

Facility Variation in Heart Failure Readmissions

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- Study Team
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Outline

- Background
- Objectives
- Methods
- Preliminary Results
 - Heart failure readmission rates and costs
 - Facility variation in health failure readmissions

Organizational Factors Related to Hospital Readmissions

- Aim 1: Assess variation in hospital-level readmission rates and costs among VA inpatients, including both VA and Medicare readmissions, for the two most common medical conditions: heart failure (HF) and chronic obstructive pulmonary disease (COPD)
- Aim 2: Identify VA hospital-level organizational factors associated with readmissions

Policy Issues

- Hospital readmissions are frequent, costly and reflect poor quality of care
- 30-day readmission rate in Medicare
 - Overall: 20%
 - HF: 25%
- Public reporting of Medicare readmission rates for HF, acute myocardial infraction, and pneumonia began in 2009
 - VA hospitals included Medicare Hospital Compare in 2011
- Medicare reimbursement penalty for excessive readmissions under Affordable Care Act began in 2012

Readmission Rates in VA

- Kaboli et al (2012): 30-day readmission rates decrease over time
 - Overall: 16.5% in 1997-1998 to 13.8% in 2009-2010
 - HF cohort: 20.5% in 1997-1998 to 19% in 2009-2010
- Heidenrieck et al (2010): Improved HF hospital mortality, but slightly worsened HF readmission rates during 2002-2006
- VA Hospital Compare
 - HF 30-day readmission rate: 20.81% for over 65 years old in FY2007-2009
- Include readmissions in VA only

Reduce Hospital Readmissions

- Effective Interventions
 - Discharge Planning
 - Patient Education
 - Post-Discharge Management
- CHF QUERI: Hospital to Home Initiative (H2H)
- Debate over preventability of readmissions

Objective for Today's Talk

- Estimate the HF readmission rates and costs, accounting for readmissions in VA and Medicare
- Examine facility variation in HF readmission rates

Study Design

- Retrospective cohort study of HF inpatients
- Study Periods
 - Three cross-sectional patient cohorts identified in FY2007, 2008, and 2009
 - One year follow-up period for each cohort

Data Sources

- VA Administrative Data
 - Patient Treatment File, Outpatient Encounter Files, Fee-Basis File, Vital Status, DSS National Extracts (inpatient, outpatient, lab, pharmacy), CDW vital records
- Medicare Claims
 - MedPAR, Carrier, Hospital Outpatients
- Facility Surveys of CHF Practices
 - Conducted by CHF QUERI in 2008

Study Samples

- Patient identification specification based on Medicare HF readmission performance measure
- Identify patients with an index admission in VA hospitals based on principle discharge diagnosis
 - ICD-9 codes: 402.01, 402.11, 402.91, 404.01, 404.03, 404.11, 404.13, 404.91, 404.93, 428.0, and 428.xx
- Index admission: 1st admission in a VA facility for each patient in a given year

Outcomes – Readmission Rates

- Readmission
 - 1st hospitalization after the index admission
- Readmission rates
 - All-cause and HF specific
 - Main outcome: 30-day all-cause readmission rate
 - Secondary outcomes: 60-day, 90-day, 1-year
- Source of readmissions
 - VA
 - VA hospitals
 - Non-VA care via fee-basis (in process)
 - Medicare

Outcomes – Readmission Costs

- Includes costs of all readmissions in 1 year after the index admission
- Payers' perspective:
 - VA expenditures
 - DSS costs for VA care
 - VA payments for non-VA care (in process)
 - Medicare payments
- VA only and total (VA + Medicare)
- In 2009 dollars: inflation adjusted using Consumer Price Index

