

Reminders in Diagnostic Test Reports to Improve Heart Failure Care

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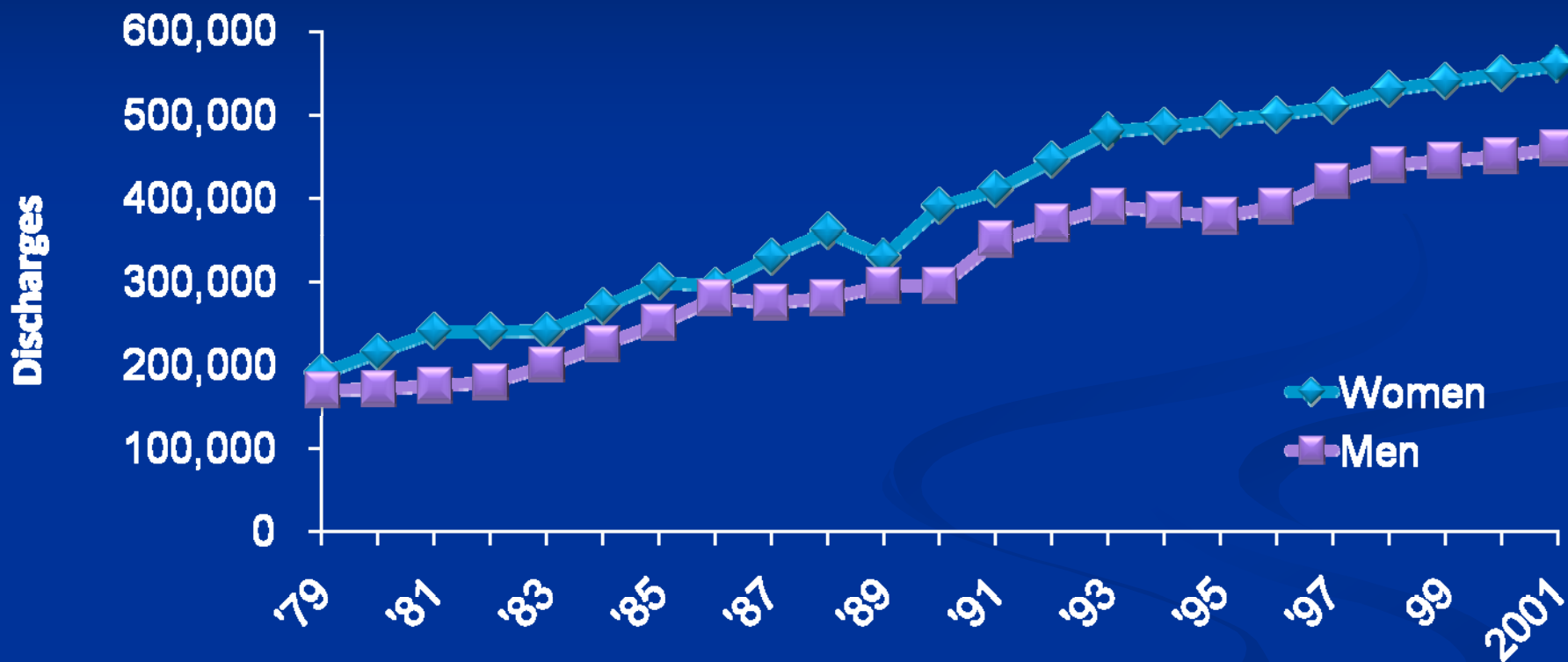
Potential Conflicts of Interest

- VA Employee
- VA Research Funding

Outline

- Background on Heart Failure
 - Life-prolonging treatment
 - Echocardiography
- Rationale for Reminders in Diagnostic Test Reports
- Randomized Trial Results
- Implementation Attempts
 - Deimplementation

Increasing Burden of Heart Failure in the U.S.



AHA, 1998 Heart and Statistical Update
NCHS, National Center for Health Statistics

Background on U.S. Heart Failure

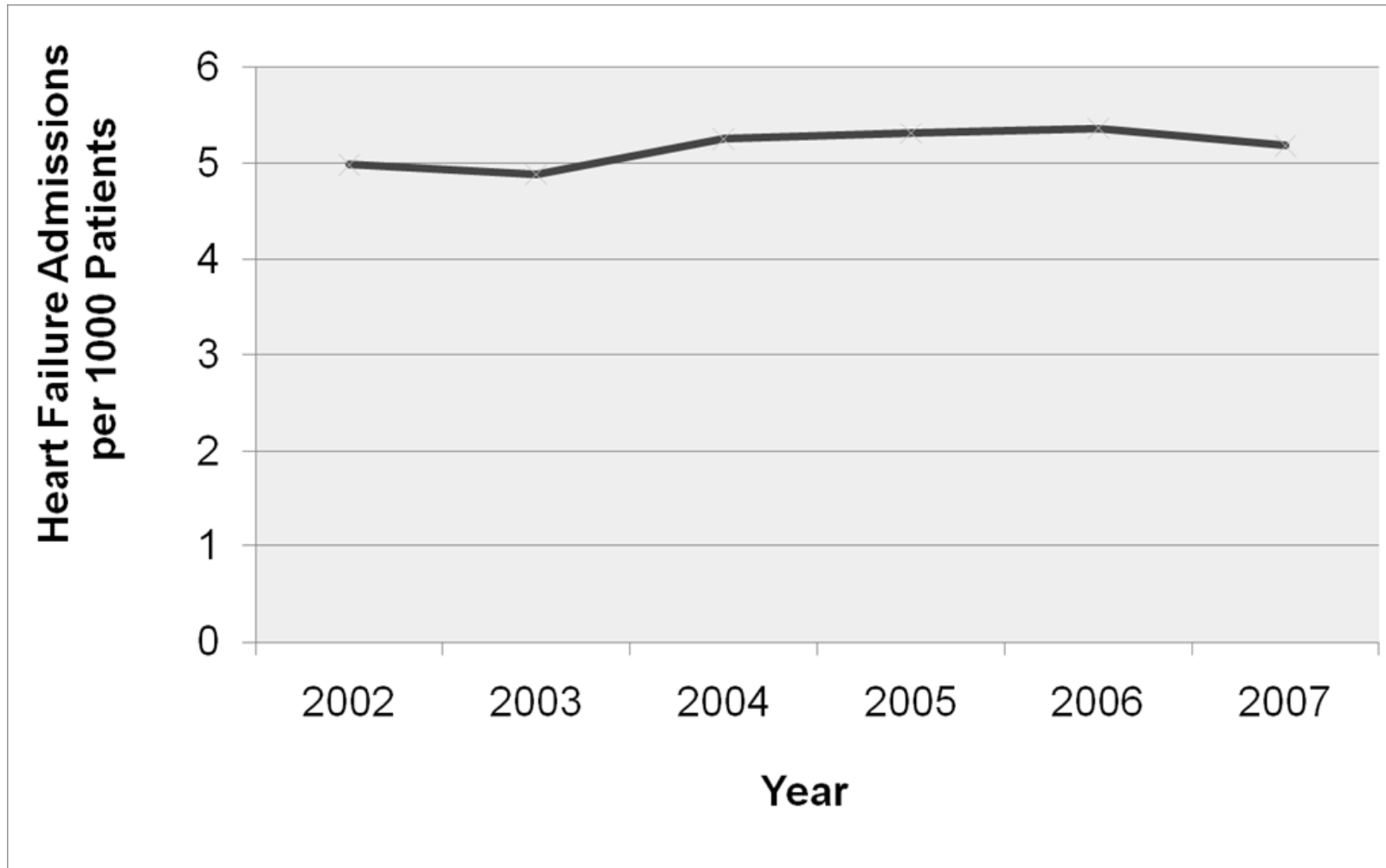
Population Group	Prevalence	Incidence	Mortality	Hospital Discharges	Cost
Total population	5,300,000	660,000	284,965	1,084,000	\$34.8 billion

VA prevalence near 140,000 or 2.6%

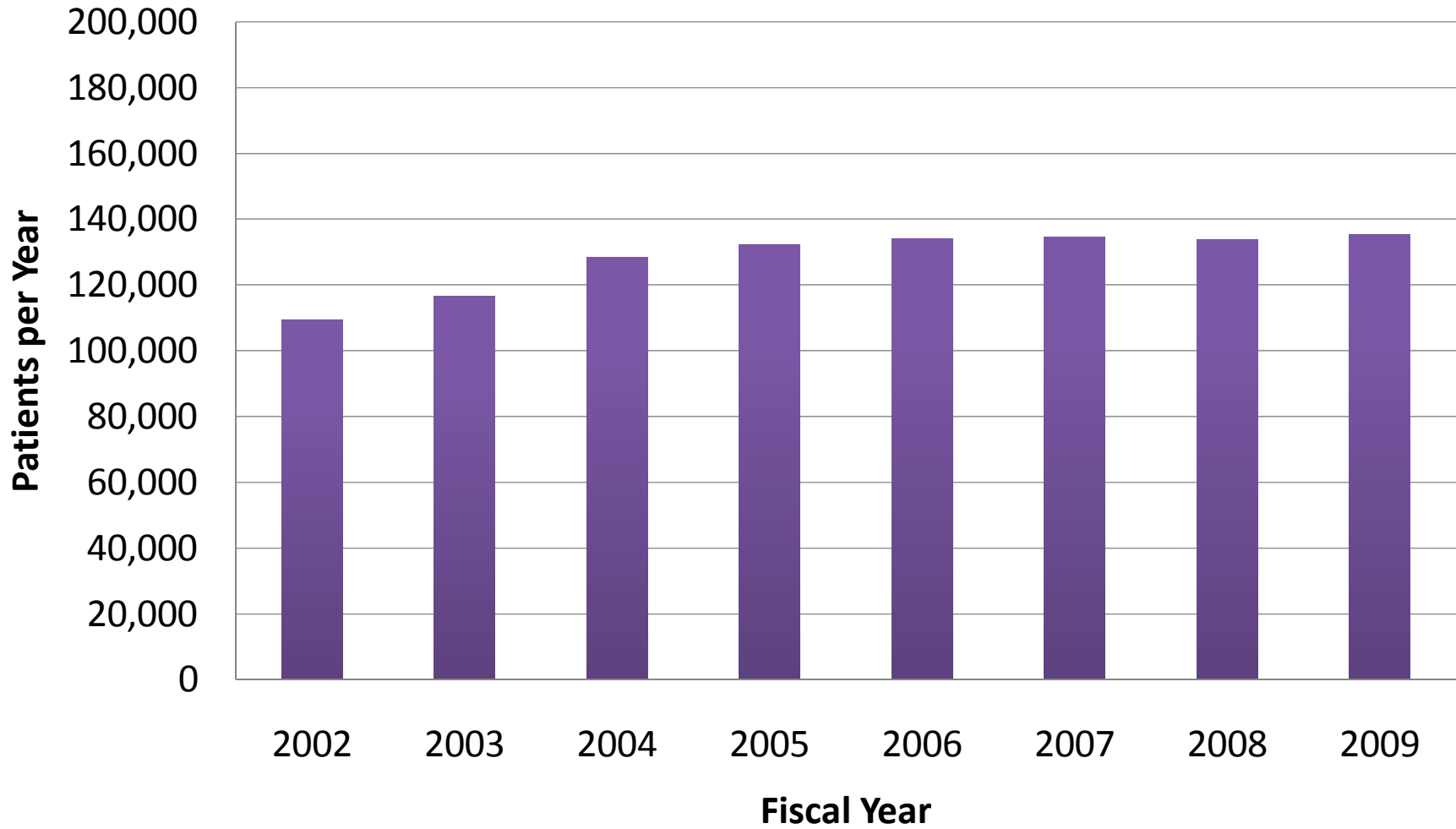
¹American Heart Association. *2008 Heart and Stroke Statistical Update*. Dallas, TX: American Heart Association; 2008.

