Creating a Hub and Satellite Heart Failure Providers Network

A New Model Of Community-Based Heart Failure Care

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Acknowledgement

The Challenge of Providing Optimum Care for Patients with Heart Failure

- Too many heart failure patients
- Too few HF providers
- Gulf between practice guidelines and clinical practice "real world"
- No single intervention has been shown to result in sustained performance improvement
- Need to develop new paradigms of care

Creating a Hub and Satellite Heart Failure Providers Network

Hypothesis:

- That training primary care providers in HF management, to function as HF provider Satellites, with support and services from a central "Hub" – the regional HF center, will improve care to HF patients
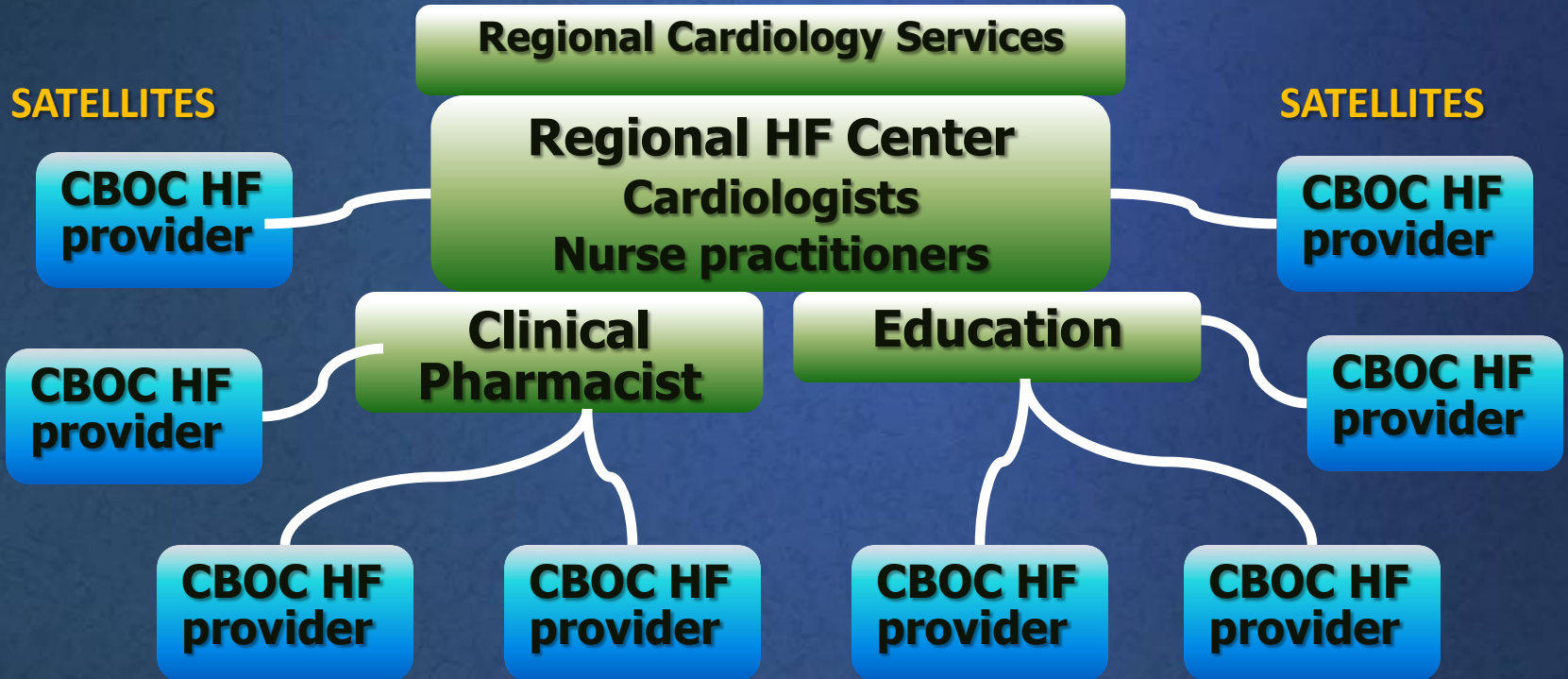
Objective:

- Pilot program to establish feasibility of a HF Hub and Satellite Network, and collect data on performance measures

New Model of Heart Failure Care

HUB

Regional Cardiology Services

SATELLITES

SATELLITES

Regional HF Center
Cardiologists
Nurse practitioners

CBOC HF provider

CBOC HF provider

CBOC HF provider

Clinical Pharmacist

Education

CBOC HF provider

CBOC HF provider

CBOC HF provider

CBOC HF provider

CBOC HF provider

Creating a Hub and Satellite Heart Failure Providers Network

A multifaceted, collaborative intervention

- Intensive, dedicated time for HF education
- Provision of textbook and materials
- Continuing education
- Patient education materials
- Support/collaboration from disease experts
- Performance feedback
- Access to clinical pharmacist for medication titration

