How to prevent ‘recurrent failure’?

How to prevent readmission in a hospital with 3 (or 20 or >100) providers in 1 (or 20 or …) different practices with 10 (or …) different systems?

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Disclosures

- Research Funding:
  - AHA-GWTG
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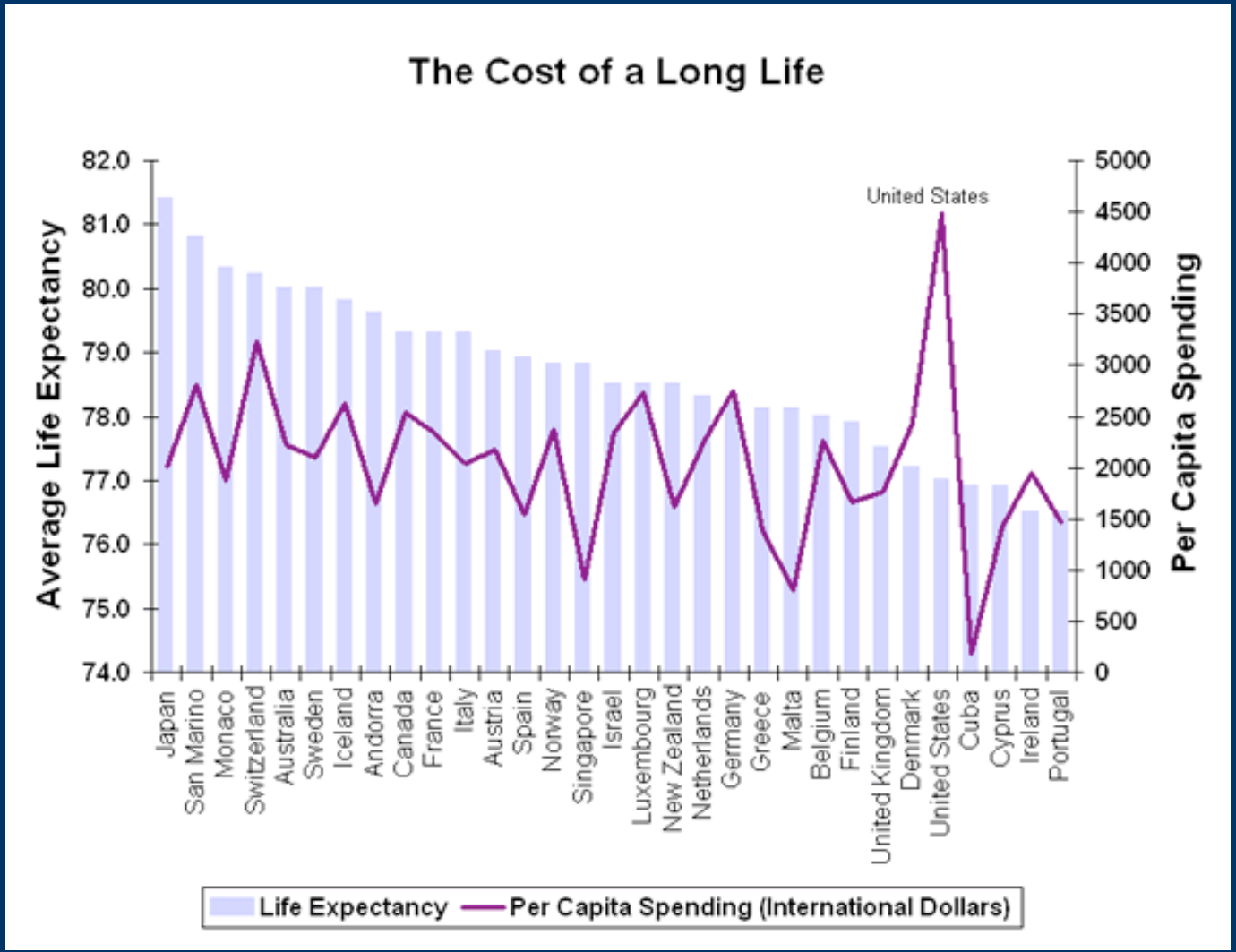
  - Johnson & Johnson
  - Amylin
  - NHLBI
- Honorarium/Consulting:
  - AstraZeneca
  - Medtronic
  - Cytokinetics

Online detailed listings of financial disclosures (http://www.dcri.duke.edu/research/coi.jsp)

In the news…

Value of US Healthcare or "Accountability"

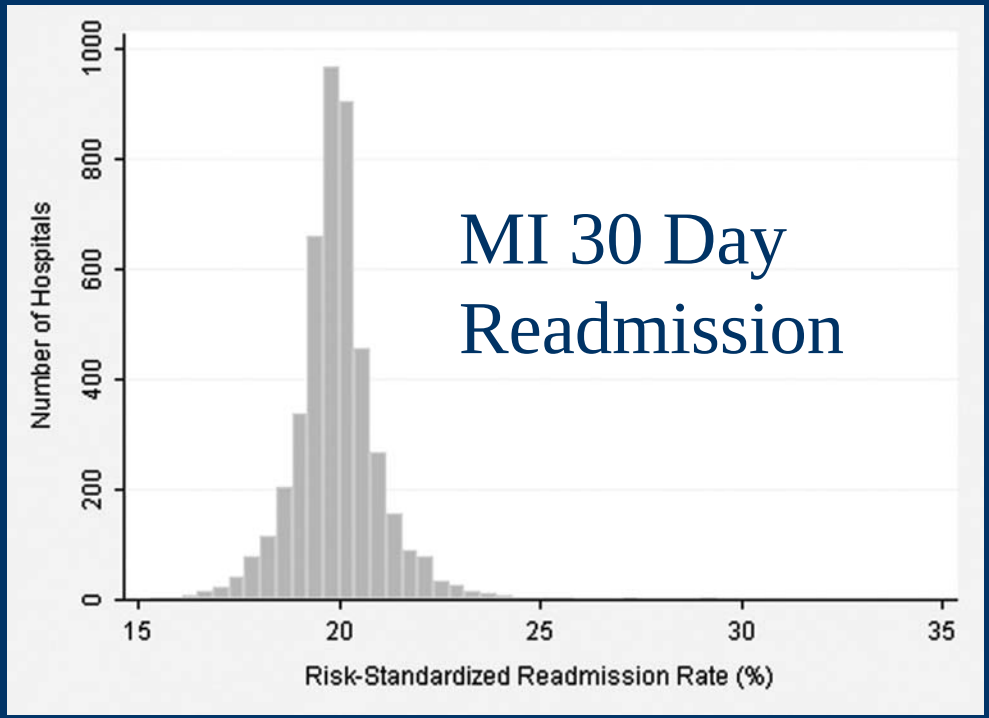


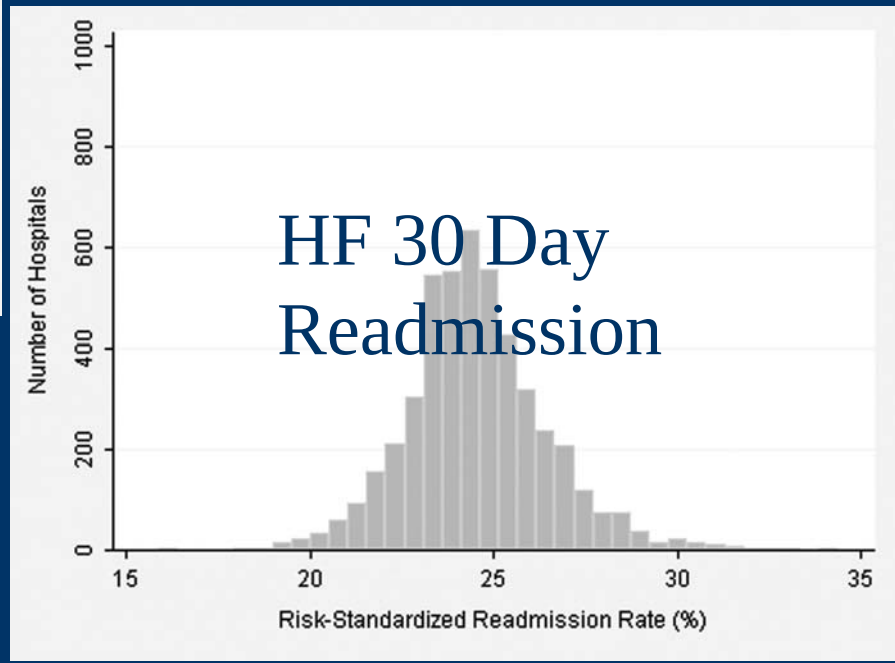
http://ucatlas.ucsc.edu/spend.php

Outcomes Matter: Limitations of *"Perfect Care"*

- Case scenario: 75 y/o admitted with CHF, mild renal insufficiency. Echo: EF 35%, no ischemia on stress test
- Treatment: Aggressive diuresis, initiation of ACE, BB, digoxin, spironolactone. Clinically stabilized.
- Discharged 4 days.
- As outpt: develops nausea, decreased PO intake, Represents with bradycardia, hyperkalemic arrest
- Evidence-based "score": 100% appropriate care!

