Early Career: Starting a Successful Career in Quality of Care and Outcomes Research

Successful Early Career Research Using Get With The Guidelines

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Presenter Disclosure Information

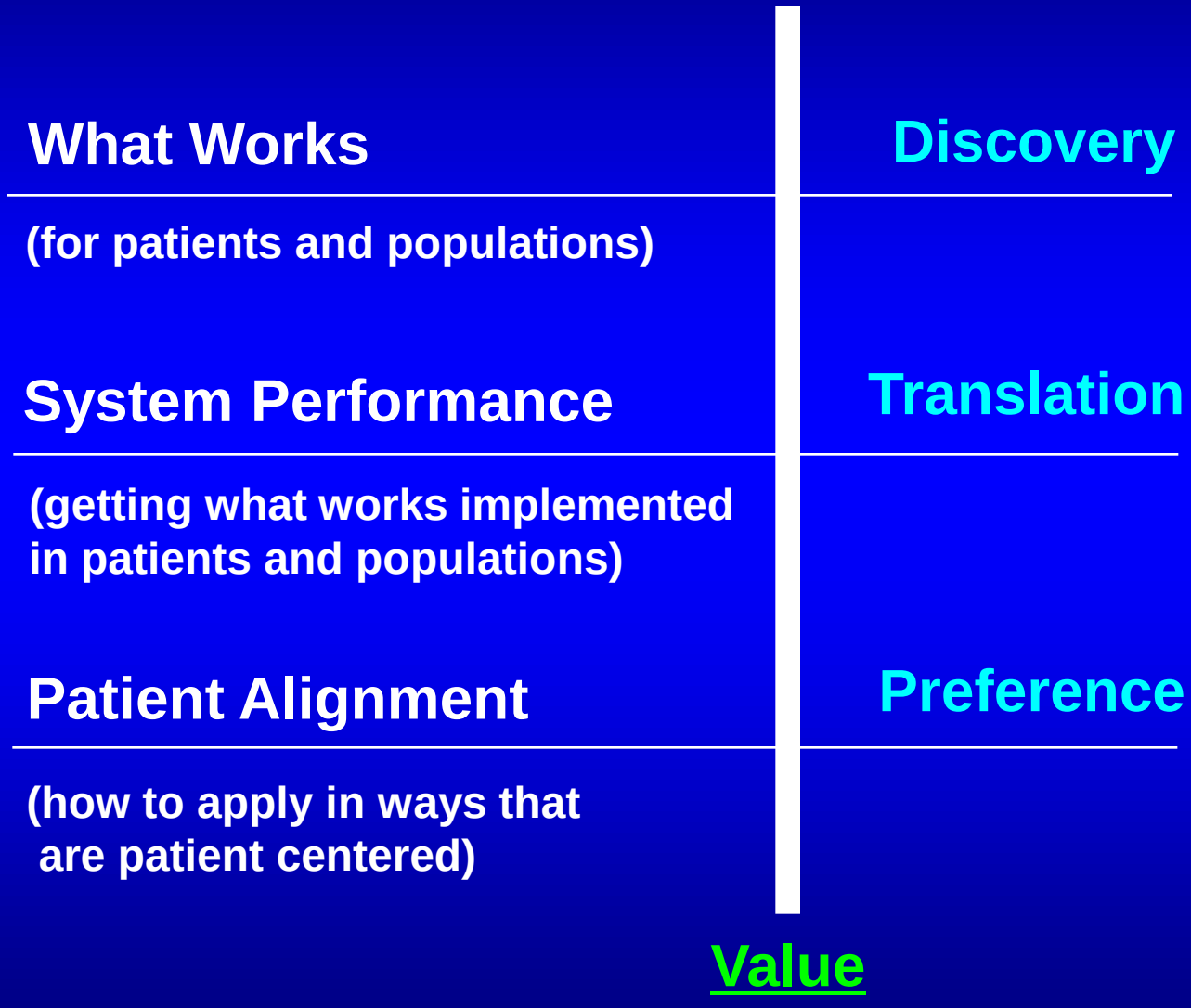
"GWTG Research"

I will not discuss off label use of medications or devices

DISCLOSURE INFORMATION:
The following relationships exist related to this presentation:

Gregg C. Fonarow, MD, FACC, FAHA – AHRQ, NHLBI, Novartis, and Medtronic: Research, Consultant

Domains of Outcomes Research



Implementing Guideline Recommended Therapies into Practice

- Cardiovascular disease remains a major public health problem resulting in substantial morbidity, mortality, and healthcare expenditures
- Several evidence-based, guideline-recommended therapies are available to treat patients with cardiovascular disease
- However, study after study shows gaps, variations, and disparities in the use of these evidence-based therapies in eligible patients

Defining Quality of Care

Institute of Medicine Definition of Quality:

The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge

IOM: Crossing the Quality Chasm: The IOM Health Care Quality Initiative

The IOM Definition of Quality Care

- Timely: rapid identification and treatment
- Effective: with right drugs / procedures and improves outcomes
- Safe: at right dose and / or done right
- Equitable: in all eligible patients
- Patient centered: considers the risks and benefits for the individual patient
- Efficient / cost-effective: avoiding over-treatment, use of futile therapies, and unnecessary procedures / hospitalizations

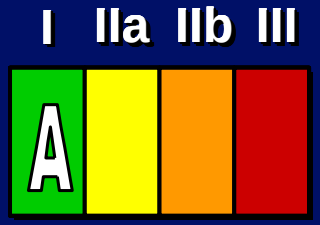
Translating Research Into Practice for Healthcare Providers:

The American Heart Association's Strategy for Building Healthier Lives, Free of Cardiovascular Diseases and Stroke

1. Research
2. Guidelines, Statements, Conference Proceedings
3. Performance Measures
4. Get With The Guidelines
5. Mission Lifeline
6. Heart 360
7. Hospital Accreditation / Certification
8. AHA/NCQA Recognition Program

Bridging the Gap Between Knowledge And Routine Clinical Practice

ACC/AHA Guidelines



- Clinical trial evidence

Systems

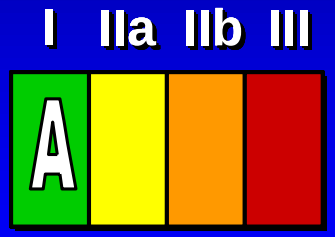
- Implement evidence-based care
- Improve communications
- Ensure compliance

Clinical Practice

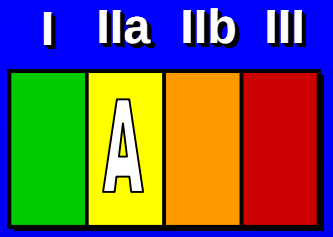
- Improve quality of care and outcomes

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

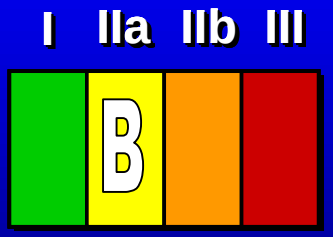
Implementation of Guidelines



- Academic detailing or educational outreach visits are useful to facilitate the implementation of practice guidelines



- Chart audit and feedback of results can be effective to facilitate implementation of practice guidelines
- The use of reminder systems can be effective to facilitate implementation of practice guidelines



- The use of performance measures based on practice guidelines may be useful to improve quality of care

Hunt SA, et al. *ACC/AHA 2005 Practice Guidelines*. Available at http://www.acc.org.

