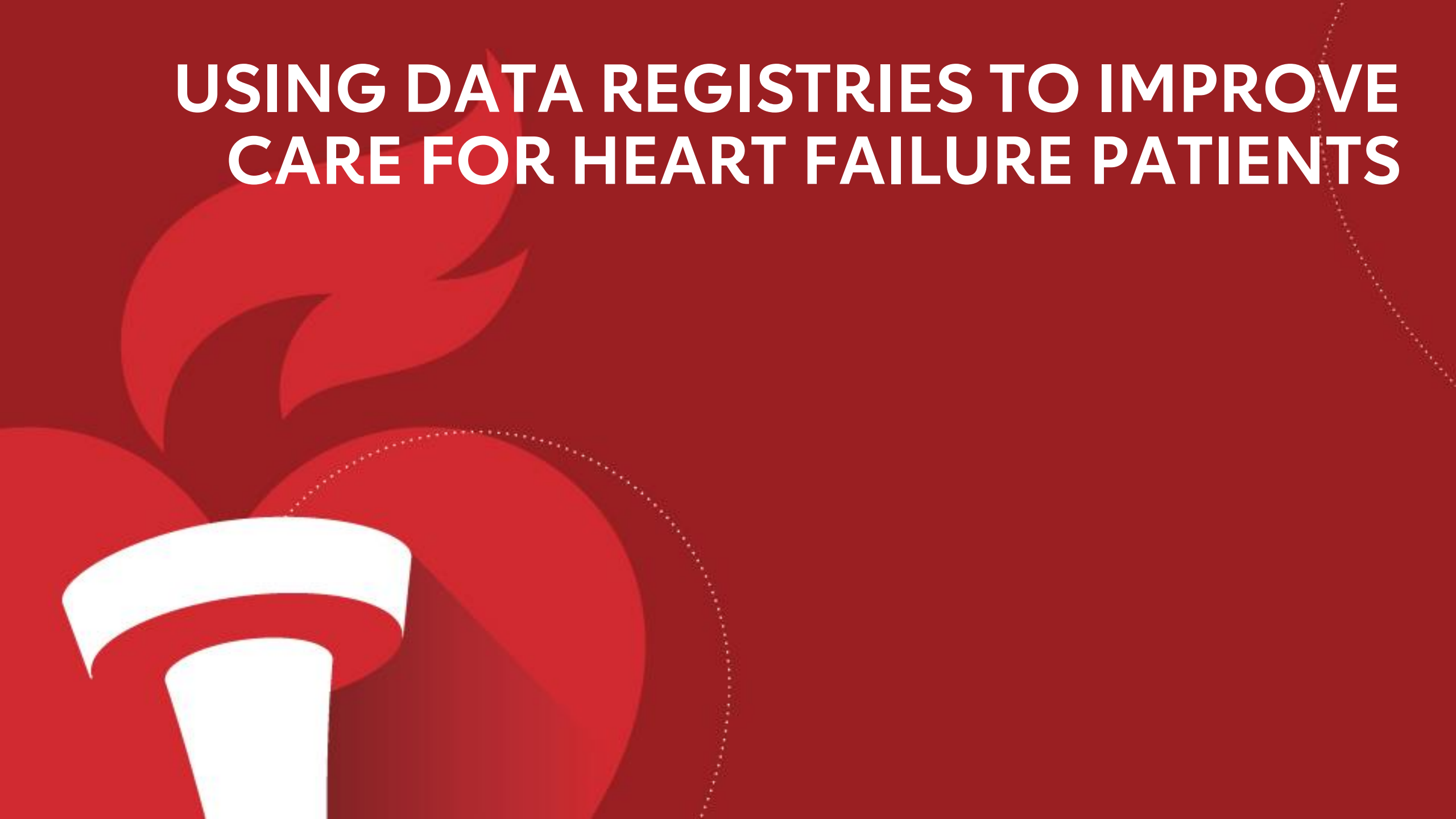
# USING DATA REGISTRIES TO IMPROVE CARE FOR HEART FAILURE PATIENTS



# CHERIE' BOXBERGER, MS. MBA. CPHQ

## REGIONAL VICE PRESIDENT – QUALITY & SYSTEM IMPROVEMENT

## AR CO OK NM TX WY

## FINANCIAL DISCLOSURE:
## AMERICAN HEART ASSOCIATION EMPLOYEE

# Guideline Directed Medical Therapies

| Guideline Recommended Therapy | Relative Risk Reduction in Mortality | Number Needed to Treat for Mortality | NNT for Mortality (standardized to 36 months) | Relative Risk Reduction in HF Hospitalizations |
|---|---|---|---|---|
| **ACEI/ARB** ARNI | 17% | 22 over 42 months | 26 | 31% |
| **ARNI** | 16% | 36 over 27 months | 27 | 21% |
| **Beta-blocker** | 34% | 28 over 12 months | 9 | 41% |
| **Aldosterone Antagonist** | 30% | 9 over 24 months | 6 | 35% |
| **Hydralazine/Nitrate** | 43% | 25 over 10 months | 7 | 33% |
| **CRT** | 36% | 12 over 24 months | 8 | 52% |
| **ICD** | 23% | 14 over 60 months | 23 | NA |
| **Ivabradine** | NA | NA | NA | 26% |

# Guideline Directed Medical Therapies – AR. CO. OK. NM. TX. WY

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# Guideline Directed Medical Therapies – ARKANSAS – 4 SITES 1531 PATIENTS

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American Heart Association.

# Guideline Directed Medical Therapies – **ARKANSAS** – 4 SITES 1531 PATIENTS

| Guideline Recommended Therapy | Relative Risk Reduction in Mortality | Number Needed to Treat for Mortality | NNT for Mortality (standardized to 36 months) | Relative Risk Reduction in HF Hospitalizations |
|---|---|---|---|---|
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| ARNI 21.3% | 16% | 36 over 27 months | 27 | 21% |
| Beta-blocker 93.8% | [illegible] | 28 over 12 months | 9 | 41% |
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| ICD 64.1% | 23% | 14 over 60 months | 23 | NA |
| Ivabradine | NA | NA | NA | 26% |

65.9%

45.8%

# BEST PRACTICES TO IMPROVE GUIDELINE DIRECTED MEDICAL THERAPIES IN ARKANSAS HEART FAILURE PATIENTS

GOAL: > 85%

# Using Data Registries to Improve Care for Heart Failure Patients

Texas Health Arlington Memorial Hospital

January 2020

# THAM Facility Overview


- 369 bed, faith-based, full service community hospital
- HF Certification through Joint Commission
- Magnet Designation for Nursing
- Mended Hearts Support Group
- Cardiac Telemetry Unit
- Medical/Surgical Intensive Care
- Outpatient Clinic –Chronic Disease
- Cardiac Rehabilitation Services
- Multidisciplinary Cardiovascular Committee

# Gold Plus Award for 2017, 2018 and 2019

HEART FAILURE HF

American Heart Association. | GET WITH THE GUIDELINES. HEART FAILURE

The American Heart Association proudly recognizes

## *Texas Health Arlington Memorial Hospital Arlington, TX*

**Get With The Guidelines®-Heart Failure GOLD PLUS**
Achievement Award Hospital

The American Heart Association recognizes this hospital for its continued success in using the **Get With The Guidelines®-Heart Failure** program. Thank you for applying the most up-to-date evidence-based treatment guidelines to improve patient care and outcomes in the community you serve.*

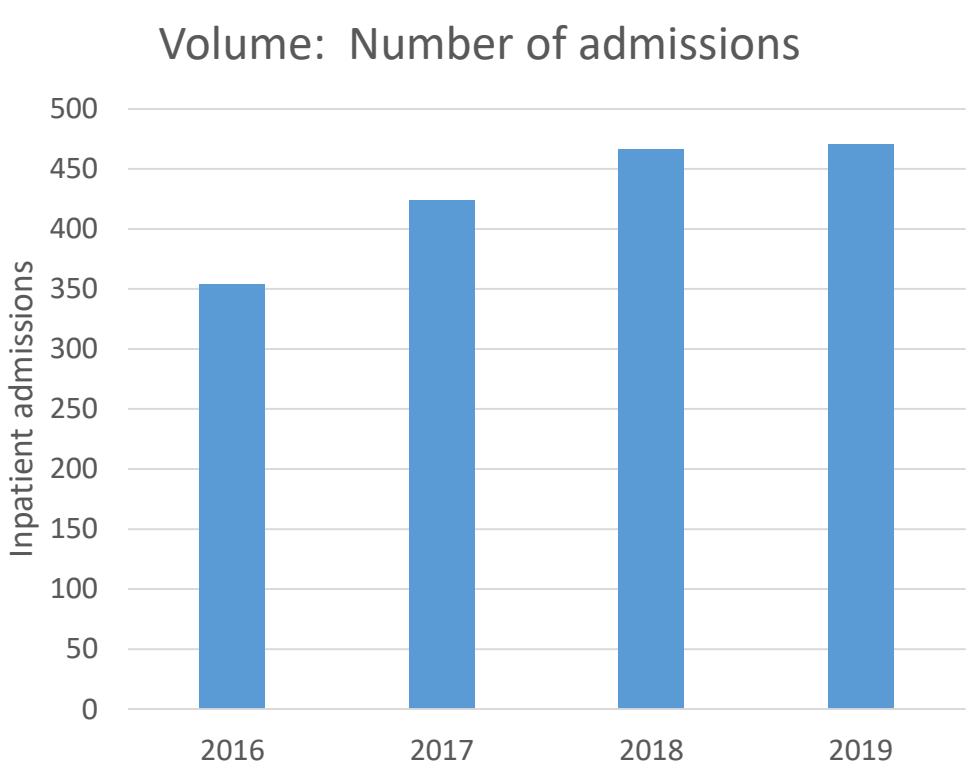

**Nancy Brown**
Chief Executive Officer
American Heart Association

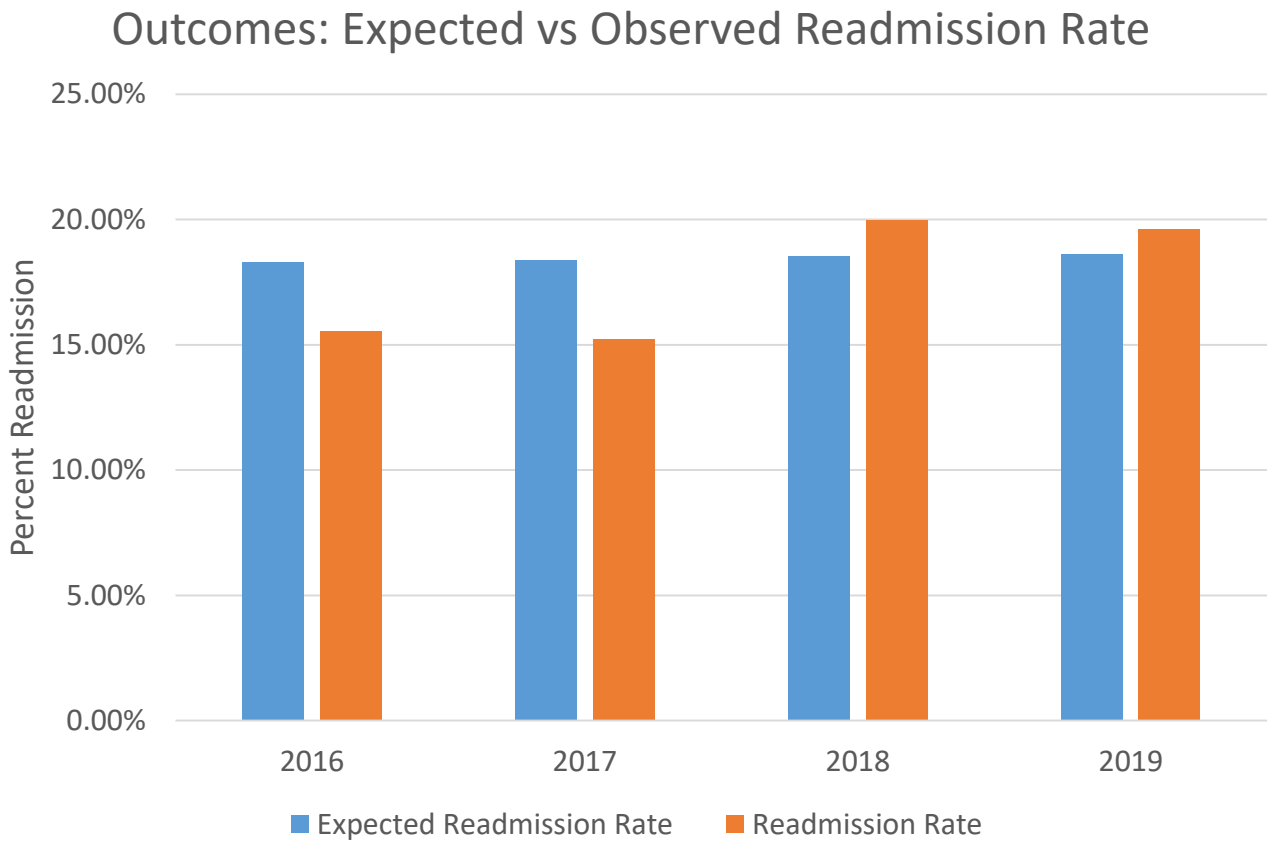
**Eric Smith, MD**
Chairperson, Get With The Guidelines® Steering Committee

**John Warner, MD**
President American Heart Association

*For more information, please visit Heart.org/GWTGQualityAwards.

