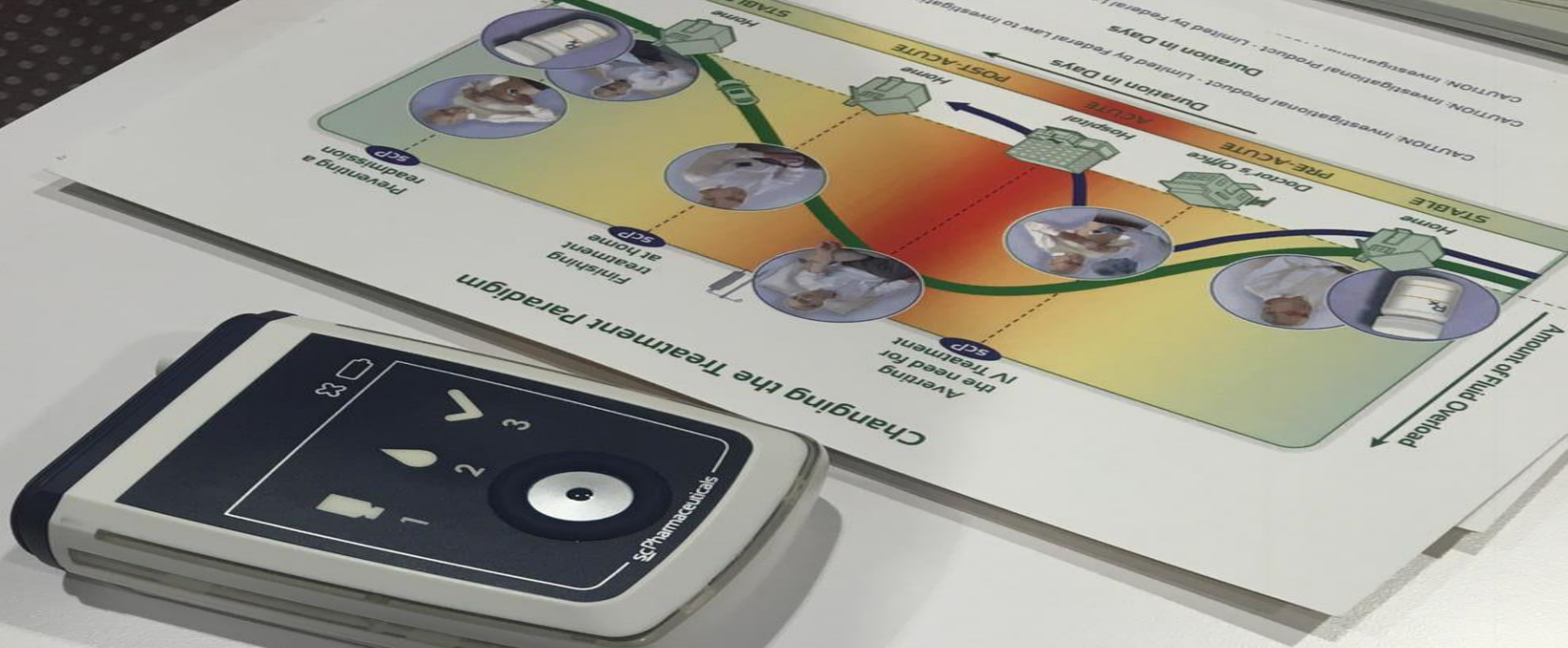


Akshay S. Desai, MD, MPH,^a Brian L. Claggett, PhD,^a Milton Packer, MD,^b Michael R. Zile, MD,^c Jean L. Rouleau, MD,^d Karl Swedberg, MD,^{e,f} Victor Shi, MD,^g Martin Lefkowitz, MD,^g Randall Starling, MD,^h John Teerlink, MD,ⁱ John J.V. McMurray, MD,^j Scott D. Solomon, MD,^a for the PARADIGM-HF Investigators

J Am Coll Cardiol. 2016;68(3):241-8.