Patient Characteristics

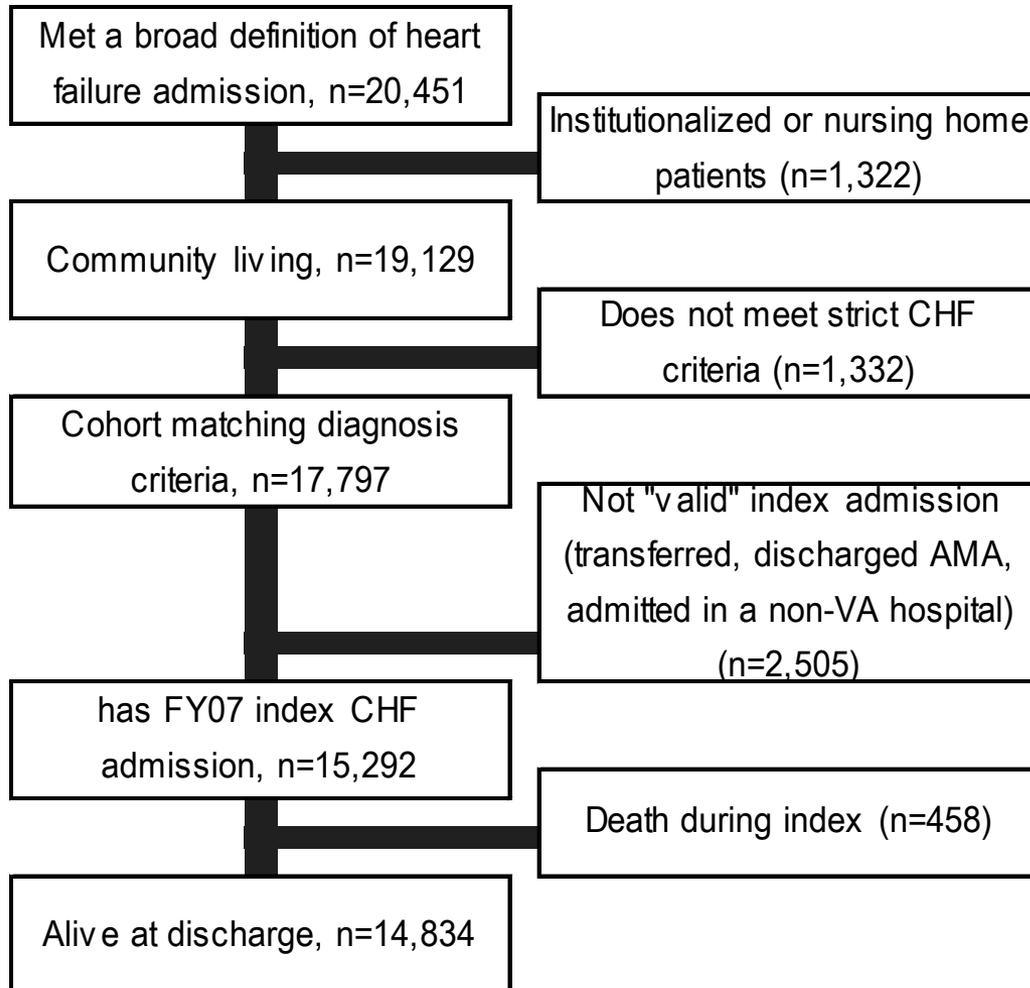
- Sociodemographic: age, gender, race, marital status, income means test, disability rating
- Access to VA care: distance to the closest VA hospital/clinic
- Health Status: comorbidity (DCG), BMI
- Health Behavior: medication adherence, BMI
- Clinical Factors (lab results and vital signs): blood pressure, respiratory rate, heart rate, sodium level, blood urea nitrogen, glucose, O₂ saturation, PO₂, PCO₂

Analytical Approaches

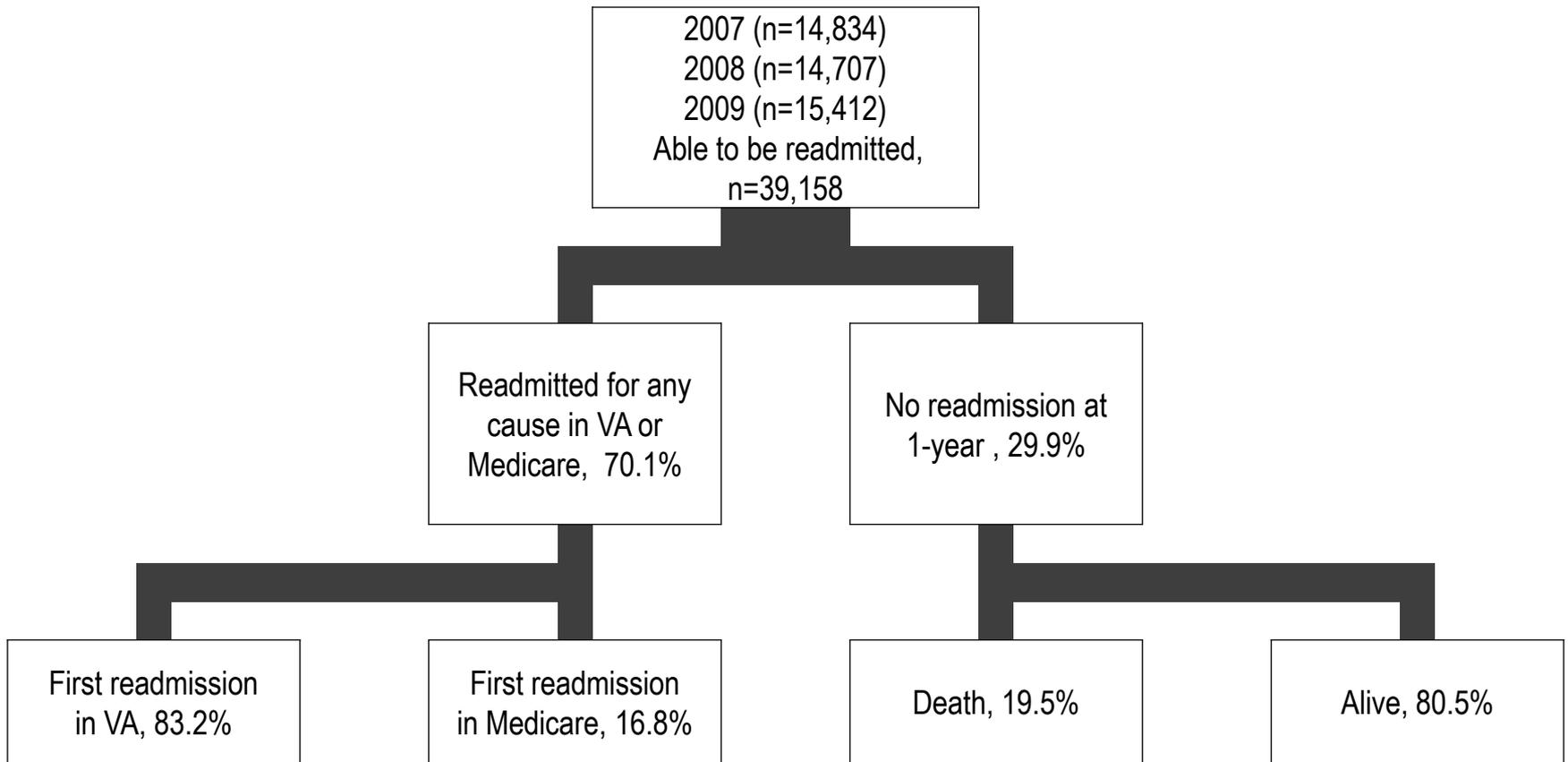
- Descriptive analysis
- Adjusted readmission rates at the hospital level using the hierarchical models
 - GLIMMIX in SAS
 - Medicare HF readmission model
 - Adjust for age, gender, 35 HCC categories from DCG
- Further analysis
 - Alternative risk adjustment measures
 - Cost model – two-part model