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

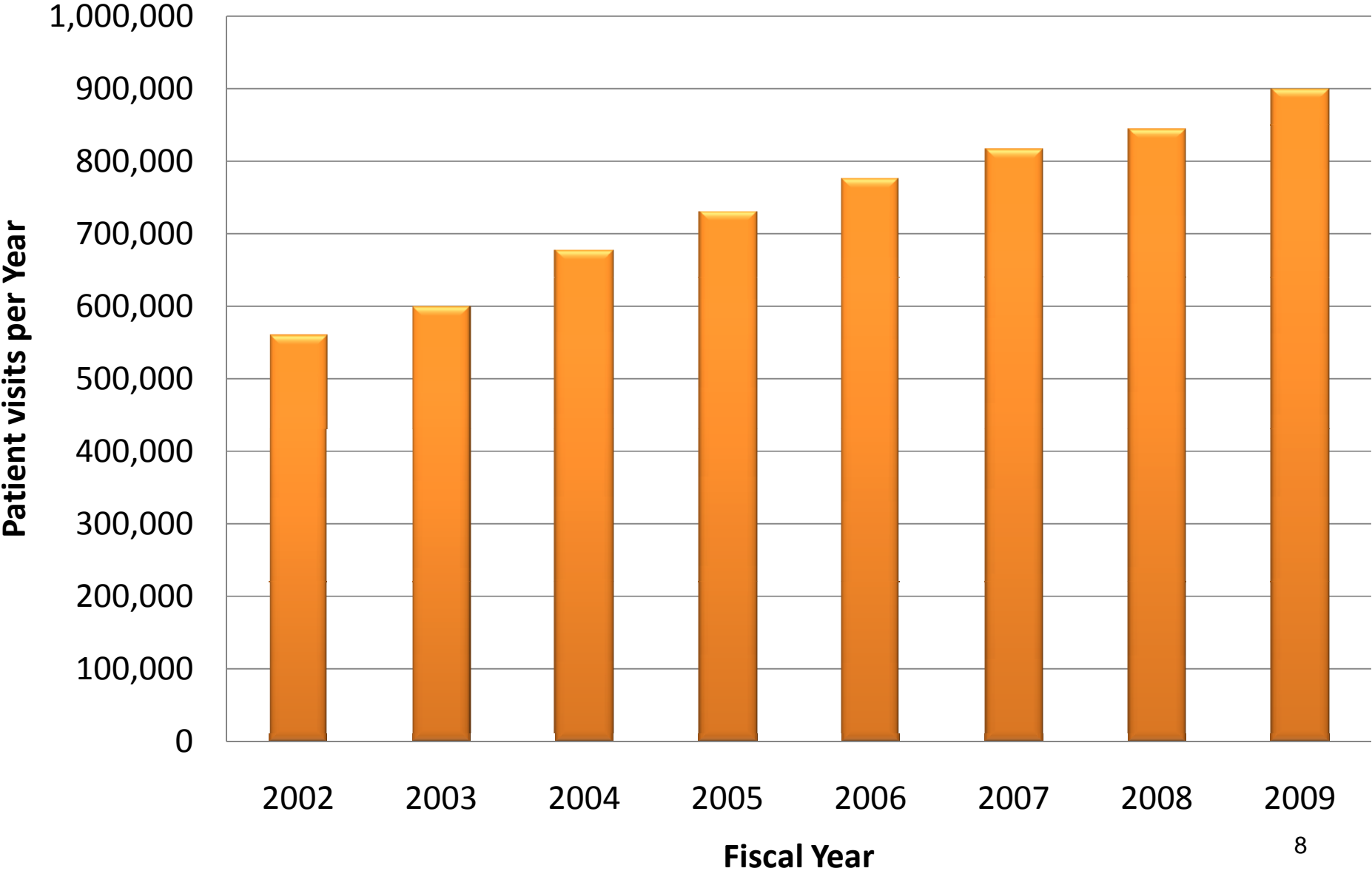
Trends in Admission Rates



Stable Number of Veteran Outpatients with Heart Failure



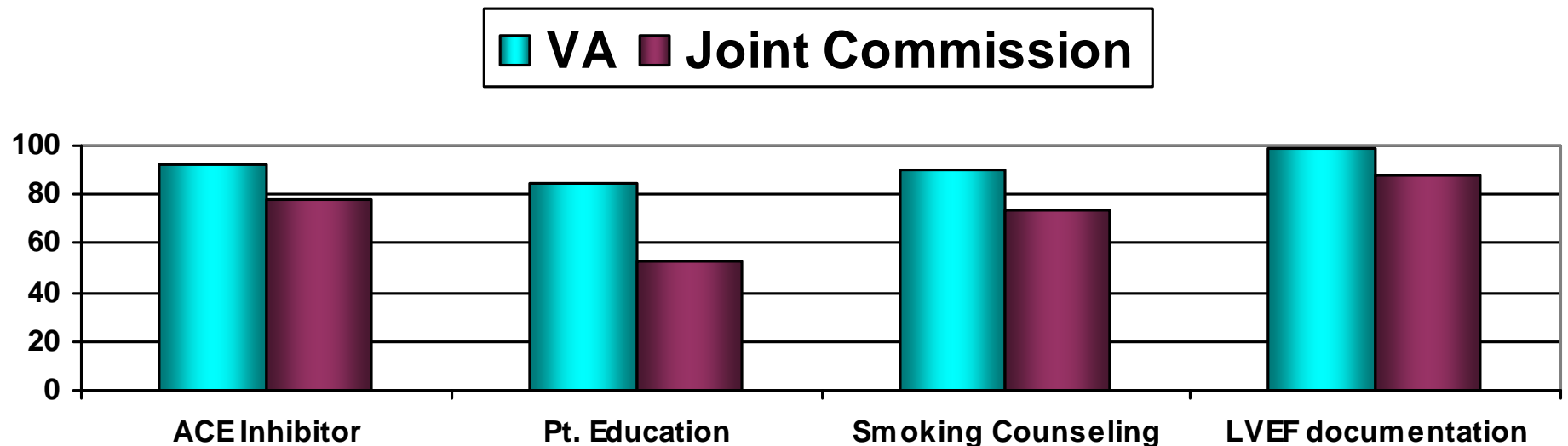
Increasing VA Burden: Outpatient Encounters for Heart Failure



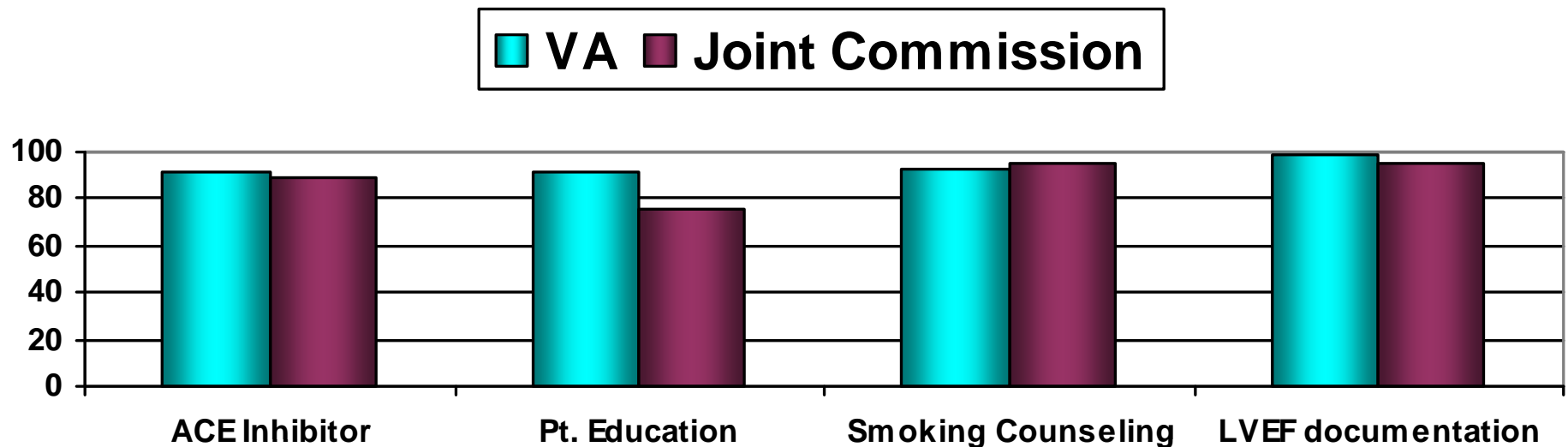
Performance Measures: Inpatient

- LVEF Documentation: ACC/AHA, CMS, JCAHO
- ACEi or ARB if EF<40%: ACC/AHA, CMS, JCAHO
- Patient Education: ACC/AHA, CMS, JCAHO
- Smoking Cessation: ACC/AHA, CMS, JCAHO

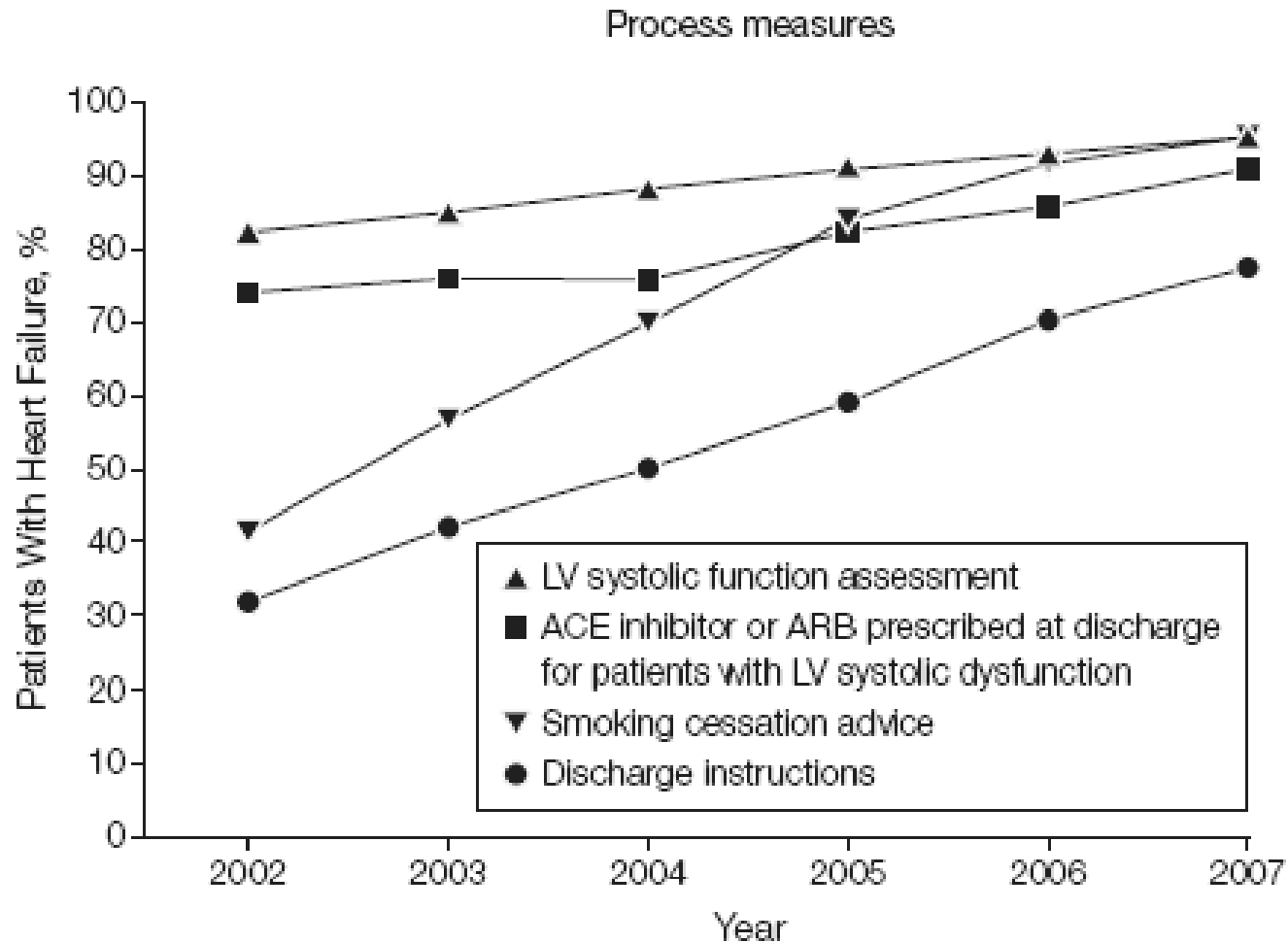
2005 Performance data for VA and the Non-VA (Joint Commission mean) for heart failure mission critical measures.