# Heart Failure Volume and Outcomes

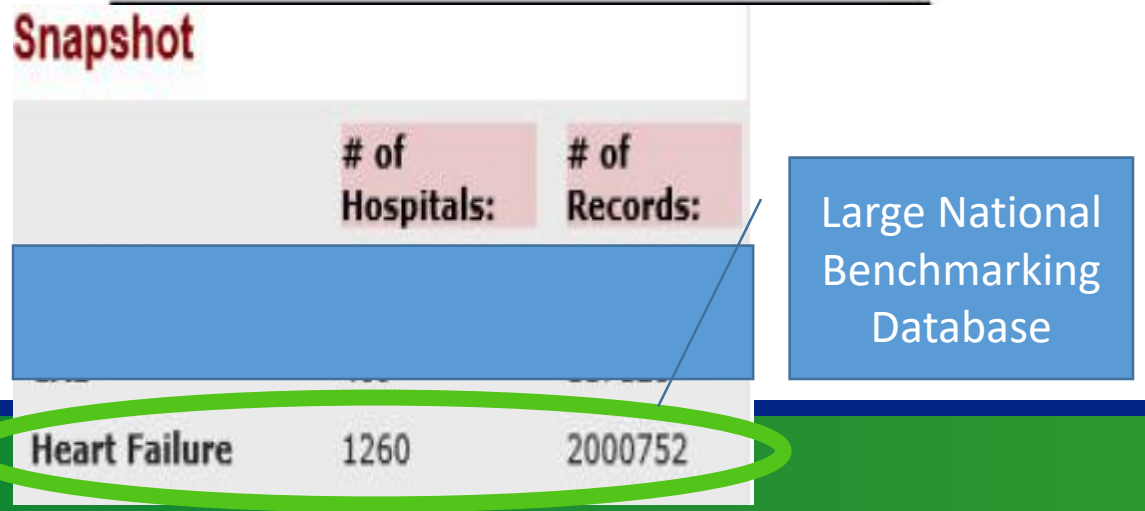


# Collecting and Using Data

Get With the Guidelines (GWTG) and Dashboards

# Data Collection and GWTG

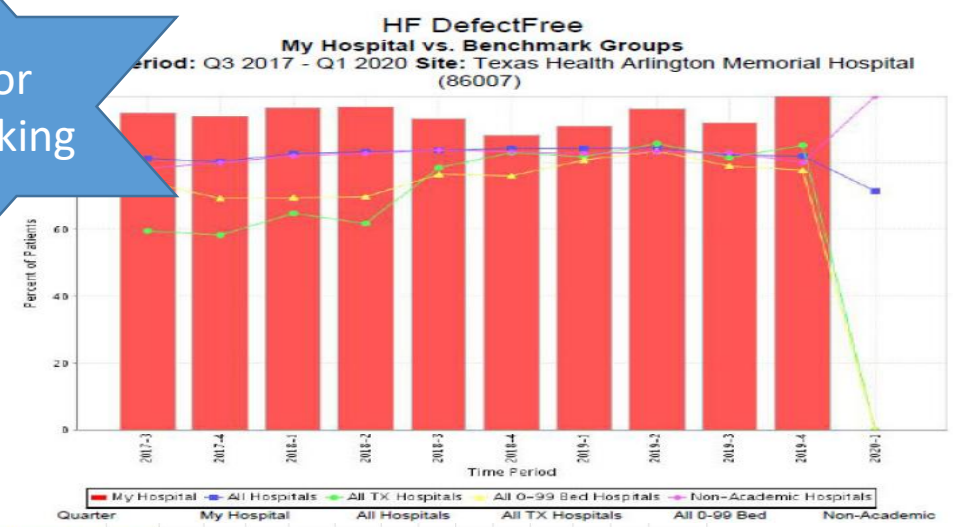




Large National Benchmarking Database

- HF Coordinator abstracts and enters data into Get With the Guidelines (GWTG)
- GWTG
  - Reports to monitor
    - Hospital Trends
    - Benchmark National and Regional

# Dashboard and Data Analysis

GWTG for Benchmarking




THAM Heart Failure

*Scorecard*

Primary Diagnosis Codes: Heart Failure (retired) Core Measure Population (Premier)

| Heart Failure Patient Volumes | Target | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | 2018 YTD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Patients with Principal Diagnosis of Heart Failure | NA | 62 | 41 | 41 | 28 | 41 | 32 | 37 | 32 | 39 | | 36 | | 389 |
| Low Income/Unfunded/Medicaid HF Clinic Patients (DSRIP DY time period) | 50 | | | | | | | | | | | | | 0 |
| | | | | | | | | | | | | | | |
| **Process Indicators** | | | | | | | | | | | | | | |
| **Hospital Care** | Target | | | | | | | | | | | | | |
| Daily Weight Monitoring | >75% | 77% | 89% | 86% | 86% | 95% | 77% | 93% | 89% | | | | | |
| ACEI/ARB or ARNi Therapy for LVSD at DC | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | |
| Evidence-based specific Beta Blocker at Discharge | >90% | 100% | 100% | 100% | 83% | 100% | 100% | 100% | 91% | 92% | 88% | 100% | 88 | |
| LVSF Assessment | 100% | 100% | 100% | 97% | 100% | 100% | 100% | 100% | 100% | 100% | 97% | 100% | | |
| Aldosterone Antagonist at Discharge | >50% | 25% | NA | 58% | 33% | 25% | 100% | 75% | 75% | 33% | 100% | 8 | | |
| ARNI at Discharge | >50% | NA | NA | 100% | NA | NA | NA | NA | NA | NA | 0% | 50% | 0% | 38% |
| Anticoagulation for Atrial Fib/Flutter | >95% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 67% | 100% | 100% | 97% |
| Hydralazine Nitrate at Discharge | >50% | 50% | 0% | 33% | 0% | 12% | 75% | 67% | 0% | 25% | 50% | 33% | 50% | 33% |
| DVT Prophylaxis | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| CRT-D or CRT-P placed or prescribed at Discharge | >50% | NA | NA | NA | NA | NA | NA | 0% | NA | NA | 0% | 0% | 75% | 19% |
| ICD Counseling or ICD placed or prescribed at Discharge | >50% | 100% | 100% | 100% | 100% | 100% | 100% | 80% | 83% | 100% | 29% | 80% | 80% | 88% |
| Influenza Immunization (Flu Season) | 100% | 100% | 100% | 100% | NA | NA | NA | NA | NA | NA | 100% | 100% | 100% | 100% |
| Pneumococcal Vaccination | >50% | 54% | 33% | 38% | 40% | 39% | 22% | 28% | 25% | 14% | 42% | 29% | 36% | 33% |
| Cardiac Rehab Referral | >75% | 80% | 86% | 80% | 92% | 88% | 91% | 80% | 92% | 79% | 81% | 97% | 84% | 86% |
| HF Education (60 mins Pt Ed, Refer to HF Disease Mgmt or HF Interactive Workbook) | >75% | 72% | 86% | 94% | 89% | 82% | 89% | 81% | 96% | 90% | 92% | 97% | 97% | 89% |
| Patient Education on Heart Failure - DC Instructions | 100% | 100% | 100% | 100% | 96% | 100% | 100% | 89% | 100% | 92% | | | | 97% |

Dashboard - Snapshot

- Dashboard
  - Provides quick summary
  - Color Code
    - Identifies Good Performance and Opportunities
- GWTG Reports
  - Historic Performance
  - Benchmarking
- Committee Analysis
  - Drill Down on Low Performing Metrics
  - PDSA to Improve

Texas Health Arlington Memorial Hospital®

# Daily Alert-Concurrent Review

Abstractors-(Susie) Stroke x6148; (Carol) HF & Perinatal x7304; (Debby) CP/AMI x 7218; (Jackie) Follow up & Overall x6107; (Robin) Overall x6373

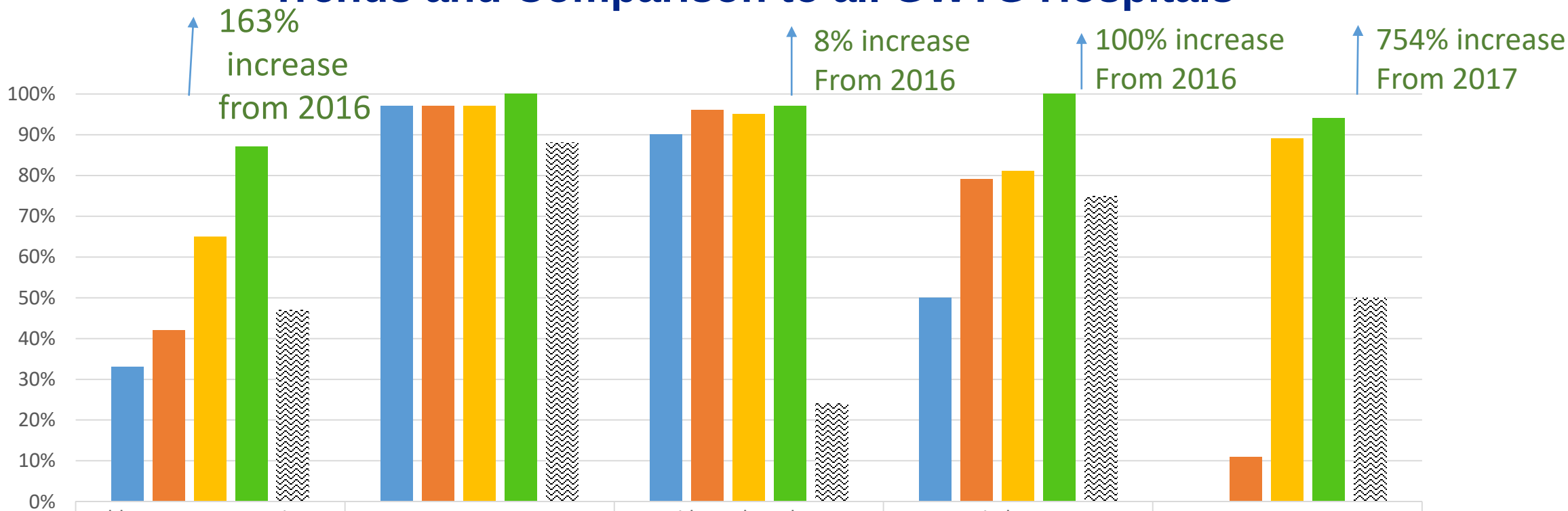
| Rm # | Admit date | Acct # | Patient Name | Attending Physician | Quality Measure | Vaccines | Abstractor Comments | Discharge Reminders |
|---|---|---|---|---|---|---|---|---|
| 3207 | 8/6 | | | | HF | | Needs LV function documented - Echo ordered 8/7 | Needs F/U Appt < 7 days from D/C. |
| 3211 | 8/1 | | | | HF | | EF 20% per cardiac consult (echo 2/2018). | Needs evidenced based BB-ACE/ARB/ARNI @ D/C. Needs F/U Appt > 7 days from D/C. |
| 3214 | 8/2 | | | | HF | | EF 20% per H/P (echo 7/12/18). | Needs evidenced based BB-ACE/ARB/ARNI @ D/C. Needs F/U Appt > 7 days from D/C. |
| 3215 | 8/6 | | | | HF | | EF 35-45% per cardiac consult. (Avg 40%).Needs cardiac rehab referral. | Needs F/U Appt < 7 days from D/C. |
| 3216 | 7/25 | | | | HF | | EF 60% per ED MD from Echo 1/2018. Hx Afib. | Needs Anticoagulant @ D/C. Needs F/U Appt < 7 days from D/C |
| 3217 | 8/1 | | | | HF | | EF 65% per Echo 8/7. Afib. | No Anticoagulant due to freg falls. Needs F/U Appt < 7 days from D/C |
| 3219 | 8/4 | | | | HF | | EF 20-25% per cardiac consult. | Needs BB @ D/C. Needs F/U Appt > 7 days from D/C. |

KEY EF - Ejection Fraction LV Function - Left Ventricular Function SAH - Subarachnoid Hemorrhage ICH - Intracerebral Hemorrhage R/O - Rule Out BB - Beta Blocker CR- Cardiac Rehab

Concurrent Review allows:

- Real Time identification of possible care issues
- Standardize communication process to email or contact physicians/nurses for prompt resolution

# Heart Failure Patient Care Measures
# Trends and Comparison to all GWTG Hospitals




| | Aldosterone Antagonist at D/C | Anticoagulation for Afib | Evidence-based Beta Blocker | Post Discharge 7 Day Follow-Up Appt | HF Education Tool Kit |
|---|---|---|---|---|---|
| 2016 | 33% | 97% | 90% | 50% | |
| 2017 | 42% | 97% | 96% | 79% | 11% |
| 2018 | 65% | 97% | 95% | 81% | 89% |
| 2019 | 87% | 100% | 97% | 100% | 94% |
| Benchmark | 47% | 88% | 24% | 75% | 50% |

# Improving Performance

Post Acute Care

Outpatient Chronic Care Clinic

# Opportunity Identified

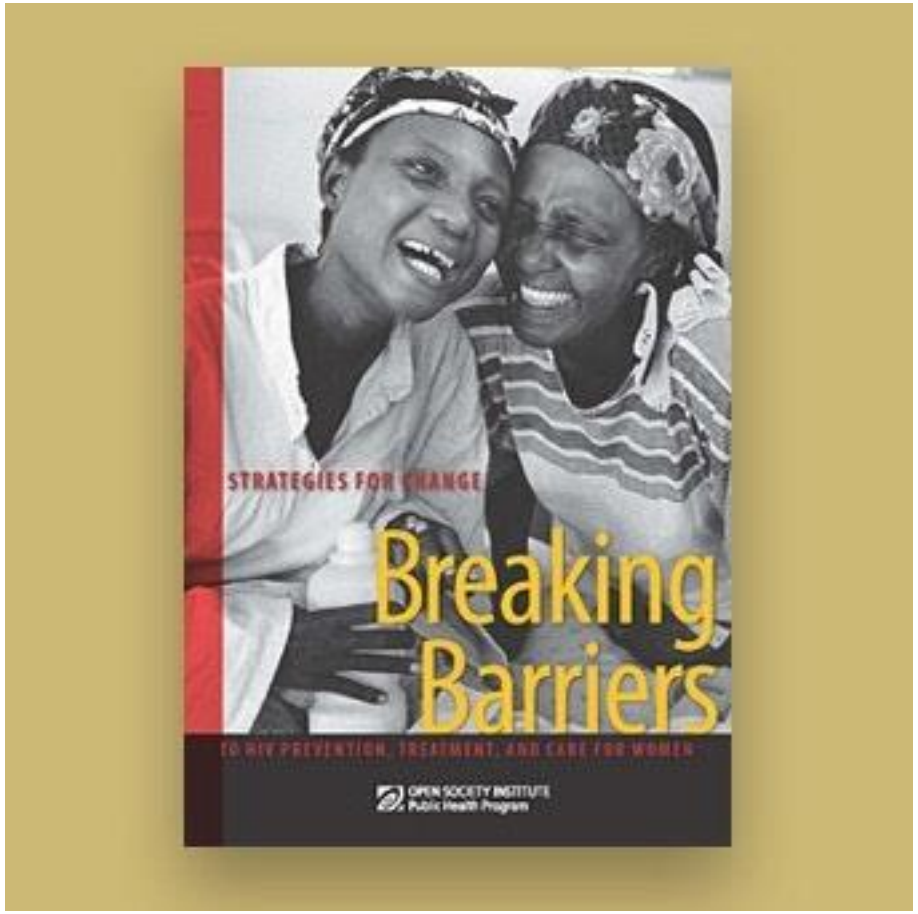
- Using Get With the Guidelines data, an opportunity was identified regarding scheduling a follow-up appointment within 7 days after discharge