Preliminary Results

HF Cohort 2007



Readmission Status in 1 Year

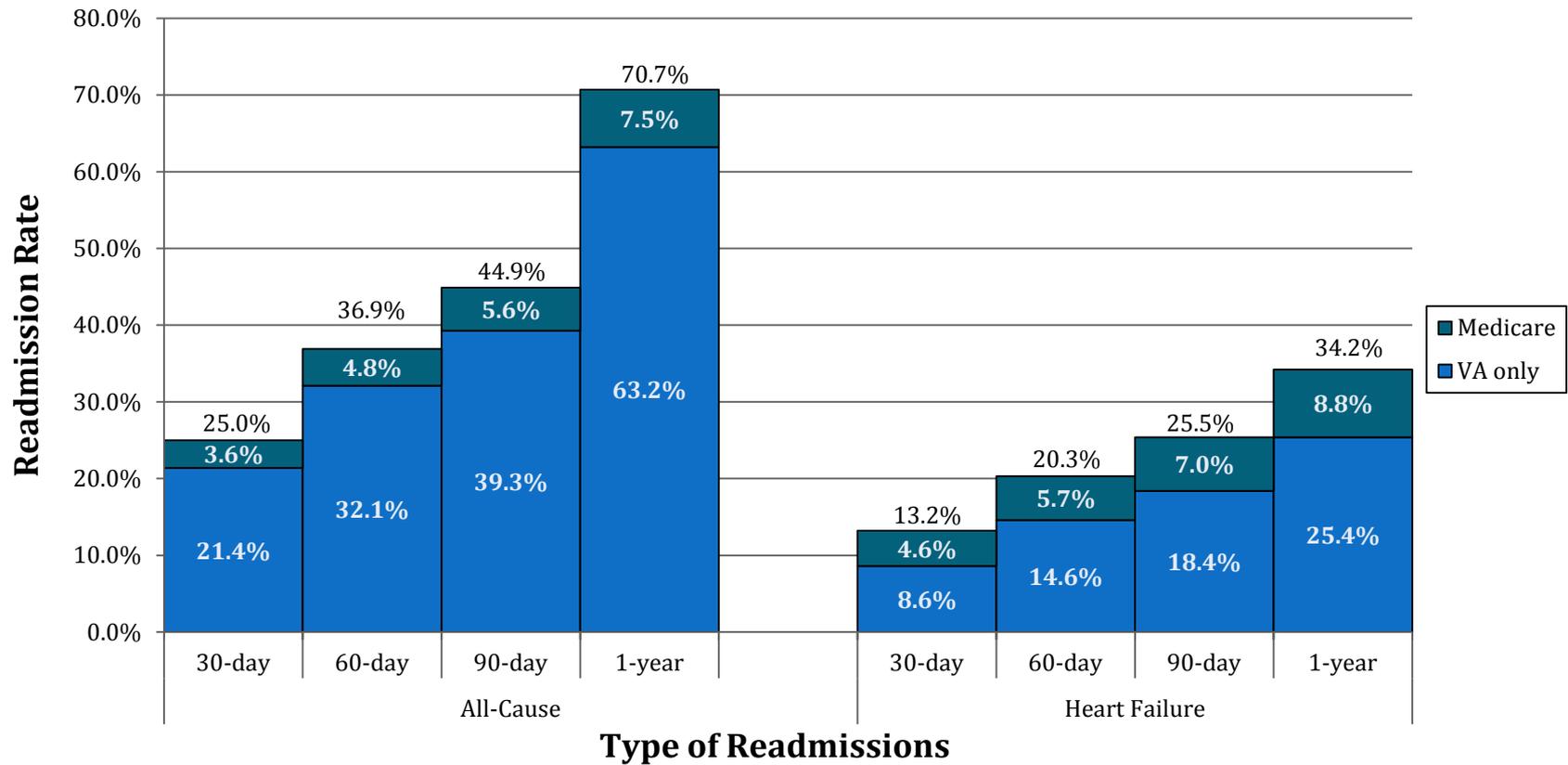


Patient Characteristics

Patient Characteristics	Readmission* (n=10,488)	No readmission* (n=4,346)
Age (mean/SD)	71.1 (11.3)	70.1 (11.7)
≥65 years old (%)	67	61
Female (%)	2	2
Receive free VA care (%)	96	93