2007 Performance data for VA and the Non-VA (Joint Commission mean) for heart failure mission critical measures.

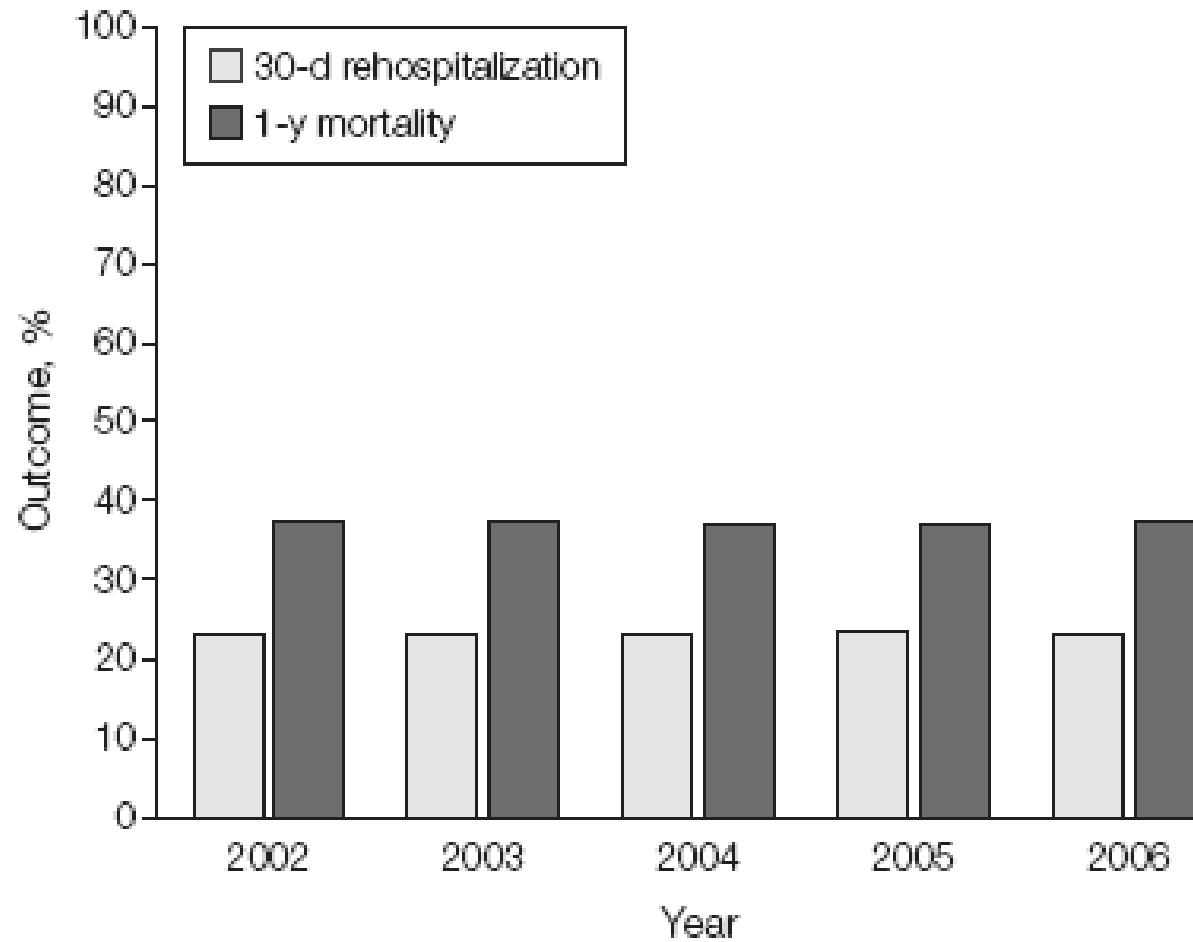


Improvement in Medicare Process of Care

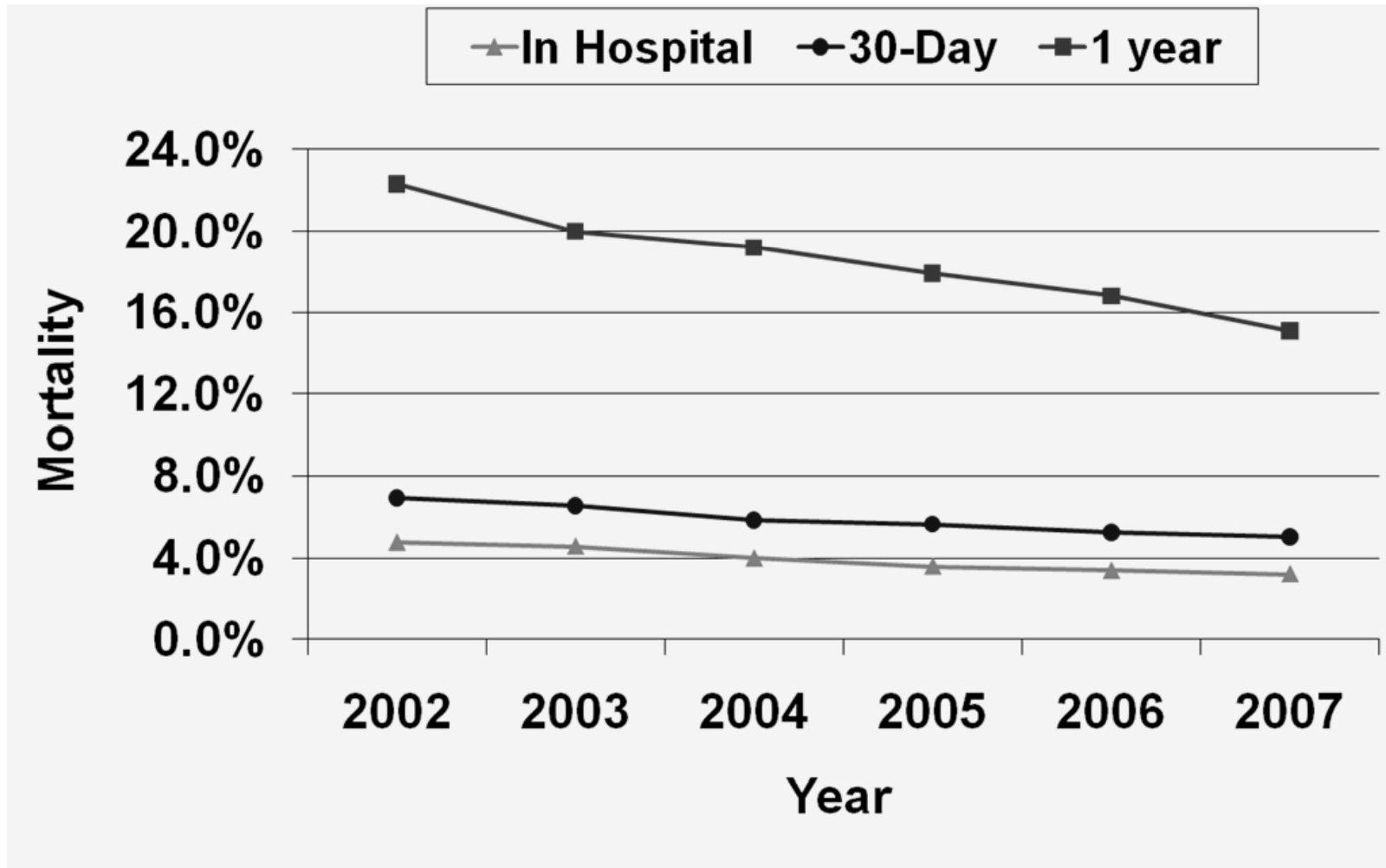


Little Change in Medicare Outcomes

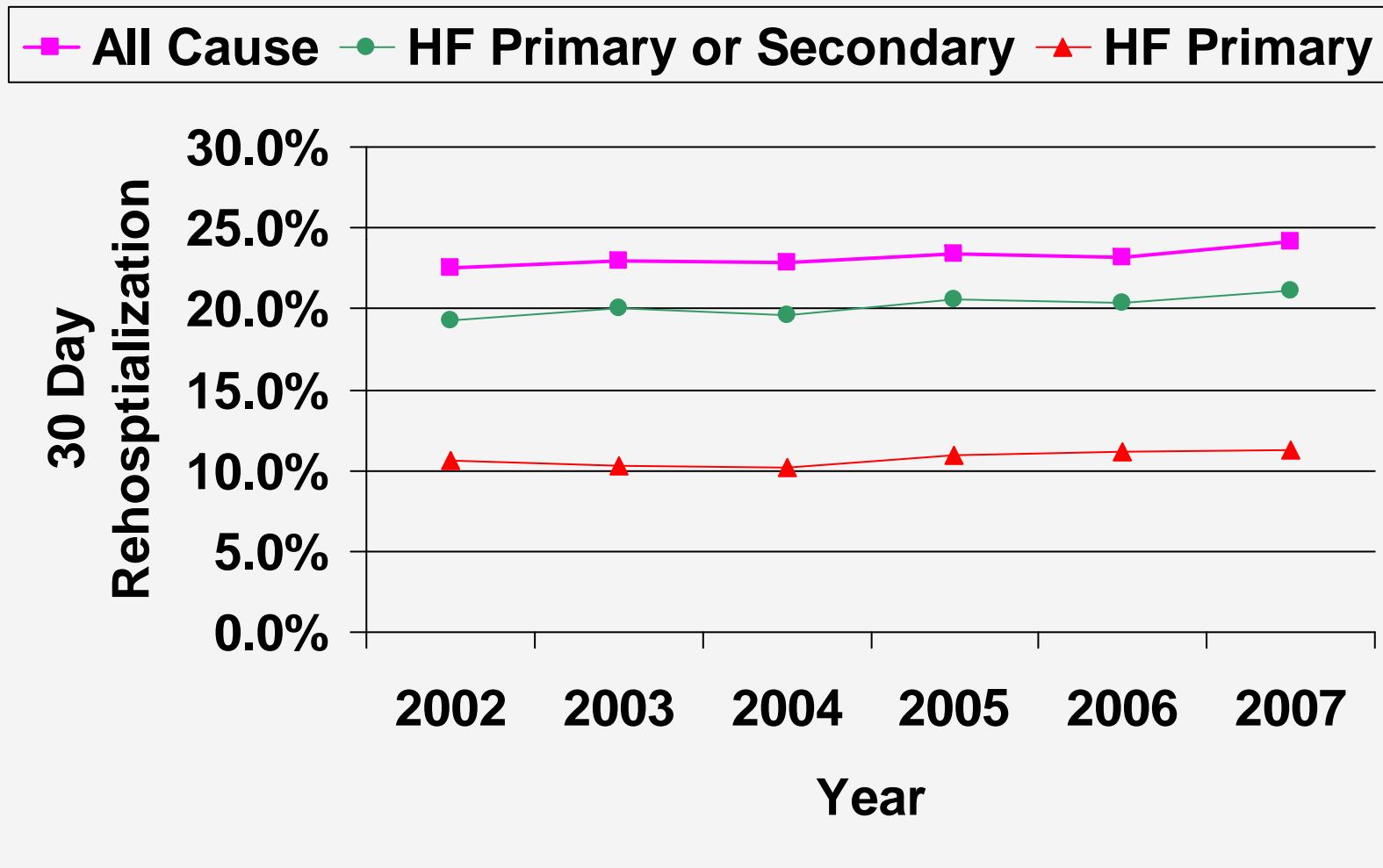
Clinical outcomes



Trends in Mortality



Trends in Rehospitalization



Denominator: all hospitalizations, not limited to one per patient

Performance Measures: Outpatient ACC/AHA

- Initial lab testing
- Weight Measurement
- Blood Pressure Measurement
- Assessment of volume overload
- Assessment of activity level
- Beta-blockers for EF < 40%
 - Does not specify which beta-blockers as recommended in the guideline.