CENTRAL ILLUSTRATION Influence of LCZ696 on Readmission: Rates After Investigator-Reported HF Hospitalization According to Treatment Assignment



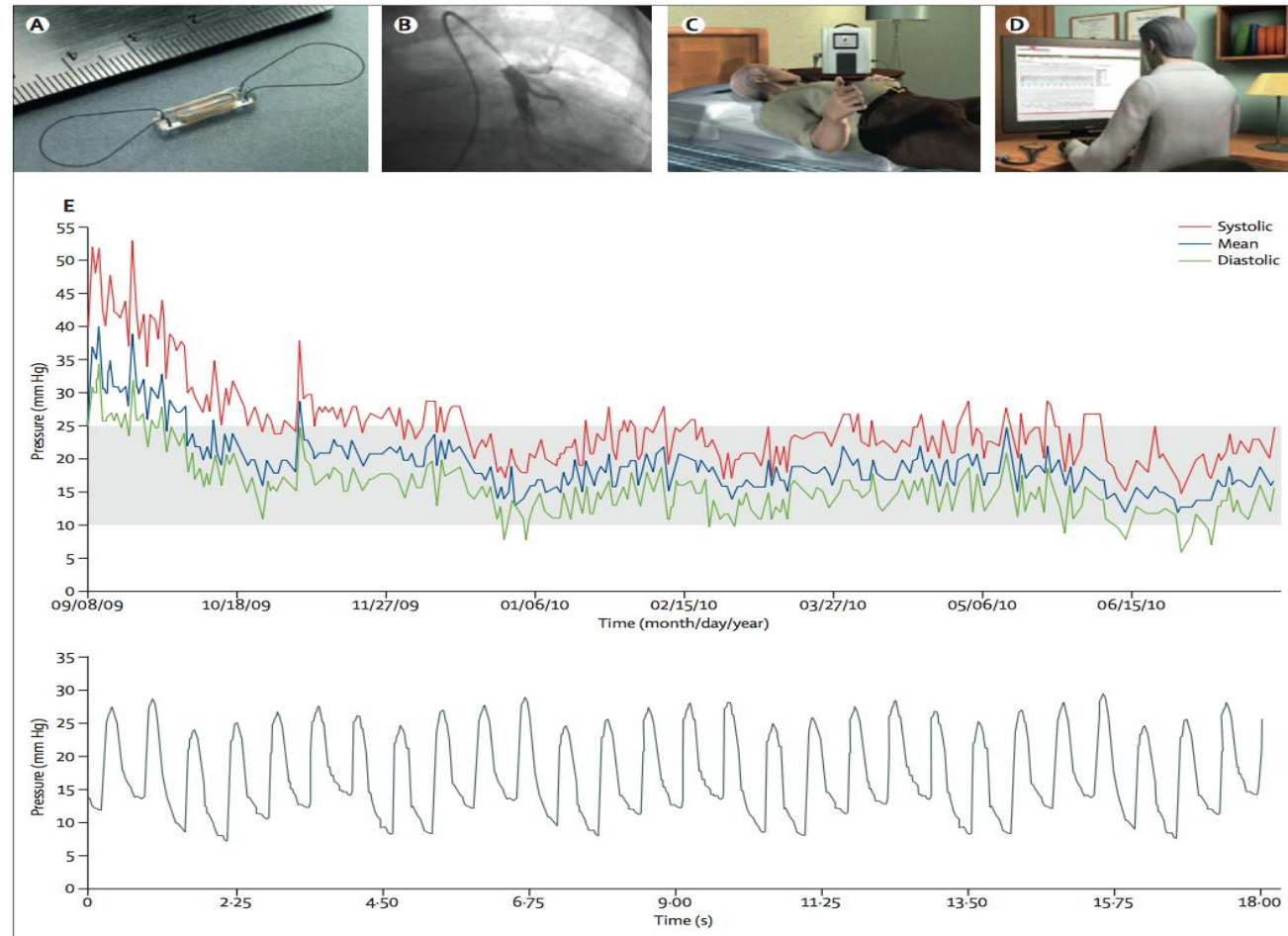


Subcutaneous Furosemide

- Parenteral therapy removes excess fluid and restores oral absorption.
- Furosemide is alkaline with pH around 9.
- Novel formulation of furosemide at physiologic pH
- A fixed dose of 80 mg infused over 5 hrs (30 mg in first hour followed by 12.5 mg/hr for 4 hrs).
- Dose of 80 mg is equivalent to 120 mg IV
- Goal: Preventing readmission, shortening LOS, others.