Nashville VA Medical Center
VISN 9

- VISN 9: 250,000 veterans
- Tennessee Valley Healthcare System: 70,000 veterans
- HF Program –
  - 490+ patients
  - Inpatient and outpatient services
  - 3 cardiologists
  - 2 full-time NPs, part-time clinical pharmacist
- Heart transplant program
- Affiliates: Vanderbilt University, Meharry Medical College

Methods

- Primary care providers recruited from Community Based Outpatient Clinics (CBOCs) across TVHS
- 3 days intensive training on HF management
- Knowledge test pre- and post-training
- DSS data – their patients with HF ICD code identified
- Patients with LVEF < 40% identified through CPRS review
- Randomly selected patients with LVEF < 40% from panels of providers in the same CBOCs who did not receive HF provider training – Control group

- 9 objective performance measures (expanded from National Quality Forum Consensus Standards for Ambulatory Care, 2007).
- Data collected for each patient and provider prior to Training (May 2010) , and after one year of follow-up (May 2011).
- Serial provider interviews for formative analysis

- **Primary Outcome:**

  Improvement of at least 20% in 3 of the 9 performance measures

Day 1

Time	Session	Presenter
8.00 a.m.	Breakfast and welcome	
8.20	Introduction to training module	Henry Ooi
8.35	Start-up interviews	Beth Donaghey
8.35	Heart failure knowledge test	
10.00	Lecture 1: Heart Failure: A Survival Guide Part 1	Henry Ooi
10.50	Break	
11.10	Lecture 2: Heart Failure: A Survival Guide Part 2	Henry Ooi
12.00	Lunch	
1.00 p.m.	Lecture 3: Ischemia and Heart Failure	Joseph Salloum
1.50	Lecture 4: Hypertension and Heart Failure	John Nadeau
2.40	Break	
3.00	Lecture 5: Arrhythmias in Heart Failure	Shane Rowan
3.50	Heart Failure – Clinical Rounds	Henry Ooi
4.50	End	

Day 2

Time	Session	Presenter
8.00 a.m.	Breakfast	
8.20	Lecture 6: Heart Failure: A Survival Guide Part 3	Henry Ooi
9.10	Lecture 7: An introduction to echocardiography	Lisa Mendes
10.00	Break	
10.20	Lecture 8: An introduction to stress testing	Marvin Kronenberg
11.10	Case Presentations and Discussions I	Henry Ooi
12.00 p.m.	Lunch	
1.00	Lecture 9: The Pharmacology of Treating Heart Failure	Cassandra Benge
1.50	Heart Failure Disease Management	Linda Howerton
2.40	Break	
3.00	Cardiac Physical Exam Skills - Rounds	Bart Campbell
4.00	The EKG in Heart Failure	Bart Campbell
5.00	End	

Day 3

Time	Session	Presenter
8.00 a.m.	Breakfast	
8.20	Lecture 10: Devices in Heart Failure	Brad Hardin
9.10	Case Presentations and Discussions 2	Henry Ooi
10.00	Break	
10.20	Heart Failure Providers Network – How it'll Work	Henry Ooi
11.10	Lecture 11: Heart Transplantation	Mark Wigger
12.00 p.m.	Lunch	
1.00	Close-out interviews	Beth Donaghey
1.00	Heart failure knowledge test	
2.35	Break	
2.50	Discussion of questions	Henry Ooi
3.30	Interactive question and answer session	Henry Ooi
4.20	End	

- Direct access to HF Program members –
  - Pager, cell phone, HF cardiologist as cosigner on notes
- Exclusive referral rights to a Nashville Clinical Pharmacist for beta-blocker and ACEI/ARB titration
- Continued education – updates on HF literature
- Performance feedback

RESULTS

- 7 Primary care providers (6 MD, 1 NP) recruited from 3 Community Based Outpatient Clinics (CBOCs) across TVHS. 9 attended training

- 27 Control providers from same CBOCs

Providers	Intervention Group	Control Group
Age (years, range)	50 (42-68)	51 (32-65)
Gender (M/F)	3/3	17/10
Years in practice (years, range)	16 (4-33)	14 (1-34)
Years in VHA (years, range)	5.8 (3-10)	3.0 (1-17)

Training Program

	Pre-Training	Post-Training	P-value
HF Knowledge Test Score /35 ± SD (range)	21 ± 4 (15-27)	25 ± 3 (21-29)	P < 0.001