- High HF 30-Day Readmission rates

- Lack of Access to Timely Follow-up care in our Community

# Plan:  Data Drill Down Findings

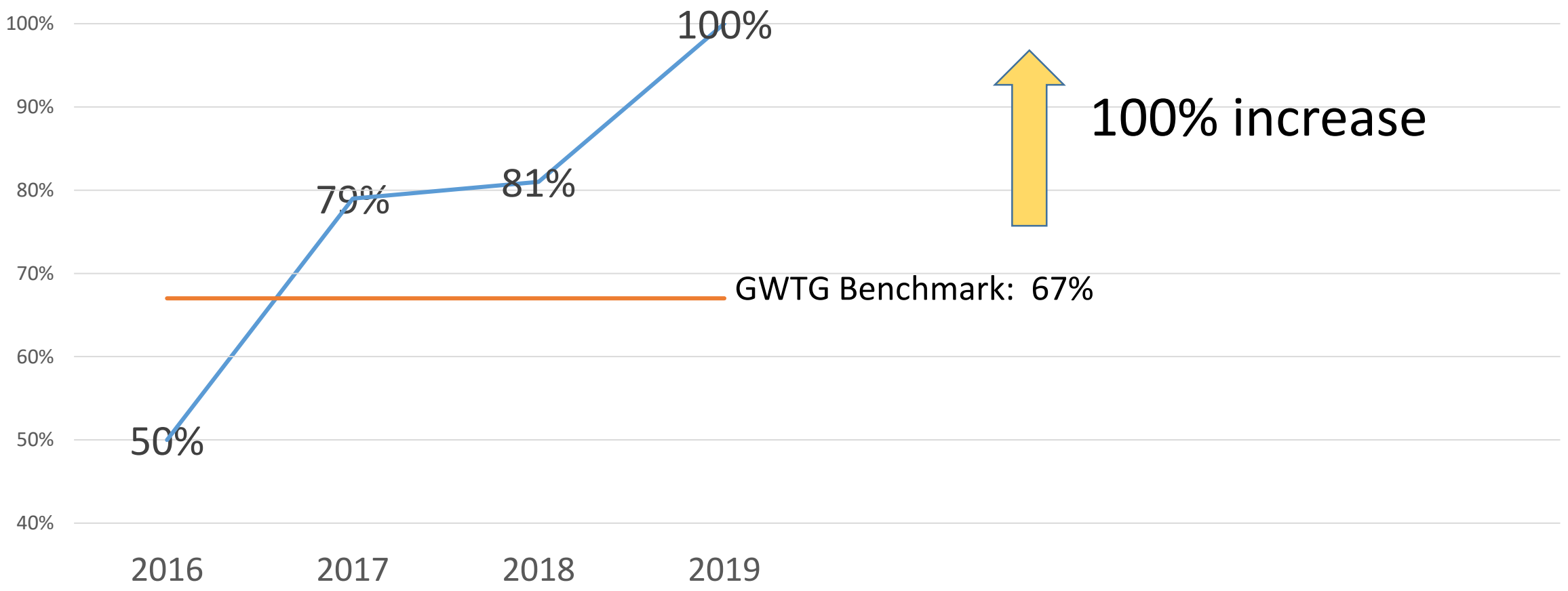
- Barriers to making/attending follow-up appointment with patients:
  - No or Limited Post-Acute Provider
  - Lack of access to Transportation
  - Did not perceived follow-up care as priority



# Do: PI Actions to Improve

- Provide Appointment Prior to Discharge and include in DC Instruction
- Utilize Clinic as Bridge for timely FU if pt's Provider not available within 3-7 days (or has no provider)
- Easy for Care Transitions to schedule appt
  - Computer order for FU Appointment coordination
  - Care Transition Staff ability to schedule
  - Phone access to Clinic Scheduler
- Educate patients on importance of scheduling/keeping follow-up appointments
- Provide patient information or arranged transportation for follow-up visit

# Follow-up Appointment Within 7 Days of Discharge



# THAM Outpatient Clinic Overview

- Created to serve the people in our community who have difficulty obtaining access to healthcare
  - Uninsured
  - Underinsured
  - Medicaid
  - Medicare
  - Undocumented
  - End stage or patients having difficulty managing their illness (as supplement to PCP or specialist)

Multidisciplinary Team Approach

- Nurse Practitioners
- Registered Nurses
- RN Case Manager
- Social Worker
- Medical Assistant (bilingual)
- Arlington Fire Department Paramedics – home visits

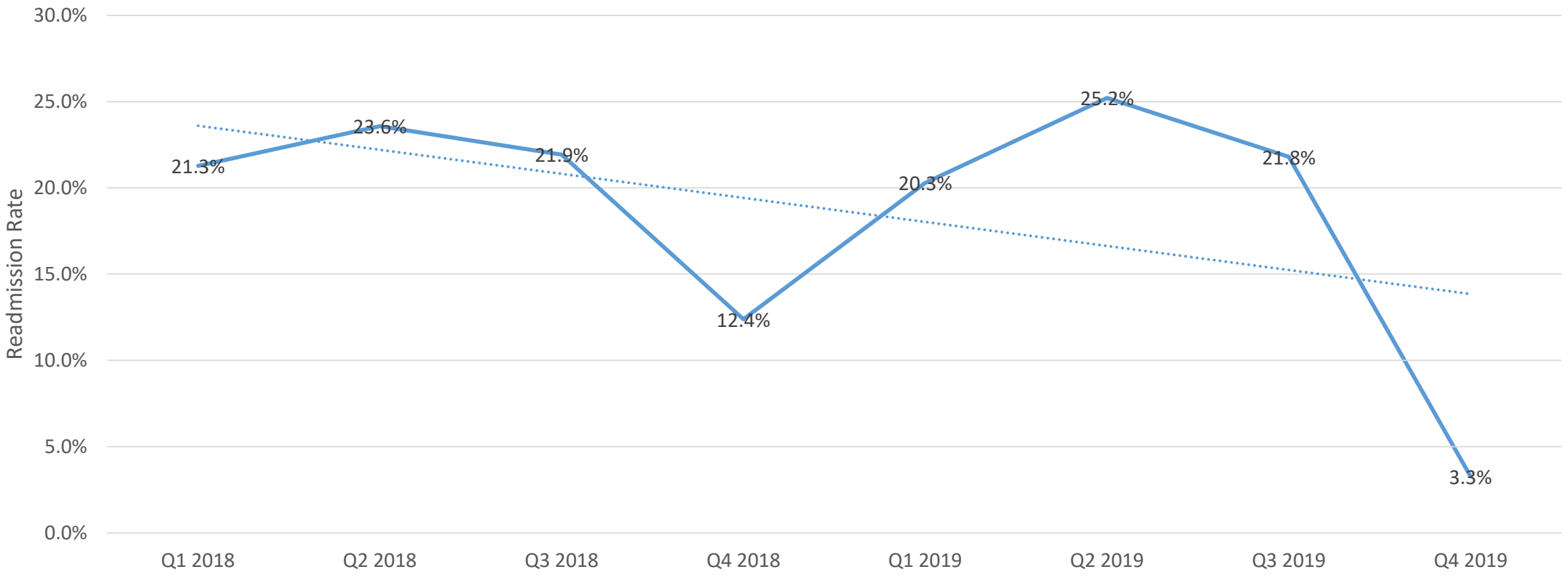
# Outpatient Clinic

- Works to provide evidenced- based care to improve patient outcomes
  - Reduce complications
  - Prevent ED visits
  - Prevent Hospital Admissions/Readmissions

# Continued Assessment in Clinic

- Assess for barriers to success in improving health
  - Provide medical care
  - Provide education
  - Access community resources
  - Provide medications/medical equipment
  - Provide home support through AFD Community Paramedic Program
  - Assist to obtain PCP/medical home
  - Assist to obtain Medicaid coverage

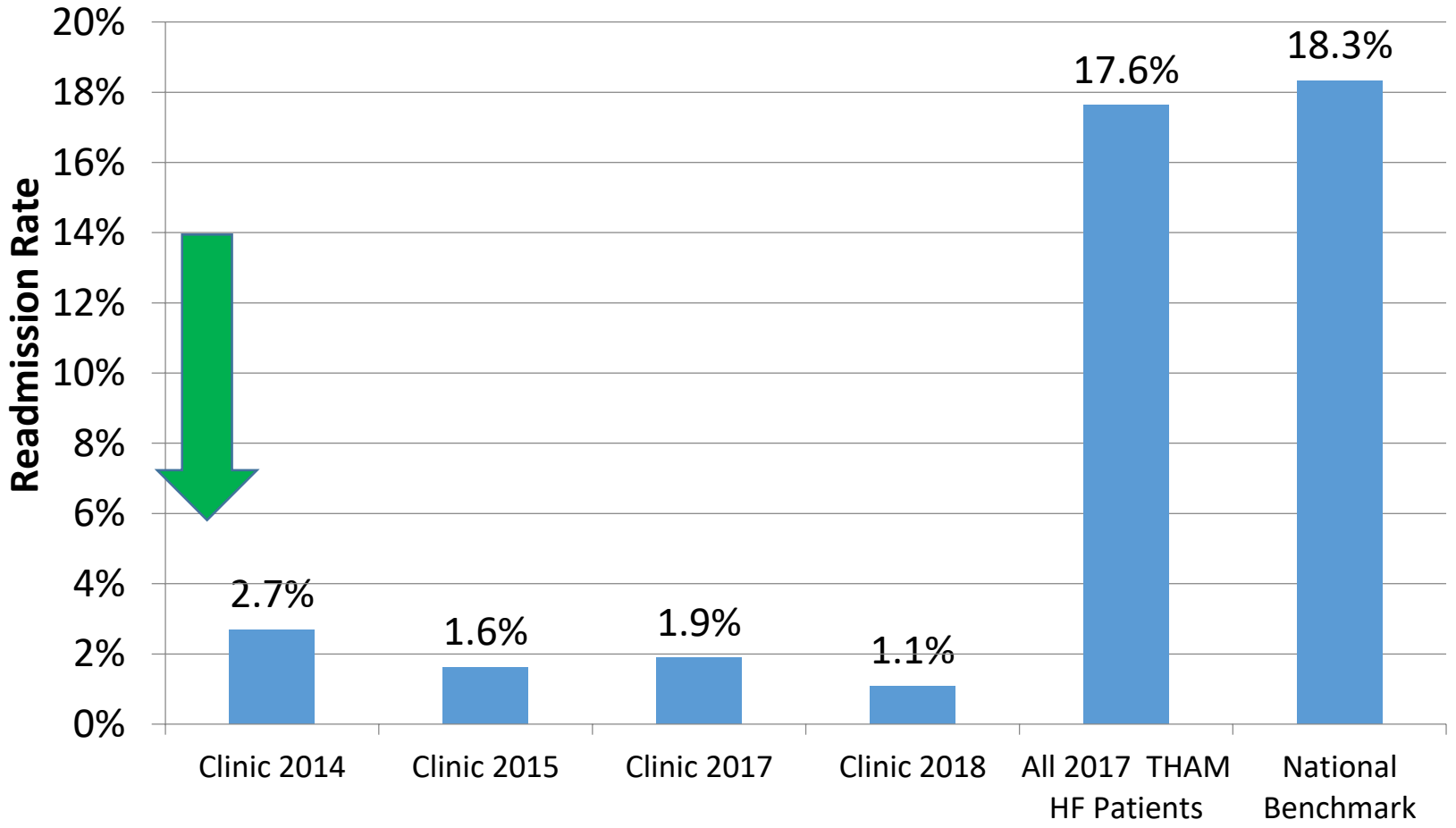
# THAM Heart Failure - All Hospital
# 30-Day Readmission Rate



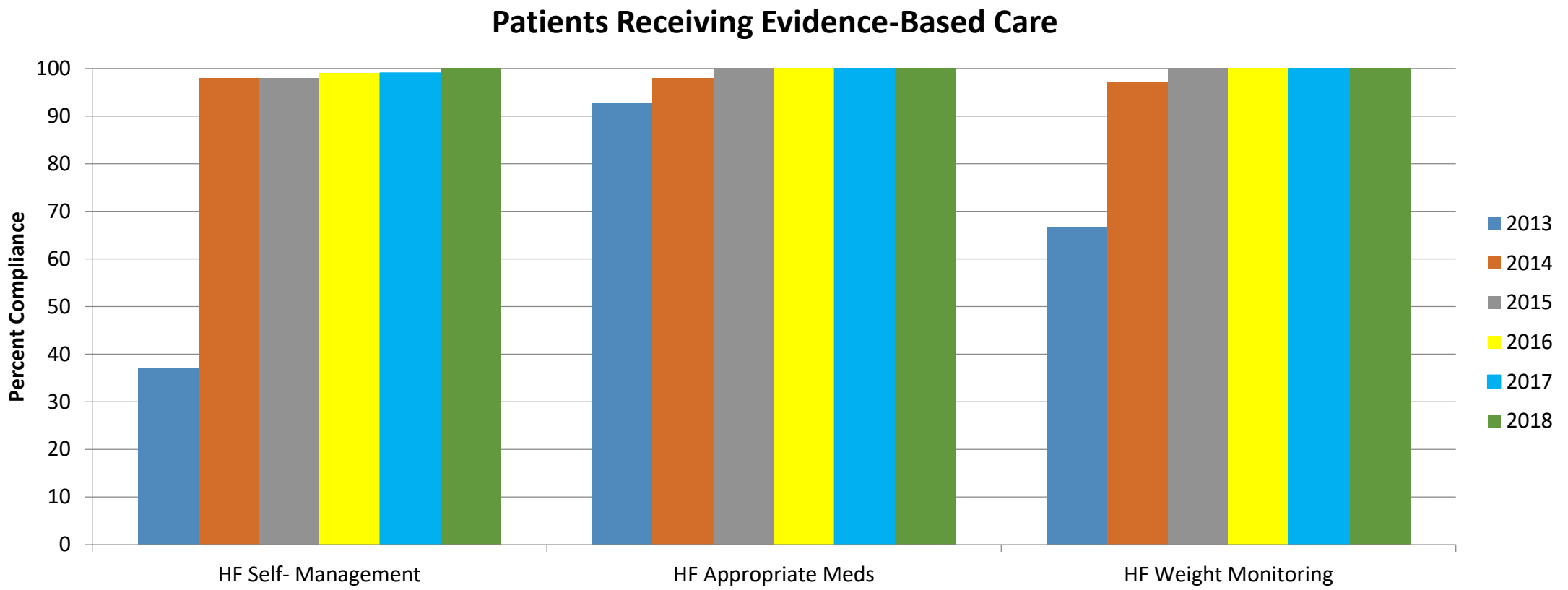
# THAM Heart Failure Outpatient Clinic Patient Readmission Rates

## Oct 2013 – 2018

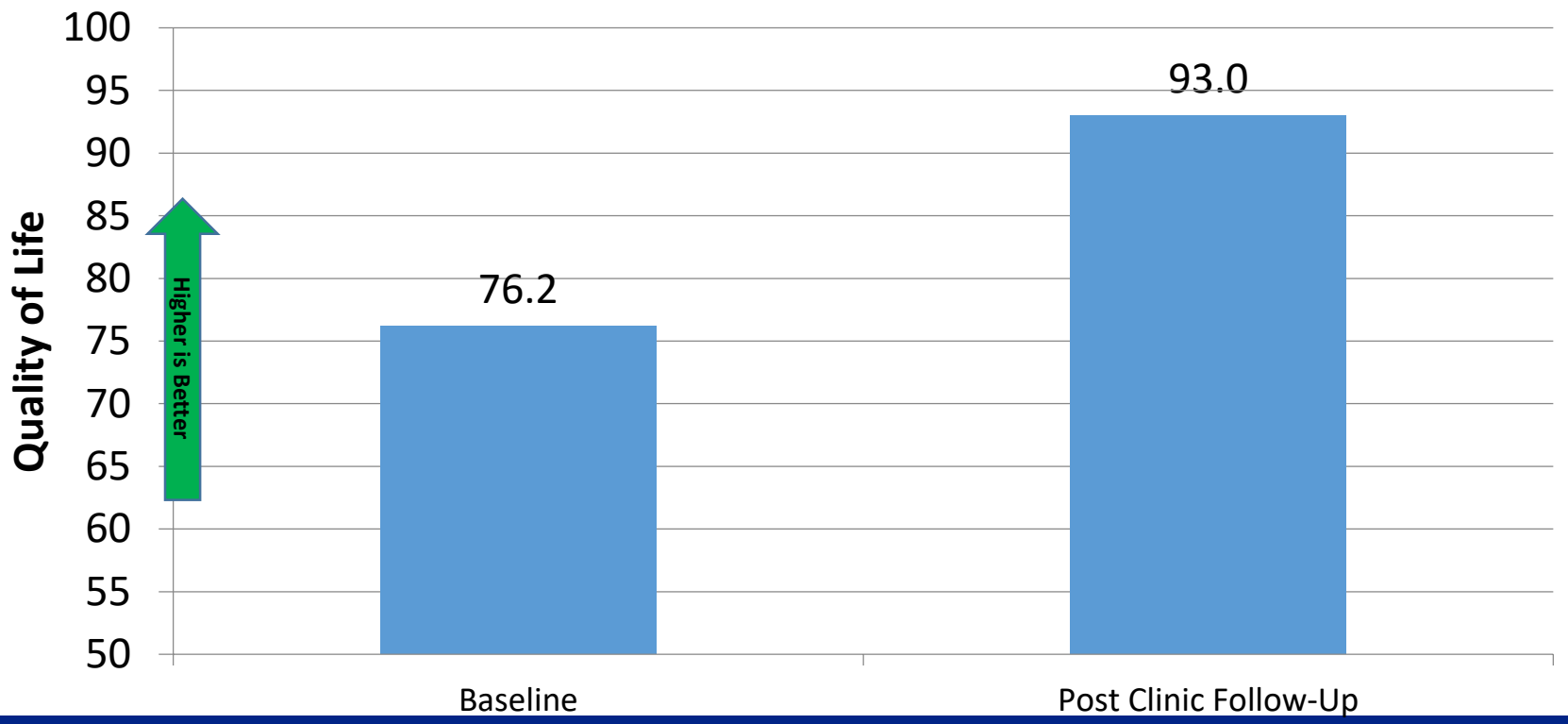
Outpatient Clinic patients have a readmission rate that is better than general hospital rate and national benchmark.