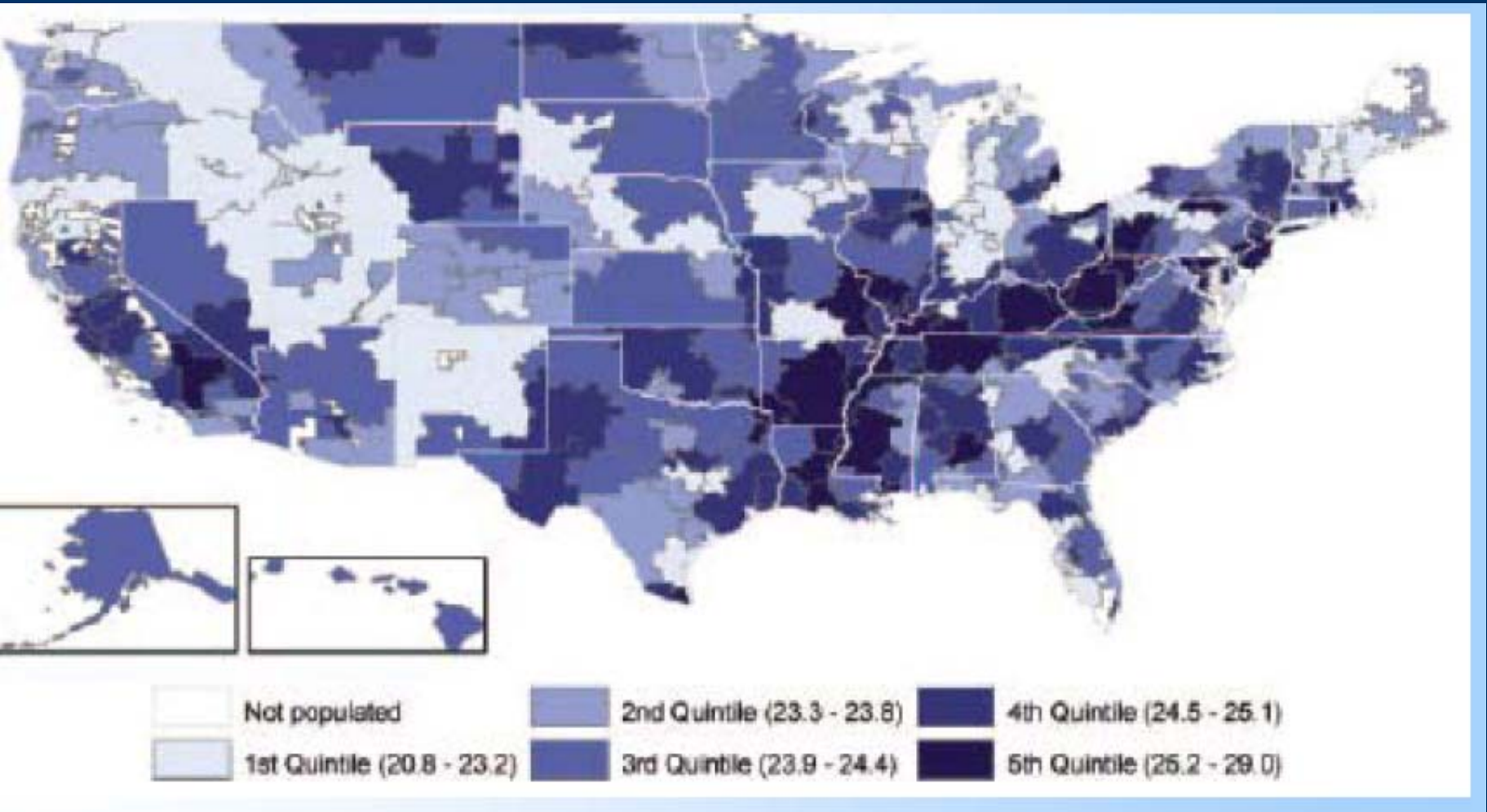
Variation in HF Readmission rates





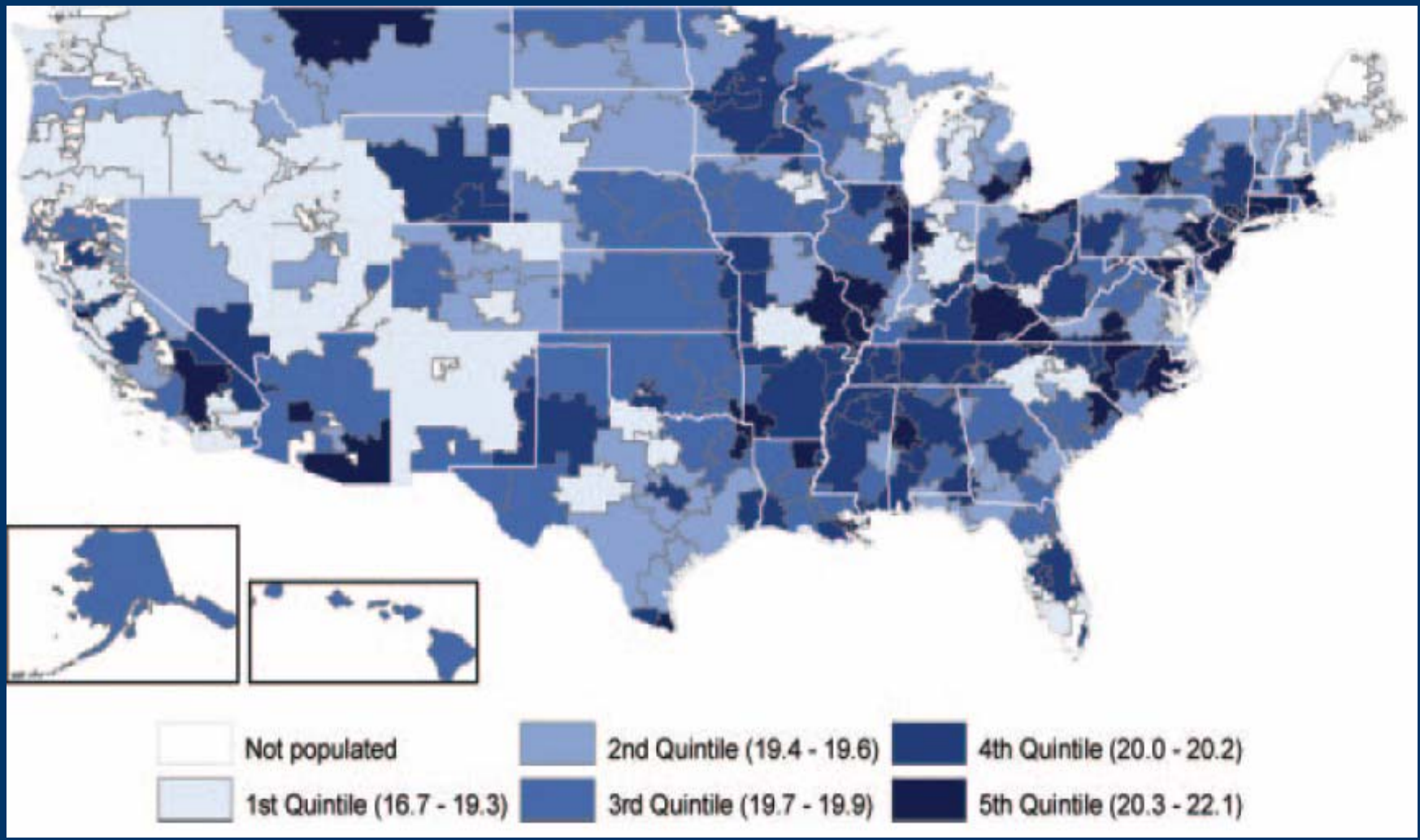
Krumholz, H. M. et al. Circ Cardiovasc Qual Outcomes 2009;2:407-413

Variability in HF Readmission



Krumholz, H. M. et al. Circ Cardiovasc Qual Outcomes 2009;2:407-413

Variability in MI Readmission



Krumholz, H. M. et al. Circ Cardiovasc Qual Outcomes 2009;2:407-413

ORIGINAL INVESTIGATION

Readmission After Hospitalization for Congestive Heart Failure Among Medicare Beneficiaries

Harlan M. Krumholz, MD; Eugene M. Parent, MD; Nora Tu, MS; Viola Vaccarino, MD; Yun Wang, MS; Martha J. Radford, MD; John Hennen, PhD

Background: Congestive heart failure is the most common discharge diagnosis for Medicare beneficiaries. While several single-center studies have suggested that these patients are particularly vulnerable to readmission, no recent study, to our knowledge, has reported the readmission rates for a large number of elderly patients with congestive heart failure across a diverse spectrum of hospitals.

Objectives: To define the readmission rate for elderly patients discharged after an episode of congestive heart failure. To determine the spectrum of diagnoses that are responsible for readmissions among patients with congestive heart failure. To identify patient and hospital characteristics associated with a higher likelihood of readmission.

Methods: This observational study, using Medicare administrative files, evaluated readmission and death among all survivors of a hospitalization in Connecticut for congestive heart failure from fiscal year 1991 through fiscal year 1994.

Results: There were 17 448 survivors of a hospitalization for congestive heart failure during the study period. In the 6 months following the index admission, 7596 patients (44%) were readmitted to a hospital at least once. Congestive heart failure was the most frequent reason for readmission among study patients, accounting for 18% of all readmissions. In the multivariable analysis, significant predictors of readmission included male sex (odds ratio [OR], 1.12; 95% confidence interval [CI], 1.05-1.20), at least 1 prior admission within 6 months of the index admission (OR, 1.64; 95% CI, 1.53-1.77), Deyo comorbidity score of more than 1 (OR, 1.56; 95% CI, 1.45-1.68), and length of stay in the index hospitalization of more than 7 days (OR, 1.32; 95% CI, 1.24-1.41). While age was not a significant predictor of readmission, it became significant in a model with the combined outcome of readmission or death as the dependent variable.

Conclusion: Readmission after a hospitalization for congestive heart failure is common among Medicare beneficiaries, with almost half of the patients readmitted within 6 months. This striking rate of readmission in a common diagnosis demands efforts to further clarify the determinants of readmission and develop strategies to prevent this adverse outcome.

Arch Intern Med. 1997;157:99-104

From the Section of Cardiovascular Medicine, Department of Medicine, the Section of Chronic Disease Epidemiology, Department of Epidemiology and Public Health, Yale School of Medicine, and the Yale–New Haven Center for Outcomes Research and Evaluation, New Haven, Conn (Drs Krumholz, Parent, and Vaccarino); Connecticut Peer Review Organization, Middletown (Drs Krumholz, Vaccarino, Radford, and Hennen, Ms Tu, and Mr Wang); and Cardiology Division, University of Connecticut Medical School, Farmington (Dr Radford).

THE HIGH prevalence of congestive heart failure[1,2] imposes a large burden on patients, their families, and the health care system. This condition is particularly prevalent among the elderly. No diagnosis is responsible for more hospital admissions among Medicare beneficiaries than congestive heart failure.[3] Of all patients hospitalized with congestive heart failure, three quarters are 65 years old and half are 75 years old.[4] With age-adjusted mortality rates from cardiovascular disease declining and the size of the elderly population growing,[5] the absolute number of individuals living with compromised cardiac function is expected to increase dramatically over the next few decades.[6]

Prior studies[7-9] have reported that elderly patients who survive hospitalization for congestive heart failure are particularly vulnerable to readmission. Some

For editorial comment see page 17

of these studies have reported a 3- to 6-month readmission rate of 29% to 47% among elderly patients. Whether these rates represent what is occurring in actual practice is not known since these

See Patients and Methods on next page

Heart failure readmission rates are quite high in 1997.