Medicare eligible in 2007 (%)	78	70
Mortality in 1 year (%)	32	21
DCG score (mean/SD)	2.6 (1.2)	2.3 (1.1)
Comorbid conditions		
Hypertension (%)	88	85
Ischemic heart disease (%)	75	64
Myocardial infarction (%)	21	15
Diabetes (%)	58	53
COPD (%)	52	46

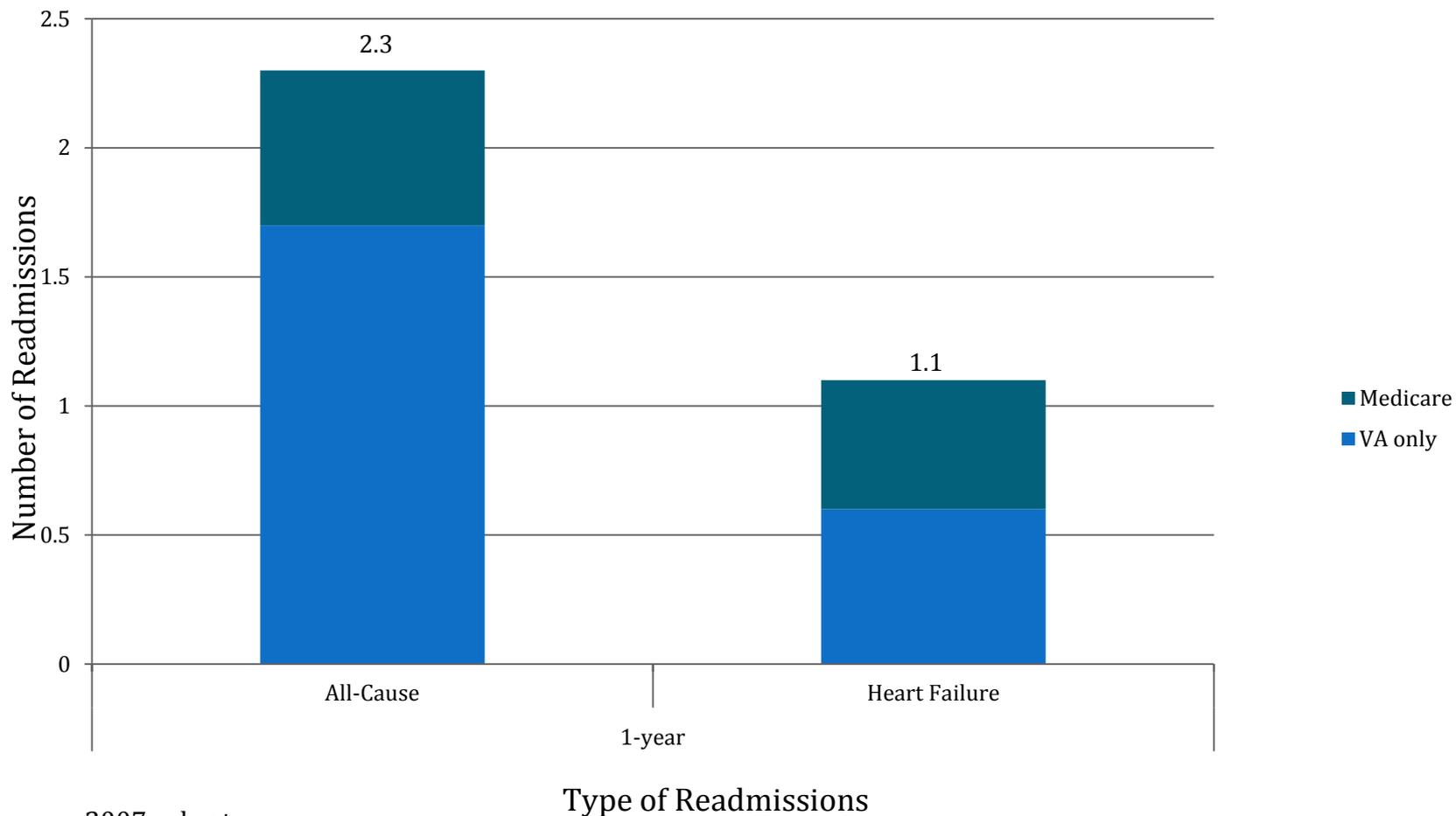
*1-year readmission in VA or Medicare
2007 cohort