CardioMEMS Heart Sensor Allows Monitoring of Pressure to Improve Outcomes in NYHA Class III Heart Failure Patients (CHAMPION) Study



Abraham WT et al., Lancet 2011; 377: 658–66

CHAMPION Trial

- Patients in NYHA class III HF randomized to a wireless implantable hemodynamic monitoring system or to a control group.
- Included patients with HFrEF and HFpEF.
- Daily measurement of pulmonary artery pressures + standard of care or standard of care alone.
- Protocol defined target filling pressure ranges with titration of diuretic and vasodilators.
- Primary efficacy endpoint: Heart failure related hospitalizations at 6 months

CHAMPION Study Primary Endpoint: Cumulative HF Hospitalizations by Randomization Assignment

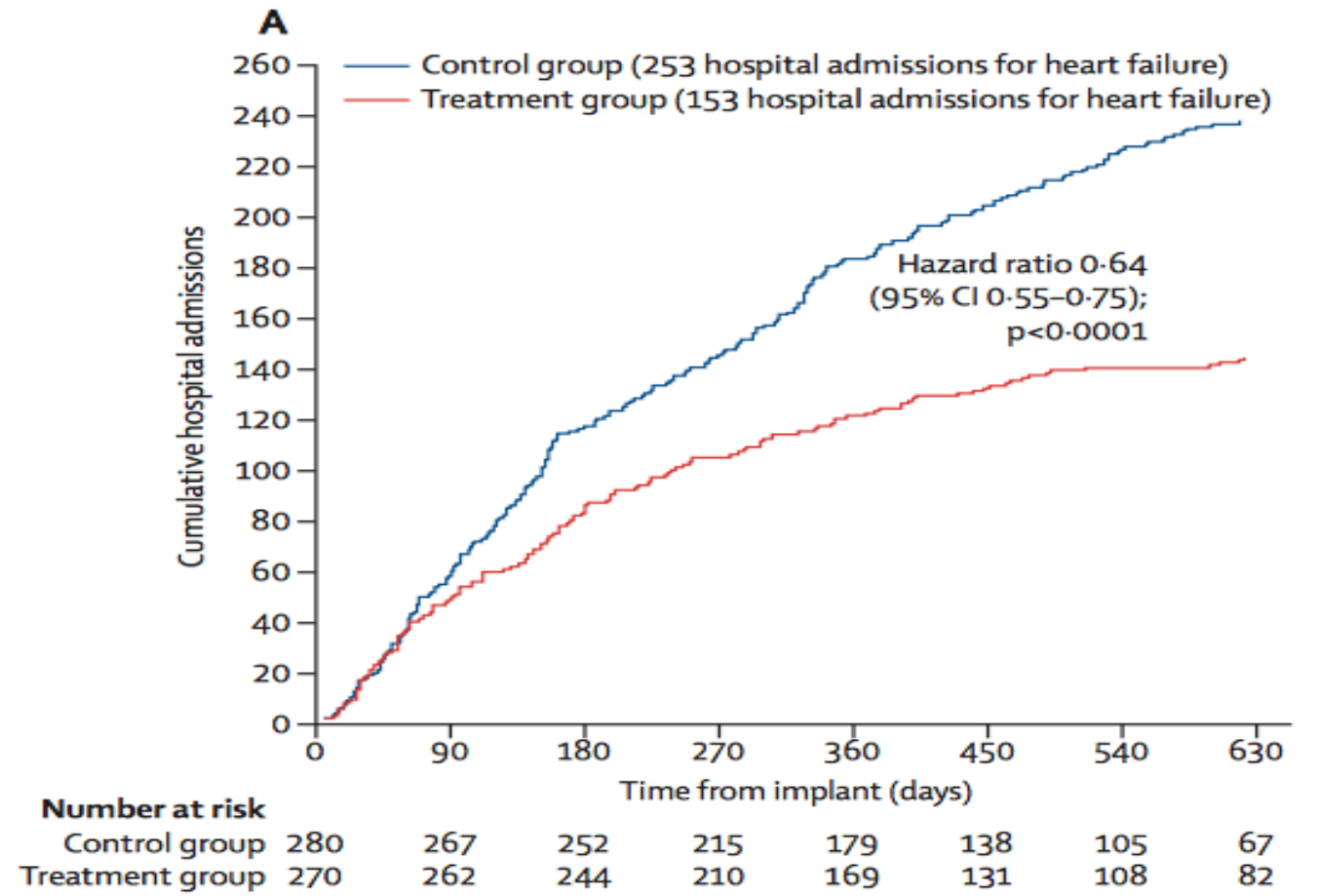
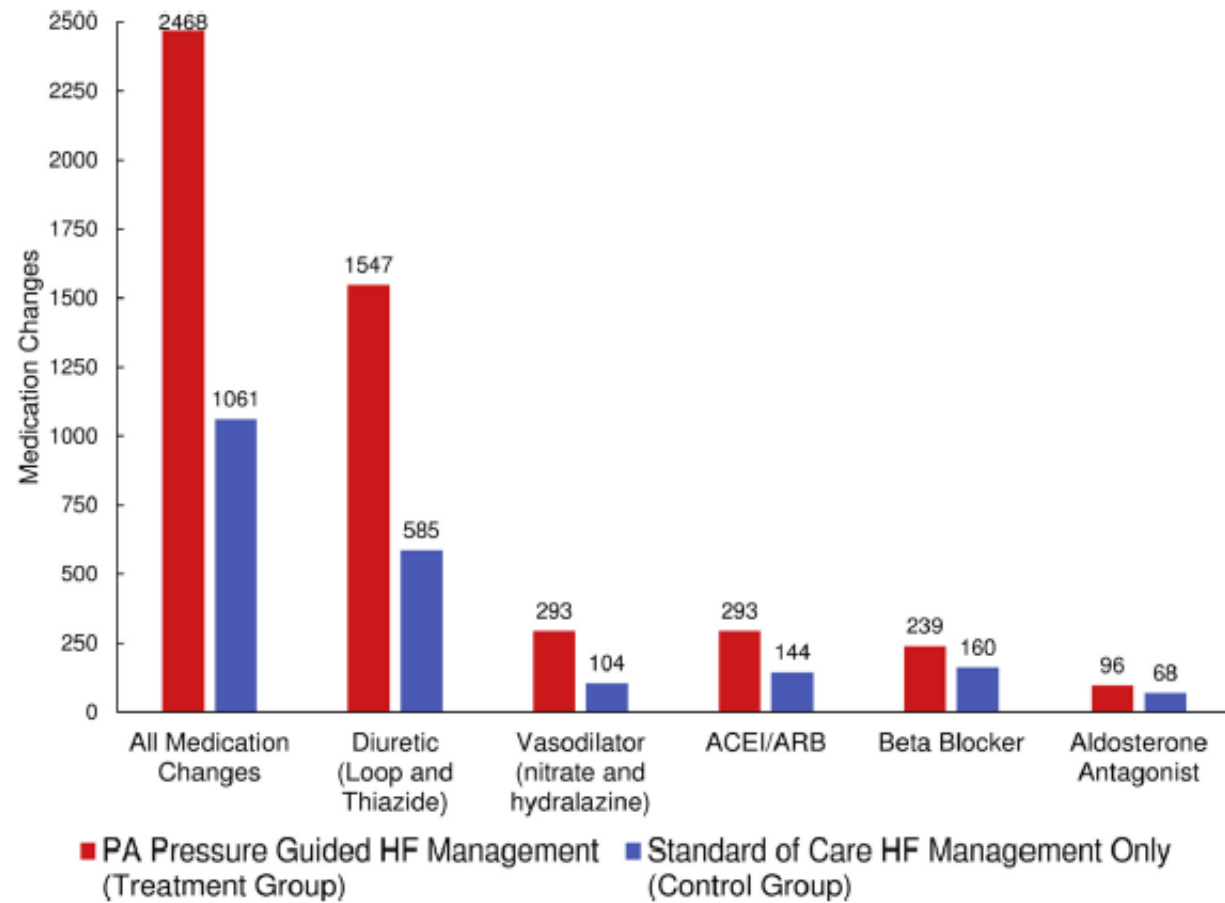
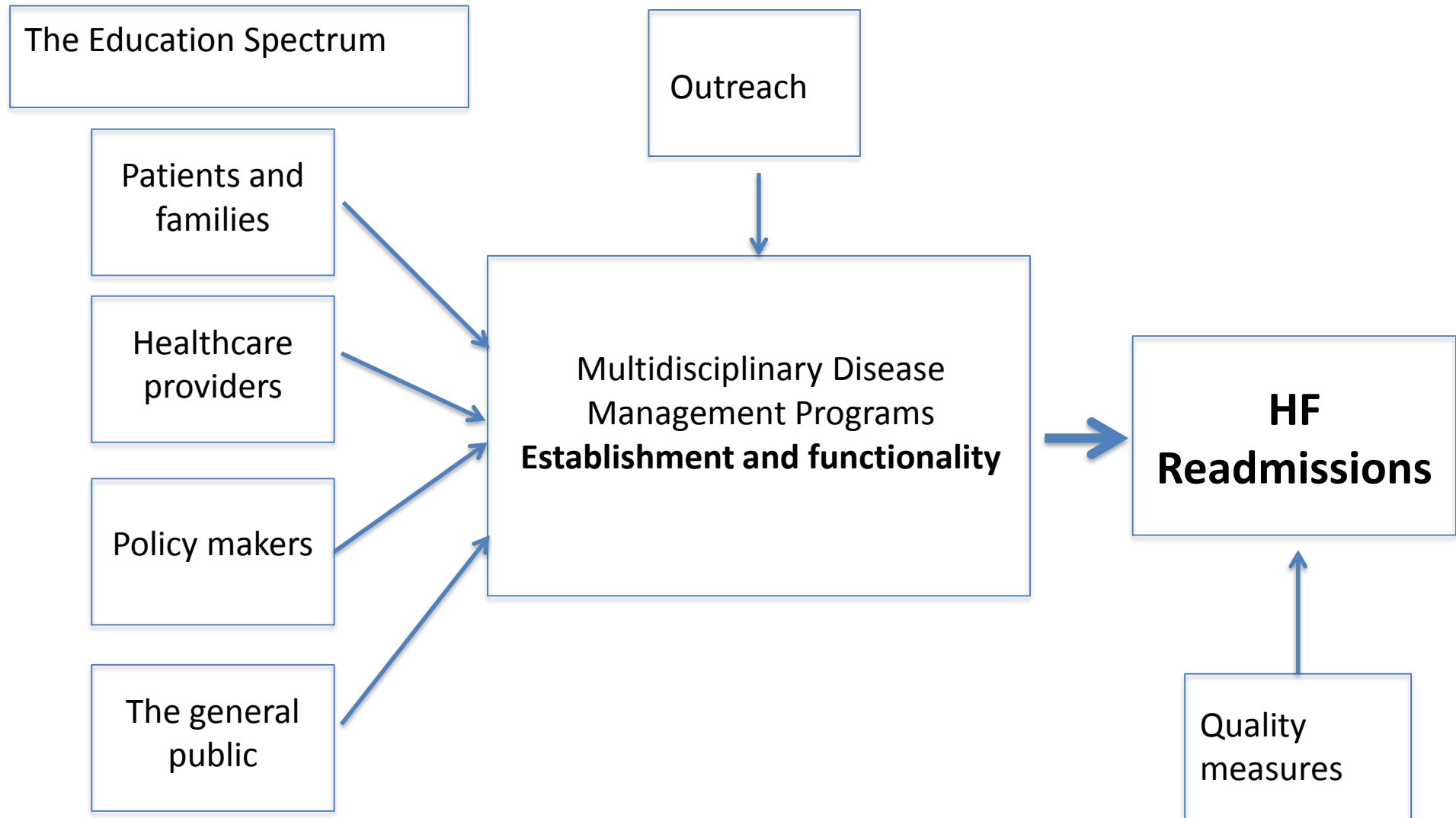