Almost half of the patients were readmitted within

6 months

More than 10 years later, readmissions are still

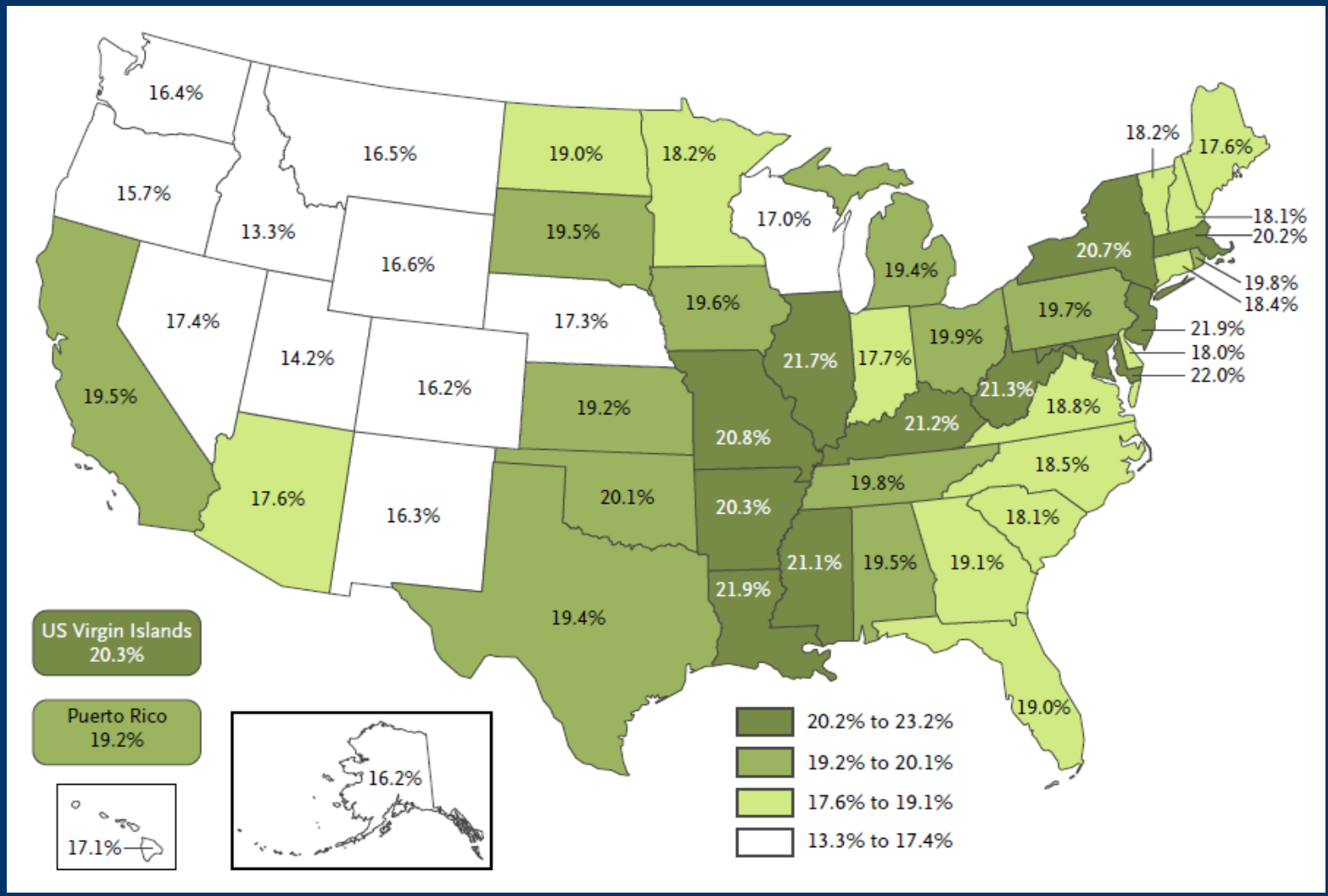
The NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

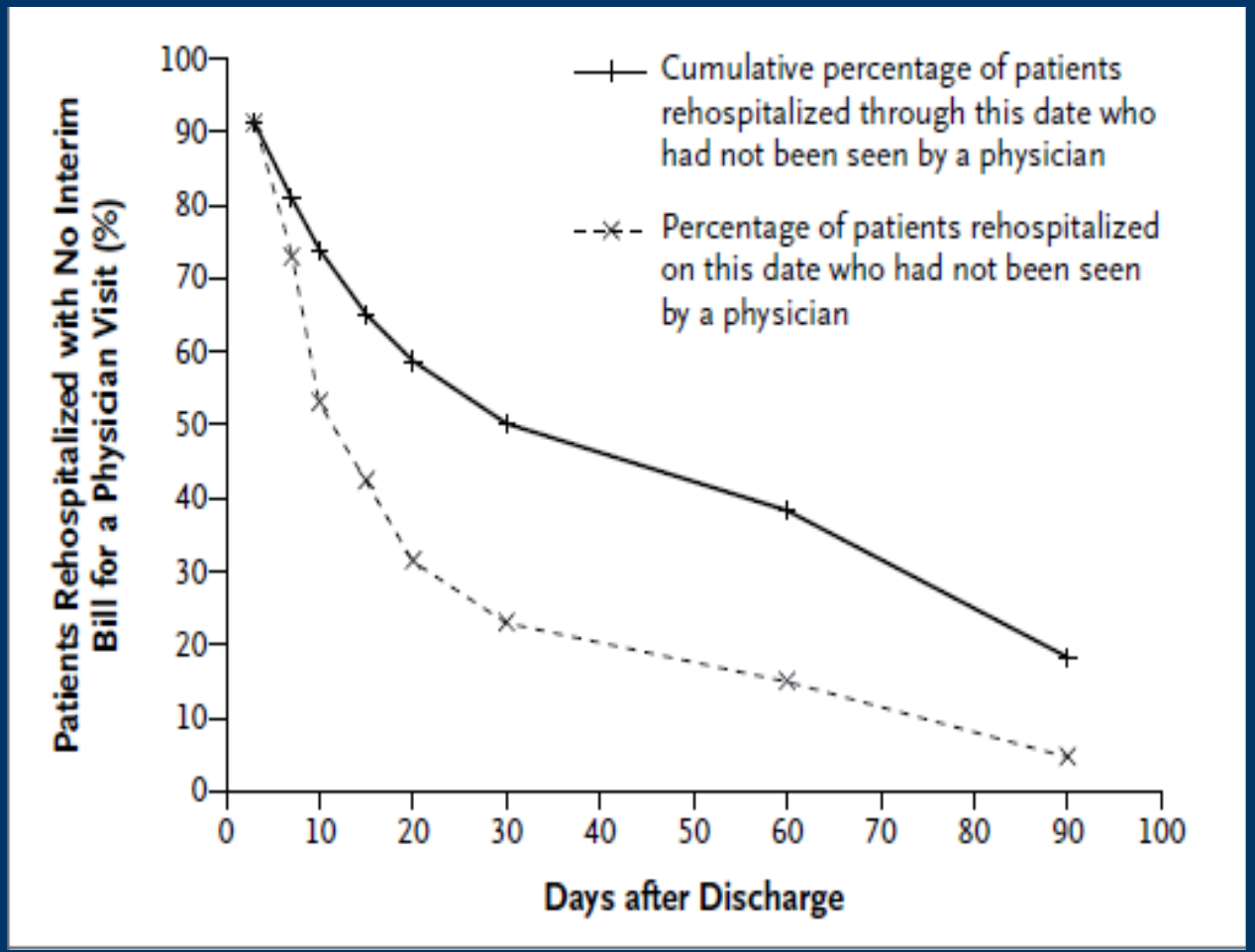
Rehospitalizations among Patients in the Medicare Fee-for-Service Program

Stephen F. Jencks, M.D., M.P.H., Mark V. Williams, M.D.,
and Eric A. Coleman, M.D., M.P.H.

Rates of Rehospitalization Within 30 Days after Hospital Discharge

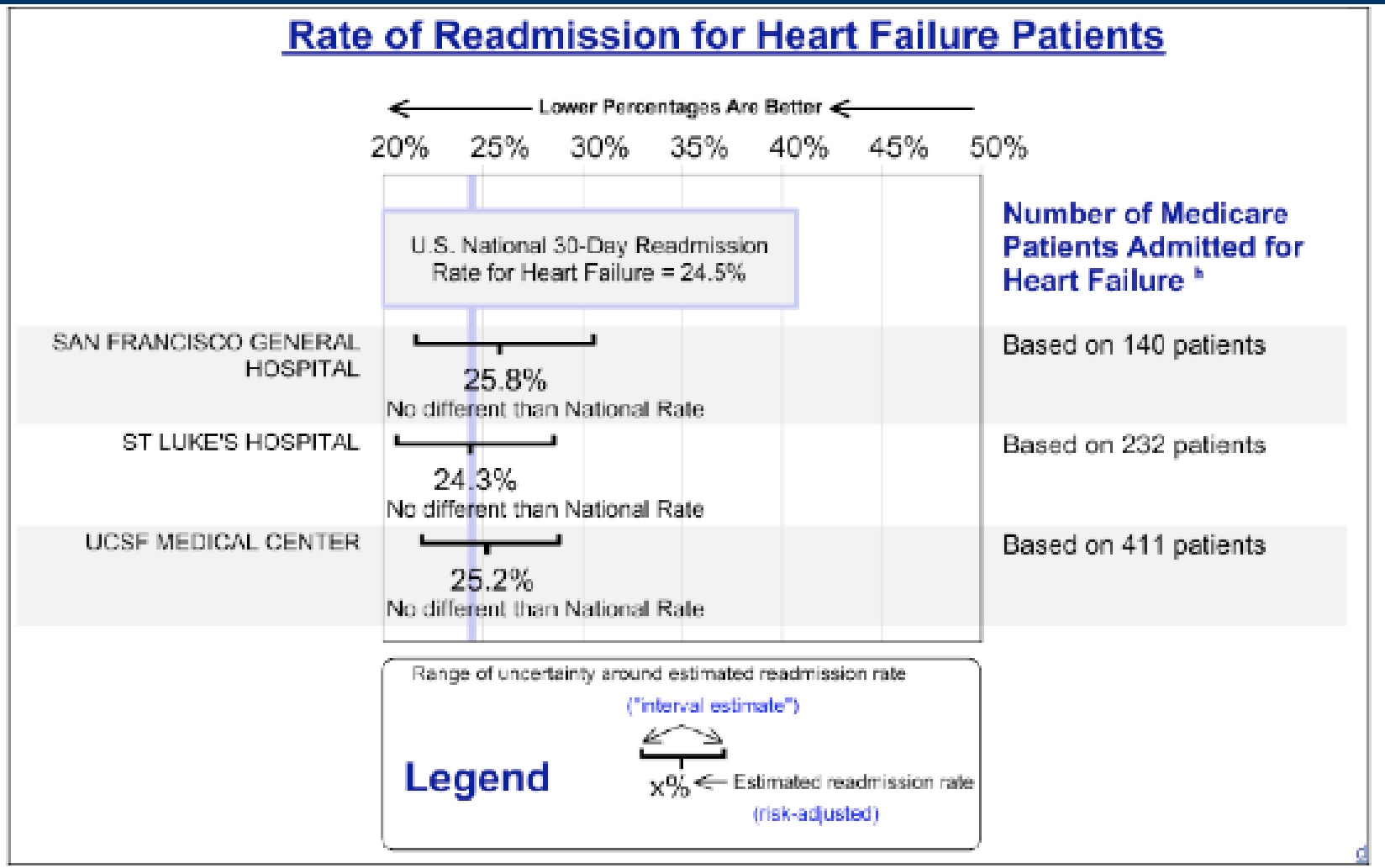


52% HF patients no associated outpatient visit billed



Jencks, S et al. N Eng J Med 2009;360:1418-28

Implications of Public Reporting



Who cares?

- Patients and Their Families
- Health Professionals
- Hospitals
- Governmental agencies
- Payers

Media Mania

News » Health & Behavior ▪ Medical Resources ▪ Health Information ▪ Your Health: Kim Paint

Hospital death rates unveiled for first-time comparison

Updated 8/21/2008 3:27 PM | Comments 212 | Recommend 135 E-mail | Save | Print | Reprints & Permissions | RSS

Enlarge

By Bradley C. Bower for USA TODAY

By Steve Sternberg and Anthony DeBarros, USA TODAY

Mixx it
Other ways to share:
Yahoo! Buzz
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Reddit
Facebook
What's this?

Motorists heading through the Lehigh Valley from Allentown, Pa., earlier this year passed two giant billboards proclaiming: "Fast Heart Attack Care Saved My Husband's Life."

What the billboards didn't say was just how fast. It took 24 minutes for Richard Silverman's doctors at Lehigh Valley Hospital to clear a 100% blockage from his heart's most vital artery. That's a third of the 90-minute goal that hospitals strive for.

Michael Moore, the hospital's chief of medical education, says the numbers don't account for the poverty and lack of education pervasive in southern Virginia. Patients with heart attacks don't seek care quickly enough, he says, while those with heart failure don't follow doctors' orders.