GWTG Program Aims

- Improve the delivery of key, evidenced-based care in patients hospitalized with CAD, Stroke/TIA, Heart Failure and those with cardiac arrest
- Improve clinical outcomes and help meet the 2010 and 2020 goals (By 2020, to improve the cardiovascular health of all Americans by 20% while reducing deaths from cardiovascular diseases and stroke by 20%).
- Engage hospitals, community, and national stakeholders in a unified approach to improving the quality of cardiovascular care
- Catalyze cardiovascular quality of care and outcomes research

Get With The Guidelines Since 2001

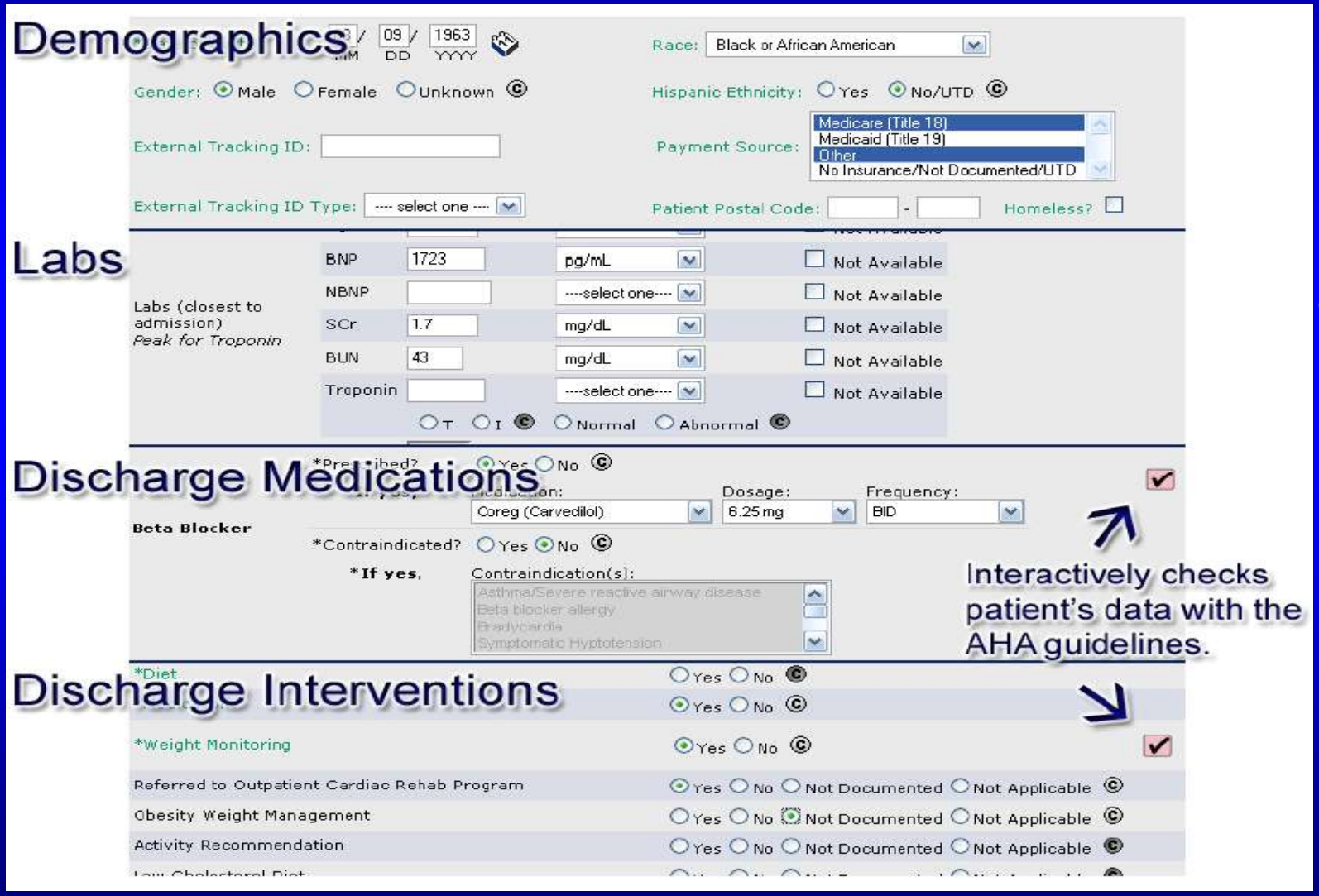
- Over 1800 Hospitals Nationwide
- Over 4.4 Million Patient Records
- Over 800 Hospitals Receiving Recognition
- Over 200 Peer Reviewed Publications

GWTG Program Components

- AHA collaborations with hospital teams, organizational stakeholders, state QIOs
- Ongoing real time feedback of hospital data, clinical decision support for rapid cycle improvement
- Learning Sessions
  - Didactic Session
  - Best Practice Sharing
  - Interactive Workshops
- Ongoing Education
  - Teleconference and Web-Ex
  - E-mail community
  - Site visits

LaBresh, KA and Tyler, PA. Quality Management in Health Care,2003,12(1),1

AHA GWTG Web Based Patient Management Tool



American Heart Association. Learn and Live.