# THAM Heart Failure Outpatient Clinic Patient Evidence Based Care Delivery
## Oct 2013 – 2018



# THAM Heart Failure Outpatient Clinic Patient Outcomes
# Quality of Life



# Ben Taub Hospital

- Acute Care Hospital
  - Level 1 Trauma Center
  - 444 licensed-beds
  - 102,987 emergency visits
  - 20,551 inpatient admissions
  - 3,440 deliveries
  - 12,609 surgeries
  - 251,414 outpatient visits

- *Data Range: Jan 1, 2017 – Jan 31, 2018*
- *Data source: FY17 P11-12; FY18 P11 Harris Health System Monthly Stat Trend Report*

# Baseline State of CHF Management at Our Institution

Largely Unknown

The only measure reported was readmission and mortality\

Reason: Switch from Joint Commission Accreditation to DNV

DNV does not require to monitor CHF Core measures

# Value of Clinical Data Registry

- Clinical data registries provide significant data on:
  - Use of evidence-based practice guidelines to evaluate proportion of patients receiving recommended treatment
  - Compare the effectiveness of different treatments for the same disease or condition
  - Evaluate different approaches to a procedure and to monitor the safety of implanted devices
  - Support health care education, accreditation and certification.
  - Ensure that payment is adjusted based on the quality of care provided
  - Give patients the information they need to make better choices

# Value of Registry to CHF Management at Ben Taub

- Foundation to establish a program with minimal financial investment
- Commitment from administration to support the program
- Increased physician awareness and compliance with GRT in CHF
- Establish metrics to drive quality care in CHF

# Get With The Guidelines®- HF

- 702 U. S. hospitals are participating in the American Heart Association's GWTG – Heart Failure program
- Ben Taub Hospital/Baylor was awarded a grant from the AHA to participate in this program
- Program started in mid Feb 2018

American Heart Association.

GET WITH THE GUIDELINES®
HEART FAILURE

# Get With The Guidelines® - HF Achievement Measures

- Evidence-based beta blockers
- Angiotensin converting enzyme inhibitor (ACEI) and angiotensin receptor blocker (ARB), or ARNI at discharge
- Measure left ventricular function (EF by Echo, Nuc or cath)
- Post-discharge appointment for HF patients
- Readmission at 30 days

# Get With The Guidelines® - HF
## Other Quality Measures

- Aldosterone antagonist at discharge
- Anticoagulation for atrial fibrillation
- Hydralazine/nitrate at discharge
- DVT prophylaxis
- CRT-D or CRT-P placed or prescribed at discharge
- ICD counseling or ICD placed or prescribed at discharge
- Influenza vaccination during flu season
- Pneumococcal vaccination
- Follow-up visit within 7 days or less

# Initiative by BT Cardiology for Coordination of Care

- Hospital Executives  /Internal Med and out patient clinic leadership  /Cardiology leadership
- Nursing Leaders
- Allied Services:
    - Social work, Pharmacy, Dietary, Home Health
- IT personnel
- Quality Department

# Intervention I

- Met with Cardiology Faculty and Fellows to inform all about the program and secure their “buy in” to participate
- Consult  placed in EPIC to Cardiology on all patients admitted with primary diagnosis of CHF
- Cardiology Consult Team will ensure patients are:
  - properly worked up and diagnosed
  - optimized on HF- GRT with attempt to use target doses of recommended meds
  - evaluation for ICD placement
  - Baseline and pre D/C BNP and Troponin
- Create Smart phrase for HF in EPIC to be used by consult team (all boxes have to be checked)

# Intervention II

- Engage IM and FM faculty and residents with program
  - Email Memos to everyone to explain the program and expectations
  - One on one sessions with physicians
  - Grand rounds to PCP
  - Specific individual feedback by email on individual patients
  - Monthly orientation to housestaff

# Intervention III

- Hired a Heart Failure Coordinator/Navigator
  - Review EPIC documentation: education, follow up,
  - Develop individualized plan of care
  - Assess and identify specific patient/family needs
  - Evaluate effectiveness of education
  - Coordinate patient referrals
  - Feedback on care provided to patients

# Intervention IV

- Nursing Education
  - Mandatory  on boarding and annual CHF Module for nurses' education
  - Cohort CHF patients into the same units
  - I-PADs One hour patient education by coordinator
  - CHF education fliers attached to patient instructions at D/C with warning signs to watch for and advice on what to do

# Intervention V

- Transition of Care Consult
  - Case management and Social Worker Services
    - Transition of care to ambulatory facility
      - Order entered in EPIC  by inpatient case managers to assign a medical home for the patients (monitored for compliance)
        - Home Health
        - Medication management
        - Out patient pharmacy to call patients who need help
        - Meals on Wheels, etc…
      - Physical therapy
    - Pastoral care support

# Intervention VI

- Prevention
  - BP management
  - Lipid management
  - DM management
  - Anemia
  - Sleep Apnea
  - Depression
  - Nutrition

# Intervention VII

- Patient Education
  - Initiated on Day 1 and reinforced daily
    - Diet
    - Fluid restriction
    - Medications
    - Daily weight monitoring
    - Tobacco cessation
    - Exercise
    - Signs and sxs of CHF
    - When to call clinic
    - When to call 911
    - ICD discussion

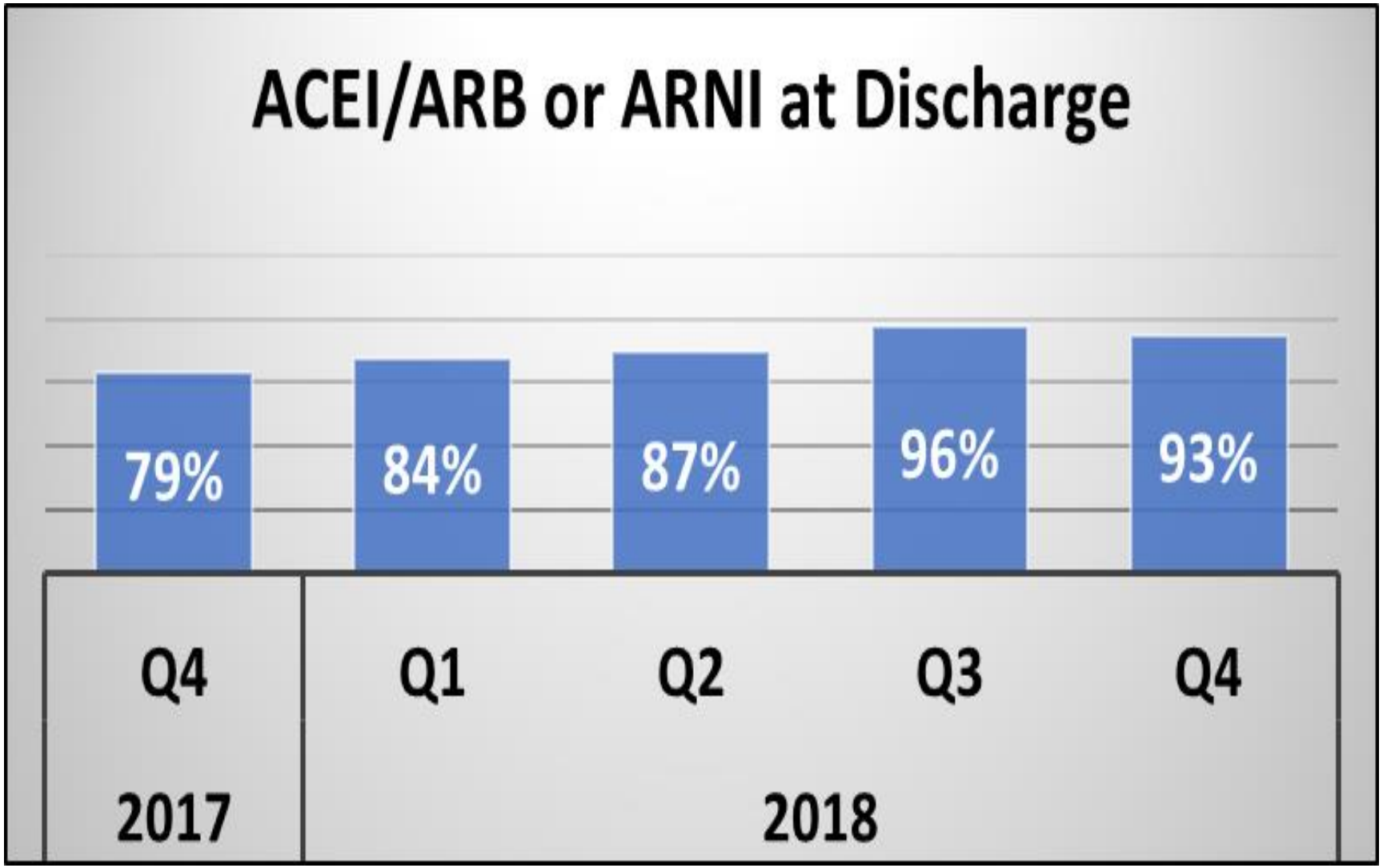
# Follow up  Interventions

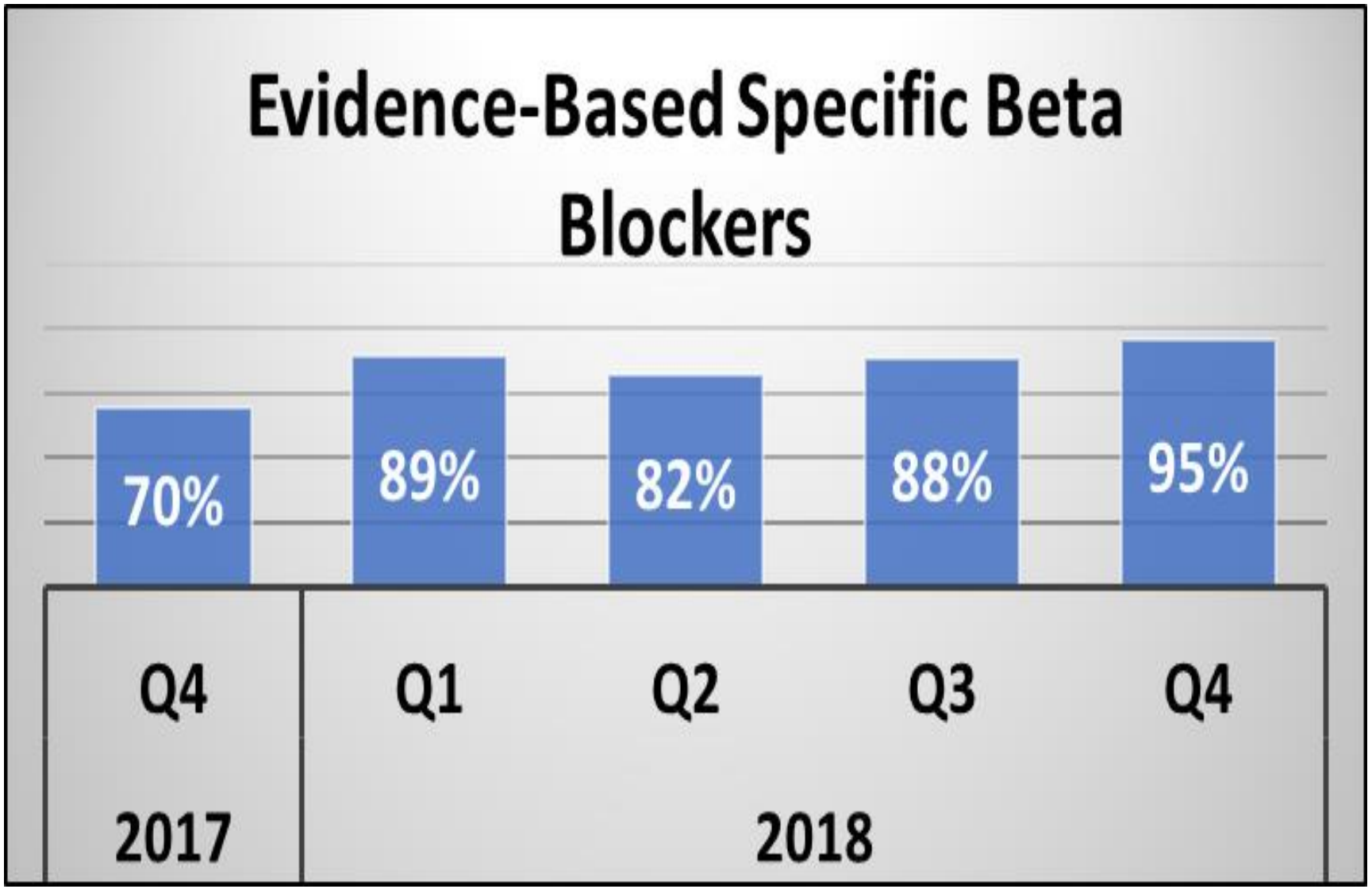
- Phone call at 48 hours and 3 weeks by CHF coordinator
- One week clinic visit with PCP or home visit arranged
- No-show patients are called by phone and are given another follow up within 7 days
- Cardiology clinic visit within 2-4 weeks
- Patients are encouraged to walk into Cardiology clinic within after D/C if symptoms worsen
- Added another Cardiology clinic session dedicated to CHF follow-ups
- **Increase template for general cardiology to accommodate more CHF patients early follow up**