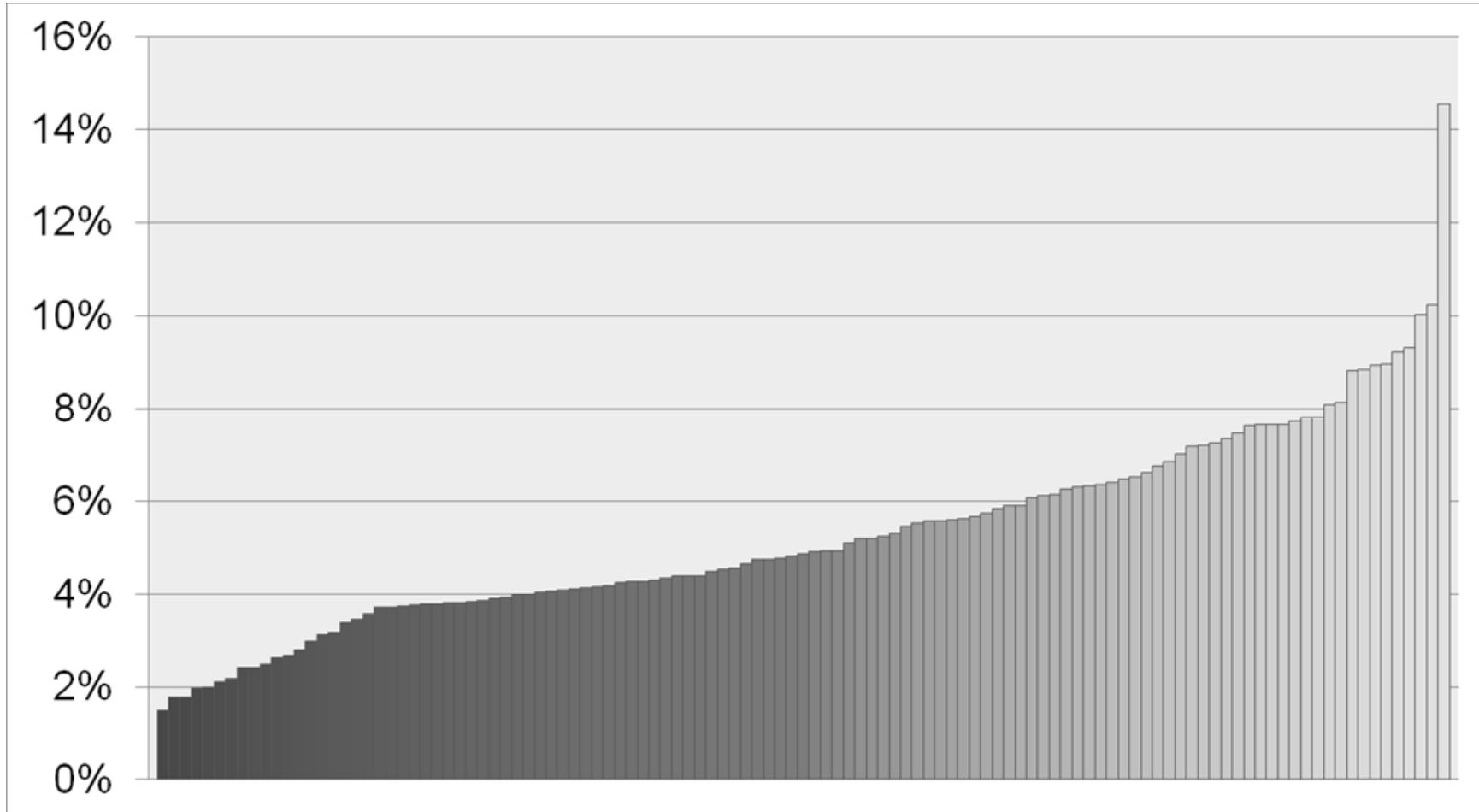
VA Medication Use

Medication Use Following Discharge	2002	2007	P value
(N)	19,827	23,993	
Beta-blocker, any (%)	53	66	<0.0001
Carvedilol, metoprolol succinate or bisoprolol (%)	21	42	<0.0001
ACE inhibitor (%)	56	51	<0.0001
Angiotensin receptor blocker (%)	7	11	<0.0001
Loop diuretic (%)	70	67	<0.0001
Digoxin (%)	35	20	<0.0001

* All patients hospitalized with heart failure regardless of indication, ejection fraction

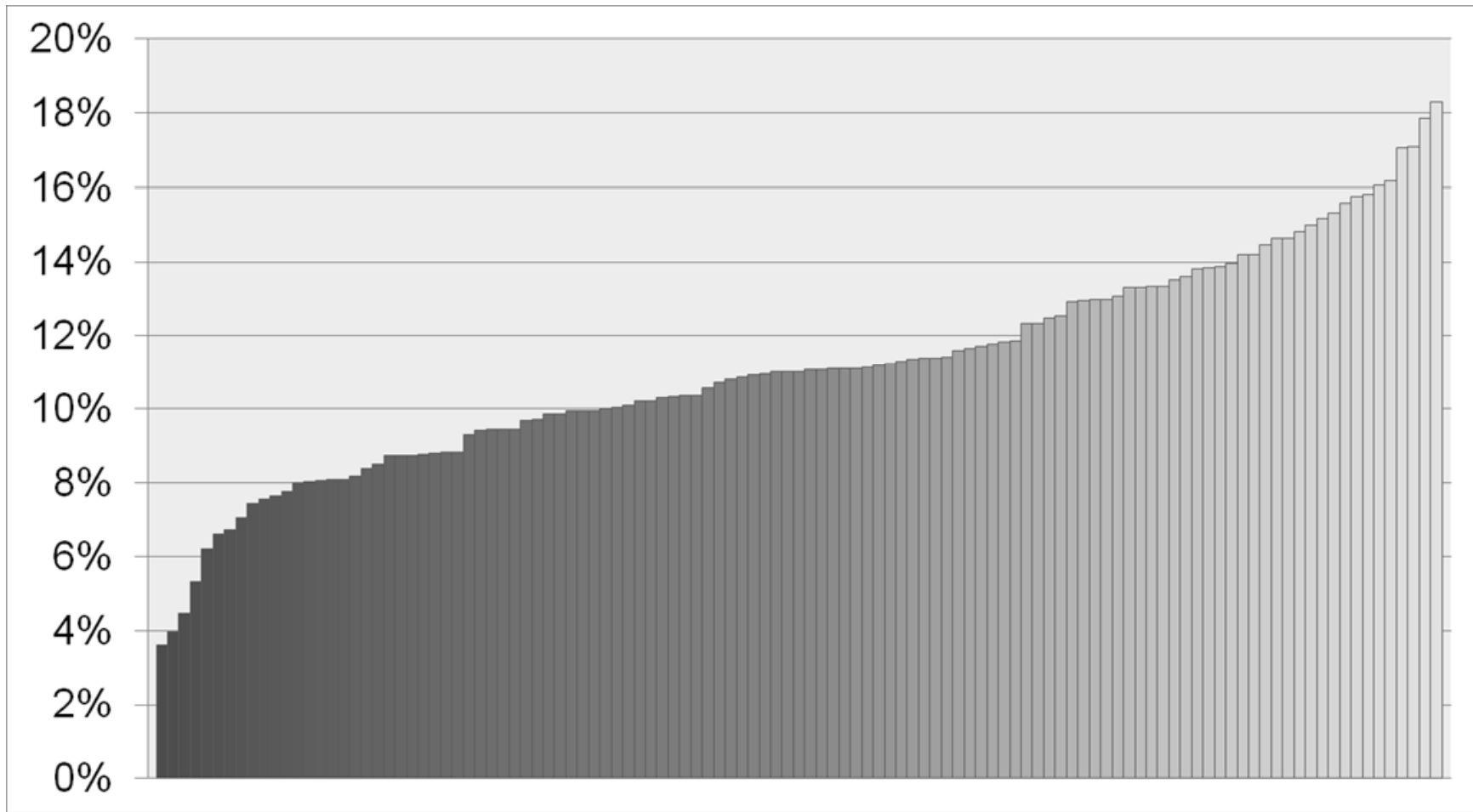
Variation in Outcome Across VA Facilities

30-Day Mortality Distribution for VA Facilities



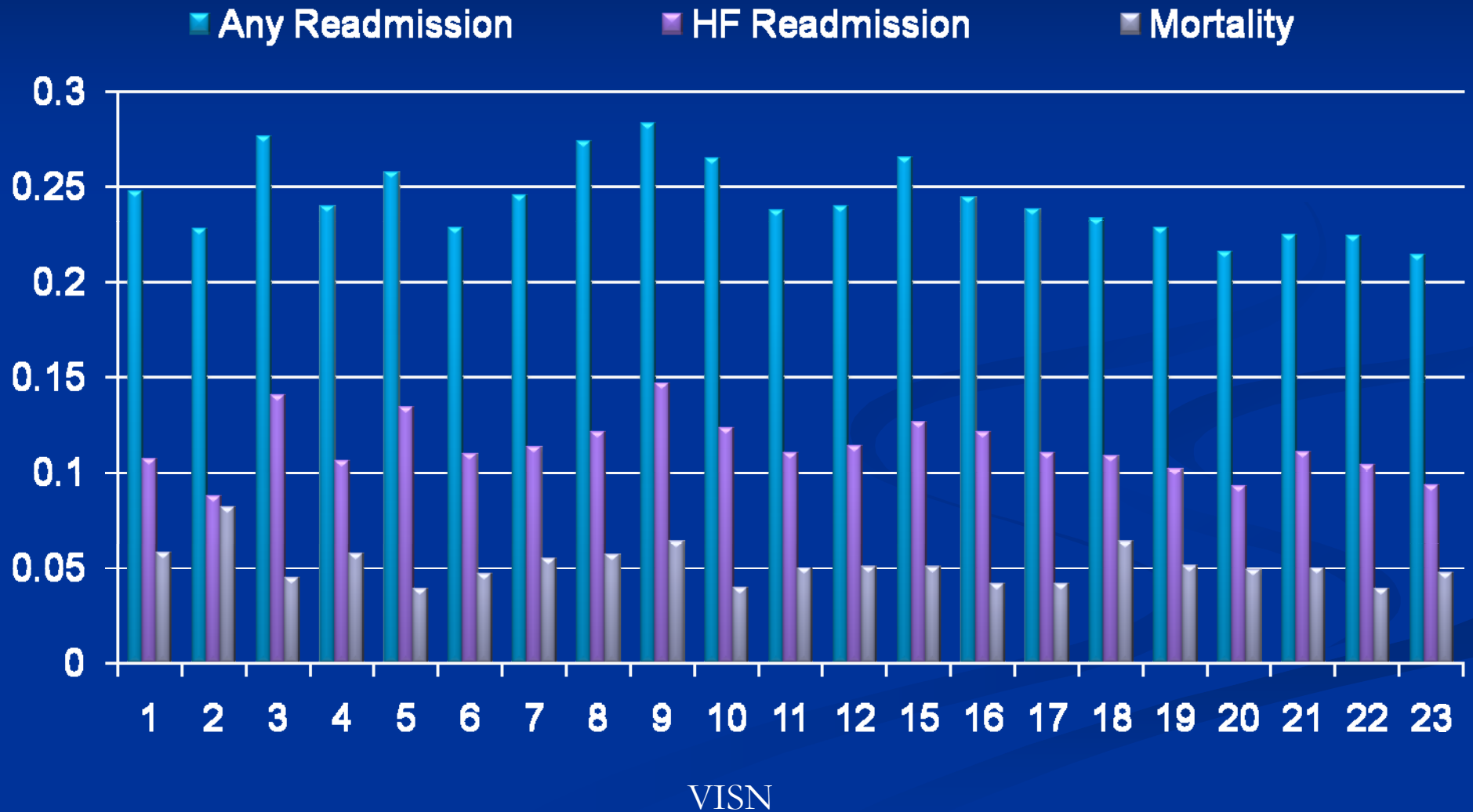
Excludes Facilities with < 100 HF discharges over 2 years.