GET WITH THE GUIDELINES

Benchmarked Performance Measures

AHA and CSM/TJC measures

Performance tracked over time

Compared against similar hospitals

Numerous benchmark, format options

Time Period: Interval:

Filter by: Diagnosi Departm Physicia Race: Gender:

Build the Report

Report 1: Measure: AHA_ASA* Format: Bar Chart

Display Baseline

Display Goal

Performance Achieve

Display Excluded Pati

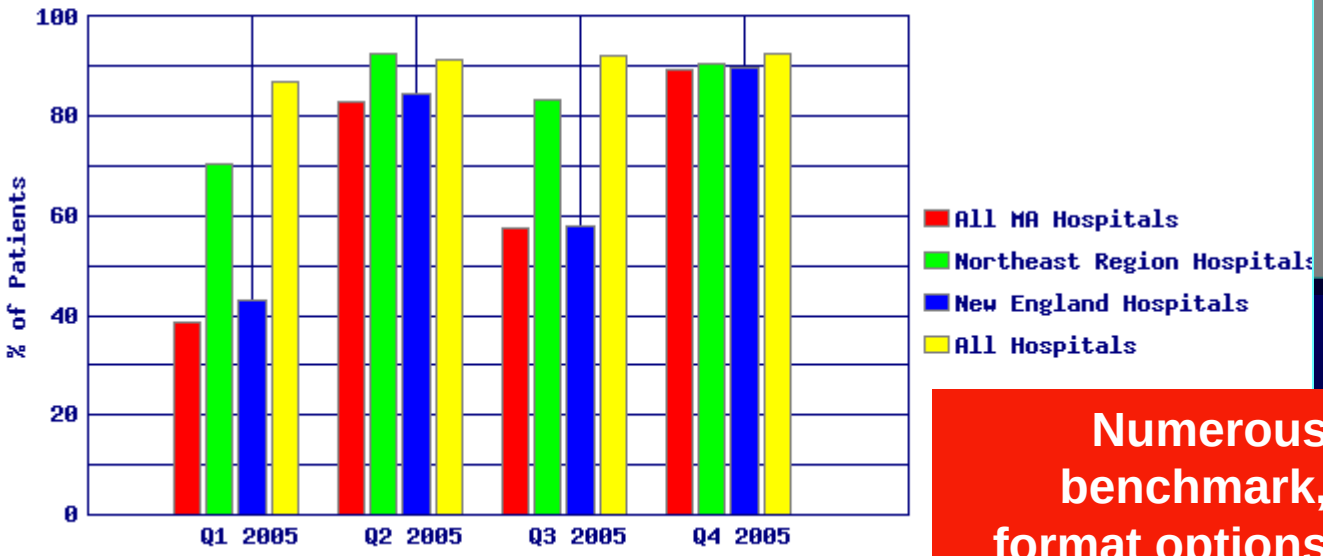
Add New Report

- **CADRecogGroup**
- **HFRecogGroup**
- **AHAGroup**
- **AHA_HFInstructions**
- ***CAD Performance***
- AHA_AMIACEARB*
- AHA_BB*
- AHA_LDL100*
- AHA_LipidRx*
- AHA_Smoking*
- AHA_ASA*
- AHA_EarlyASA*
- ***HF Performance (and JCAHO)***
- HF-1*
- HF-2*
- HF-3*
- HF-4*
- Beta Blocker Usage*
- ***CAD Quality***
- AHA_ACEARBforLV
- AHA_AllACE*
- AHA_AMIACE*

CAD Measures

Hospital: AHA Training Site

AHA ASA:Percent of patients discharged on Aspirin
All Hospitals
New England Hospitals
Northeast Region Hospitals
All MA Hospitals
Time Period: Q1 2005 - Q4 2005



GWTG Patient Populations

ACTION- Registry – GWTG	Get With The Guidelines-Stroke	Get With The Guidelines-Heart Failure	Get With The Guidelines-Resuscitation
STEMI, NSTEMI	Ischemic Stroke, TIA, Hemorrhagic Stroke, stroke of unknown origin	Acute HF admission – ischemic, non-ischemic cardiomyopathy	Acute Respiratory Failure, Cardiac Arrest, MET Team

GWTG – Cumulative Progress

Module		Contracts	Patient Records
ACTION Registry-GWTG		737	358,379
GET WITH THE GUIDELINES.	Resuscitation	295	503,342
GET WITH THE GUIDELINES.	Heart Failure	549	720,384
GET WITH THE GUIDELINES.	Stroke	1,632	2,223,854
Total		3,213	3,805,959
** GWTG-CAD closed effective 12/31/09 with final data entry completed by 3/31/10 and a Final Patient Record count = 615,184.		n/a	615,184
Adjusted Total**			4,421,143

CPA = 243,462
ARC = 30,347
MET = 229,533

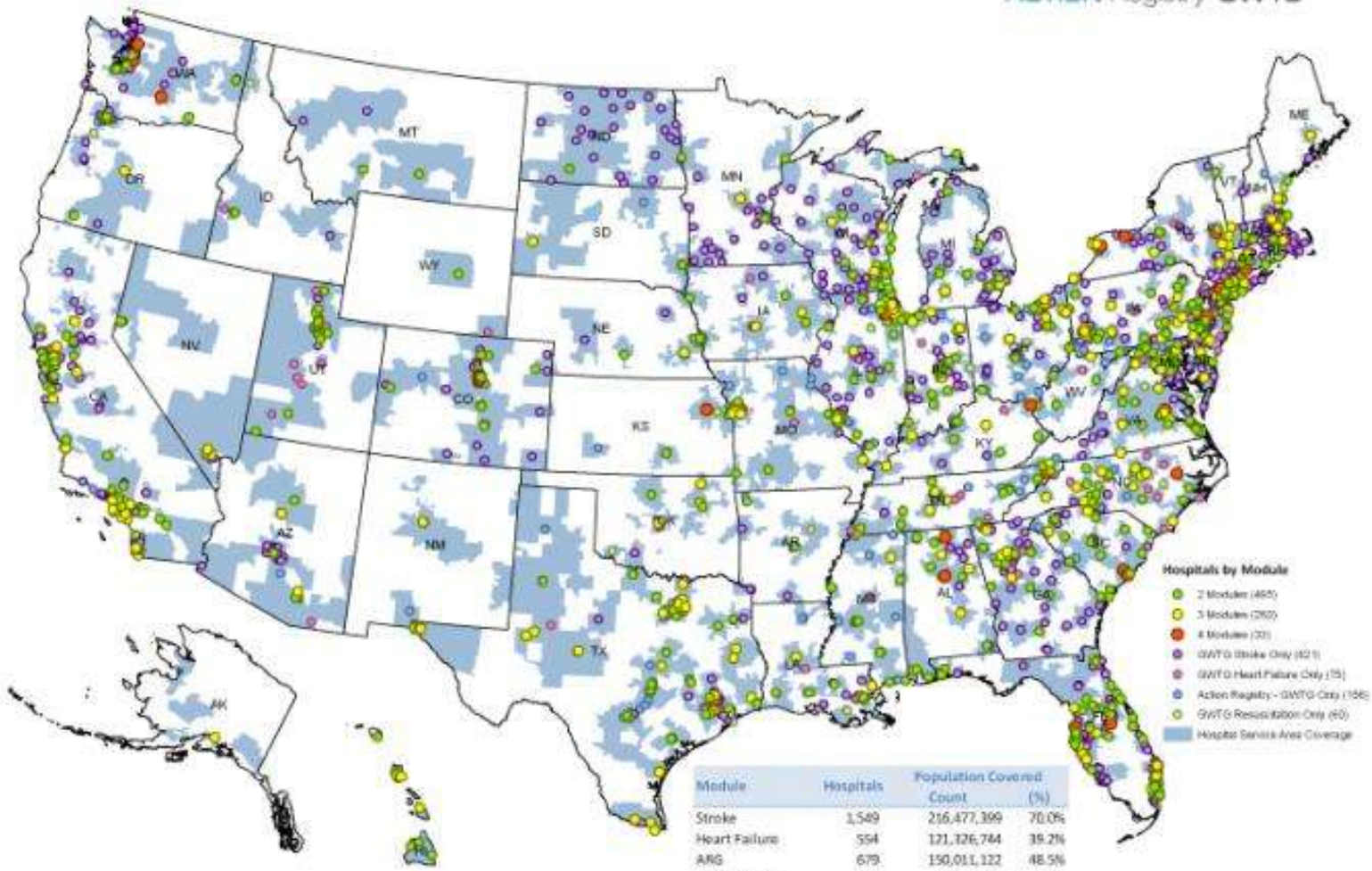
Get With the Guidelines® - Heart Failure, Stroke, Resuscitation & ARG