FIGURE 2 Frequency of Medication Changes by Drug Class



Total HF medication changes occurring during the 6-month follow-up period were compared between the active monitoring group (PA pressure-guided HF management added to standard of care management of patient clinical signs and symptoms) (**red bars**) and the blind therapy group (HF management including only standard assessment of weights and patient-reported symptoms) (**blue bars**). In addition, medication changes by HF drug class were compared between groups. ACEI = angiotensin-converting enzyme inhibitors; ARB = angiotensin receptor blockers; HF = heart failure; other abbreviations as in [Figure 1](#).

Reducing readmissions in developing countries



THE ADVANCED
HEART FAILURE AND
TRANSPLANT PROGRAM

برنامج قصور
القلب المتقدم

ADVANCED HEART FAILURE CLINIC

Patient Instructions

Worsening heart failure can present as increased shortness of breath, fatigue, leg swelling and rapid weight gain.

1. Please weigh yourself daily and record your weight every day. Please bring your weight record to every clinic visit.
2. Eat a balanced diet with low salt content (2 grams of salt or less per day).
3. Limit total fluid intake to 2 liters (68 fl oz) per day.
4. Keep active. Walking is a great form of exercise.
5. Take all of your medications as prescribed. Please bring medication list or medication bottles(s) to each visit.

Please call 800 8 CCAD (800 8 2223).

Ask to speak to the Triage Nurse if you have:

1. A net weight gain of 2 kg or more over 1 week.
 2. Increasing shortness of breath.
 3. Difficulty breathing lying flat.
- If you have coronary artery disease and have chest pain relieved with Nitroglycerin please have someone drive you to closest emergency room.
 - If you have any questions, please call us at the heart failure clinic.
 - For emergencies please call (999).

PATIENT INFORMATION

Patient Name: _____

Date of Birth: _____

Sex: ☐ Male ☐ Female

سجل الوزن اليومي DAILY WEIGHT DIARY

الجمعة Friday	الخميس Thursday	الاربعاء Wednesday	الثلاثاء Tuesday	الاثنين Monday	الاحد Sunday

Month: _____

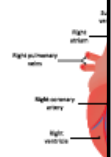
Month: _____

إرشادات زيارة اليوم TODAY'S INSTRUCTIONS

Date:	التاريخ:
Discontinue the following medications:	التوقف عن أخذ الأدوية التالية:
Change the dose of the following medications:	تغيير جرعة الأدوية التالية:
Investigations requested and date:	الفحوصات المطلوبة وموعدها:
Next appointment:	الموعد القادم:

HEART FAILURE

Heart failure means your heart is not pumping enough blood to meet your body's needs for blood. Heart failure is a long-term condition that requires ongoing treatment to improve your health.



IMPORTANT OF HEART FAILURE EDUCATION

Heart failure, and also increases your risk of heart failure. Heart failure can lead to fluid retention and cause heart failure to worsen or become life-threatening.

CAUSES AND RISK FACTORS

DIAGNOSIS

1. PHYSICAL ASSESSMENT

The following physical signs, along with medical history, can help your doctor diagnose heart failure:

- Enlarged heart.
- Abnormal heart sounds.
- Abnormal sounds in the lungs.
- Swelling or tenderness of the liver.
- Fluid retention in legs and abdomen.
- Elevation of pressure in the veins of the neck.

2. BLOOD TESTS

Blood tests are used to evaluate kidney and thyroid function and the presence of anemia.

3. CHEST X-RAY

A chest X-ray shows the size of your heart and whether there is fluid in the lungs.



4. ELECTROCARDIOGRAM (EKG OR ECG)

An EKG records the electrical impulses traveling through the heart.



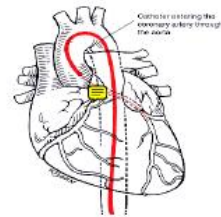
7. CARDIOPULMONARY EXERCISE TESTING (CPET)

Cardiopulmonary exercise testing has become an important clinical tool to evaluate exercise capacity and predict outcome in patients with heart failure and other cardiac conditions. It provides assessment of the integrative exercise responses involving the pulmonary, cardiovascular and skeletal muscle systems.



8. CARDIAC CATHETERIZATION

This invasive procedure helps determine whether coronary artery disease is a cause of congestive heart failure. Right heart catheterization enables your physician to evaluate the pressures in the right side of your heart, your lungs, overall fluid status and cardiac output.



An angiogram is a kind of x-ray test that can show if you have clogged arteries that can lead to heart attack.

MANAGEMENT OF HEART FAILURE

HOW IS HEART FAILURE TREATED?