30-Day Readmissions (HF Principal Dx) Distribution for VA Facilities



Excludes Facilities with < 100 HF discharges over 2 years.

VISN 30-Day Outcome Following a Heart Failure Discharge



State of VA Heart Failure Care

- Prevalence stable
- Resource use increasing
- Readmission rates unchanged
- Mortality following an admission is declining
- Inpatient Performance Measures near a ceiling
 - Opportunities for improving other treatments

Other Life-Prolonging Therapies

Treatment	Gap in Care	Population	Value
Beta-blockers	Moderate	Large	High
Aldosterone Antagonists	Moderate	Small	High
ICD (defibrillator)	Unclear	Large	? Mod
CRT (bi-Ven pacemaker)	Unclear	Small	? Mod

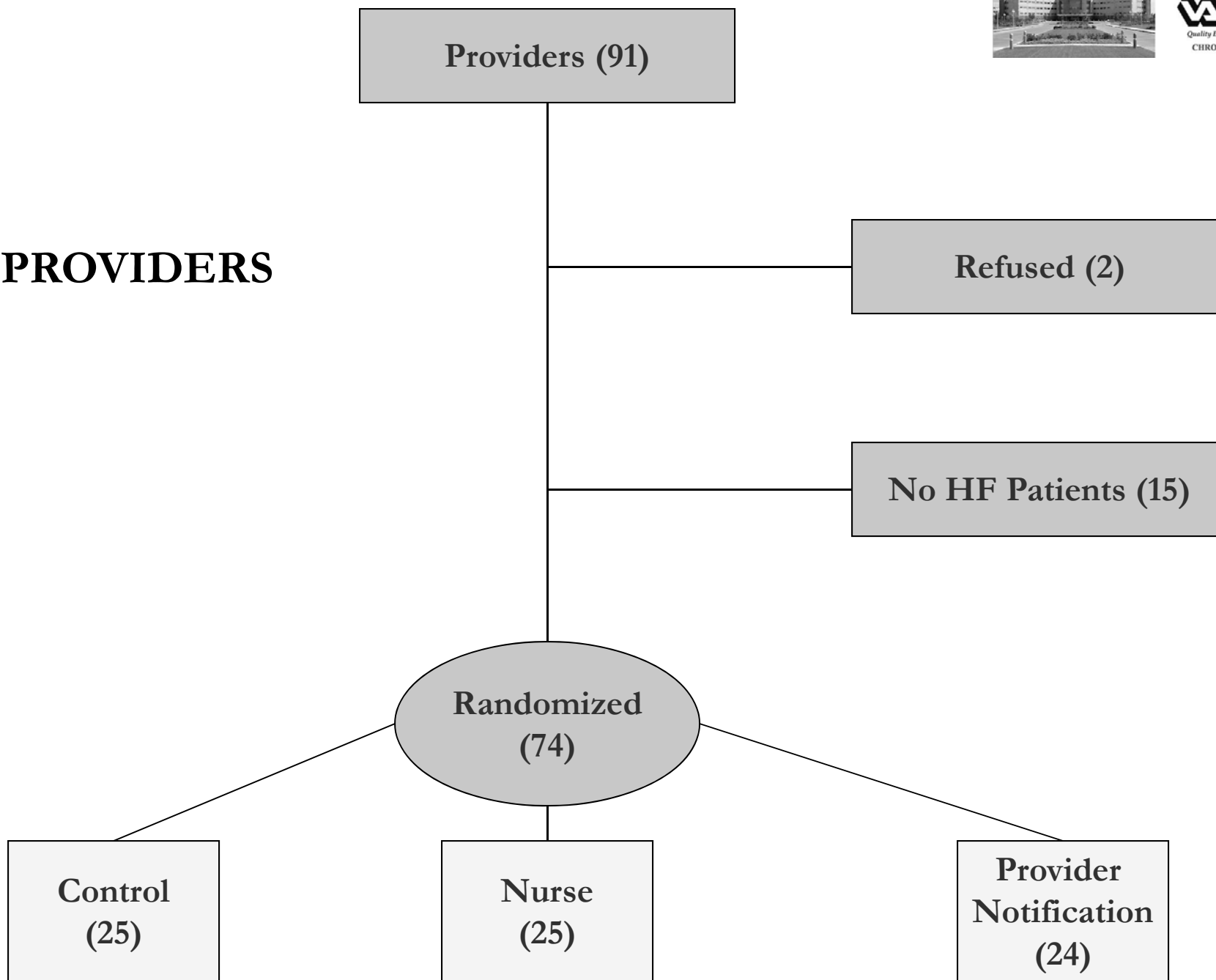
Randomized Trial of a Nurse Initiation Clinic

- VA Facility
- Randomization at the Provider Level
 - Nurse initiation and titration group:
 - Notification group: providers received an electronic message that their patient was a candidate for beta-blockers
 - Control group: usual care-grand rounds given to all regarding the importance of beta-blocker use





PROVIDERS





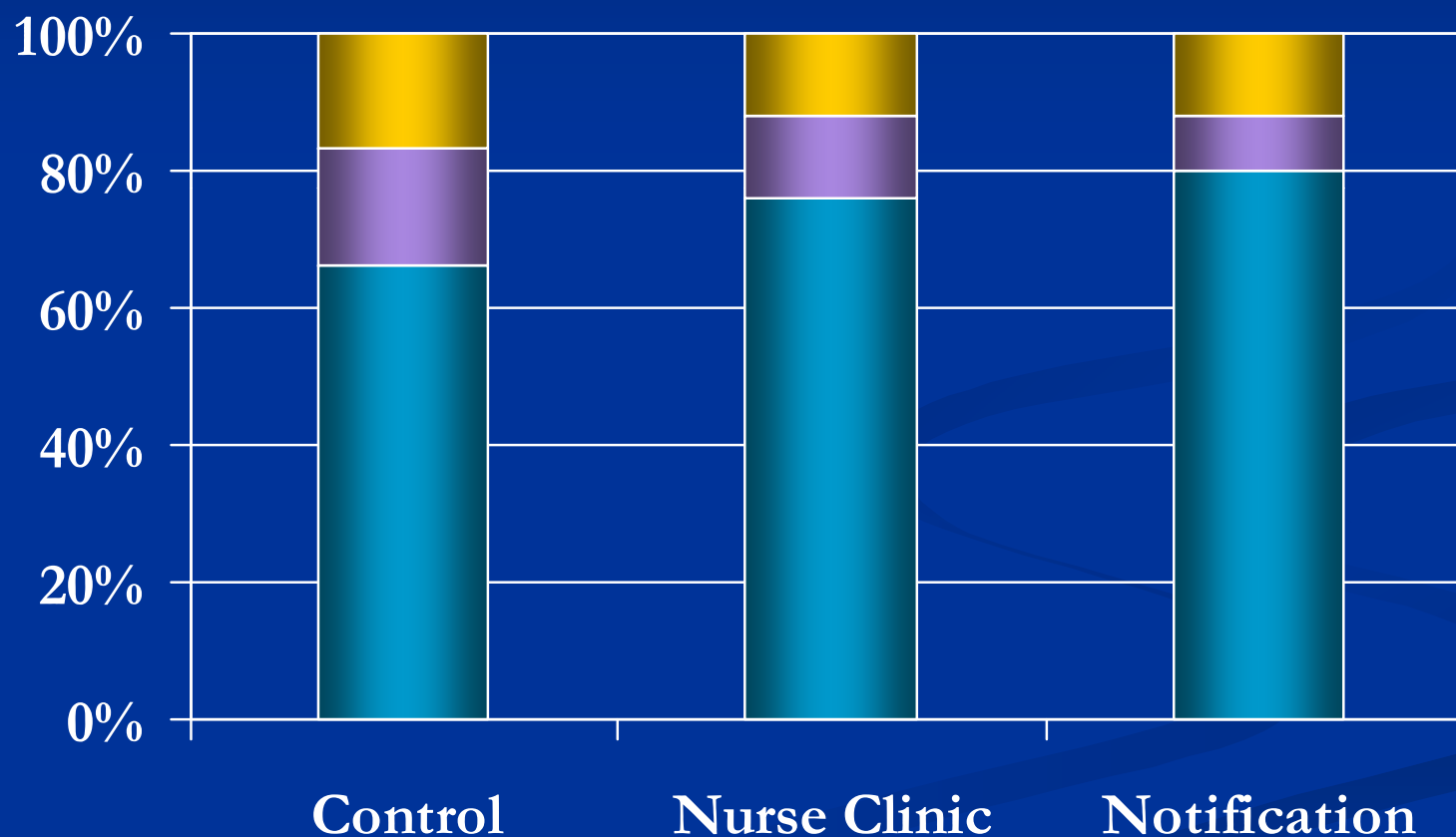
Patient Characteristics

	Control (n=51)	Nurse Facilitator (n=54)	Provider/Patient Notification (n=64)	<i>P</i>
Age, y	70±11	69±11	70±11	0.53
Male sex	50 (98)	51 (94)	62 (97)	>0.99
Baseline β -blocker use				
None	35 (69)	36 (67)	41 (64)	0.90
At less than target dose	16 (31)	18 (33)	23 (36)	