Unique hospitals implementing GWTG Stroke, Heart Failure, Resuscitation or ARG as of 3/17/11
(Count: 1895; 75.4% population coverage)

American Heart Association. | American Stroke Association.
Learn and Live.

GET WITH THE GUIDELINES.

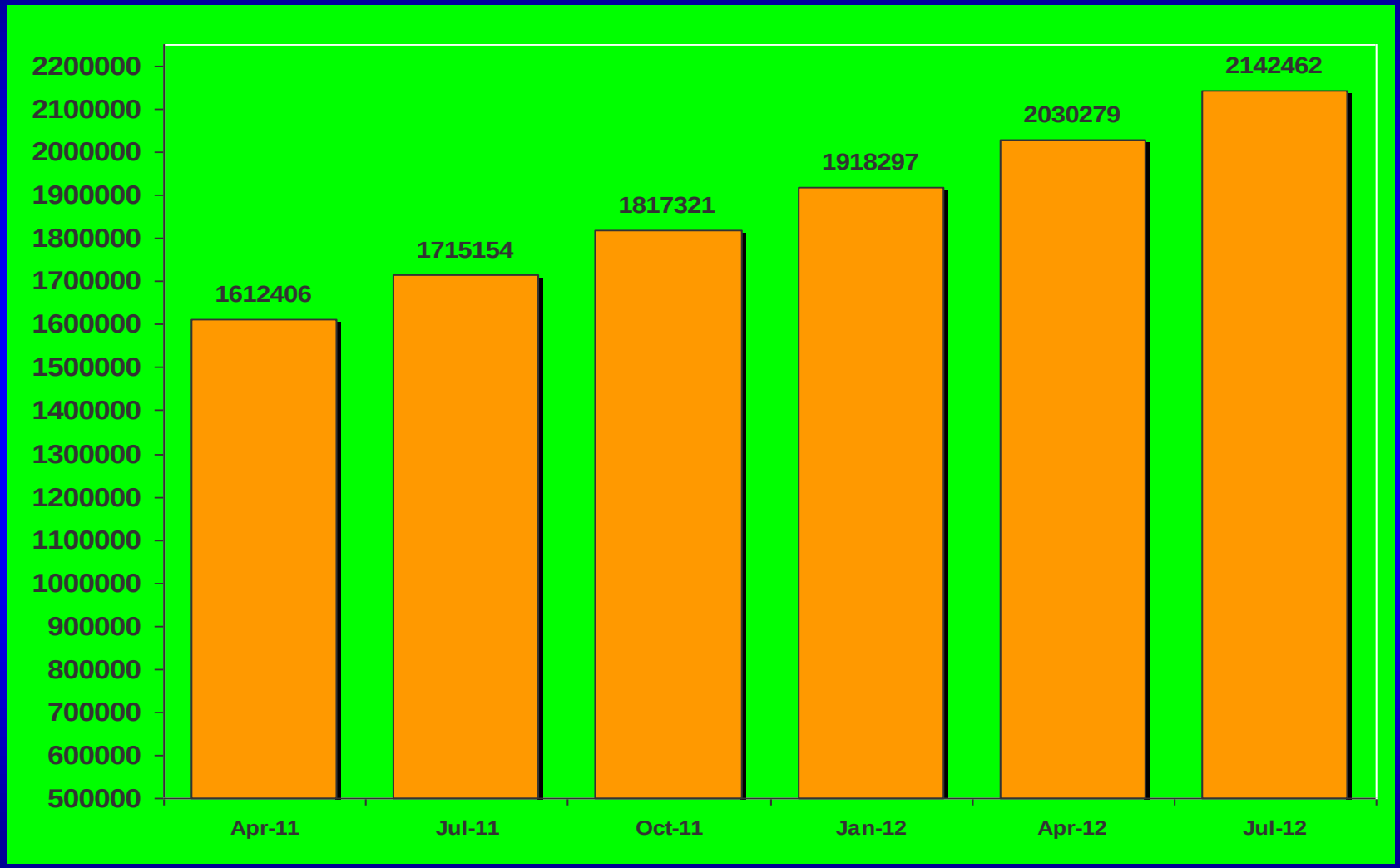
ACTION Registry-GWTG



Module	Hospitals	Population Covered Count	(%)
Stroke	1,549	216,477,399	70.0%
Heart Failure	554	121,326,744	39.2%
ARG	679	150,011,122	48.5%
Resuscitation	232	74,403,151	24.1%
Mission: Lifeline	59	19,656,626	6.4%
1 or more modules	**1,900**	**233,200,494**	**75.4%**

Data as of 3/17/11. Hospital Service Area based on 2005 Dartmouth Atlas.
Population estimates: ESRI 2010