The goals of treatment are to help you feel better and live longer. Treatment may include the following:

- Heart medicines help regulate your heart rhythm, lower your blood pressure, and get rid of extra fluids.
- Cardiac rehabilitation is a program run by specialists who will help you safely strengthen your heart. The program includes exercise, relaxation, stress management and heart-healthy nutrition advice from a registered dietitian. Caregivers will also make sure your medications are helping to reduce your symptoms. In order to attend you will need an assessment and internal referral by a cardiac physician.
- Oxygen may help you breathe easier if your oxygen level is lower than normal. A CPAP machine may be used to keep your airway open while you sleep.
- Surgery can be done to implant a pacemaker in your chest to regulate your heart rhythm. Other types of surgery can open blocked heart vessels, replace a damaged heart valve or remove scar tissue.

DIET

The following dietary modifications will help to decrease some of the symptoms.

- Low sodium diet
- Fluid restriction
- Low fat and low cholesterol diet
- No alcohol

LOW SODIUM DIET

- Sodium acts like a sponge to hold extra water in the body, which makes the heart work harder. Cutting down on sodium is one of the most important parts of a treatment plan. Sodium is found in large amounts in salt (sodium chloride) and is added to most prepared and processed foods.
- The American Heart Association recommends that you reduce your sodium intake to 1,500 mg per day. One teaspoon of salt contains about 2,300 mg of sodium.
- Here are some tips to lower the amount of sodium you eat:
- Avoid using salt at the table or in cooking. Remove the salt shaker. You'll be less likely to use it.



Most patients are willing to take the advice, and follow it, simply because it's rare!

[illegible]

MY FLUID DIARY

مذكرة تسجيل السوائل

DATE (التاريخ): _____

Today, you are just expected to consume _____ milliliters (ml) of fluids.

اليوم، يتوقع فقط أن تستهلك _____ مليلتر (مل) من السوائل

TIME الوقت	FLUID INTAKE السوائل المتناولة	MEASURED URINE OUTPUT قياس كمية البول	REMARKS ملاحظات
12:00 MN			
1:00 AM			
2:00 AM			
3:00 AM			
4:00 AM			

The Value of Nurse-Based Patient Education in the Success of Multidisciplinary Heart Failure Programs in Developing Countries

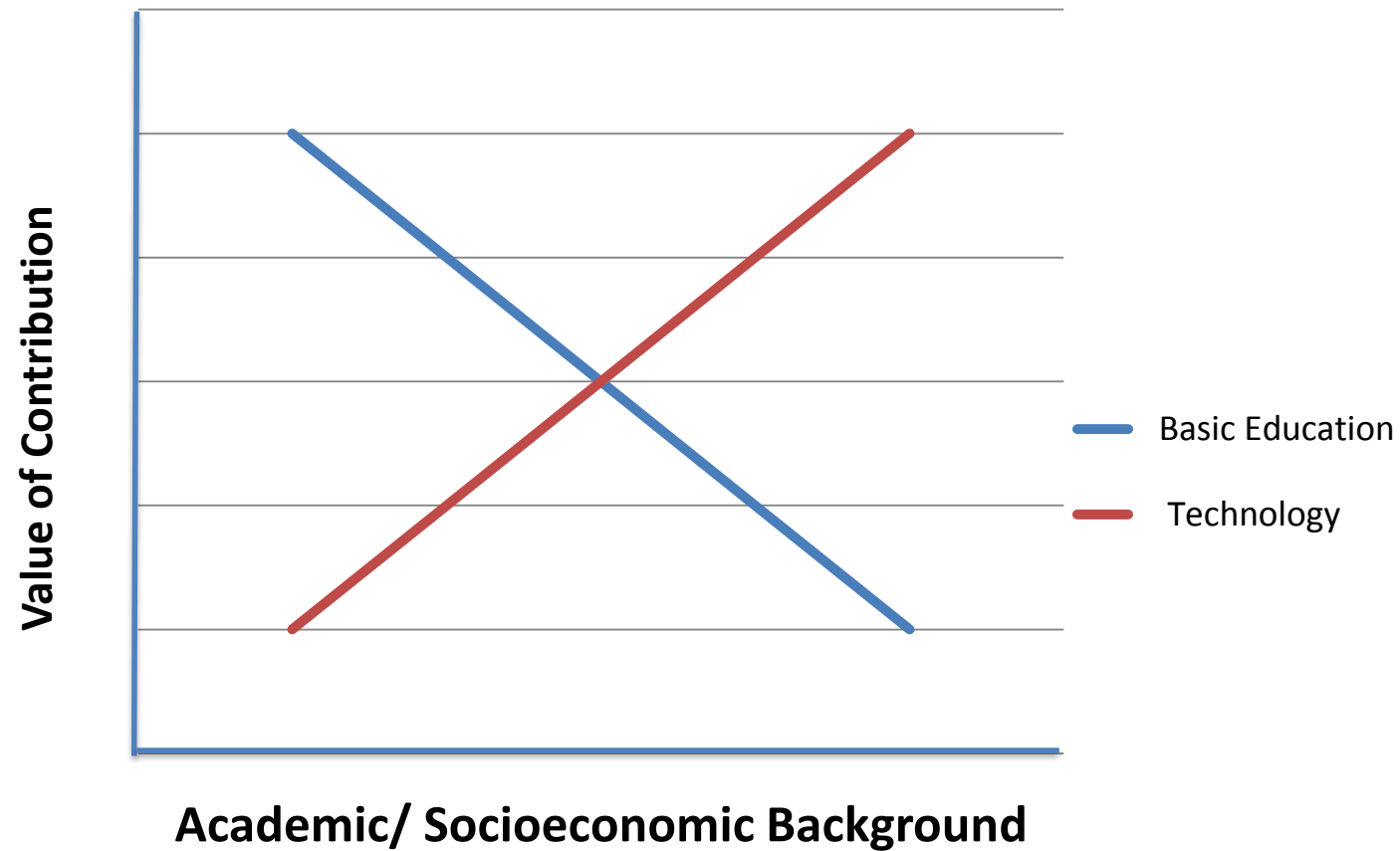
- Fe
Tb
- 26% did not know how much salt HF patients can have.
 - 24% thought that bed rest is the best advice on physical activity.