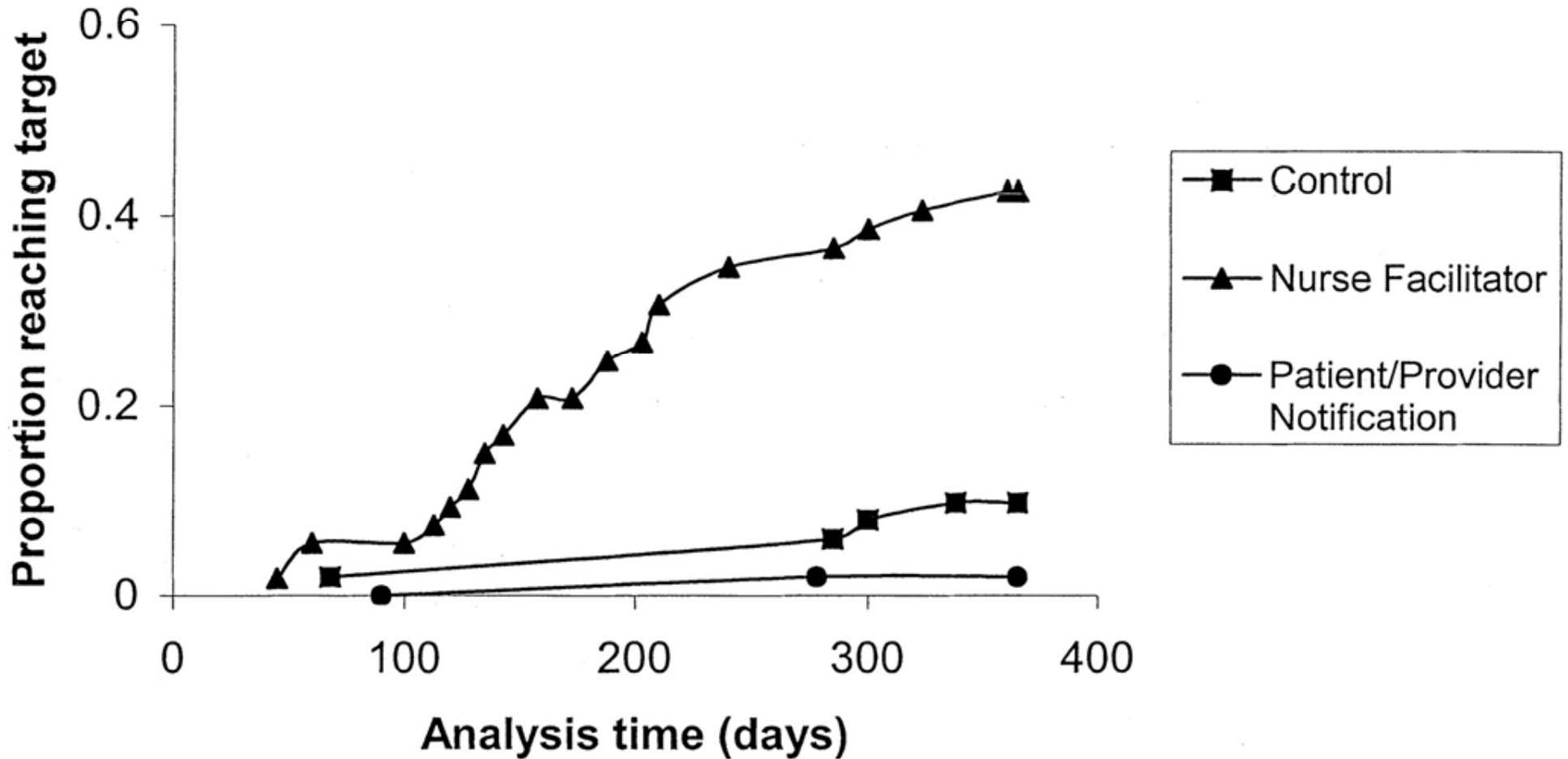
Type of Providers

Internal Med Cardiology Nurse Pract



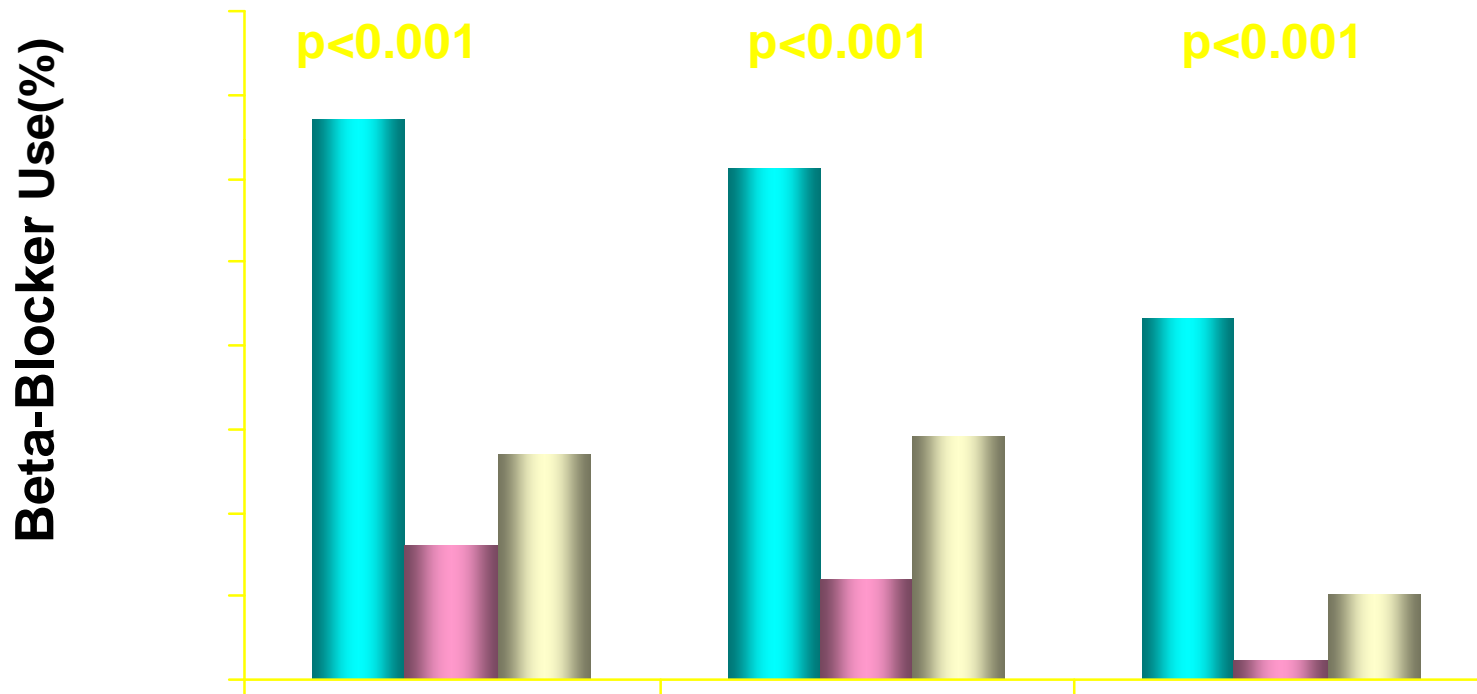
Time to reach target doses of {beta}-blockers

Time to Reach Target Doses of Beta-blockers



VA: Nurse Clinic for Beta-Blocker Initiation/Titration

■ Nurse Clinic ■ Notification ■ Control



Study Summary

- Nurse Initiation is effective
- Simple notification not effective
 - Are there better ways to deliver reminders?



Promise of the Echocardiography Report for Delivering Reminders

- Echocardiography used for ejection fraction measurement
 - All HF patients have one done at some point
- The report is usually reviewed at the time of the patient encounter
- A cardiologist signs the report (may be an opinion leader)
- Not provider specific, available to anyone caring for the patient.

Echocardiogram



VA ACE Inhibitor Reminder Study

- What is the appropriate level of randomization
 - Influencing providers
 - Contamination is a concern
 - The report is patient specific
 - More than one clinician may act on the report
 - Predicting this provider at the time of randomization is difficult