Doctors at Lehigh Valley are proud of their speed. It's one reason the hospital boasts the lowest heart attack death rate in the country, 11.6%, in a new government analysis obtained by USA TODAY. Among those at the other end of the spectrum is Virginia's Danville Regional Medical Center with death rates for heart attack of 19.6% and for heart failure of 15.5%.

Media-Mania– Google

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Hospital Ratings
www.ConsumerReports.org/Health Search over 3400 **Hospital** Ratings to find the best **hospital** for you.

Stem Cell Heart Treatment
www.xcell-center.com/CardioVascular Increase your ejection fraction now **Heart failure**, cardiomyopathy, CAD


The Star-Ledger - NJ.com

Rankings for New Jersey's Top Hospitals
The Star-Ledger - NJ.com - Mar 12, 2010
Find out if your **hospital** is among the best. Inside Jersey and Castle Connolly Medical Ltd., one of the nation's most respected health care research and ...


The Star-Ledger - NJ.com

How New Jersey's Top Hospitals were selected
The Star-Ledger - NJ.com - Martin Tsai - Mar 11, 2010
Points then were assigned to votes. A **hospital** voted No. 1 generated 5 points; No. 2 was 4 points, and so on. A No. 5 **ranking** was assessed 1 point. ...


BNET

Looking for a Great Hospital? Good Luck -- the Quality Data Sucks
BNET - Ken Terry - Mar 11, 2010
Quality Check offers data on how well hospitals do on treating chronic diseases such as stroke and congestive **heart failure**, and it also supplies data on ...

Sponsored Links

Coronary Artery Disease
Get the Coronary Artery Disease Guide From Cleveland Clinic
ClevelandClinic.org/Coronary

Hospital Reviews
Automate Performance Reviews for All Hospitals & Clinics.
successfactors.com/healthcare

End-stage heart failure
Left ventricular assist device may increase survival in some patients.
www.hearthope.com

Heart disease
Looking For Cardiovascular Care? Look No Further. Contact Us Today.
www.Wellstar.org

Best Heart Hospital
Innovators in Patient Care.
Top **Hospital** 19 Consecutive Years.
www.hopkinsmedicine.org

Heart Disease Video
Women Discuss their **Heart** Attacks & the Symptoms Leading up to them.
www.YouTube.com/JNJhealth

Does quality mean beating UNC?

University of North Carolina Hospital

Duke Hospital

Issues for comparing individual hospitals

- Sample size/Case volume
- Case mix
- Event rates
- Temporal variability

Challenges for Public Reporting

Association of Patient Case-Mix Adjustment, Hospital Process Performance Rankings, and Eligibility for Financial Incentives

Rajendra H. Mehta, MD, MS
Li Liang, PhD
Amrita M. Karve, BA
Adrian F. Hernandez, MD, MHS
John S. Rumsfeld, MD, PhD
Gregg C. Fonarow, MD
Eric D. Peterson, MD, MPH

Context While most comparisons of hospital outcomes adjust for patient characteristics, process performance comparisons typically do not.

Objective To evaluate the degree to which hospital process performance ratings and eligibility for financial incentives are altered after accounting for hospitals' patient demographics, clinical characteristics, and mix of treatment opportunities.

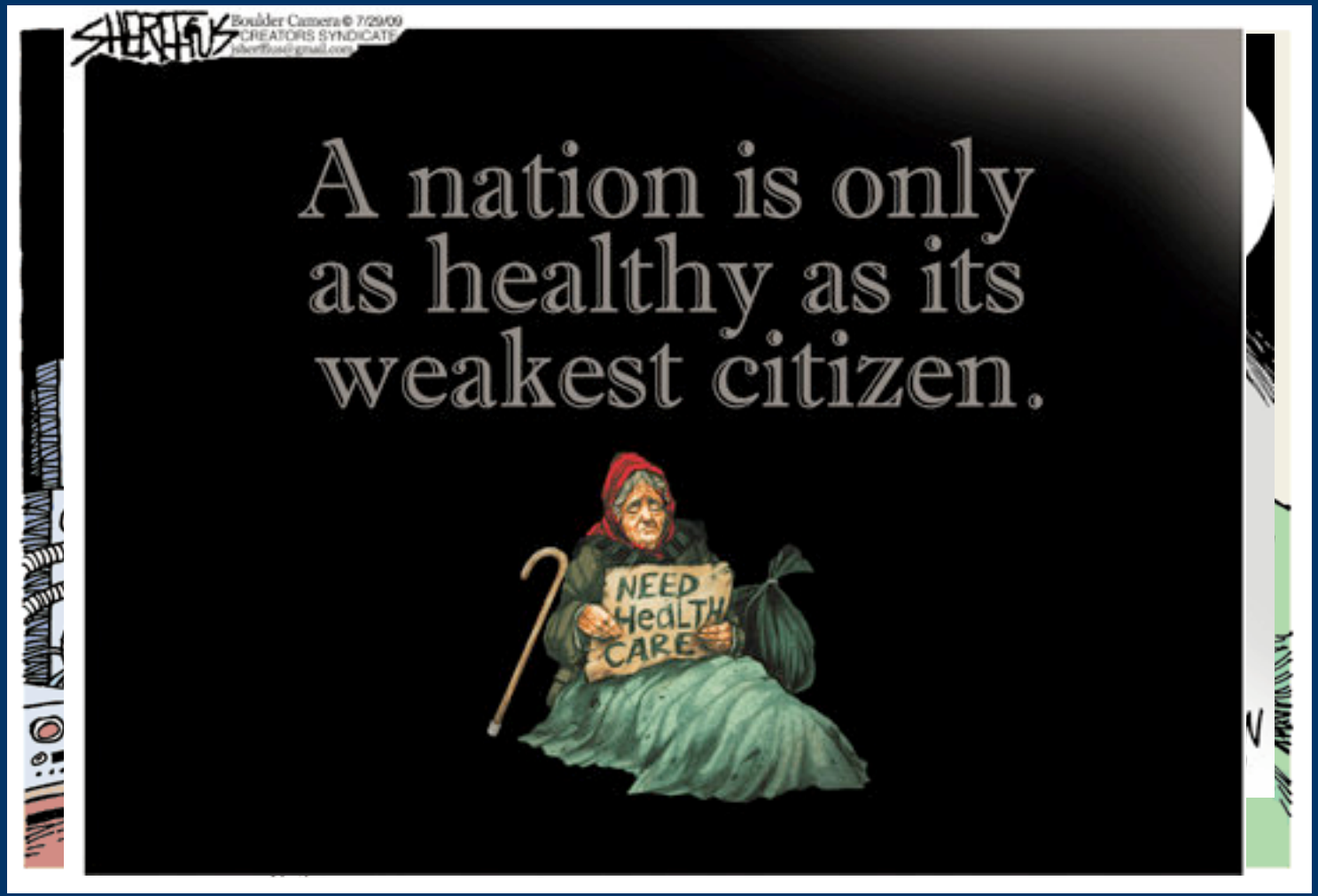
Design, Setting, and Patients Using data from the American Heart Association's Get With the Guidelines program between January 2, 2000, and March 28, 2008, we analyzed hospital process performance based on the Centers for Medicare & Medicaid Services' defined core measures for acute myocardial infarction. Hospitals were initially ranked based on crude composite process performance and then ranked again

PRIOR INVESTIGATIONS HAVE

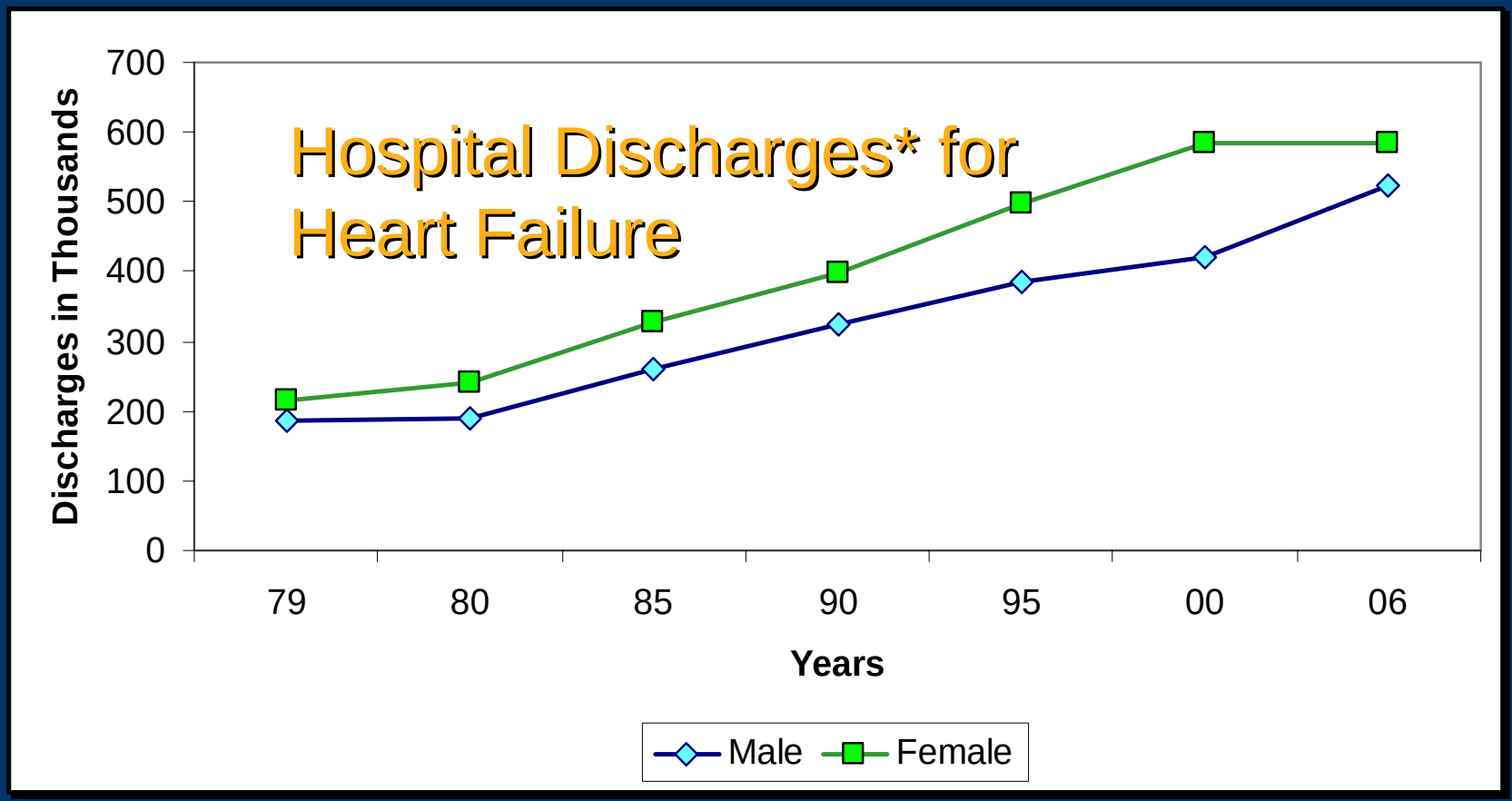
Table 3. Degree of Agreement Between Hospital Rankings Based on Observed vs Adjusted Composite Adherence Scores (Total N = 449)[a]