GWTG-Stroke: Data Submission



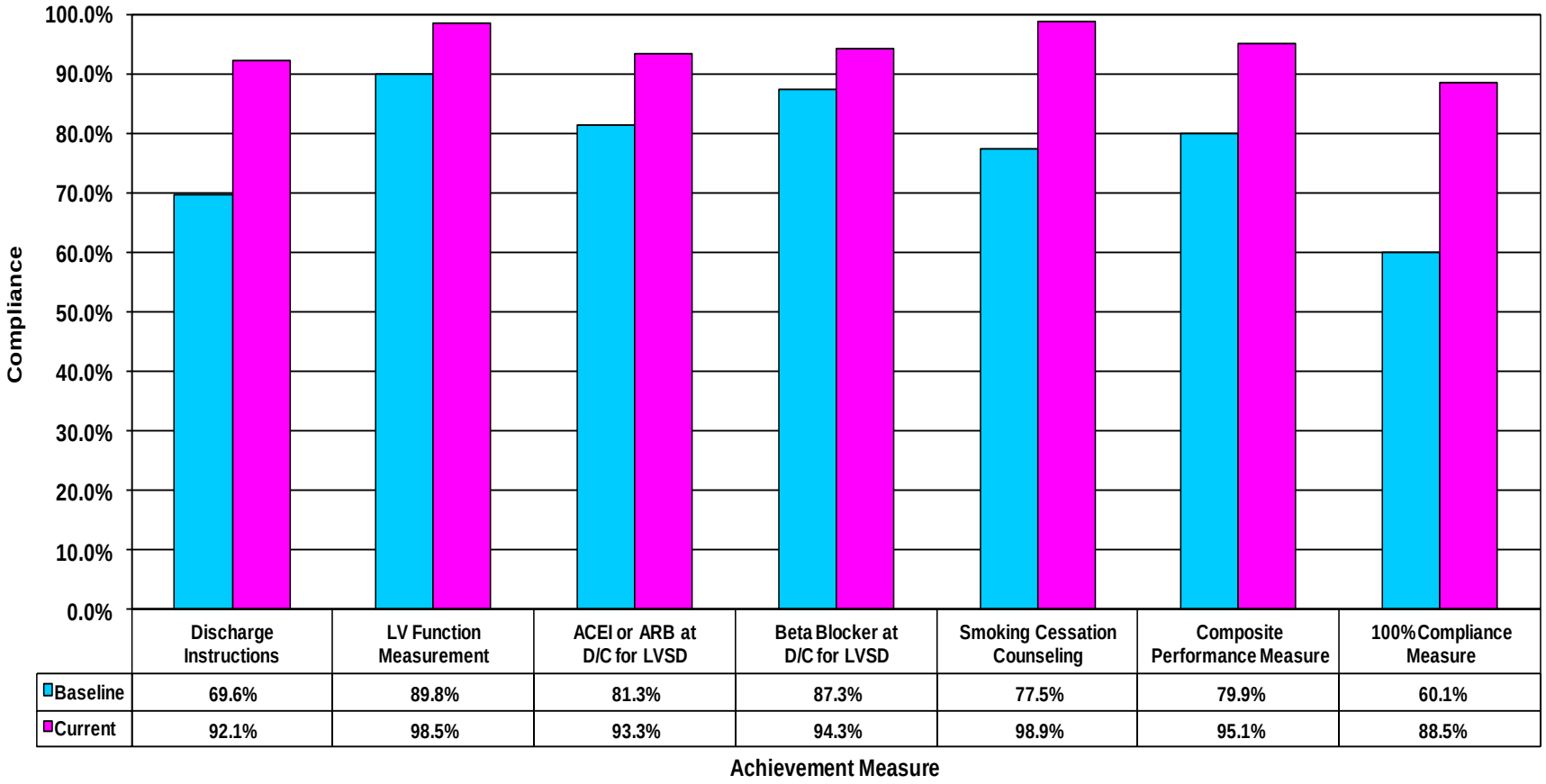
GWTG Quality Improvement Activity

- QI activities driven by database
  - Local/regional QI workshops for multidisciplinary teams
  - National monthly webinars
  - National Quality Site reports
  - National Performance Improvement reports
  - Local/regional C-Suite events
  - Monthly local/regional teleconferences
  - QI site consultation: local hospital mentor programs, staff

- Local, State or National QI activity that utilizes the database
  - AHA National Recognition
  - JCAHO/ORYX
  - AHA Clinical Cardiology Council
  - Quality Improvement Organizations (QIOs)
  - Departments of Health
  - Health Plan relations
  - National hospital systems, regional systems, individual systems
  - AHA QI consultants