Unadjusted Readmission Rates



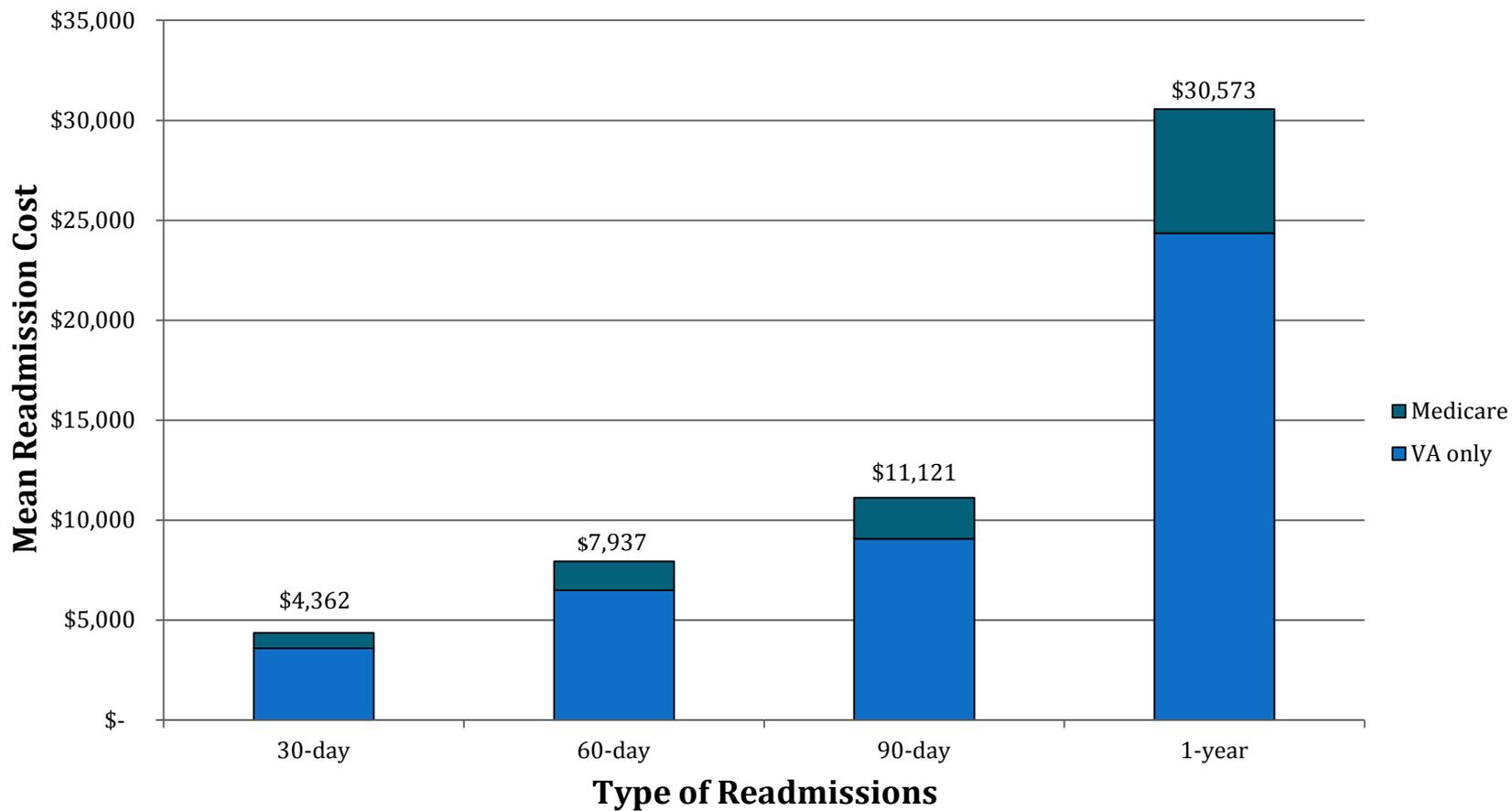
2007 cohort

Number of Readmissions in One Year



2007 cohort

Unadjusted Readmission Costs



2007 cohort