	Adjusted Hospital Rankings[b]		
	Top 20%	Middle 60%	Bottom 20%
Observed hospital rankings, No. (%)[c]			
Top 20%	61 (13.59)[d]	29 (6.46)[e]	0
Middle 60%	29 (6.46)[f]	233 (51.89)[d]	8 (1.78)[e]
Bottom 20%	0	8 (1.78)[f]	81 (18.04)[d]

Case Study: Heart Failure



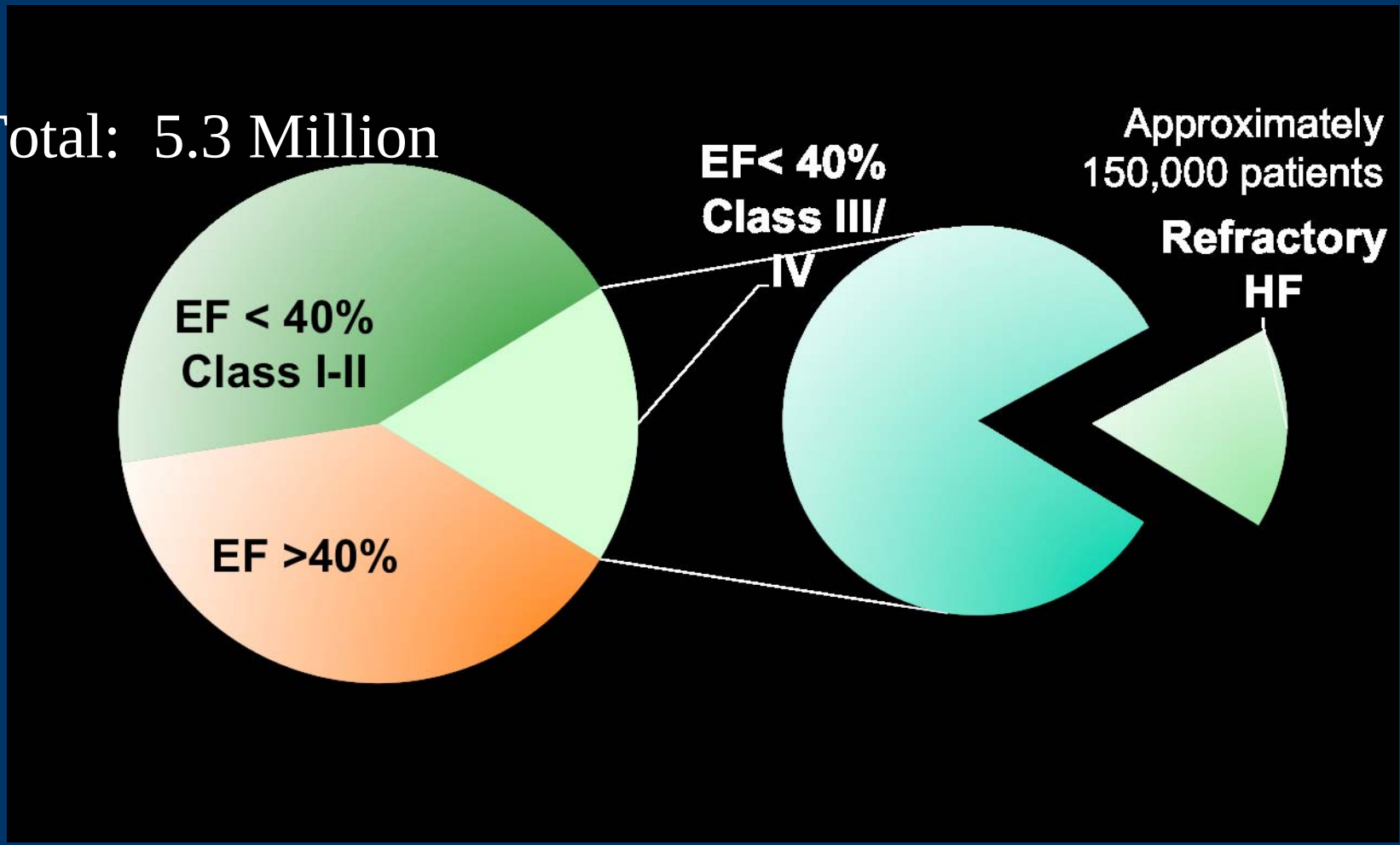
Heart Failure as the Paradigm of America's Problems



*Hospital discharges include people discharged alive, dead & status unknown.

AHA 2009 Heart and Stroke Statistical Update

Heart Failure Populations



[1]American Heart Association. *2008 Heart and Stroke Statistical Update.* Dallas, Tex: American Heart Association; 2008.

[2]Hunt SA et al. ACC/AHA guidelines for the evaluation and management of chronic heart failure in the adult. 2001.

Challenges For Measuring Quality: HF Case Example

- HF is not a single entity
  - Systolic vs. diastolic HF
  - Etiology (ischemic vs. other)
  - Severity (NYHA class I-IV)
- Limited data on what acute processes work
- Even less information how process of care delivery factors affect acute outcomes
- Longitudinal disease
  - Therapies target long-term outcomes

Sample Questions from Hospitals ….

- Denominator
  - My hospital is too small or too big/diffuse
- Dates of observations?
  - 1 year is too short; 3 years is too long
- Data-to-performance measure lags?
  - We do the best care with the newest therapies but don't get credit
- Dosing issues?
  - We do everything very well…Any dose vs careful titration + follow-up. Why doesn't it count?
- Durability?
  - If we change will it stay and will it matter?

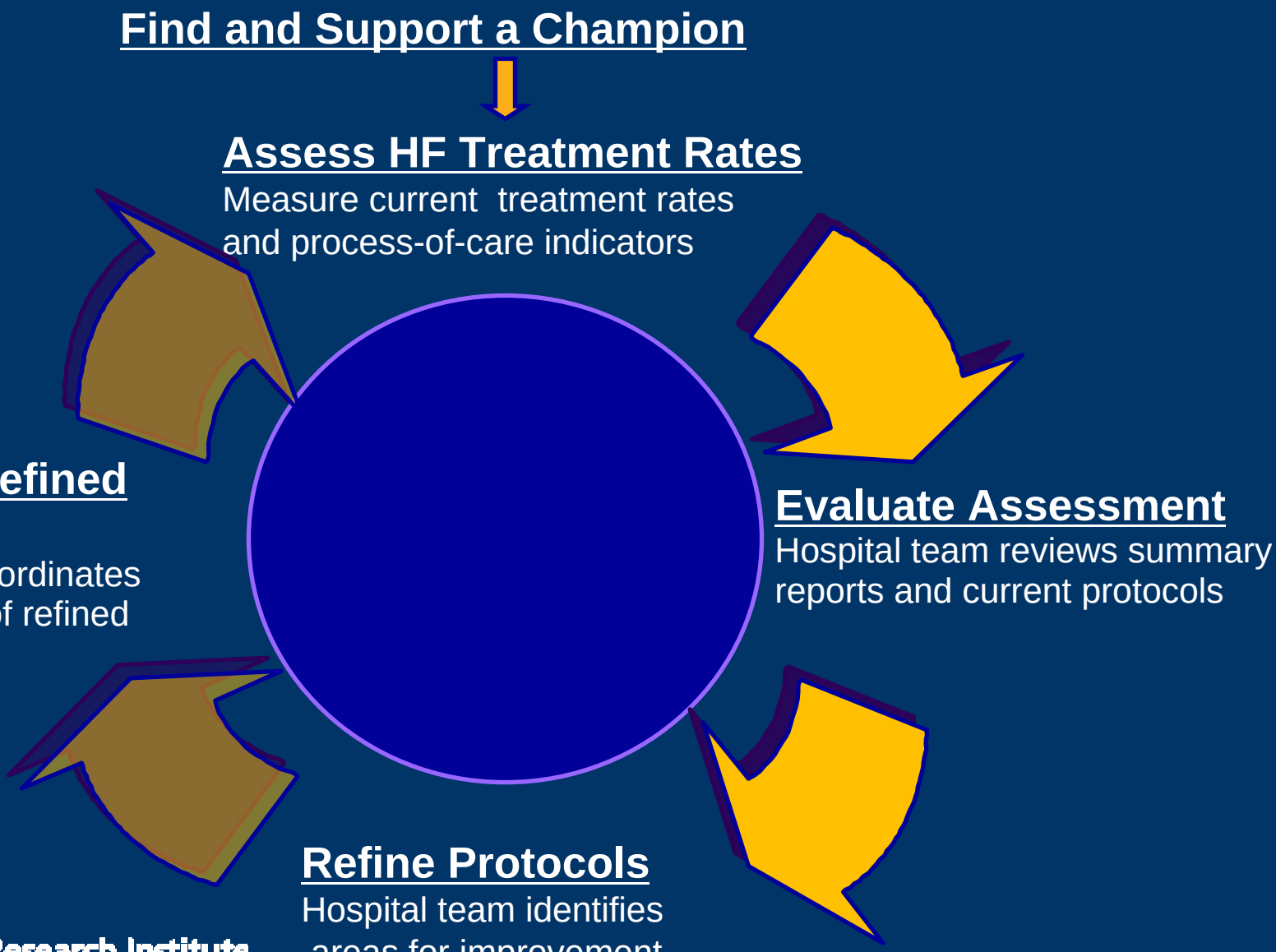
What doesn't work? Change the input…

Heart Attack	Heart Failure
Age-65 Gender (male) History of PTCA History of CABG History of heart failure History of MI	Age-65 Gender (male) History of PTCA History of CABG History of heart failure History of MI
AMI location	
Unstable angina Chronic atherosclerosis	Unstable angina Chronic atherosclerosis
Respiratory failure and shock	Respiratory failure and shock
Valvular heart disease Hypertension Stroke	Valvular heart disease Hypertension Stroke
Cerebrovascular disease	
Renal failure COPD Pneumonia Diabetes Protein-calorie malnutrition	Renal failure COPD Pneumonia Diabetes Protein-calorie malnutrition
Dementia Functional disability	Dementia Functional disability
Peripheral vascular disease Metastatic cancer Trauma in last year Major psych disorder Chronic liver disease	Peripheral vascular disease Metastatic cancer Trauma in last year Major psych disorder Chronic liver disease

Developing Systems of Care
Application to individual patients

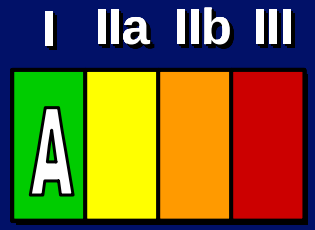
- MI is not a single entity
  - STEMI
  - NSTEMI
  - Complications
- HF is not a single entity
  - Systolic vs. diastolic HF
  - Etiology (ischemic vs. other)
  - Severity (NYHA class I-IV)

Cycle of Quality Improvement



Bridging the Gap Between Knowledge and Routine Clinical Practice

AHA/ACC Guidelines



- Clinical trial evidence
- National guidelines

Systems

- Implement evidence-based care
- Improve communications
- Ensure compliance

Clinical Practice

- Improve quality of care
- Improve outcomes

Adapted from the American Heart Association. *Get With The Guidelines*; 2001.

HF readmission can be decreased.

REVIEW

Comprehensive Discharge Planning With Postdischarge Support for Older Patients With Congestive Heart Failure

A Meta-analysis

Christopher O. Phillips, MD, MPH
Scott M. Wright, MD
David E. Kern, MD, MPH
Ramesh M. Singa, MPH
Sasha Shepperd, MS, DPhil
Haya R. Rubin, MD, PhD

Context Comprehensive discharge planning plus postdischarge support may reduce readmission rates for older patients with congestive heart failure (CHF).