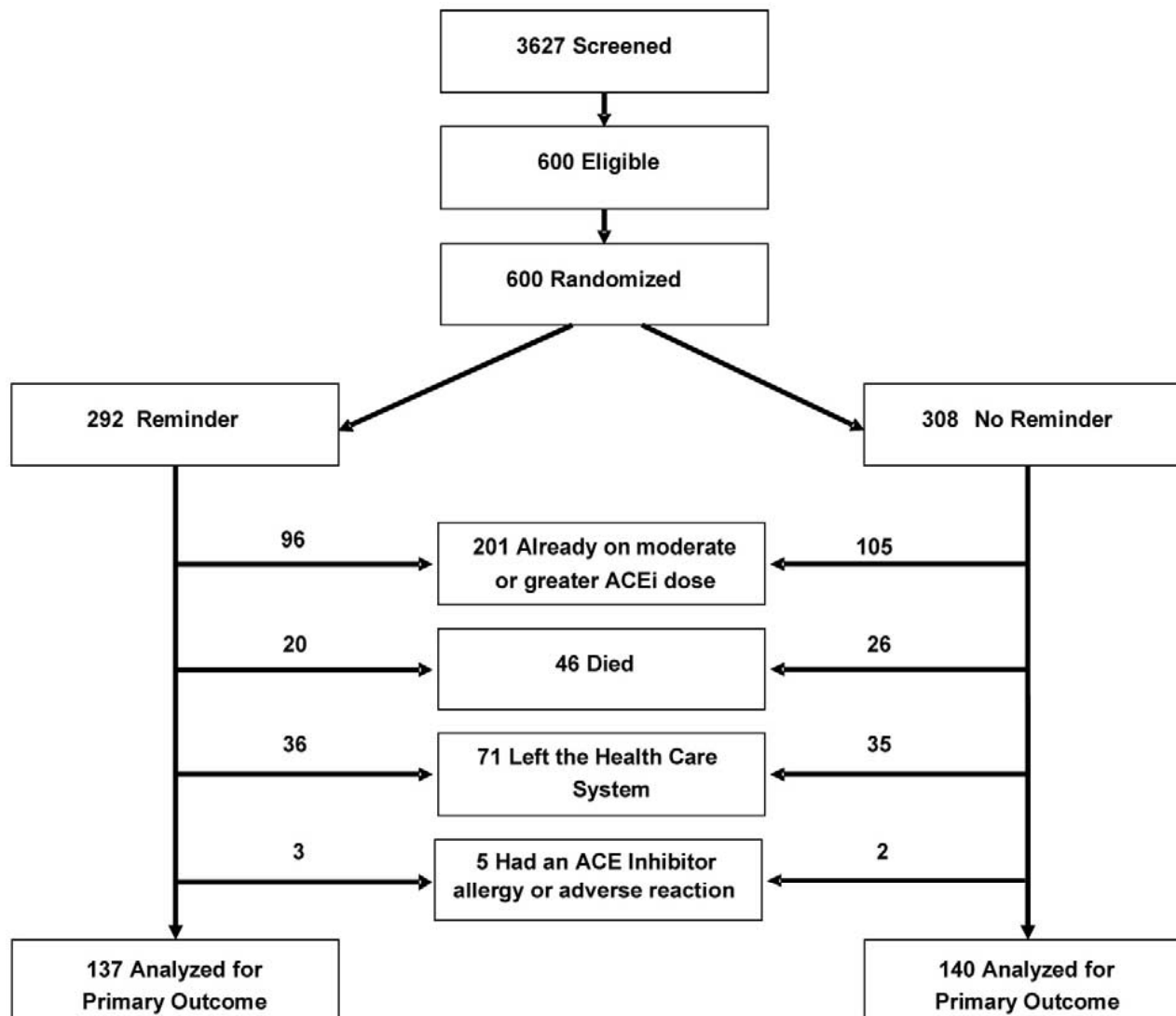


VA ACE Inhibitor Reminder Study

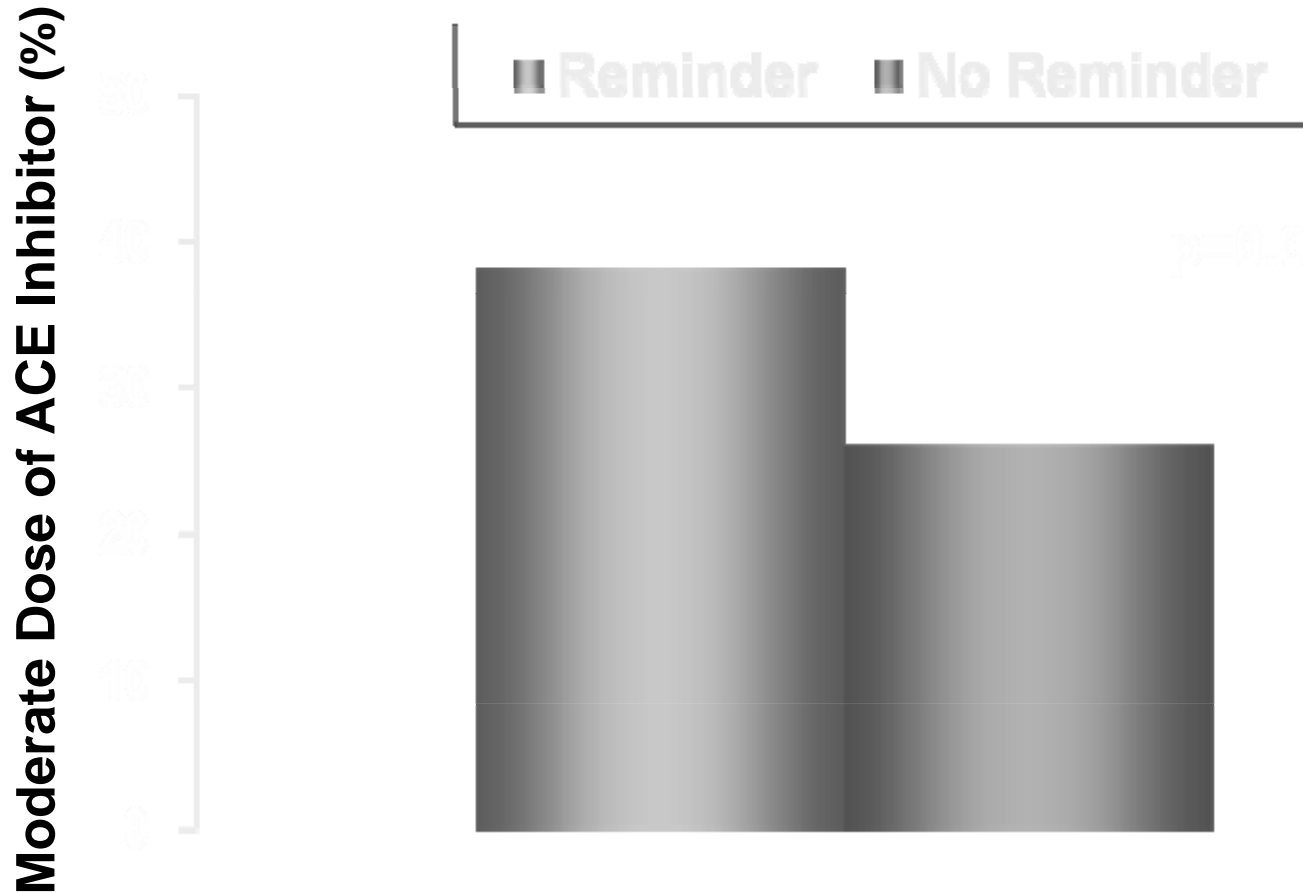
- Could a clinical reminder attached to the echocardiography report (that provides ejection fraction data) be effective in increasing the dose used?
 - Many patients are treated at doses below those shown effective in RCTs.



ACE Inhibitor Reminder Study



VA: Reminder in the Echo Report for ACE-Inhibitors



ACE Inhibitor Reminder Study

Findings

- Reminder promising
- Too small a sample size to be conclusive

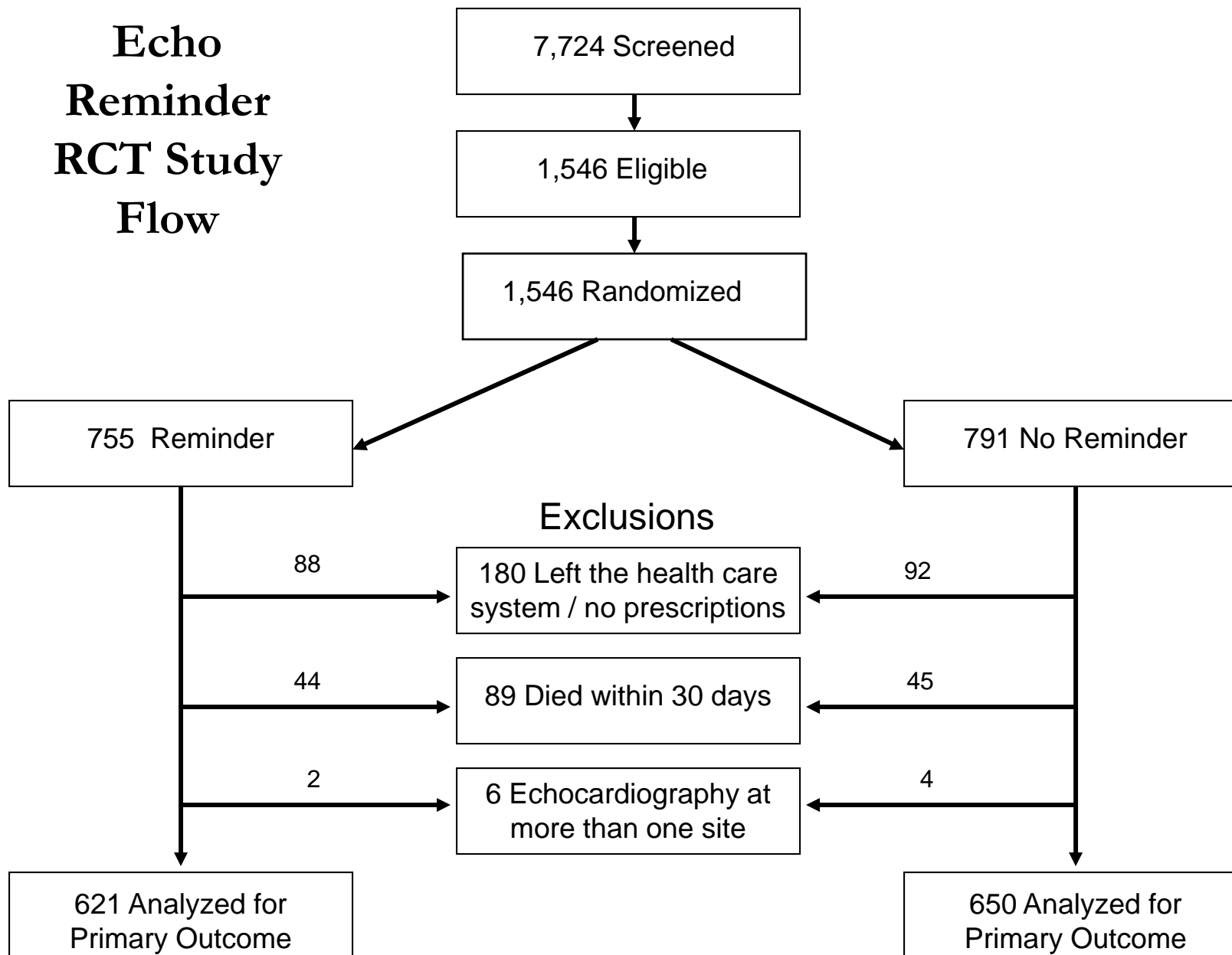
VA Beta-Blocker Reminder Study

- Could a clinical reminder attached to the echocardiography report (that provides ejection fraction data) be effective in increasing prescriptions for beta-blockers?