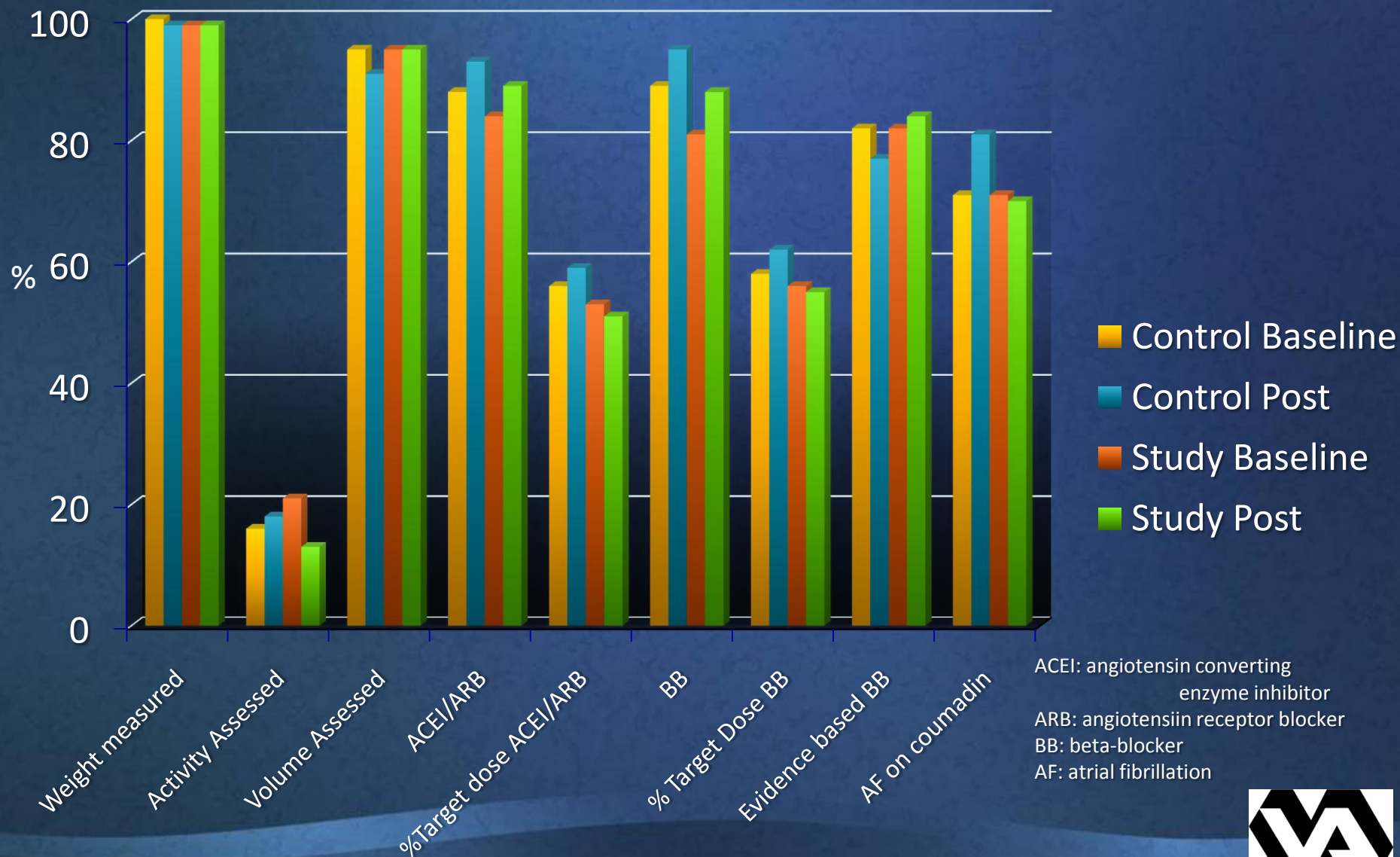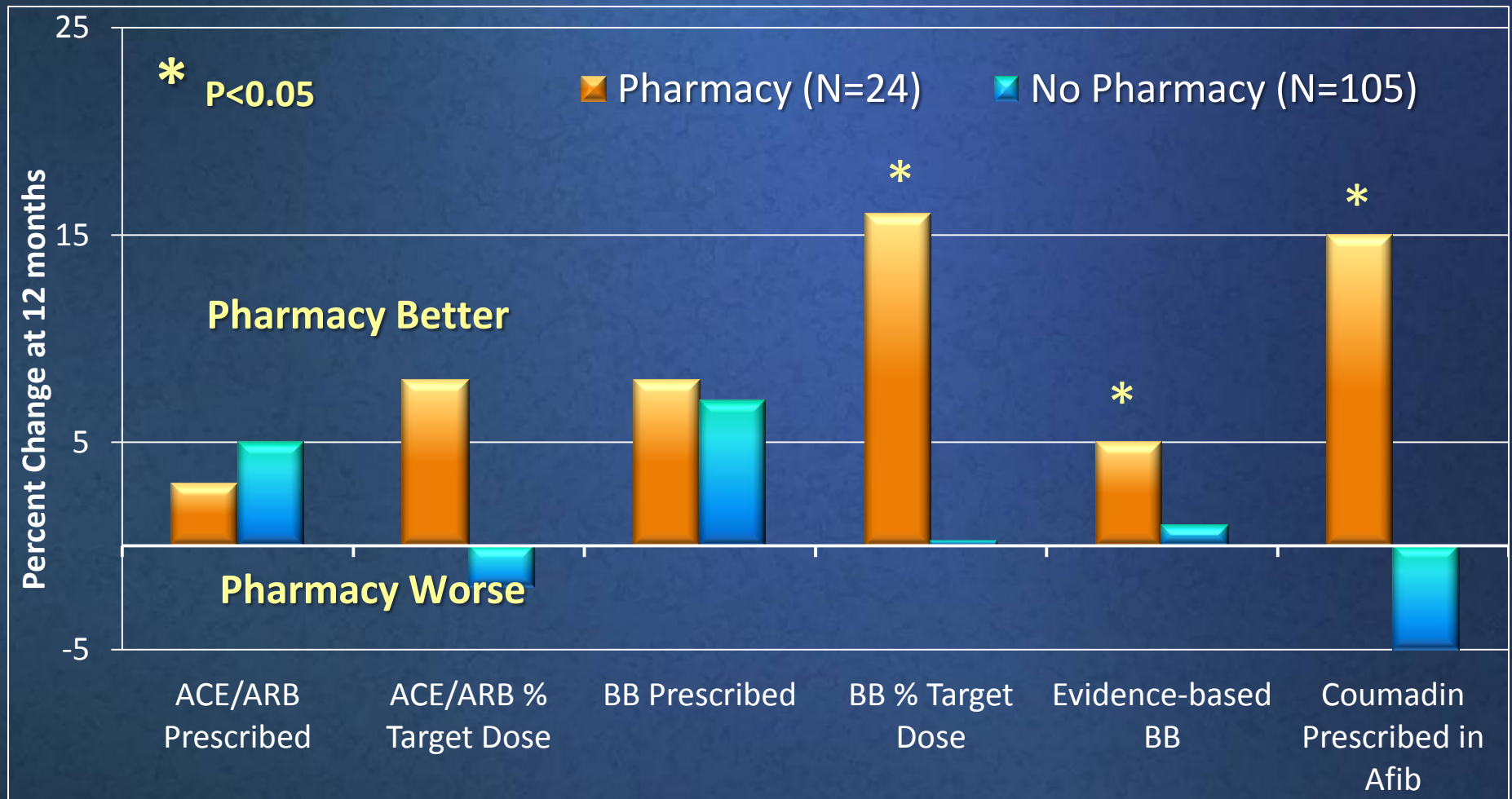|	Very satisfied	Satisfied	Satisfied	Not satisfied
Objectives met?	8	1	-	-
Content	8	1	-	-
Clear?	8	1	-	-
Teaching methods	8	1	-	-
Facilities	8	1	-	-