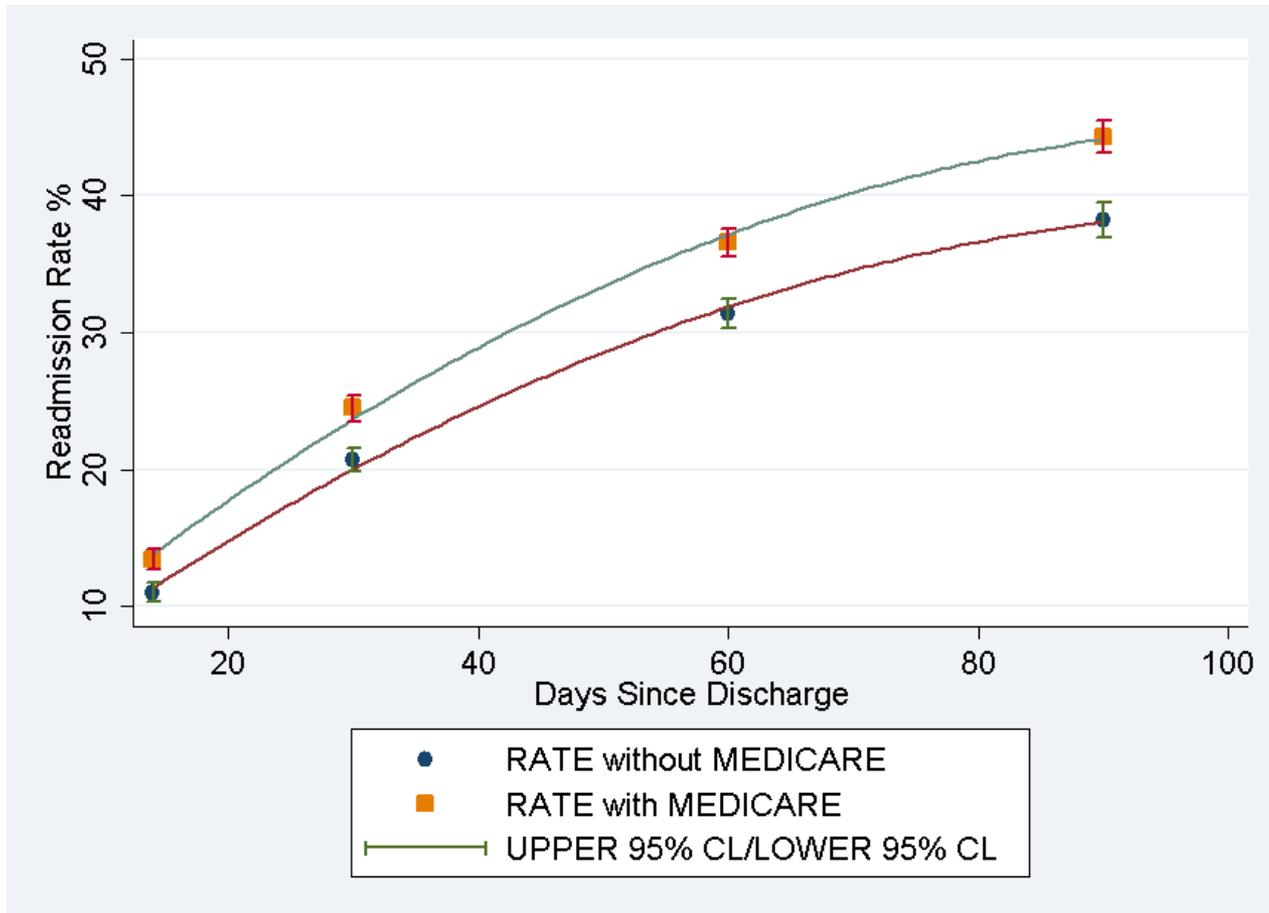
Facility Level Readmission Rates

Facility Level Readmission Rates

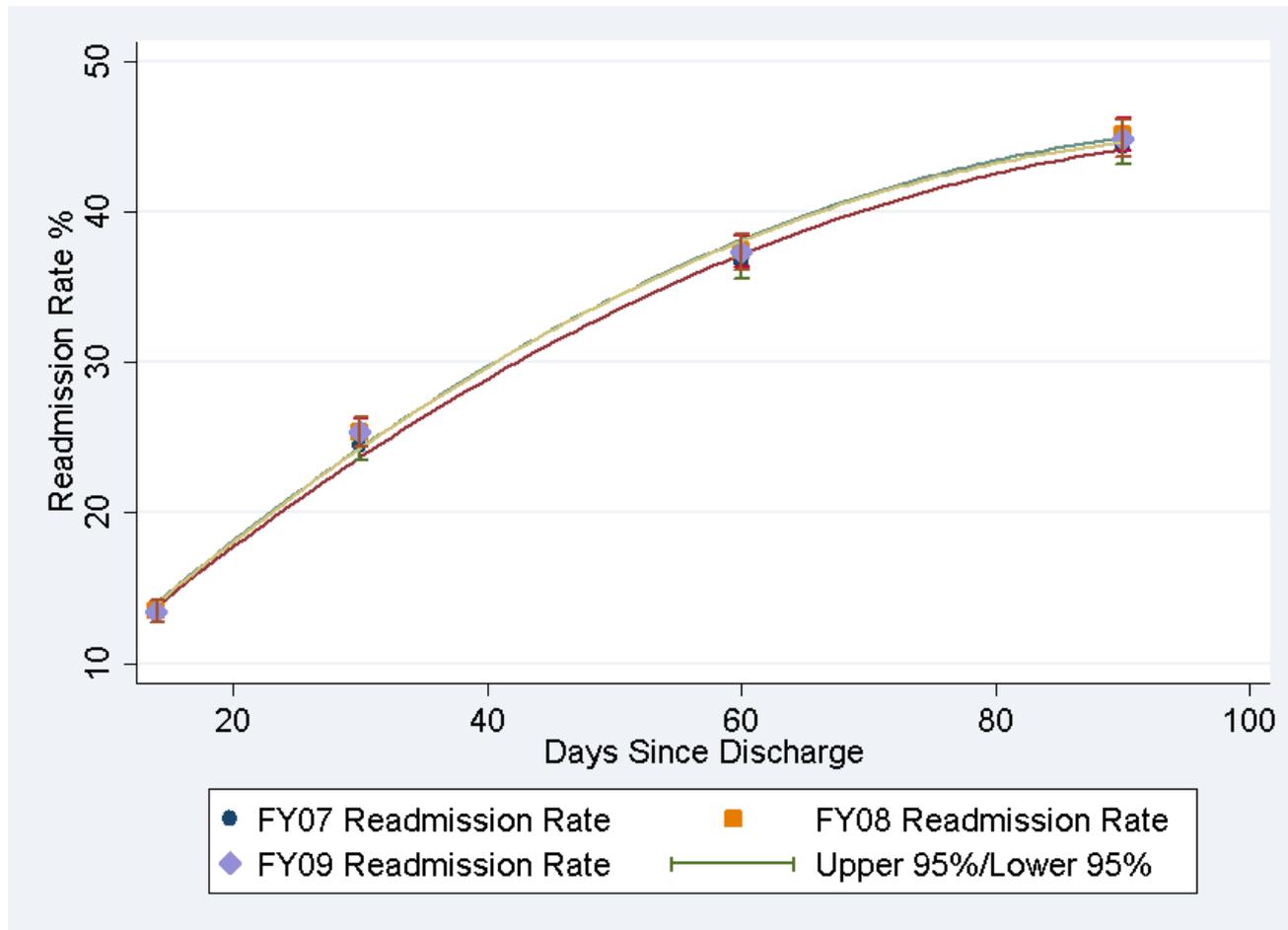
M					
Readmission Rate					%
25					
50					
75					