Results with GWTG-HF: Quality of Care Measures

All p<0.0001

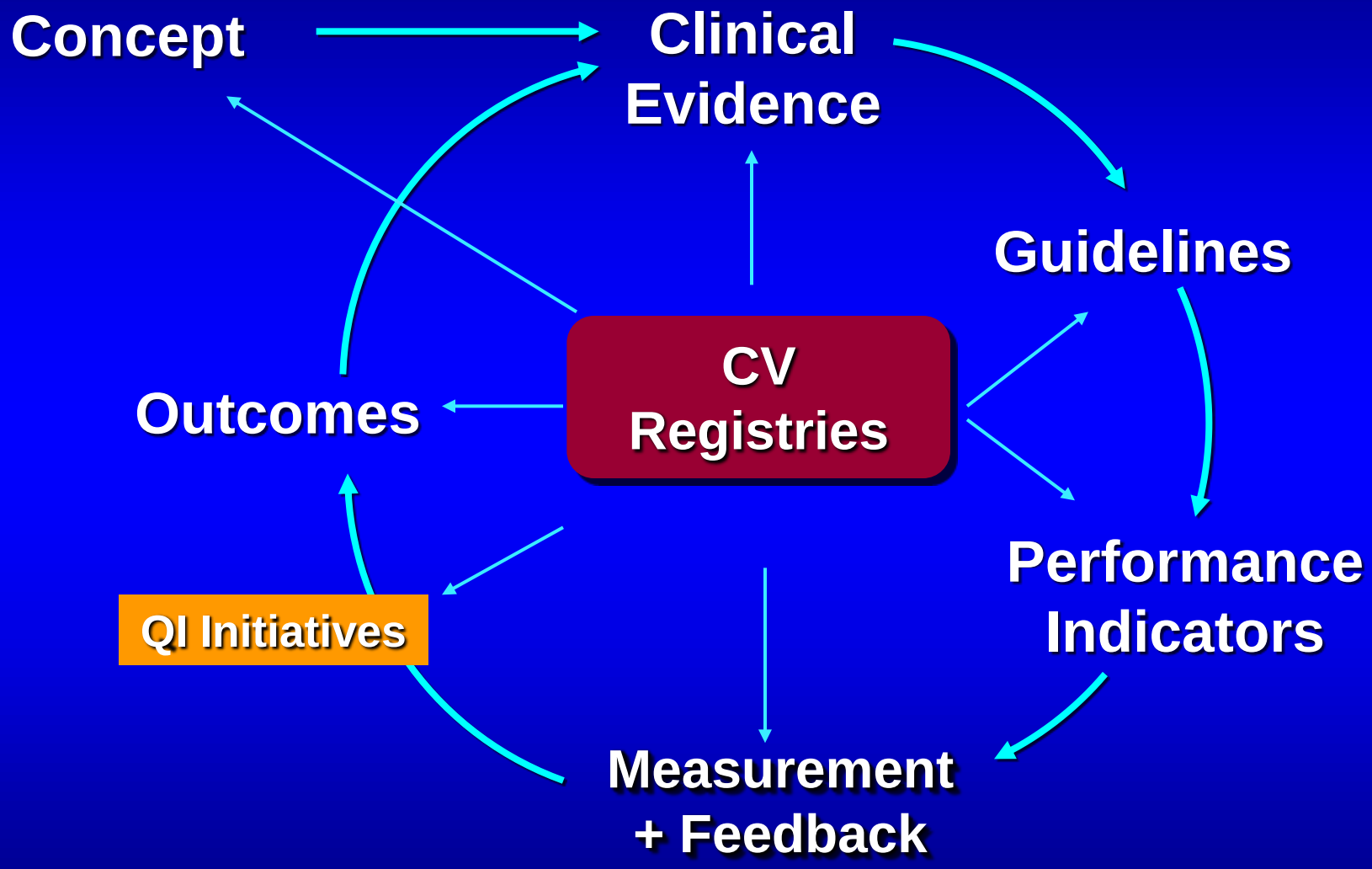


	Discharge Instructions	LV Function Measurement	ACEI or ARB at D/C for LVSD	Beta Blocker at D/C for LVSD	Smoking Cessation Counseling	Composite Performance Measure	100% Compliance Measure
Baseline	69.6%	89.8%	81.3%	87.3%	77.5%	79.9%	60.1%
Current	92.1%	98.5%	93.3%	94.3%	98.9%	95.1%	88.5%

Achievement Measure

Data from 458 GWTG-HF hospitals and 451,098 HF hospitalizations collected from 1/1/05-10/1/10

Registries Role in Evidence Development and Dissemination



Adapted from Califf RM, Peterson ED et al. JACC 2002;40:1895-901

GWTG-HF: Data Elements

- Patient ID
- Physician/Service
- Transferred in (ED)
- Medicare
- Medicaid
- Admit Date
- Discharge Date/Time
- Date of Birth
- Gender
- Race
- Medical History
- Hx Smoking
- HF Hx
- Cardiac Diagnosis
- Medications Prior to Admission
- VITAL Signs
- Height
- Weight
- BMI
- Heart Rate
- BP
- Respiratory Rate
- Lipids
- Labs
- Procedures
- Ejection Fraction
- Discharge Status
- Discharge Meds
- Other Meds
- ICD Therapy
- Risk Interventions Smoking Cessation Counseling
- Activity Level
- Follow-up
- Symptoms worsening
- Diet
- Medications
- Weight Monitoring
- Referred to Rehab Program

GWTG Data Quality Control

- Site level data quality requirements
  - Edit Range Checks
  - Required fields to save records as complete
  - Staff training
- Not Society mandated
  - Front end vendor software data validation
- Frequency of validation
  - Submission per record
- National level data quality requirements
  - Ongoing data quality monitoring with annual data quality reports for each module
  - Pre-harvest internal quality control validations performed prior to analysis
- Type of quality report feedback
  - Site Data Quality Report feedback to each site introduced in Q1 ’07
  - Number of records excluded
  - Number of duplicate records
  - Number of complete records at time of harvest
  - Edit range checks
  - Required fields to save records as complete

GWTG Research

- Research activity supported by AHA/GWTG
  - AHA (Clinical Cardiology and Stroke Councils)
  - Extramural grants AHRQ, NIH, others
- Data access process
  - Formal Publication Process and Oversight Committee
  - GWTG Committees, AHA Council, Participating Hospitals
  - Young Investigators
  - Proactively promote the database to all interested investigators
- Research project recruitment process
  - Periodic calls to our national volunteer base for recruitment as well as “idea generation” conference calls
  - Research question and hypothesis presented to GWTG Science Subcommittee
  - GWTG Steering Committee member assigned to writing group for guidance and co-authorship