Patient Characteristics

Characteristic	Control N=129	Intervention N=129
Median Age, years (IQR)	65 (59-72)	65 (62-74)
Male (%)	97	99
Non-white race (%)	20	19
Coronary Artery Disease (%)	78	75
Hypertension (%)	92	92
Diabetes (%)	56	50
Median ejection fraction (%)(IQR)	30 (25-35)	30 (23-35)
Followed by Cardiology (%)	90	84
Followed in Advanced HF Clinic (%)	20	29
CHF Hospitalization past year (%)	20	12

Performance Measures

Legend:
- Control Baseline
- Control Post
- Study Baseline
- Study Post

X-axis categories:
- Weight measured
- Activity Assessed
- Volume Assessed
- ACEI/ARB
- %Target dose ACEI/ARB
- BB
- % Target Dose BB
- Evidence based BB
- AF on coumadin

Y-axis: % (0 to 100)

ACEI: angiotensin converting enzyme inhibitor
ARB: angiotensiin receptor blocker
BB: beta-blocker
AF: atrial fibrillation

Pharmacist Led Medication Titration

Provider Satisfaction with Program

	Pre-Program	Exit interview
Ability to manage HF	6.8	8.5
Coordination of care	6.8	8.5
Time to manage HF	6.6	7.5
Communication	7.1	8.6
Expert availability	8	10

Scores (/10)

One year follow-up

Providers – Barriers and Suggestions

- Insufficient time during encounters
- Patients already "plugged in"
- More refresher training

Summary

- Despite high, sustained provider satisfaction, no change in objective performance measures
- Limitations include:
  - Ceiling effect (5 of 9 measures > 80% at baseline)
  - High penetration of Cardiology/HF Program care
  - Provider perception of inadequate encounter time
- Some success in clinical pharmacist driven medication titration
- Refinement of this approach will be needed to improve outcomes