*Exclude 7 facilities with fewer than 25 patients
2007 cohort

Higher readmission rates at the facility level after including Medicare data (unadjusted)



Stabled readmission rates overtime at facility level (unadjusted)

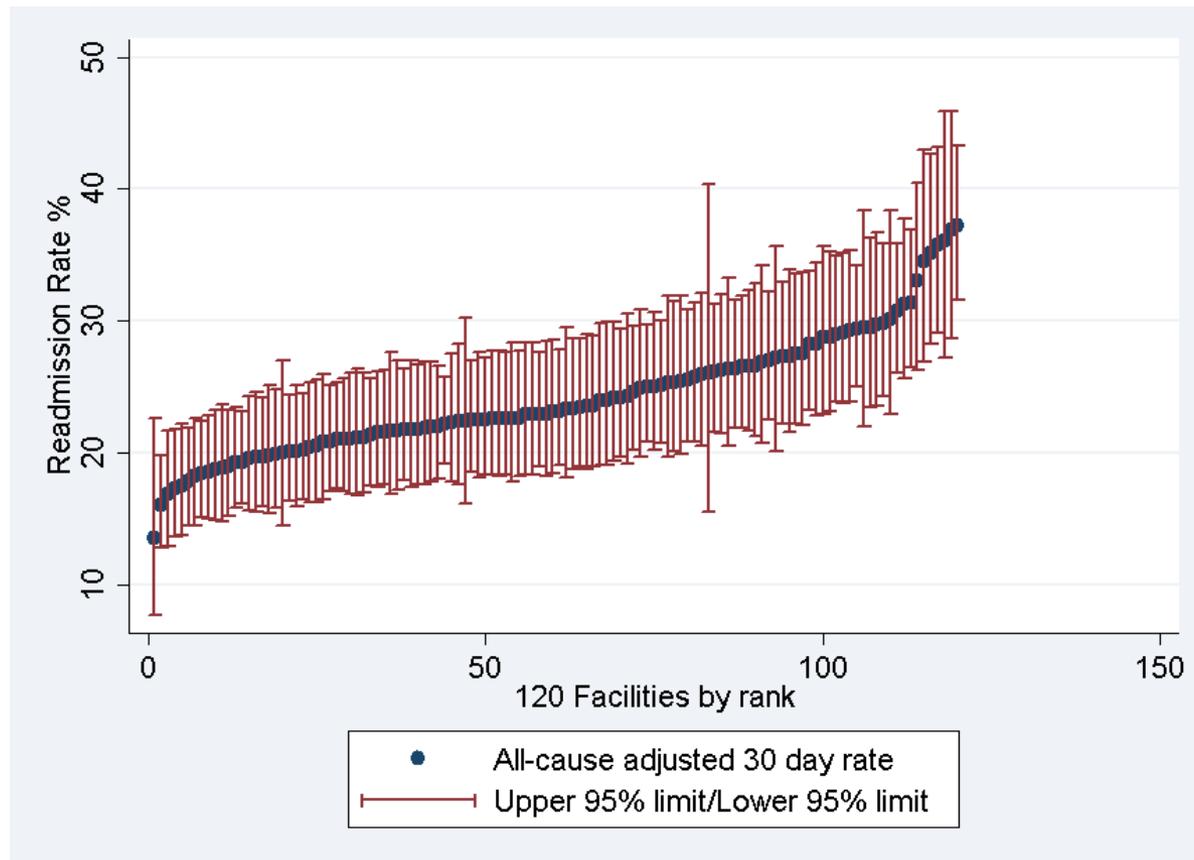


All-cause Readmission Rates

	Number of Patients (n= 127)	30-day Total All-cause Readmission Rate* (n=120)		30-day HF Specific Readmission Rate* (n=120)	
		Unadjusted	Adjusted	Unadjusted	Adjusted
Mean	117 (83)	24.5%	24.1%	12.7%	12.5%
Range (min – max)	1 - 543	12.5% - 39.8%	13.5% - 37.2%	3.0%-23.1%	4.3% -21.7%
25 th percentile	56	21%	21.1%	10.6%	10.9%
50 th percentile	104	24.8%	23.1%	13.0%	12.1%
75 th percentile	160	27.5%	26.8%	15.0%	13.1%

*Exclude 7 facilities with fewer than 25 patients