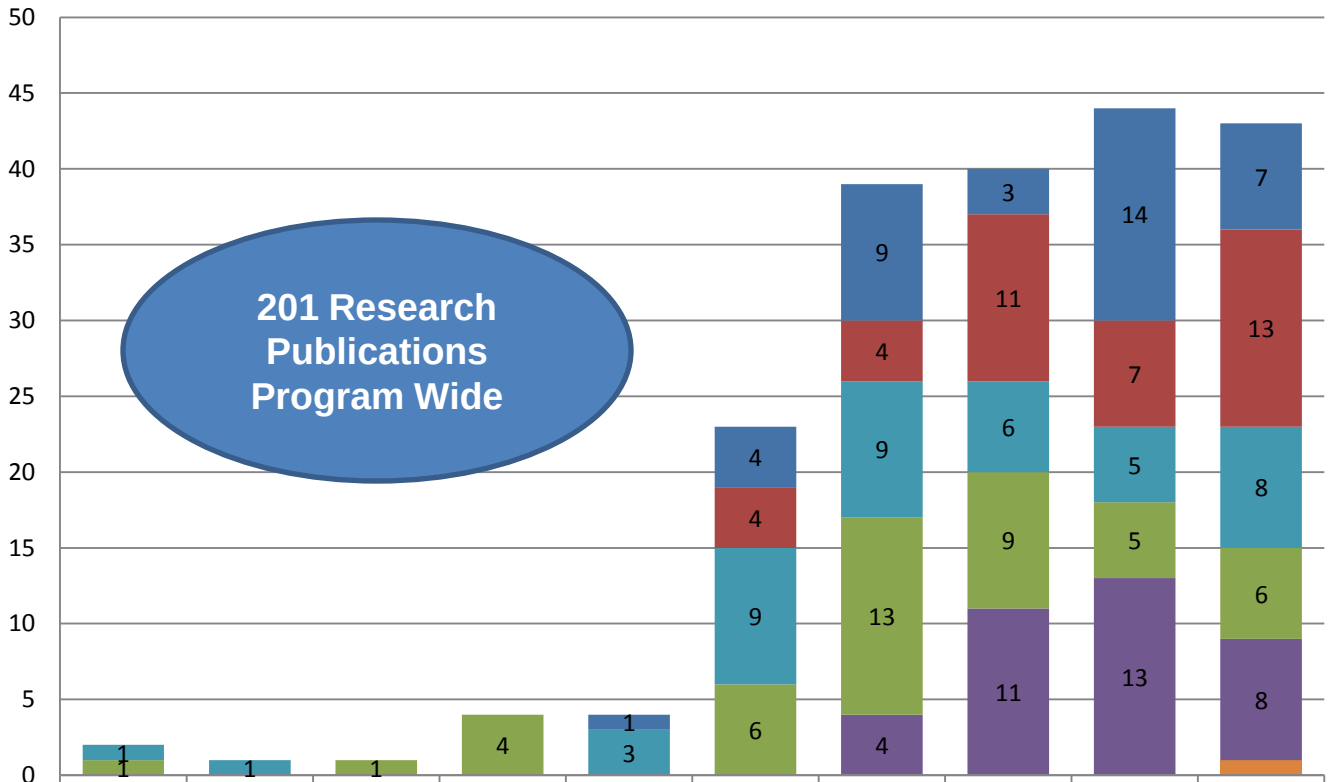
GWTG Quality Research Programs

Years through 9/30/12

Total Pubs by Program :
*GWTG HF: 38
*GWTG Stroke: 39
*GWTG CAD: 42
*GWTG Resuscitation: 45
*Action-Registry GWTG: 36
*Mission: Lifeline: 1

Note: "Due to the transition over to ACTION Registry-GWTG, GWTG - CAD closed effective December 31, 2009 with final data entry completed on March 31, 2010"

*Pubs for more than module are counted in both module
*Pubs counted in year they went online or print



GWTG

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
GWTG Heart Failure					1	4	9	3	14	7
GWTG Stroke						4	4	11	7	13
GWTG CAD	1	1			3	9	9	6	5	8
GWTG Resuscitation	1		1	4		6	13	9	5	6
ACTION-GWTG							4	11	13	8
Mission: Lifeline										1

GWTG Publications – HF, CAD, Stroke

2012 Calendar Year Results – through 10/15/12
33 Published Manuscripts (9 HF, 11 CAD, 13 Stroke)
22 Abstracts presented at Conferences
(ISC: 7, ACC: 0, QCOR: 6, HFSA: 2, SS: 7)

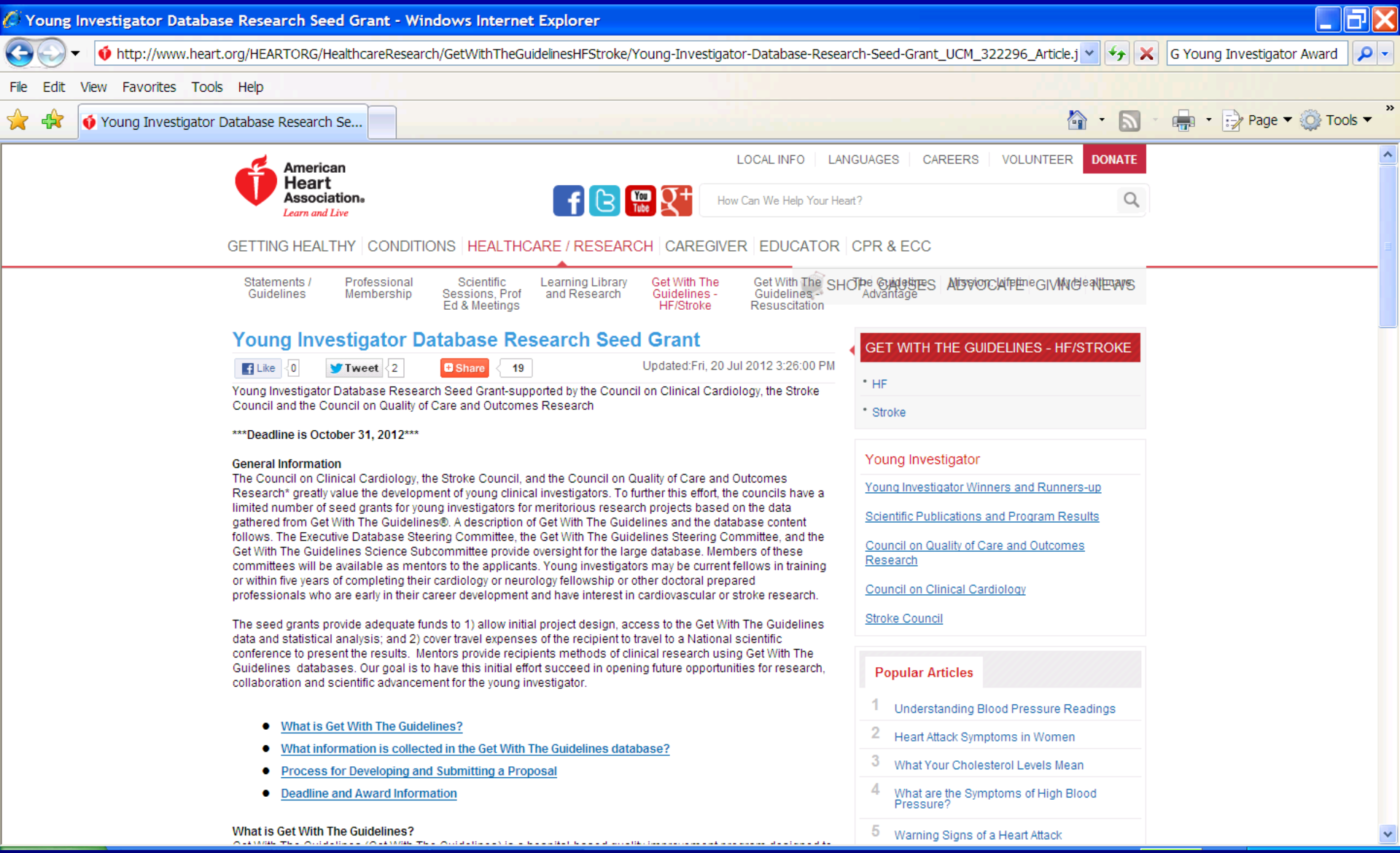
2011 Calendar Year Results
26 Published Manuscripts (13 HF, 4 CAD, 1 HF/CAD, 7 Stroke)
31 Abstracts presented at Conferences
(ISC: 10, ACC: 7, QCOR: 4, HFSA: 0, SS: 10)