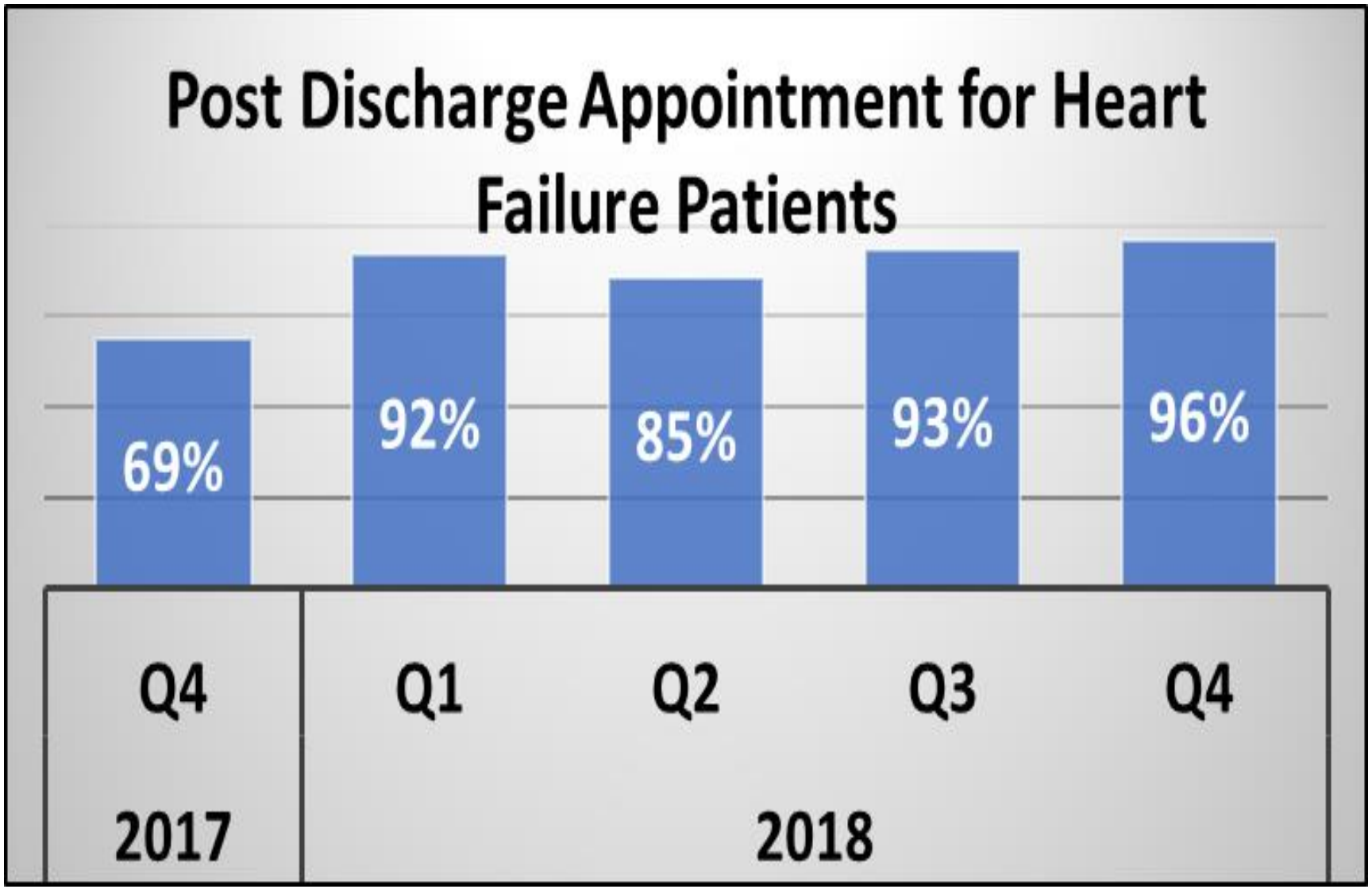
# Data Collection

- Abstractor
  - Non medical person
  - Given access to EPIC
  - Trained to collect data and submit to web based AHA registry
  - Support by local nursing leadership

- Transitioned data abstraction to the Quality Department at the hospital


ACEI/ARB or ARNI at Discharge
79%
84%
87%
96%
93%
Q4
Q1
Q2
Q3
Q4
2017
2018


Evidence-Based Specific Beta Blockers
70%
89%
82%
88%
95%
Q4
Q1
Q2
Q3
Q4
2017
2018

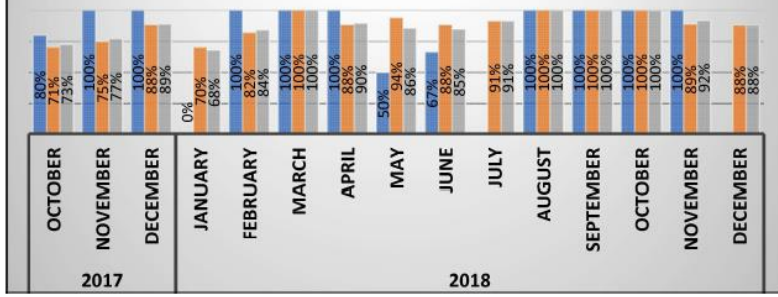

Post Discharge Appointment for Heart Failure Patients
69%
92%
85%
93%
96%
Q4
Q1
Q2
Q3
Q4
2017
2018

American Heart Association. life is why™ | GET WITH THE GUIDELINES® HEART FAILURE | TARGET:HF

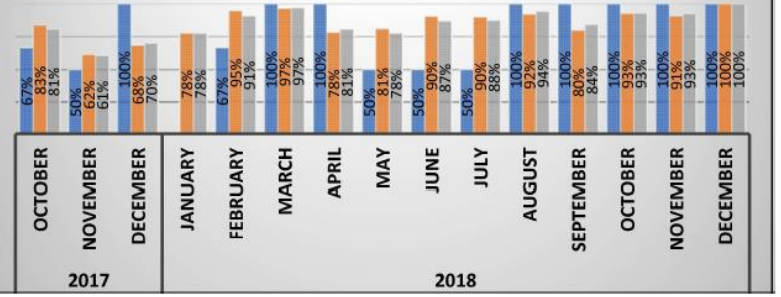
# Achievement Measures by Month

Cardiologist | Non-Cardiologist | All Physicians

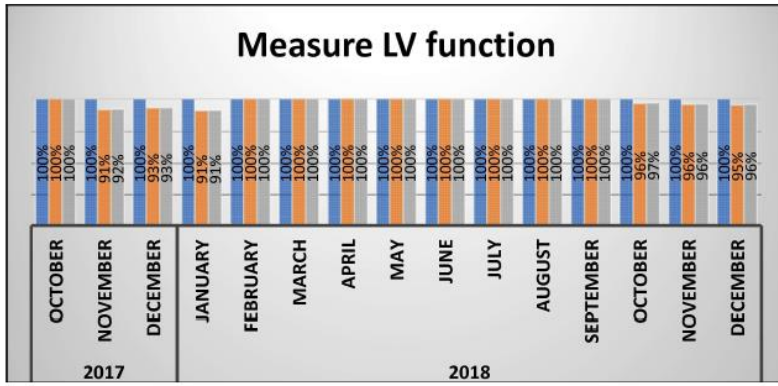
## ACEI/ARB or ARNI at Discharge



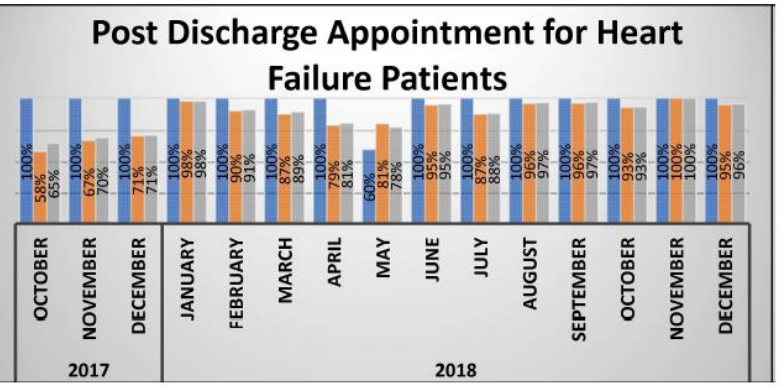

## Evidence-Based Specific Beta Blockers



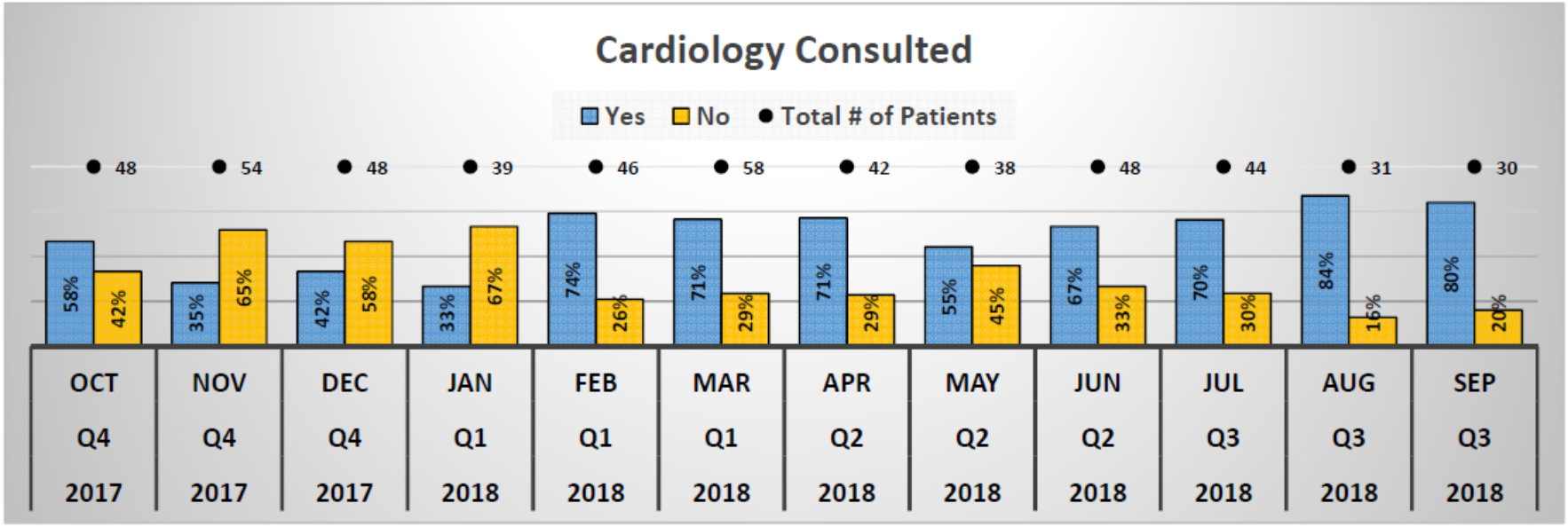

## Measure LV function




## Post Discharge Appointment for Heart Failure Patients



American Heart Association. life is why™ | GET WITH THE GUIDELINES® HEART FAILURE | TARGET:HF™



# Economic Data – preliminary estimate

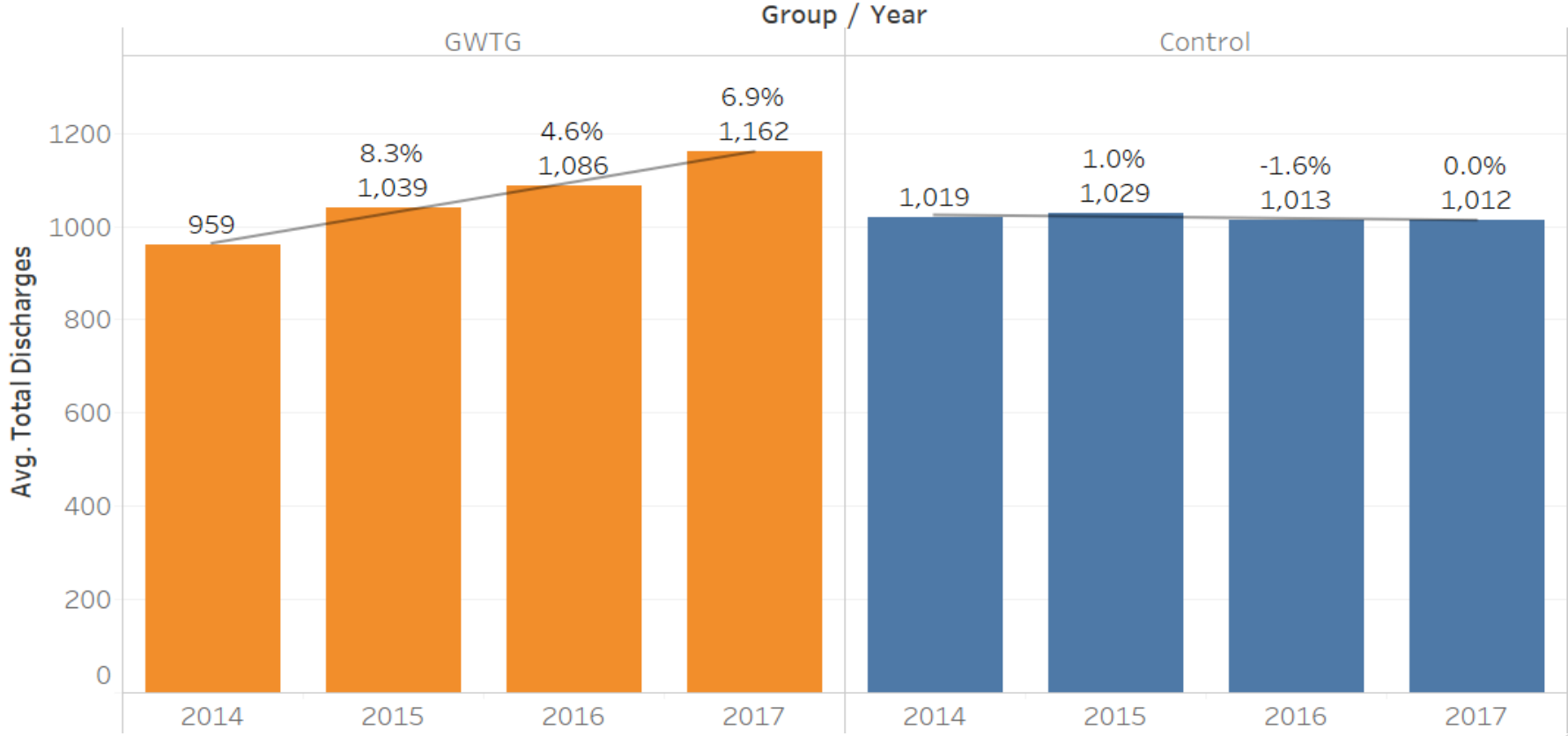
- Pre-intervention  compared to Post-intervention
- 693 Bed Days vs 548 Bed Days
- > $286,000 savings per year – conservative estimate

- (based on $1975 per day / new data suggests it is more like 2,740. )