Echo Reminder RCT Study Flow





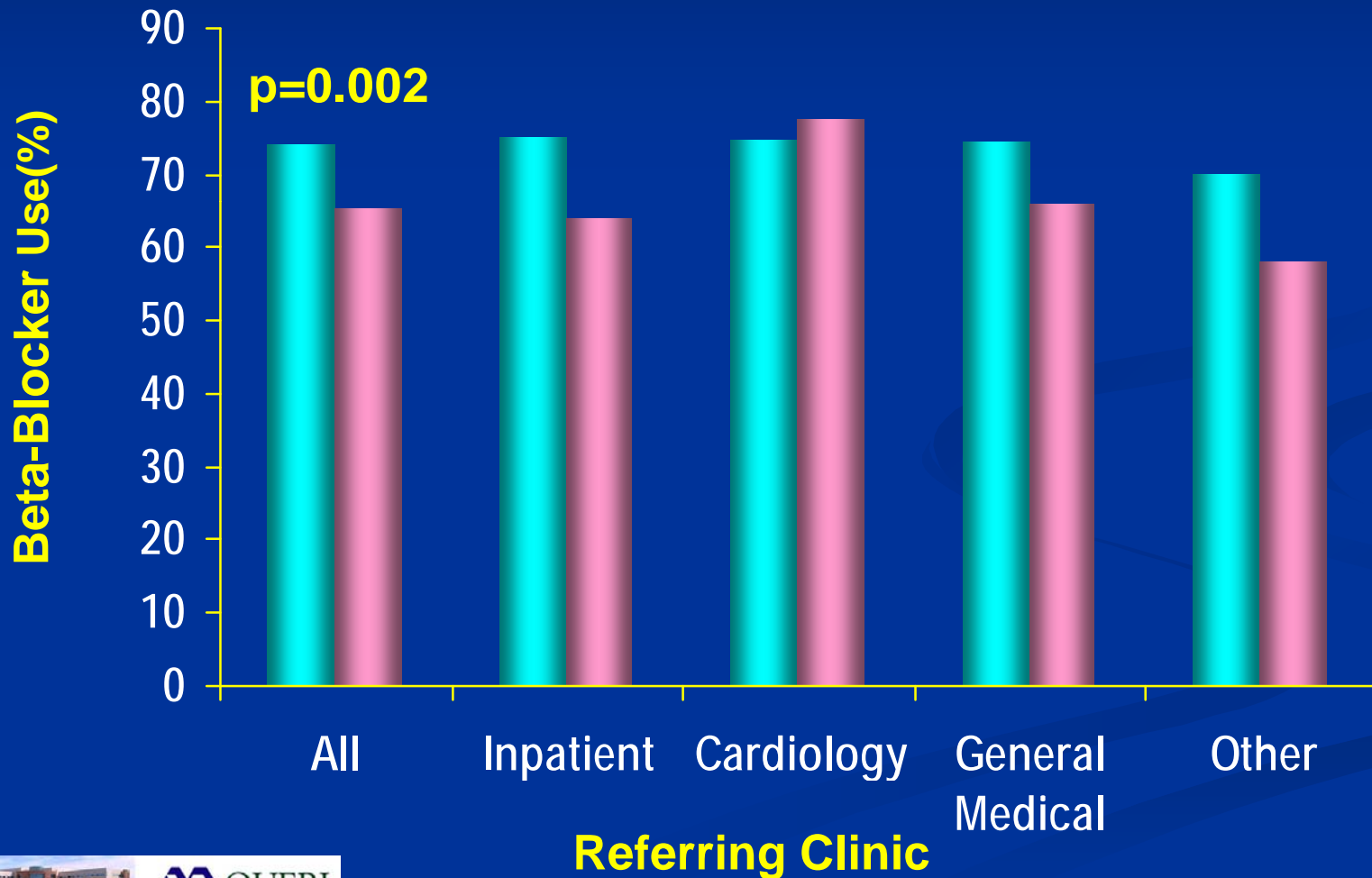
Patient Characteristics

Baseline Characteristics of the Study Population

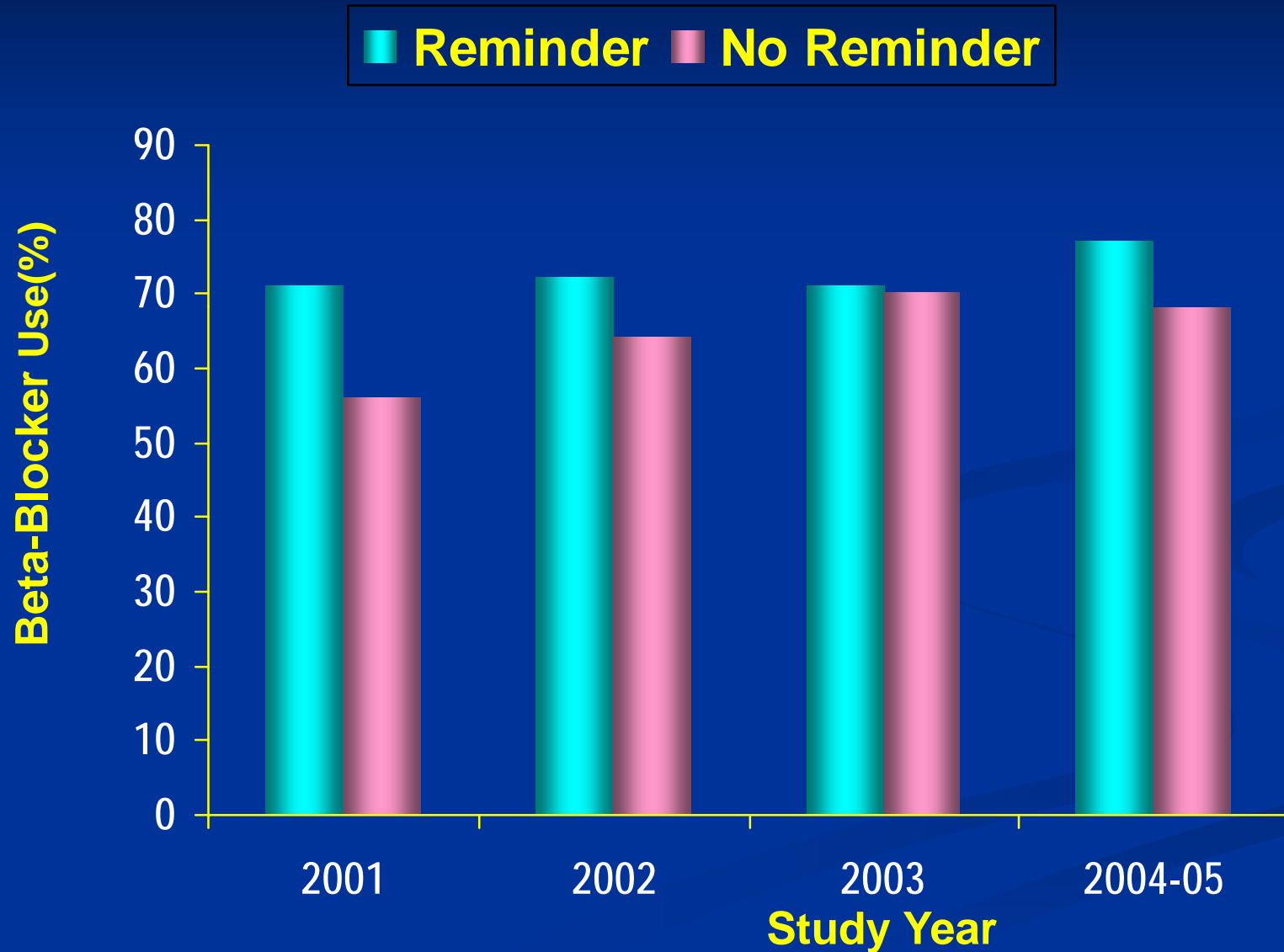
Characteristic	Reminder	No Reminder	<i>P</i>
No.	621	650	...
Age, y	69±11	69±12	0.84
Male	615/621 (99)	634/650 (98)	0.05
Race*			0.165
White	278/369 (75)	321/407 (79)	...
Black	31/369 (8.4)	41/407 (10)	...
Hispanic	40/369 (11)	33/407 (8.1)	...
Asian	18/369 (4.9)	12/407 (3.0)	...
Native American	2/369 (0.5)	0/407 (0)	...
Heart failure	394/621 (63)	386/650 (59)	0.14
Ischemic heart disease	437/621 (70)	458/650 (70)	0.97

VA: Reminder in the Echo Report for Beta-blockers

Reminder No Reminder

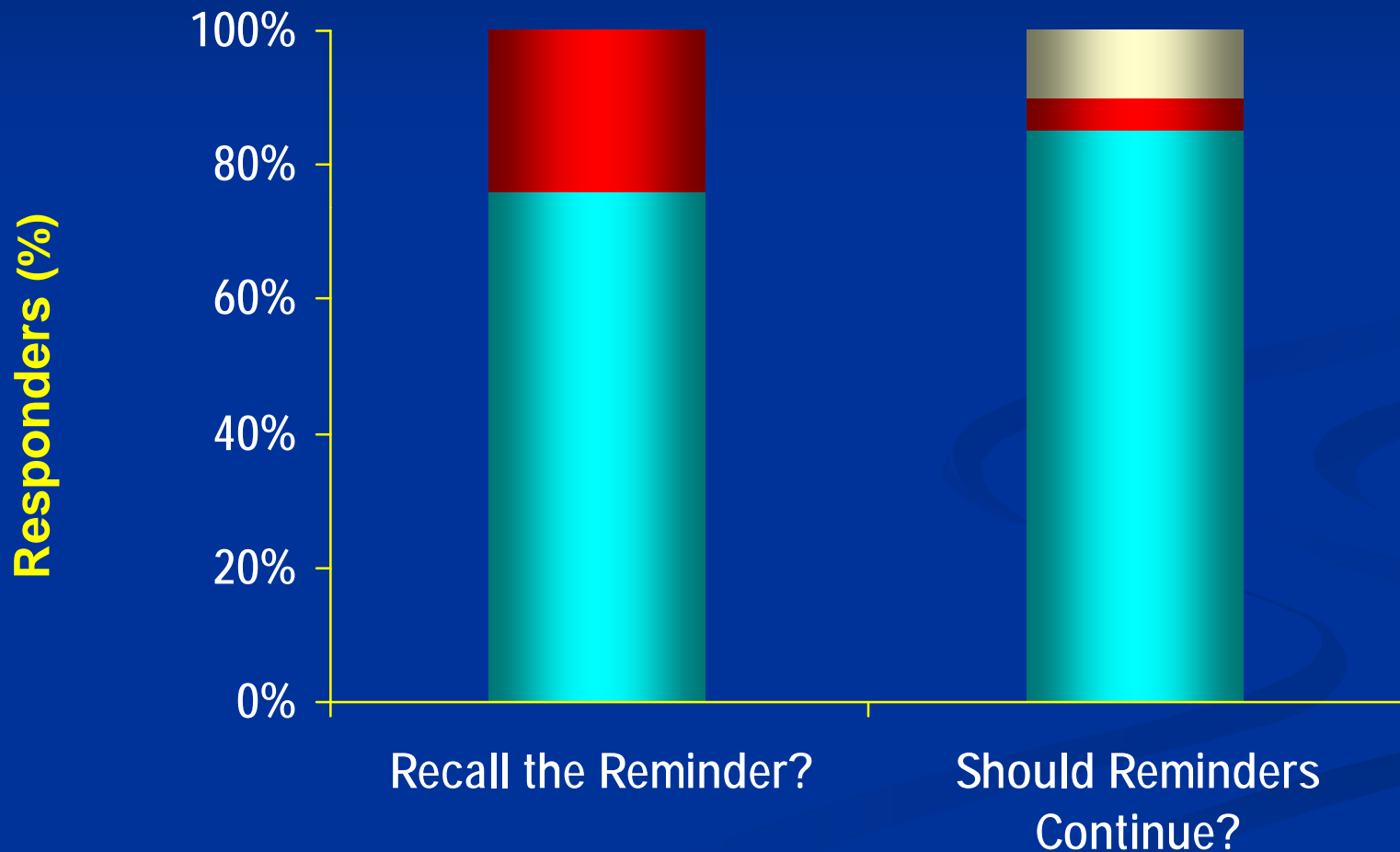


Reminder Effect over Time



Primary Care Provider Survey

■ Yes ■ No ■ No Opinion



Implementation of Reminders in Echocardiography Reports

Implementation: Reminders at the VA

- Negligible cost, small benefit
- Can be done without additional resources or infrastructure

Randomized Trial of Implementation

- 158 VA facilities randomized to
 - Email
 - Email plus invitation to Web-based meeting
- Designed from the perspective of VA administrator:
 - list of contacts not necessarily
 - No advance contact with the facilities

Email

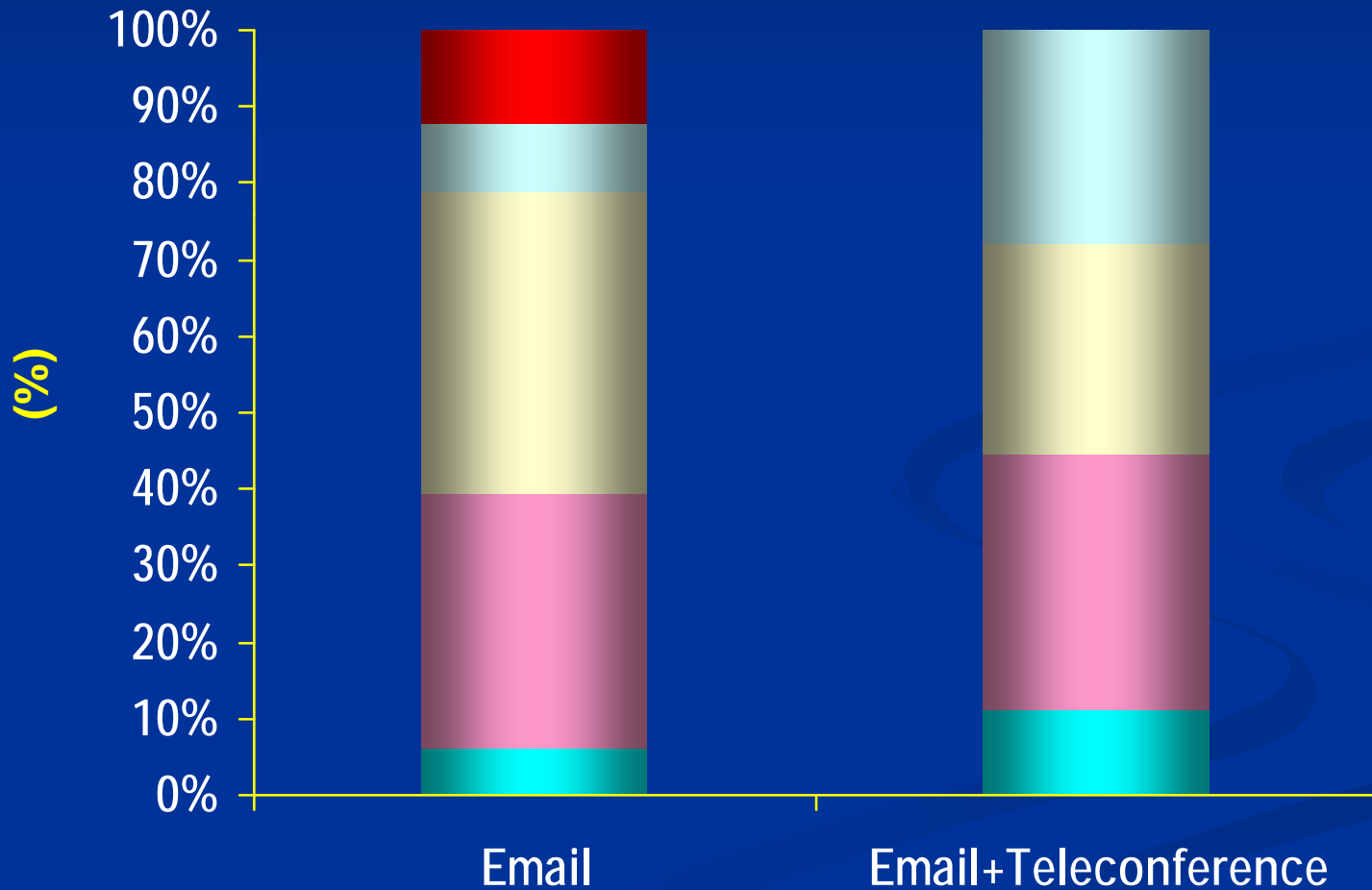
- Described the intervention in enough detail for each lab director to start doing it.
- Provided abstract of article with link.
- Gave contact info

Teleconferences

- Two separate times offered each 30 minutes in duration
- Web-based with slides describing the study
- Question and answer period
- 15 attended

Are they Implementing?

■ Started ■ Plan to ■ Not sure ■ Already do it ■ Won't do it



Reminder Deimplementation

- We have now stopped the ACE inhibitor reminder due to high dosage rates
- We may discontinue the beta-blocker reminder soon.
- Goal is to have one reminder at a time.

Conclusions

- Reminders in echocardiography reports have a small but significant impact on care
- Provider satisfaction was high
- Ease of implementation has helped spread the use to other facilities.
- Reminders should be considered for other diagnostic test reports.