Objective To evaluate the effect of comprehensive discharge planning plus postdischarge support on the rate of readmission in patients with CHF, all-cause mortality, length of stay (LOS), quality of life (QOL), and medical costs.

Data Sources We searched MEDLINE (1966 to October 2003), the Cochrane Clinical Trials Register (all years), Social Science Citation Index (1992 to October 2003), and other databases for studies that described such an intervention and evaluated its effect in patients with CHF. Where possible we also contacted lead investigators and experts in the field.

Study Selection We selected English-language publications of randomized clinical trials that described interventions to modify hospital discharge for older patients with CHF (mean age ≥55 years), delineated clearly defined inpatient and outpatient components, compared efficacy with usual care, and reported readmission as the primary outcome.

Data Extraction Two authors independently reviewed each report, assigned quality scores, and extracted data for primary and secondary outcomes in an unblinded standardized manner.

Data Synthesis Eighteen studies representing data from 8 countries randomized 3304 older inpatients with CHF to comprehensive discharge planning plus postdischarge support or usual care. During a pooled mean observation period of 8 months (range, 3-12 months), fewer intervention patients were readmitted compared with controls (555/1590 vs 741/1714, number needed to treat = 12; relative risk [RR], 0.75; 95% confidence interval [CI], 0.64-0.88). Analysis of studies reporting secondary outcomes found a trend toward lower all-cause mortality for patients assigned to an intervention compared with usual care (RR, 0.87; 95% CI, 0.73-1.03; n = 14 studies), similar initial LOS (mean [SE]: 8.4 [2.5] vs 8.5 [2.2] days, $P = .60$; n = 10), greater percentage improvement in QOL scores compared with baseline scores (25.7% [95% CI, 11.0%-40.4%] vs 13.5% [95% CI, 5.1%-22.0%]; n = 6, $P = .01$), and similar or lower charges for medical care per patient per month for the initial hospital stay, administering the intervention, outpatient care, and readmission (−$359 [95% CI, −$763 to $45]; n = 4, $P = .10$ for non-US trials and −$536 [95% CI, −$956 to −$115]; n = 4, $P = .03$, for US trials).

Conclusion Comprehensive discharge planning plus postdischarge support for older patients with CHF significantly reduced readmission rates and may improve health outcomes such as survival and QOL without increasing costs.

JAMA. 2004;291:1358-1367 www.jama.com

IN THE UNITED STATES, HALF OF INpatients older than 65 years with congestive heart failure (CHF) are readmitted within 6 months of hospital discharge, with payments totaling 60% of Medicare reimbursements for CHF, the leading diagnosis related group (DRG) for acute hospitalization and readmission in this population.[1-6] Readmissions have increased since the introduction of the Medicare Prospective Payment System[7,8] and may reflect suboptimal assessment of readiness for discharge, fragmented discharge planning, a breakdown in communication and information transfer between hospital-based and community physicians, inadequate postdischarge care and follow-up, or some combination of these processes,[4,9-17] whose resolution may require better coordination of care or comprehensive discharge planning.[14-17]

Comprehensive discharge planning plus postdischarge support may reduce readmission rates and improve health outcomes for patients with CHF. Previous reviews of CHF disease management have emphasized beneficial effects of outpatient care and multidisciplinary teams[14,17]; however, the efficacy of programs incorporating discharge planning, transitional care, and postdischarge management for this patient population has not been established. We sought to extend the results

Author Affiliations are listed at the end of this article.
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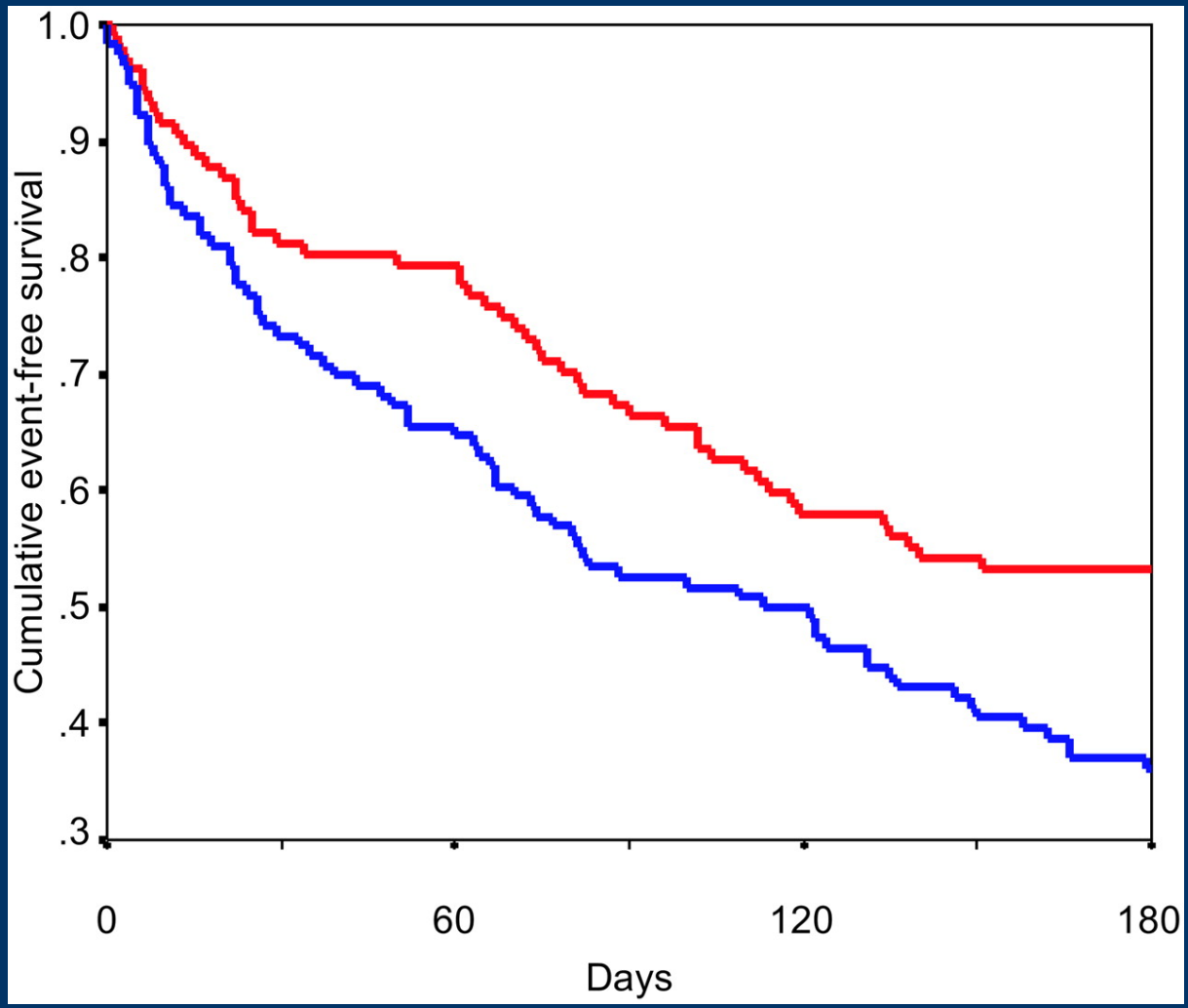
Comprehensive discharge planning plus post-discharge support for older patients with CHF significantly reduced readmission rates and may improve health outcomes such as survival and QOL without increasing costs.

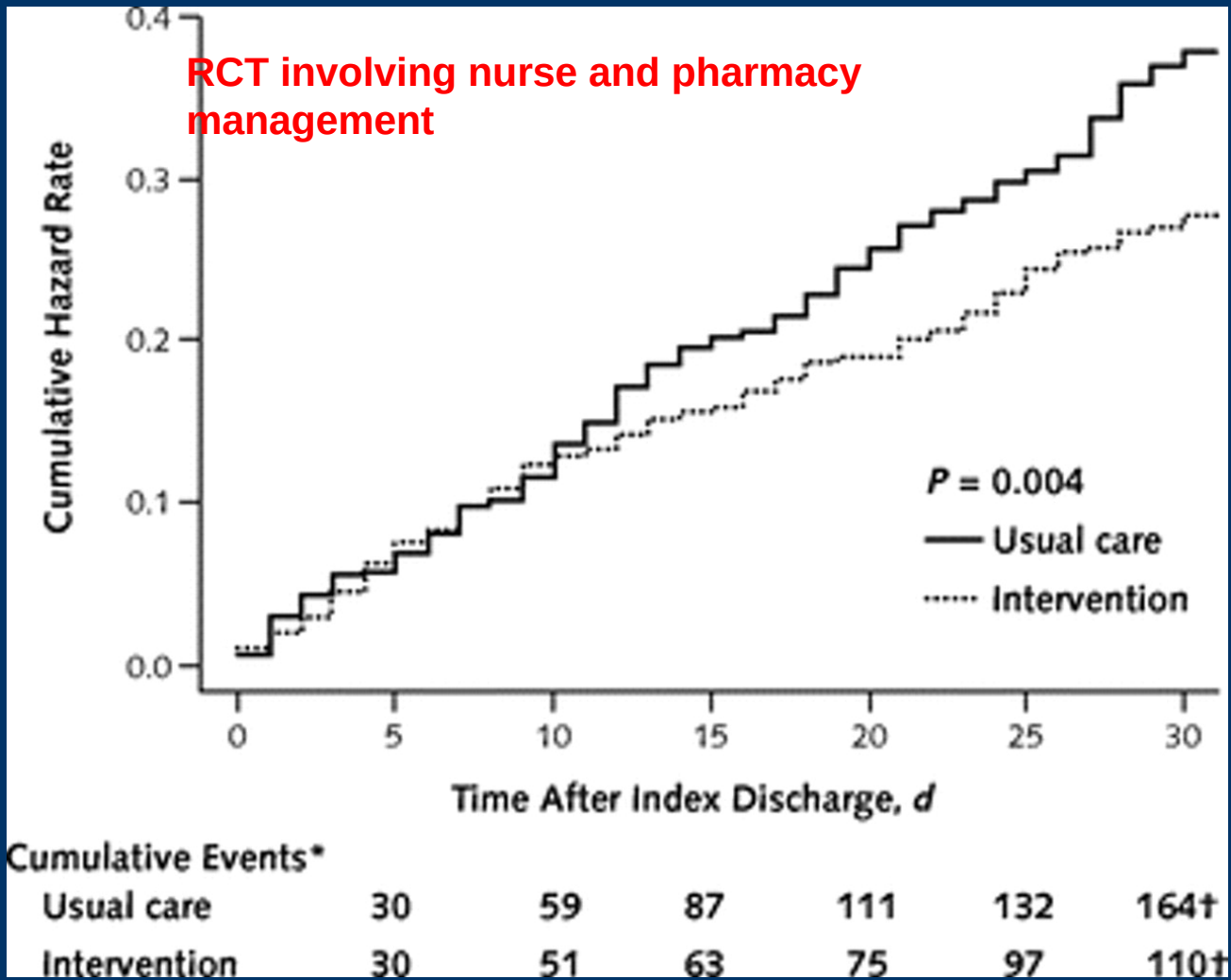
Discharge Education Improves Clinical Outcomes in Patients with Chronic Heart Failure