# RESULTS OF USING A NATIONAL REGISTRY (GWTG)

# GWTG Accelerates Case Growth

## Average annual HF cases per hospital and year over year growth 2014 – 2017




**GWTG**
6.6%
Ave YOY Growth

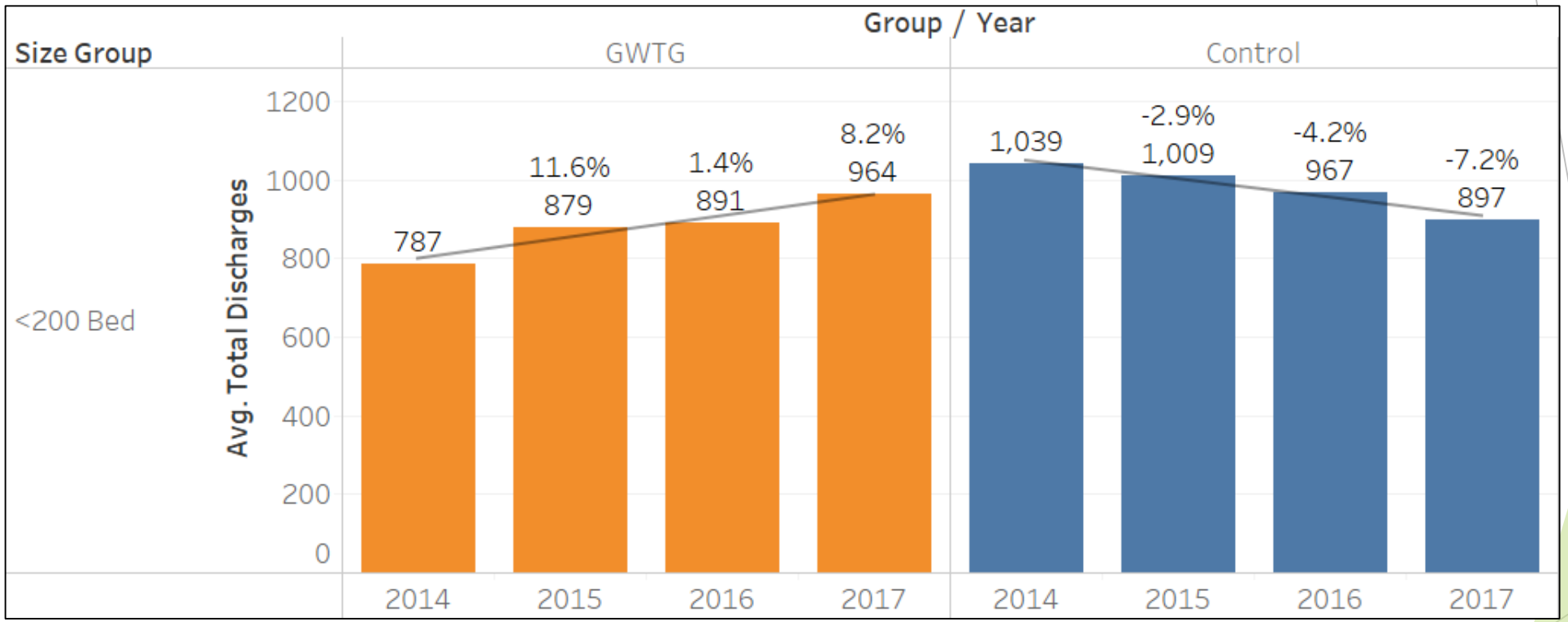
**Control**
-0.2%
Ave YOY Growth

**Delta**
6.8%
Ave YOY Growth

- On average, GWTG participant programs **grew 21% over 4 years,** attracting about 50 additional cases year over year, while control group hospitals lost volume.

# Case Growth: <200 Bed Hospitals

## Average annual HF cases per hospital and year over year growth 2014 – 2017




**GWTG**
**7.1%**
Ave YOY Growth

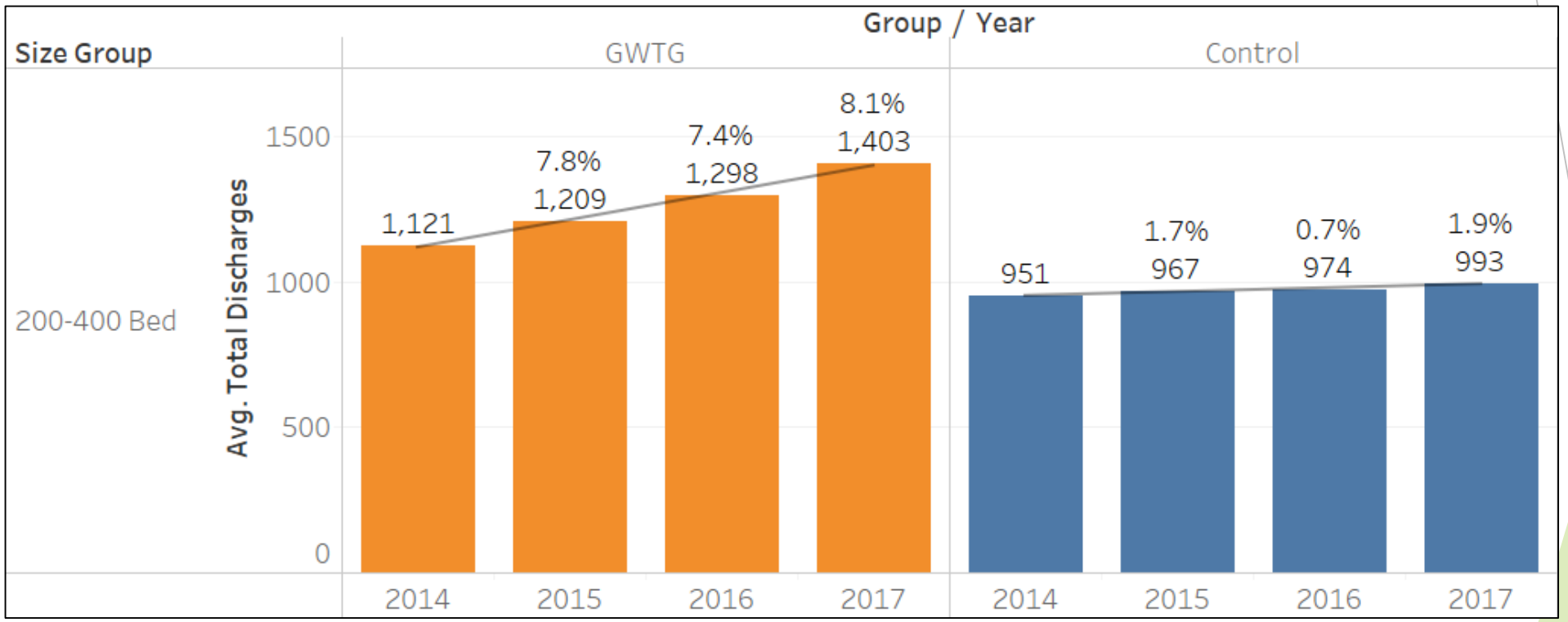
**Control**
**-4.8%**
Ave YOY Growth

**Delta**
**+11.8%**
Ave YOY Growth

- Small-Sized (<200 beds) GWTG participants grew 7.1% YOY while peer-facilities lost HF volume -4.8% YOY.
- GWTG hospitals under 200 beds had the greatest increase in volume and the lowest length of stay.

# Case Growth: 200-400 Bed Hospitals

## Average annual HF cases per hospital and year over year growth 2014 – 2017




**GWTG**
7.7%
Ave YOY Growth

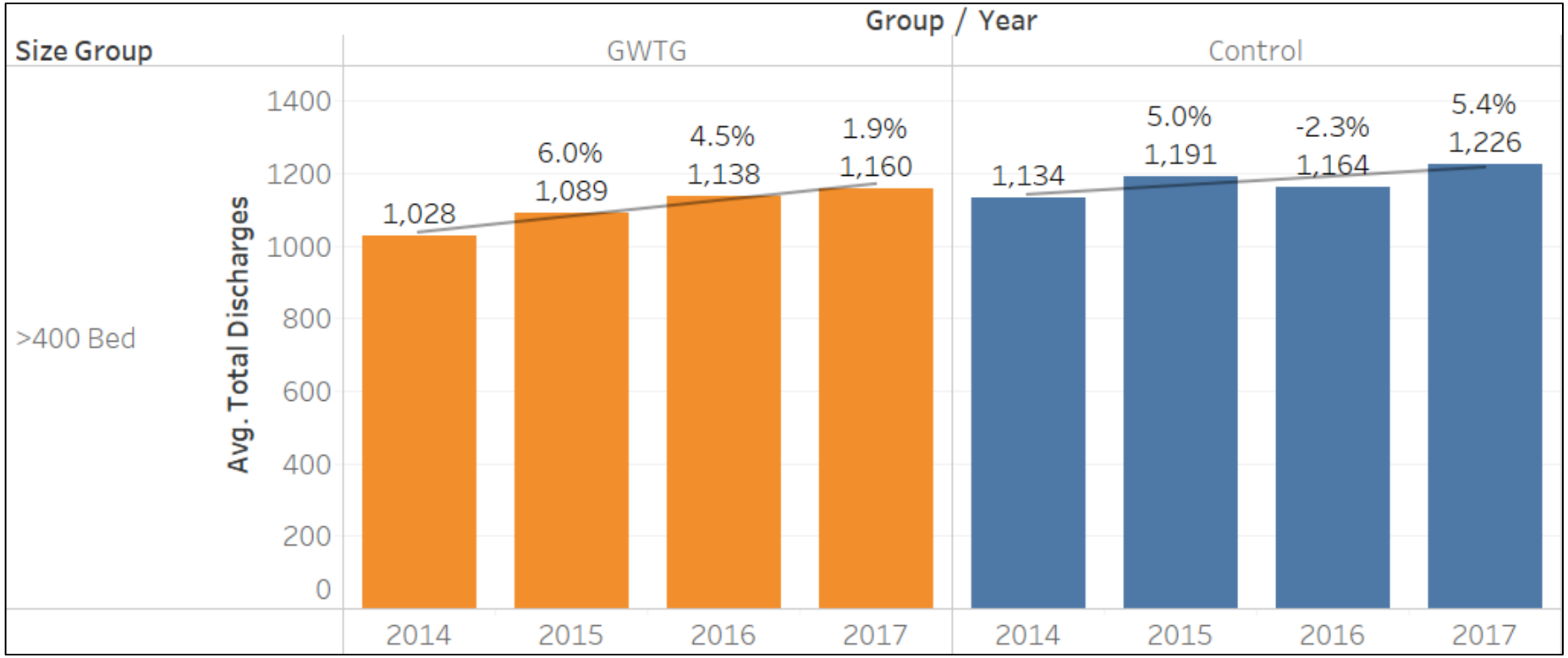
**Control**
1.4%
Ave YOY Growth

**Delta**
+6.4%
Ave YOY Growth

- Mid-Sized (200-400 Beds) GWTG participants attracted more patients and grew 6.4% faster on average than peer-matched facilities, adding more than 100 cases per year on average.

# Case Growth: >400 Bed Hospitals

## Average annual HF cases per hospital and year over year growth 2014 – 2017



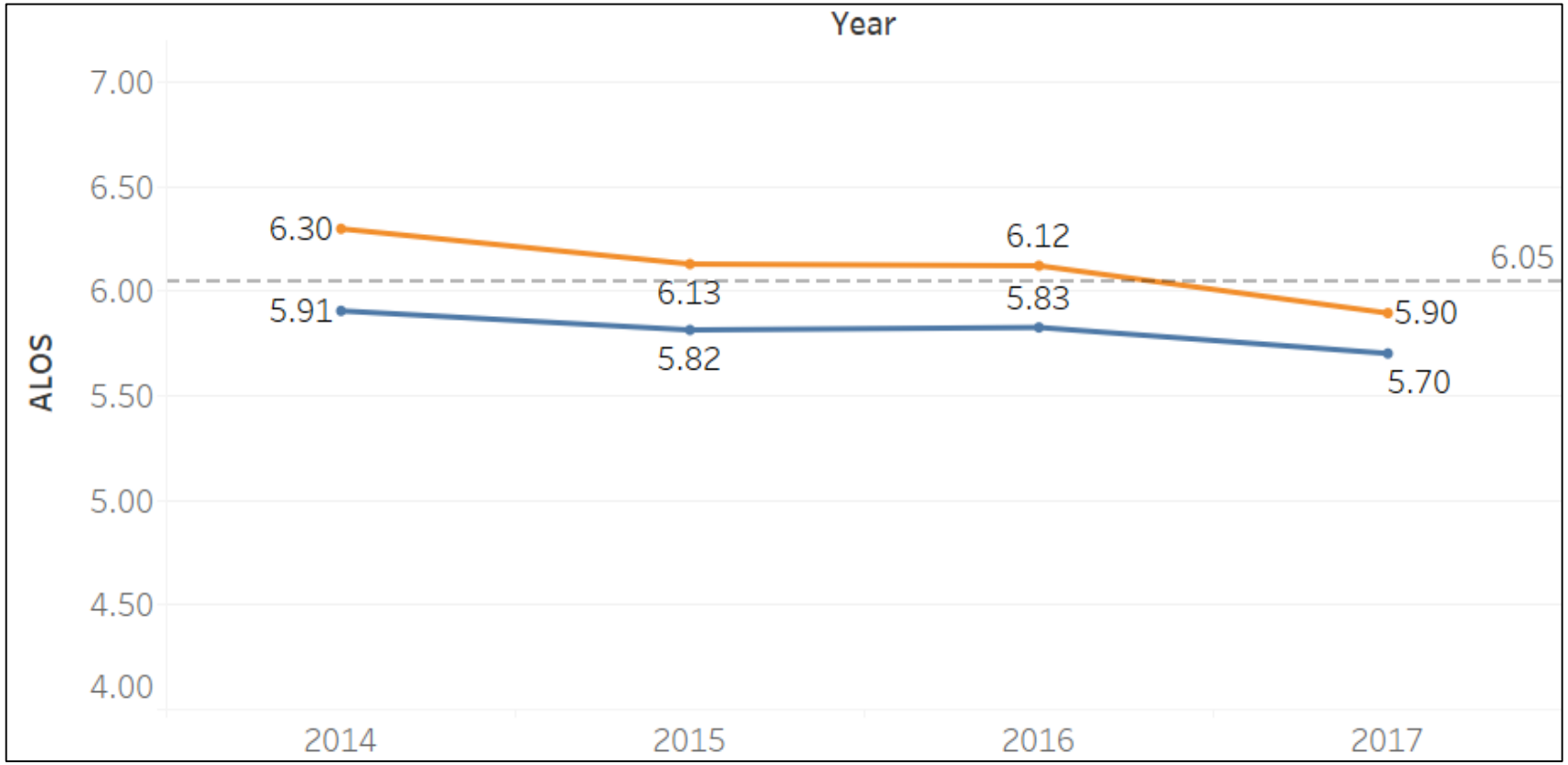

**GWTG**
4.1%
Ave YOY Growth

**Control**
2.7%
Ave YOY Growth

**Delta**
+1.4%
Ave YOY Growth

- GWTG Hospitals with more than 400 beds grew admissions 1.4% YOY faster than control hospitals.