Symptom	Number (%)
Shortness of breath	129 (98)
Light headedness	27 (21)
Leg swelling	115 (88)
Abdominal Swelling	61 (47)
Weight gain	112 (85)
Weakness, fatigue	116 (89)
Chest pain	71 (54)
Poor appetite	51 (39)
Poor sleep	82 (63)
Inability to lie flat	119 (91)

Table 2: Responses of patients on the initial and follow up surveys to questions on adherence and self-care (total of 30)

Question	Choices	Initial (%)	Follow up (%)
How much salt should you approximately take per day?	2 grams or less	9 (30)	27 (90)
	5 grams	2 (7)	1 (3)
	Any amount of salt	3 (10)	0
	Don't Know	16 (53)	2 (7)
How many liters of fluid you can consume per day?	Up to 2 Liters or 2000ml	12 (40)	25 (83)
	2to 3 Liters (2000-3000ml)	3 (10)	3 (10)
	More than 3 Liters(3000ml)	0	1 (3)
	Don't Know	15 (50)	1 (3)
How often do you check your weight?	Every day early morning after passing urine and before breakfast	9 (30)	20 (67)
	Several times per week	0	3 (10)
	Once every week	4 (13)	5 (17)
	Whenever they find weighing scale	0	0
	Never	17 (57)	2 (7)
If your weight increases by 2 Kg or more over 2 days, what should you do?	Take extra water pill	6 (20)	5 (17)
	Call the heart failure nurse within 24 hours	4 (13)	23 (77)
	Wait until the next visit to tell the doctor	5 (17)	1 (3)
	Don't Know	15 (50)	1 (3)
Do you know who to contact if your heart failure symptoms (e.g. shortness of breath, weight gain, chest pain, palpitations) worsen?	Physician	15 (50)	12 (40)
	Nurse	3 (10)	24 (80)
	Dietician	0	0
	I don't know	13 (40)	2 (7)

Technology vs. self-care behaviors



Summary

- HF hospitalizations remain high and represent a significant burden on healthcare systems worldwide.
- Most medications and devices improve hospitalization rates individually, but overall rates do not reflect that.
- Measures to prevent HF readmissions should be tailored to patients' backgrounds and level of education.
- Markers of readmissions may need to be broadened in light of current epidemiology (ER visits?, urgent clinic visits?, days at home instead of days at the hospital?)

Thank you