Event-free survival defined as time to first hospitalization or death for control (blue) and education (red) subjects

Koelling, T. M. et al. Circulation 2005;111:179-185

Cumulative hazard rate of hospital utilization for 30 days after index hospital discharge



Cumulative Events*						
Usual care	30	59	87	111	132	164†
Intervention	30	51	63	75	97	110†

Jack B W et al. Ann Intern Med 2009;150:178-187

Early Physician Follow-Up and 30-Day Readmission among Medicare Beneficiaries Hospitalized with Heart Failure

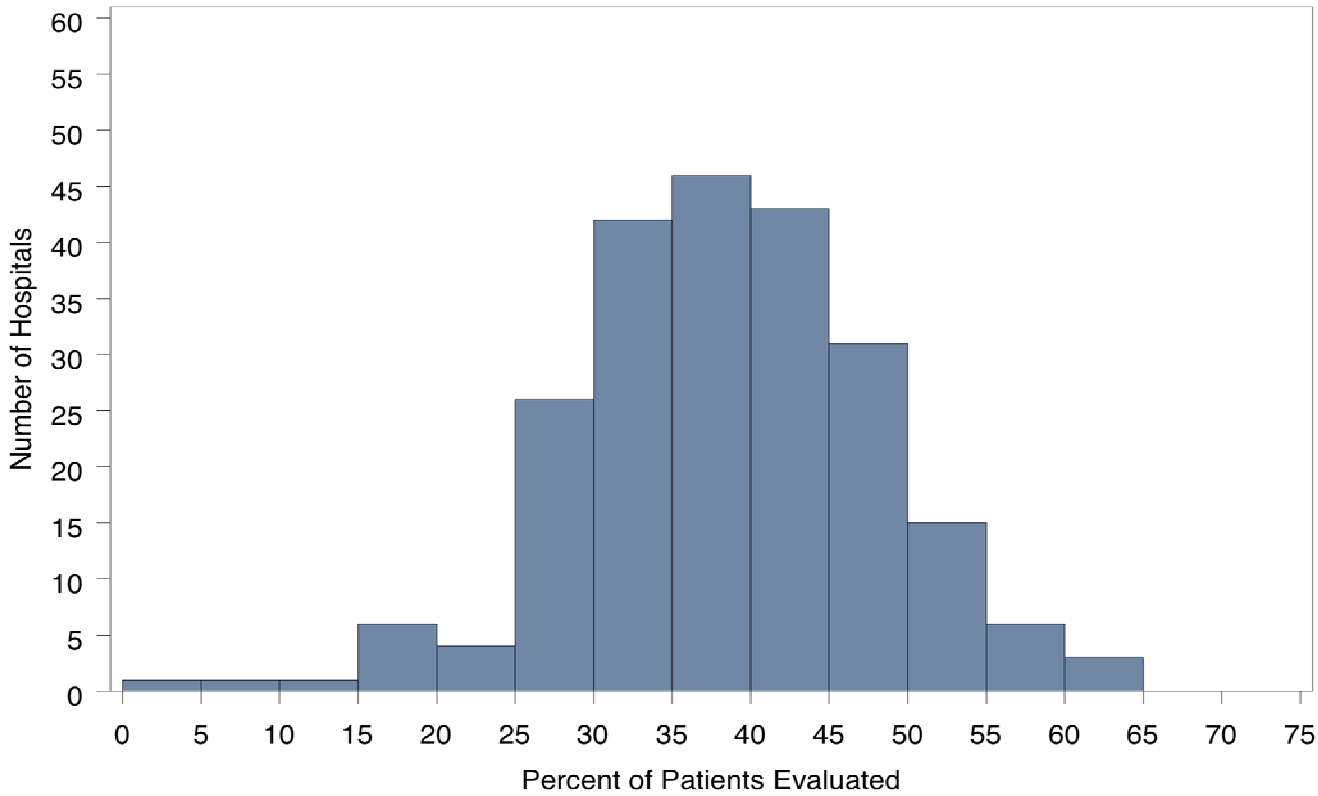
Adrian F. Hernandez, MD[a], Melissa A. Greiner, MS[a], Gregg C. Fonarow, MD[b], Bradley G Hammill, MS[a] Paul A. Heidenreich, MD[c], Clyde W. Yancy, MD[d], , Eric D. Peterson, MD, MPH[a] and Lesley H. Curtis, PhD[a]
on behalf of the Get With The Guidelines Steering Committee and Hospitals

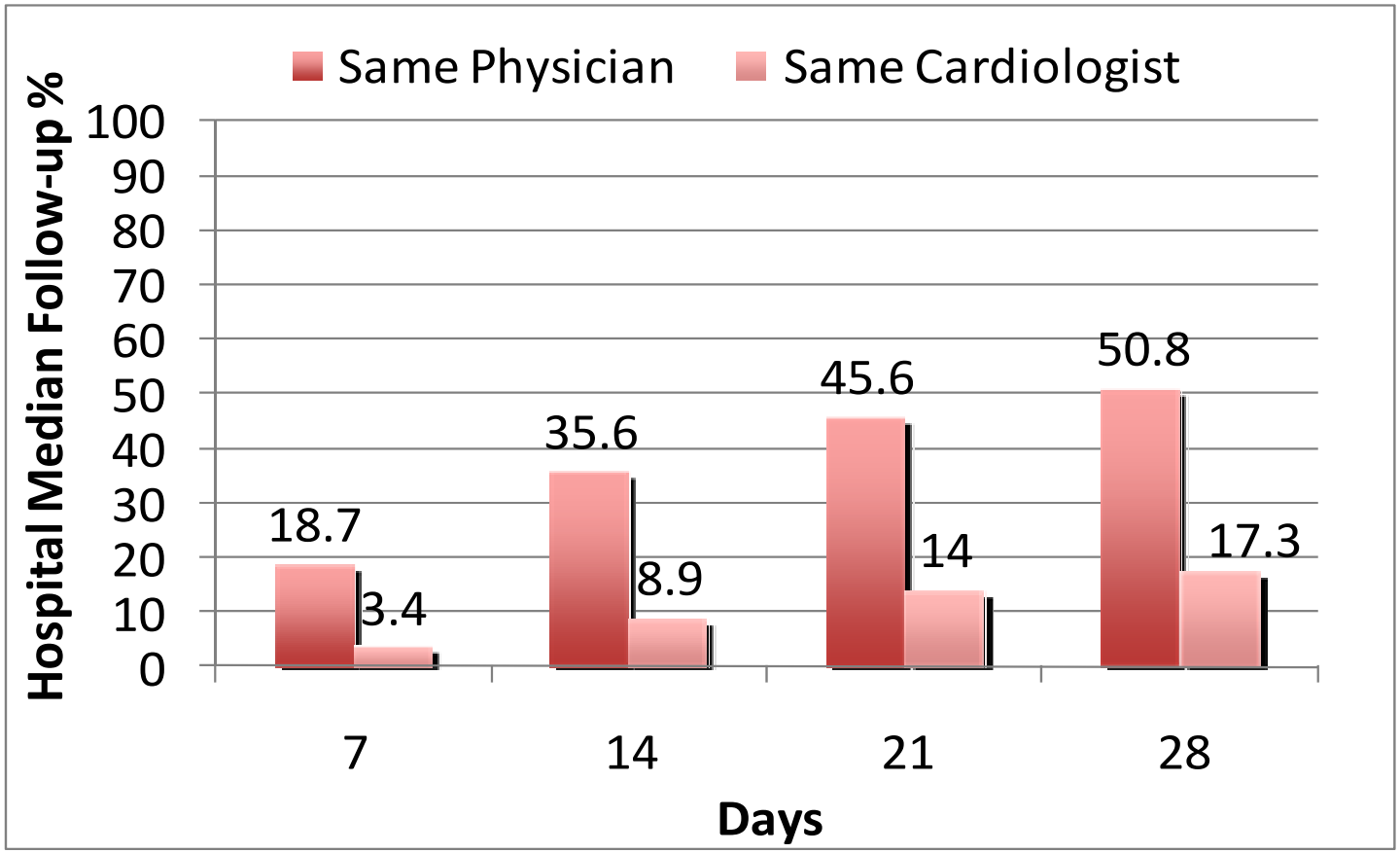
[a]Duke Clinical Research Institute, Durham NC
[b]UCLA Medical Center, Los Angeles, CA
[c]Palo Alto VA Medical Center, Palo Alto, California
[d]Baylor Baylor Heart and Vascular Institute, Dallas, Texas

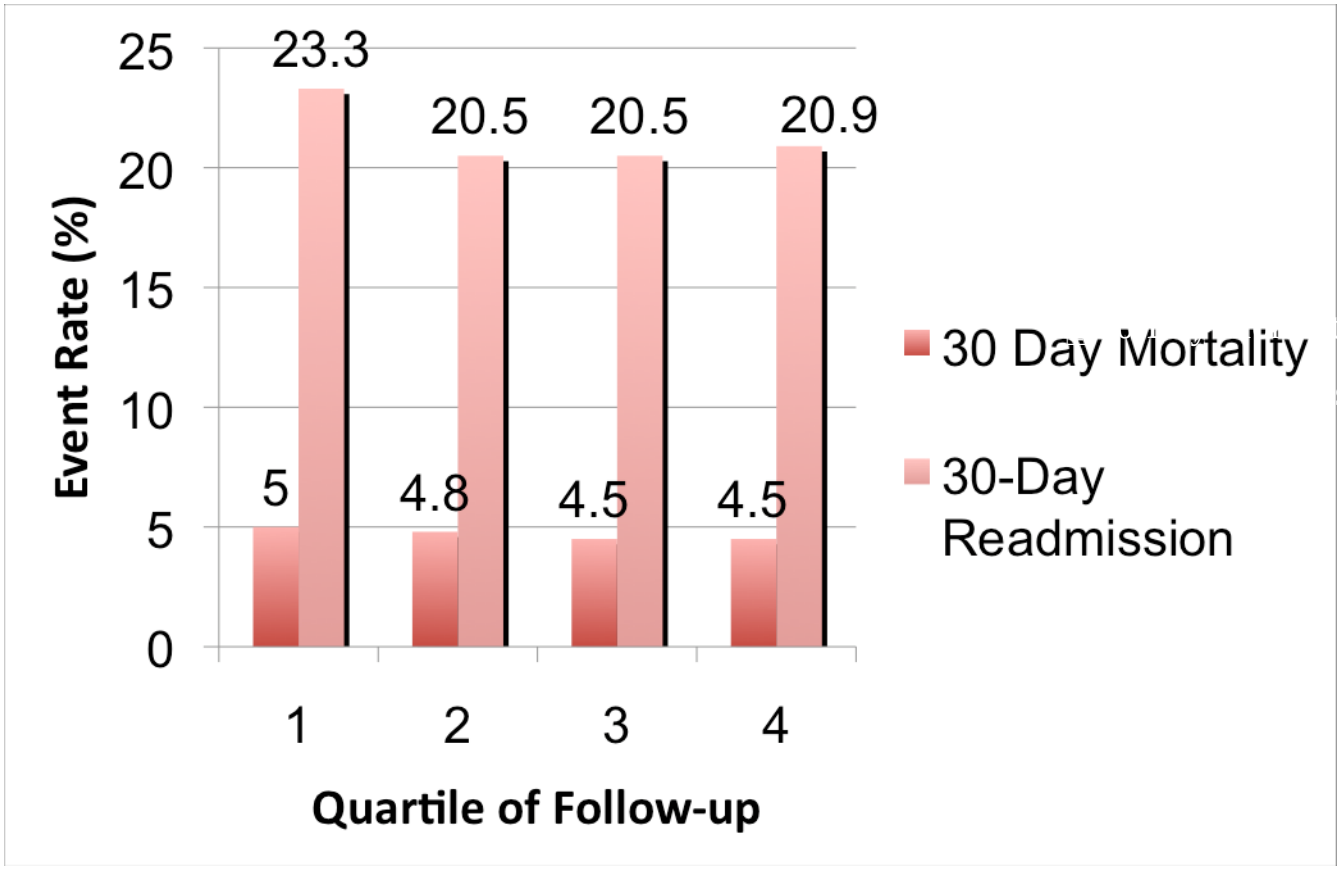
Hospital Variation in Early Follow-up

Median Follow-up Visit within 7 days = 37.5%

225 Hospitals




Same Physician
Same Cardiologist
Hospital Median Follow-up %
100
90
80
70
60
50
40
30
20
10
0
18.7
3.4
35.6
8.9
45.6
14
50.8
17.3
7
14
21
28
Days