2007 cohort

Adjusted 30-Day All-cause Readmission Rates

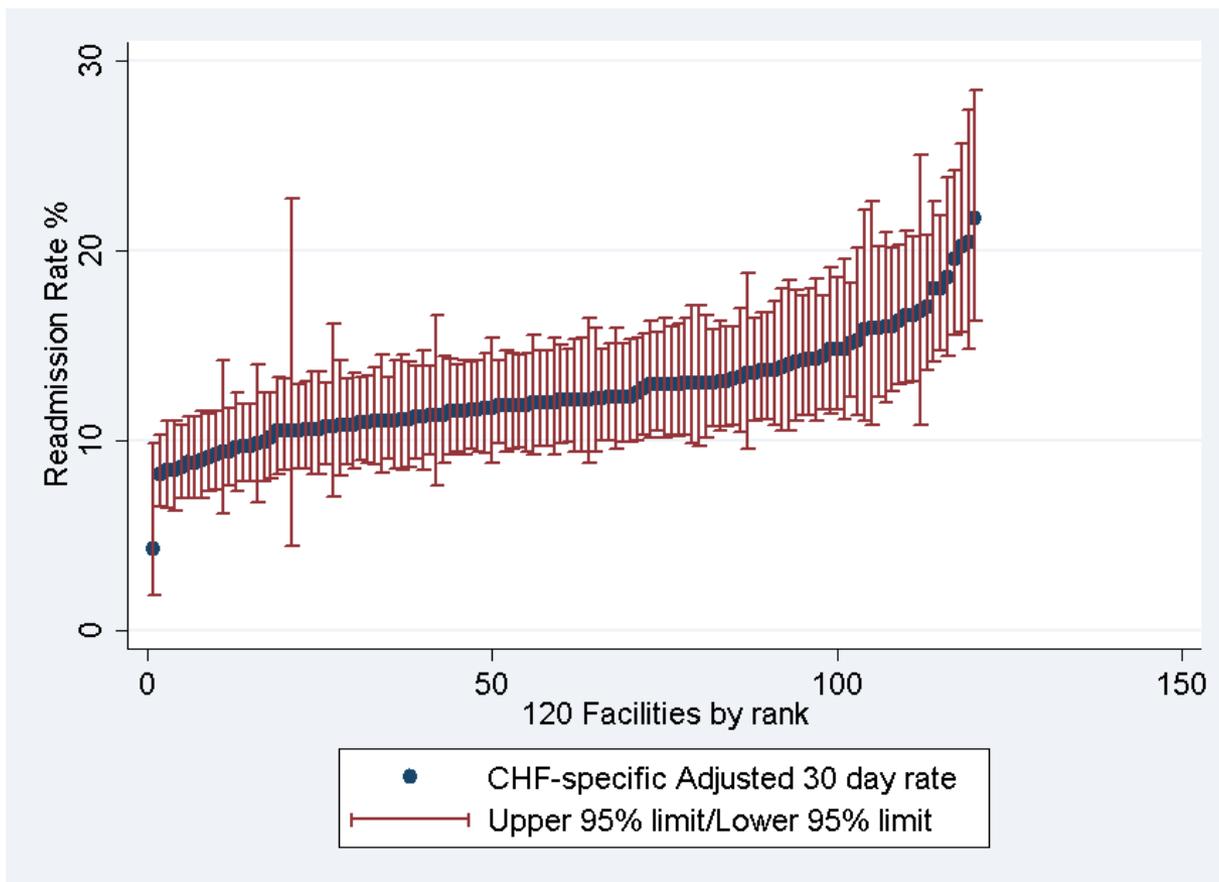


HF Specific Readmission Rates

Mean					
Range (min - max)					%
25 th					
50 th					
75 th					

*Exclude 7 facilities with fewer than 25 patients
2007 cohort

Adjusted 30-Day HF Specific Readmission Rates



Summary

- Accounting for VA only readmissions underestimates readmission rates and costs, especially for HF specific readmissions
- 25% were readmitted in 30 days and 70% were readmitted in one year
- Wide variation in readmission rates across VA hospitals

Next Steps

- Complete readmission rates and costs for HF cohorts
- Combine facility surveys and patient level data to examine organizational factors associated with HF readmissions