# Reductions in Length of Stay



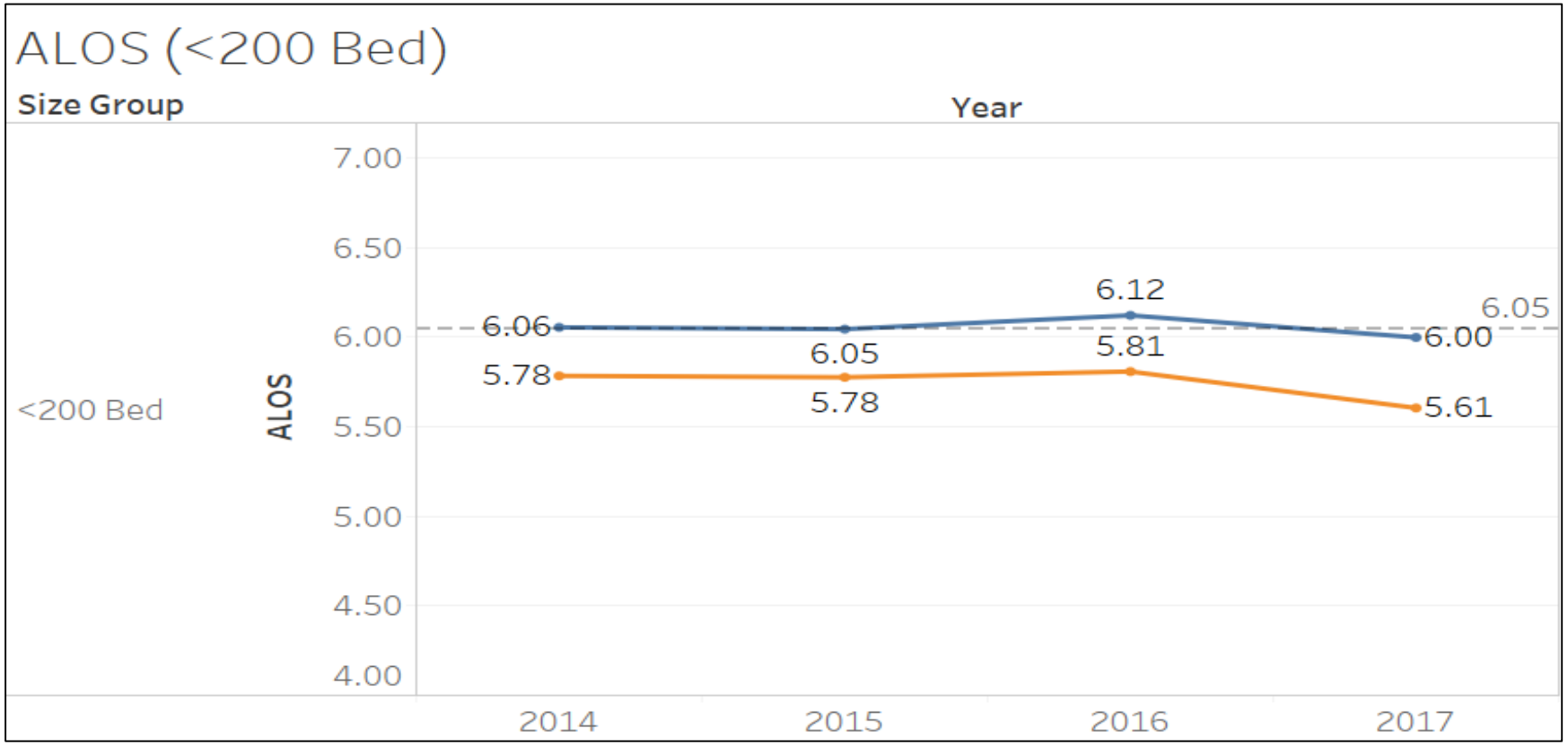

**GWTG**
-0.40 Days
-6.3% ALOS Reduction

**Control**
-0.21 Days
-3.5% ALOS Reduction

**Delta**
-0.19 Days
-2.8% additional ALOS Reduction

- Hospitals in GWTG programs started at an Average Length of Stay (ALOS) 0.40 days higher than the control group, but reduced ALOS by 0.40 days over 4 years, surpassing the 6.05 day national benchmark.
- Over the same period, ALOS in the control group decreased by 0.21 days, half the improvement seen in the GWTG programs.

# Reductions in Length of Stay: <200 Beds



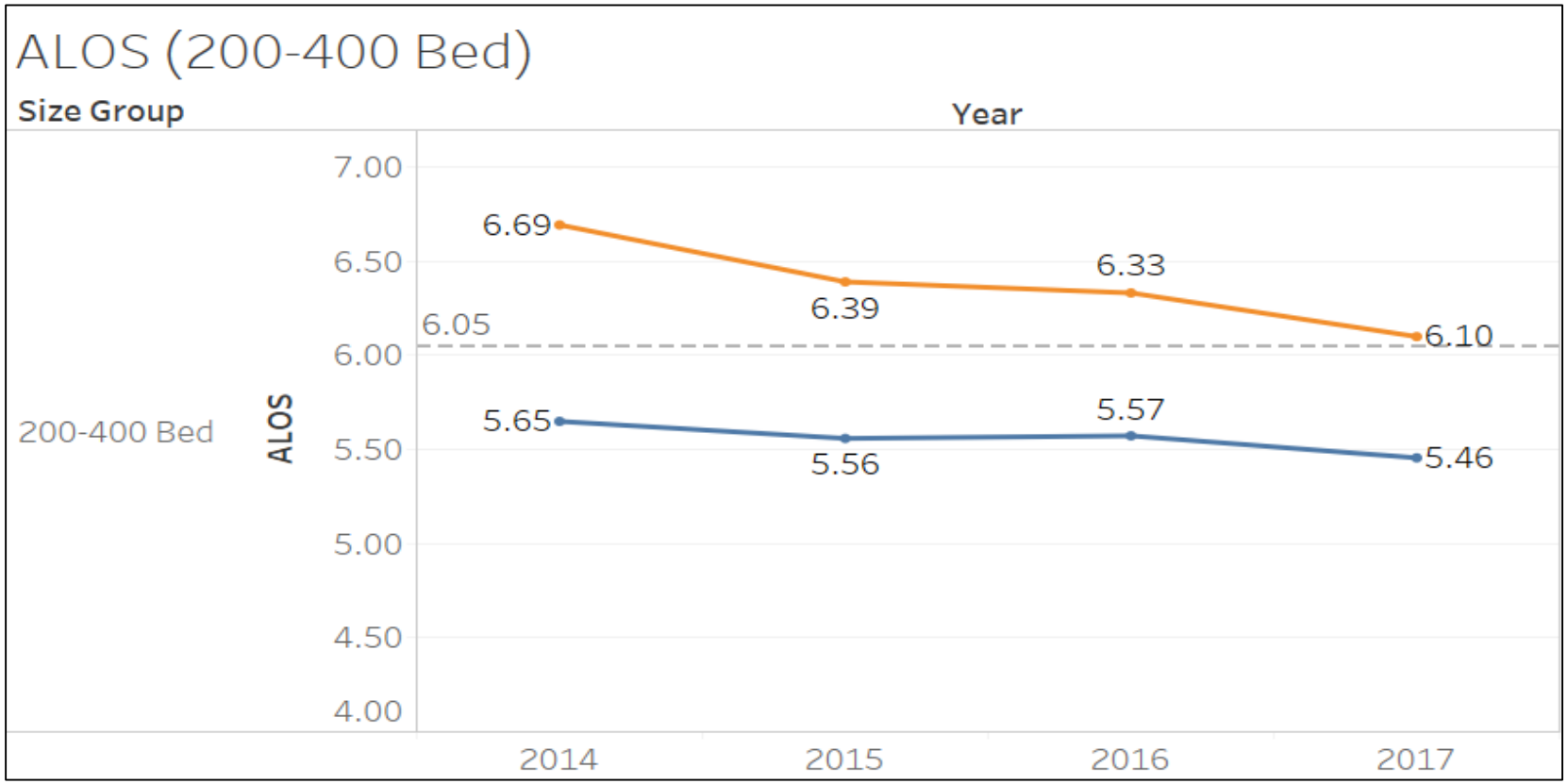

**GWTG**
-0.17 Days
-2.9% ALOS Reduction

**Control**
-0.06 Days
-0.01% ALOS Reduction

**Delta**
-0.11 days
-2.8% Additional ALOS Reduction

- Hospitals under 200 beds had the shortest average length of stay among the GWTG size groups.
- This group decreased ALOS by 0.17 days while the control group reduced length of stay by less than 0.06 days between 2014 and 2017.

# Reductions in Length of Stay: 200-400 Beds



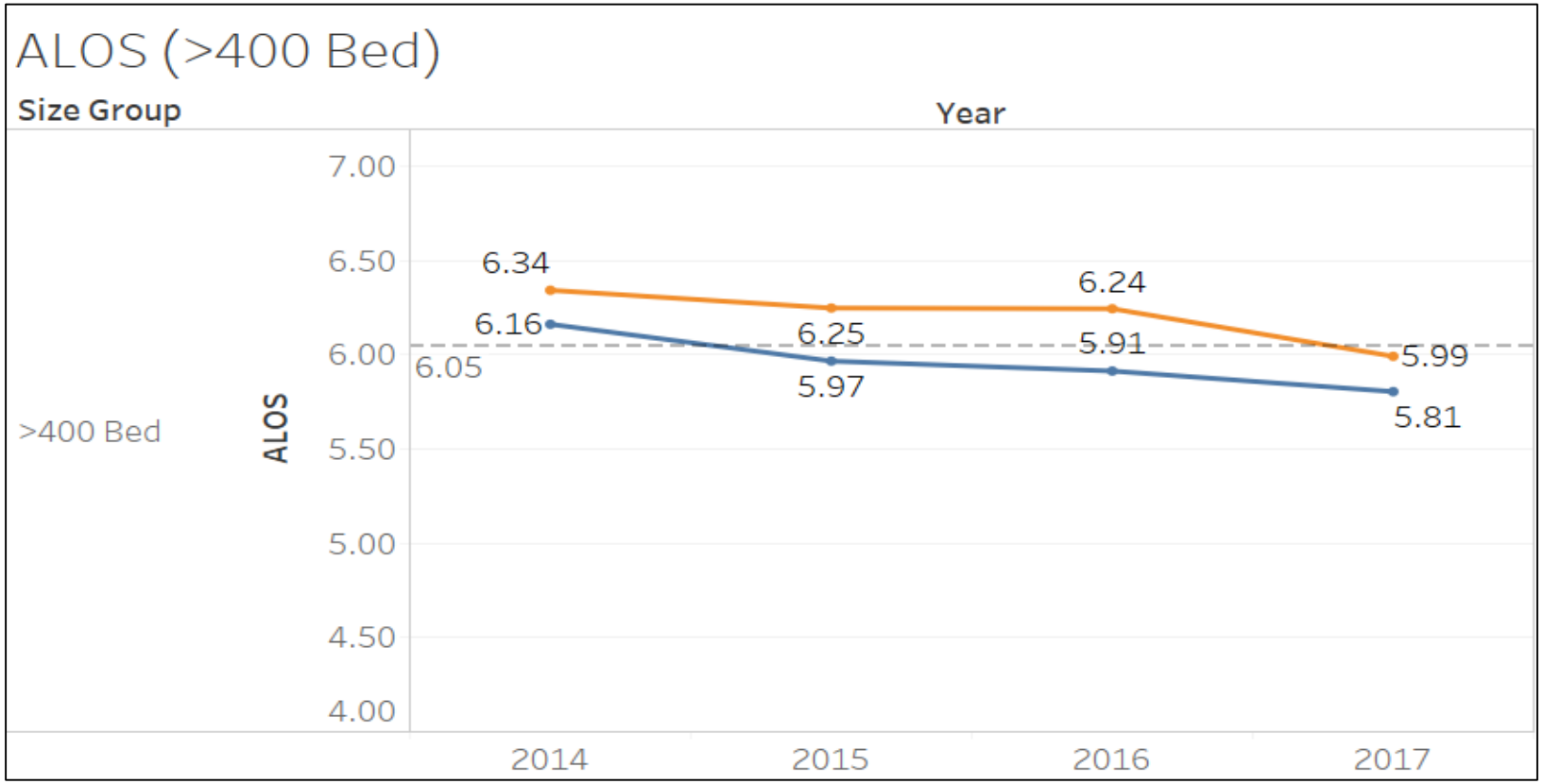

**GWTG**
-0.59 Days -8.8%
ALOS Reduction

**Control**
-0.19 Days -3.4%
ALOS Reduction

**Delta**
0.40 Days
-5.4% Additional
ALOS Reduction

- Although GWTG participants in the 200-400 bed size group started with a considerably higher ALOS, ALOS decreased by 0.59 days, considerably faster than non-GWTG programs and approaching the 2017 benchmark of 6.05 days.
- Overall, the ALOS decreased 5.4% faster in the GWTG group than controls between 2014 and 2017.

# Reductions in Length of Stay: >400 Beds



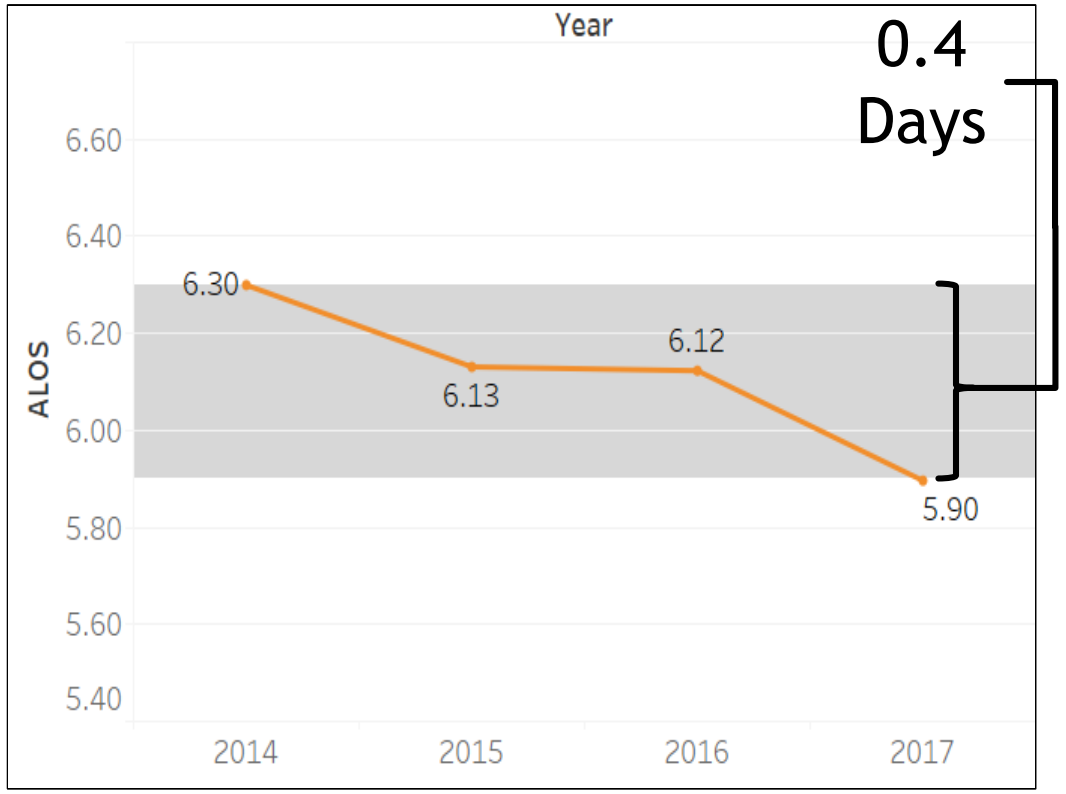

**GWTG**
-0.35 Days -5.5%
ALOS Reduction

**Control**
-0.35 Days -5.7%
ALOS Reduction

**Delta**
0.0 Days
+0.2% ALOS
Increase

- GWTG programs in the >400 bed group started with a higher ALOS than programs in the control group and reduced length of stay at the same rate as controls to beat the 6.05 day National Benchmark.
- On average, the ALOS at the GWTG hospitals decreased by 0.35 (5.5%) days between 2014 and 2017.