25
20
15
10
5
0
Event Rate (%)
23.3
20.5
20.5
20.9
5
4.8
4.5
4.5
1
2
3
4
Quartile of Follow-up
30 Day Mortality
30-Day Readmission

Early Follow-up	Unadjusted HR	95% CI	P Value	Adjusted HR	95% CI	P Value
Quartile 1	1.0 (REF)			1.0 (REF)		
Quartile 2	0.86	0.78-0.94	<.01	0.85	0.78-0.93	<01
Quartile 3	0.85	0.76-0.94	<.01	0.87	0.78-0.96	<01
Quartile 4	0.87	0.79-0.95	<.01	0.91	0.83-1.0	.05

Guidelines for The Hospitalized Patient

- Medications should be reconciled in every patient and adjusted as appropriate on admission to and discharge from the hospital. (*Class I, LOE: C*)
- Comprehensive written discharge instructions for all patients with a hospitalization for HF and their caregivers is strongly recommended, with special emphasis on 6 aspects of care…" (*Class I, LOE: C*)
- Post discharge systems of care, if available, should be used to facilitate the transition to effective outpatient care for patients hospitalized with HF" (*Class I, LOE:B*)

Jessup M, et al. ACC/AHA 2009 Guideline Focused Update on Heart Failure

Hospital to Home (H2H)

Excellence in Transitions

Goal

To reduce all-cause re-admission rates among patients discharged with heart failure or acute myocardial infarction by 20% nationally by December 2012.

H2H Will:

- Build a community of hospitals, health care systems, clinical practices, and strategic partners dedicated to reducing preventable hospital readmissions.
- Address the challenge of creating a coordinated health care team across different settings of care.
- Ensure reliable, safe and health-enhancing transitions for patients.
- Leverage the expertise and experience of other organizations and partners.

H2H Core Concepts

1. **Medication Management Post-Discharge**
   - *Is the patient familiar and competent with his or her medications and is there access to them?*
2. **Early Follow-Up**
   - *Does the patient have a follow up visit scheduled within a week of discharge and is she or he able to get there?*
3. **Symptom Management**
   - *Does the patient fully comprehend the signs and symptoms that require medical attention and whom to contact if they occur?*

Committed H2H Participants

1. Obtain Administrative Support
2. Assemble an Improvement Team
3. Develop an Improvement Plan
4. Report on Progress

Provisions

- Expanded use of readmission as a performance measure
- Penalties for hospitals with high readmission rates
- Pilots to test bundled payments for hospitals and physicians 30 days post discharge
- Study to determine how to apply readmission penalty to physicians

Why a Hospital-Based System for HF Management?

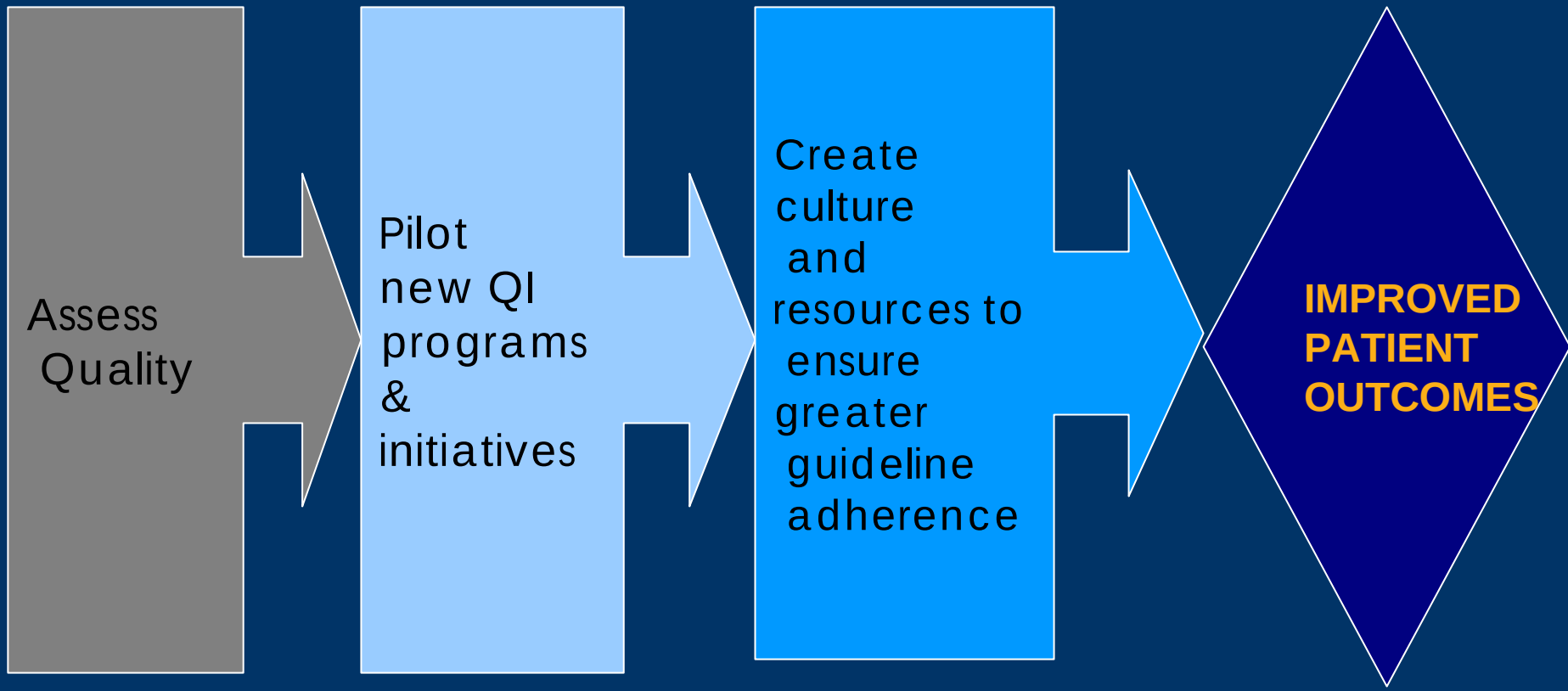
- **Patients**
  - Patient capture point
  - Have patient's/family's attention: "teachable moment"
  - Predictor of care in community
- **Hospital structure**
  - Standardized processes/protocols/ orders/teams
  - Accrediting bodies for standards of care
  - Centers for Medicare and Medicaid Services—peer review organizations

    JCAHO (in-hospital)

    HEDIS (post-discharge)

Fonarow GC et al. *Am Heart J*. 2004;148:43–51.

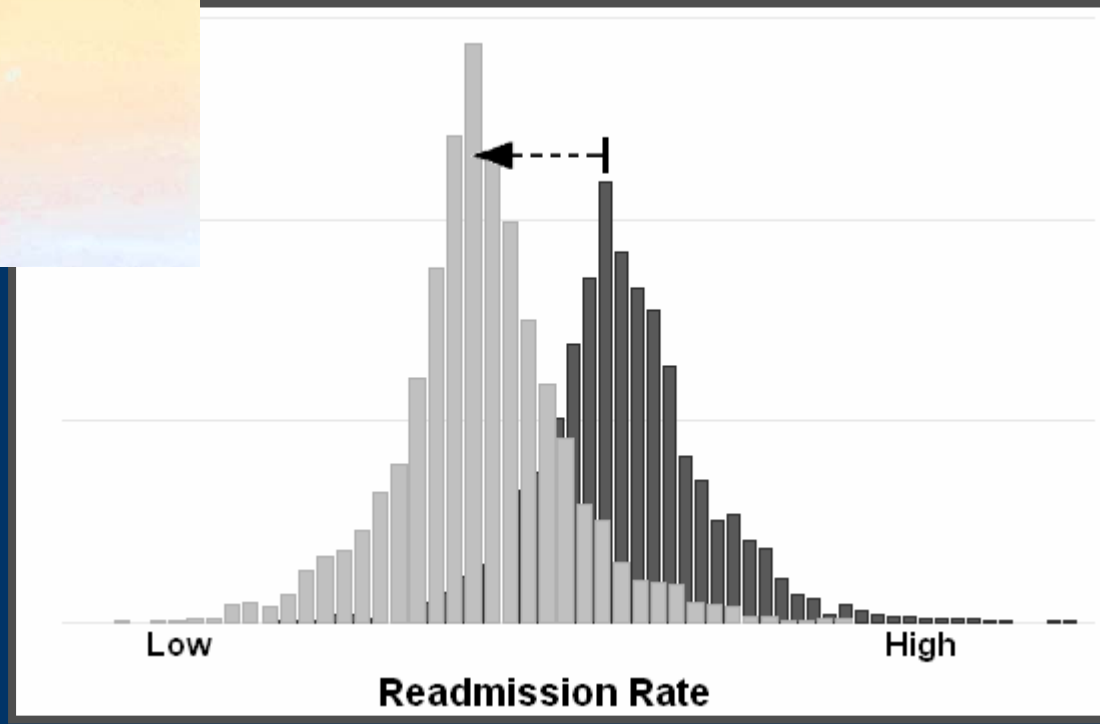
Make plans now…
Building a Continuum of Care in the Outpatient Setting



“Failure” is not an answer

- Failure to prescribe evidence-based medications
- Failure to discontinue medication that may exacerbate HF
- Failure to titrate medications to target doses
- Failure to adhere to prescribed medications
- Failure to adequately address comorbidities
- Failure to consider device therapies
- Failure to provide adequate dietary counseling
- Failure to comply with dietary regimen
- Failure to seek early care with escalating symptoms
- Failure of adequate discharge planning
- Failure of adequate follow-up
- Failure of adequate monitoring
- Failure of patient social support systems
- Failure to address patient and care-giver needs

With help, shift the curve



Conclusions:

- The major need for ‘accountability’ and value of health care requires the clinical community to evaluate quality of care including readmission
- Outcomes matter
- How to prevent ‘recurrent failure’ is complicated but possible…
  - By improving discharge processes
  - By improving transitional communications
  - By improving follow-up
  - By improving ‘real-time’ measurements
  - By improving evidence based care

Questions

"Quality means doing it right when no one is looking."

--Henry Ford