# ALOS: Cost Impact of Excess Patient Days



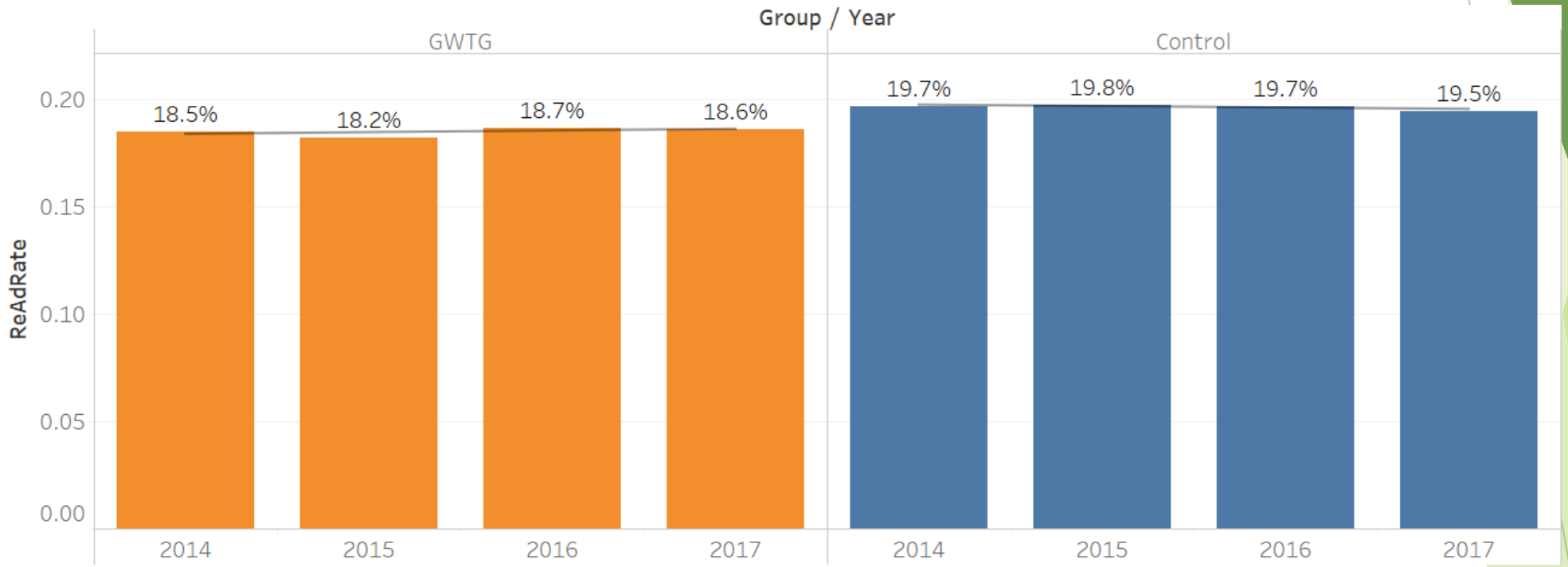

| Program Size, Annual HF Cases | Annual Reduction @ 0.4 Patient Days per case | Financial Impact @ $2,480* HF Per Bed Day |
|---|---|---|
| 100 | -40 | $99,200 |
| 400 | -160 | $396,800 |
| 700 | -280 | $694,400 |
| 1,000 | -400 | $992,000 |

| *FY16 Medicare Payments | Discharges | % Cases | Payment | ALOS | Daily Rate |
|---|---|---|---|---|---|
| 291 - HEART FAILURE & SHOCK W MCC | 235,068 | 50% | $13,491 | 5.20 | $2,594 |
| 292 - HEART FAILURE & SHOCK W CC | 183,732 | 39% | $9,262 | 4.00 | $2,316 |
| 293 - HF & SHOCK W/O CC/MCC | 52,944 | 11% | $6,567 | 2.80 | $2,345 |
| **Weighted Average** | **471,744** | **100%** | **$11,067** | **4.46** | **$2,480** |

CMS Medicare Utilization FY16 - https://data.cms.gov/Medicare-Inpatient/National-Summary-of-Inpatient-Charge-Data-by-Medic/us23-4mx2

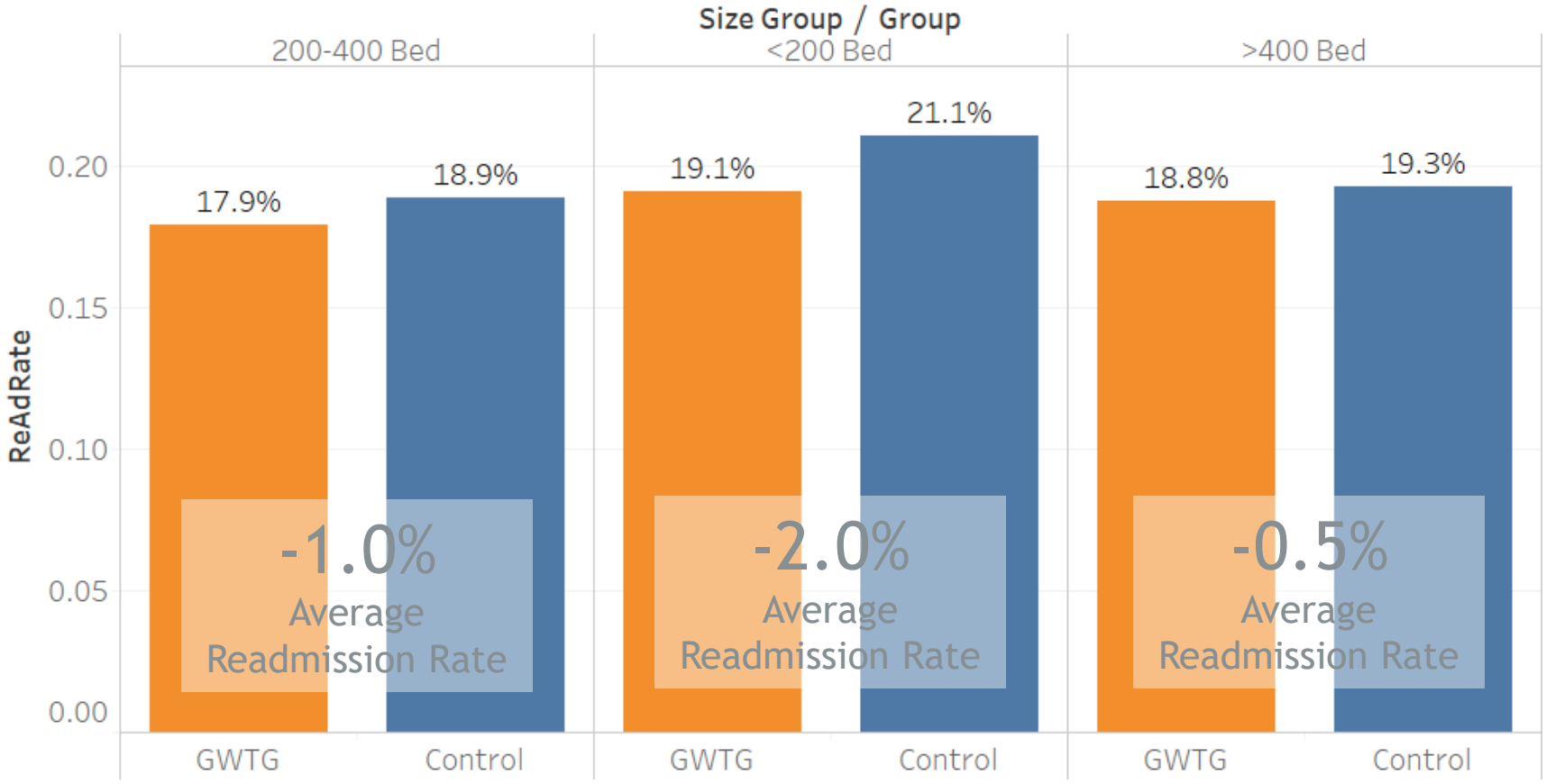
- Heart Failure is the cause of 42% hospitalization and cost in the Medicare program.
- A reduction in ALOS of 0.4 days (6.3%) translates to hundreds of days and hundreds of thousands of dollars saved depending on the program size.
- Daily cost of $2,480 derived from FY16 Medicare reimbursement per case, case mix of DRGs 291-293, and ALOS.

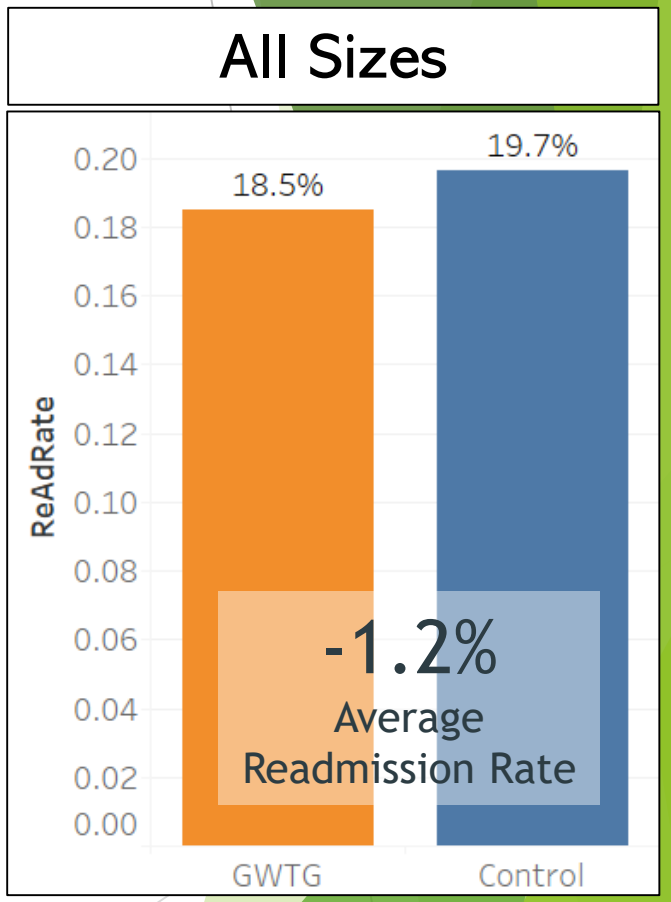
# Readmissions Reduction




- HF Readmission rates at GWTG hospitals are lower than control group hospitals. However, between 2014 and 2017, readmission rates at GWTG hospitals increased slightly while controls came down slightly.
- Readmission rates were not significantly impacted by.

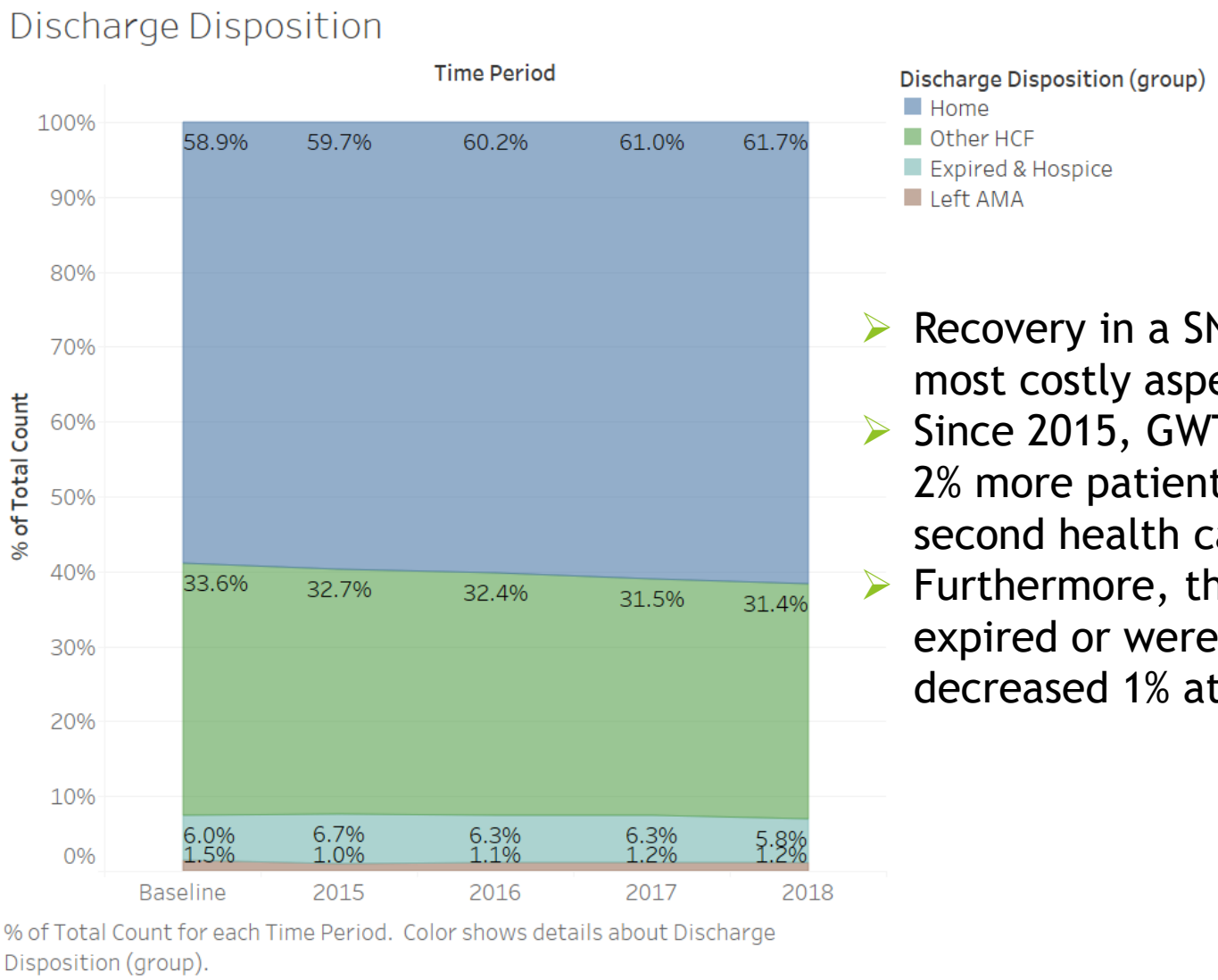
# GWTG Hospitals Have Fewer Readmissions




- HF Readmission rates at GWTG hospitals are lower than control group hospitals.
- Overall, GWTG participants readmitted 1.2% fewer patients, a metric which translates to significant Medicare reimbursement penalties.

# Improved Discharge Disposition




- Recovery in a SNF or LTAC can be one of the most costly aspects of HF treatment.
- Since 2015, GWTG hospitals have discharged 2% more patients to home rather than to a second health care facility.
- Furthermore, the share of patients that expired or were discharged to hospice decreased 1% at GWTG hospitals.

# Conclusions

## Grow Revenue

- HF case volume at hospitals participating in GWTG collectively grew 6.8% faster YOY than their peers between 2015 and 2017.
- GWTG certification attracts
  - Patients that trust the AHA brand
  - Physicians seeking highest clinical quality standards
  - Payers looking for reductions in ALOS and readmission

## Cut Costs

- GWTG programs reduced their length of stay by 0.4 days, cutting direct costs.
- Readmission rates at GWTG hospitals are lower than their peers, reducing penalties levied by Medicare and uncompensated care for readmissions.
- More patients at GWTG programs are discharged to home, saving thousands in post-acute care.
- Small changes in ALOS, Readmissions, and Discharge Disposition have a substantial impact on reducing cost

# HOSPITALS OF ALL SIZES CAN BENEFIT FROM USING A NATIONAL HEART FAILURE REGISTRY

## $750 – $3500 PER YEAR


GET STARTED TODAY!