2010 Calendar Year Results
19 Published Manuscripts (3 HF, 6 CAD,10Stroke)
20 Abstracts presented at Conferences
(ISC: 3, ACC: 2, QCOR:11, HFSA:1, SS: 3)

2009 Calendar Year Results
21 Published Manuscripts (8 HF, 8 CAD, 1 CAD/HF, 4 Stroke)
23 Abstracts presented at Conferences

2008 Calendar Year Results:
17 Published Manuscripts (4 HF, 9 CAD, 4 Stroke)
14 Abstracts presented at Conferences

GWTG Young Investigator Seed Grant



Young Investigator Research Seed Grant

- Grant Awards are for meritorious research projects based on the data gathered from Get With The Guidelines®.
- Data available for CAD, Heart Failure, Stroke, and Resuscitation
- Young investigators may be current fellows in training or within five years of completing their cardiology or neurology fellowship or other doctoral prepared professionals who are early in their career development and have interest in cardiovascular or stroke research
- Goal of the grant is to have this initial effort succeed in opening future opportunities for research, collaboration and scientific advancement for the young investigator

Young Investigator Research Seed Grant

- Grant Awards are funded through AHA Council Leadership
- Funds are provided to:

  1) allow initial project design, access to the Get With The Guidelines data and statistical analysis;

  2) cover travel expenses of the recipient to travel to a national scientific conference to present the results
- Award cycles are scheduled twice per year
- Mentorship provided to awardees by members of GWTG Science Subcommittee and clinical workgroups.
- Mentors provide recipients methods of clinical research using Get With The Guidelines databases during the length of the awarded project

Young Investigator Research Seed Grant

- Based on review of the data elements collected across each of the GWTG modules, develop a study hypotheses
- To avoid potential overlap, please review prior published publications and previously funded projects
- Obtain research proposal form online via the Young Investigator Research Seed Grant webpage
- Submit completed research proposal and updated Curriculum Vitae to Manager, Quality Research Development (email: laura.shuey@heart.org)
- Submitted proposals will be reviewed by the Get With The Guidelines committee leadership
- Notification is sent to all applicants based on the committee's decision

Young Investigator Research Seed Grant

- If awarded funding, data access will be arranged through AHA staff and a designated Get With The Guidelines mentor
- Statistical analysis will be arranged through DCRI
- The monetary award will cover statistical analysis up to $6,000 in addition to $2,000 to support travel to the national conference for presentation
- Awardees will work with their mentor to draft an abstract for presentation at a national conference and to development of a manuscript for submission to peer reviewed journal
- Additional information may be found online through the AHA website: www.heart.org key search Young Investigator Research Seed Grant

Examples of GWTG Research with Early Career Investigators as First Author

Sex Differences in Medical Care and Early Death After Acute Myocardial Infarction

Hani Jneid, MD; Gregg C. Fonarow, MD; Christopher P. Cannon, MD; Adrian F. Hernandez, MD; Igor F. Palacios, MD; Andrew O. Maree, MD; Quinn Wells, MD; Biykem Bozkurt, MD; Kenneth A. LaBresh, MD; Li Liang, PhD; Yuling Hong, MD, PhD; L. Kristin Newby, MD, MHS; Gerald Fletcher, MD; Eric Peterson, MD, MPH; Laura Wexler, MD; for the Get With the Guidelines Steering Committee and Investigators

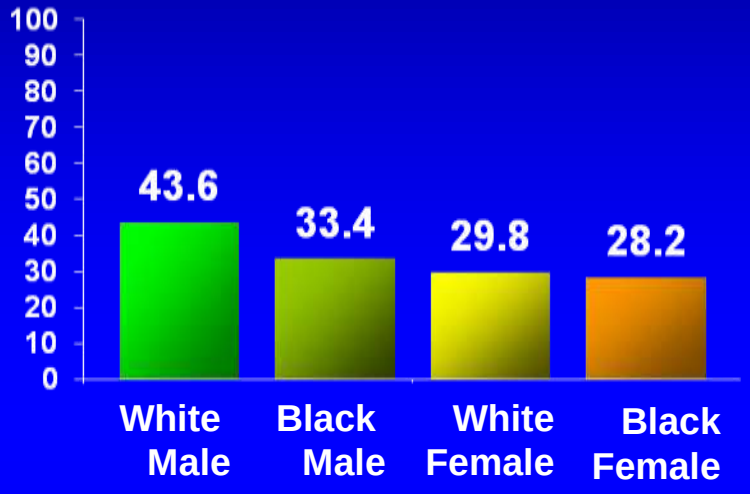
Background—Women receive less evidence-based medical care than men and have higher rates of death after acute myocardial infarction (AMI). It is unclear whether efforts undertaken to improve AMI care have mitigated these sex disparities in the current era.

Methods and Results—Using the Get With the Guidelines–Coronary Artery Disease database, we examined sex differences in care processes and in-hospital death among 78 254 patients with AMI in 420 US hospitals from 2001 to 2006. Women were older, had more comorbidities, less often presented with ST-elevation myocardial infarction (STEMI), and had higher unadjusted in-hospital death (8.2% versus 5.7%; $P<0.0001$) than men. After multivariable adjustment, sex differences in in-hospital mortality rates were no longer observed in the overall AMI cohort (adjusted odds ratio [OR]=1.04; 95% CI, 0.99 to 1.10) but persisted among STEMI patients (10.2% versus 5.5%; $P<0.0001$; adjusted OR=1.12; 95% CI, 1.02 to 1.23). Compared with men, women were less likely to receive early aspirin treatment (adjusted OR=0.86; 95% CI, 0.81 to 0.90), early β-blocker treatment (adjusted OR=0.90; 95% CI, 0.86 to 0.93), reperfusion therapy (adjusted OR=0.75; 95% CI, 0.70 to 0.80), or timely reperfusion (door-to-needle time ≤30 minutes: adjusted OR=0.78; 95% CI, 0.65 to 0.92; door-to-balloon time ≤90 minutes: adjusted OR=0.87; 95% CI, 0.79 to 0.95). Women also experienced lower use of cardiac catheterization and revascularization procedures after AMI.

Conclusions—Overall, no sex differences in in-hospital mortality rates after AMI were observed after multivariable adjustment. However, women with STEMI had higher adjusted mortality rates than men. The underuse of evidence-based treatments and delayed reperfusion among women represent potential opportunities for reducing sex disparities in care and outcome after AMI. (*Circulation.* 2008;118:2803-2810.)

Key Words: myocardial infarction ■ percutaneous coronary intervention ■ reperfusion ■ revascularization ■ sex

Race and Sex Disparities in ICD Use at Discharge Among Eligible Patients With HF



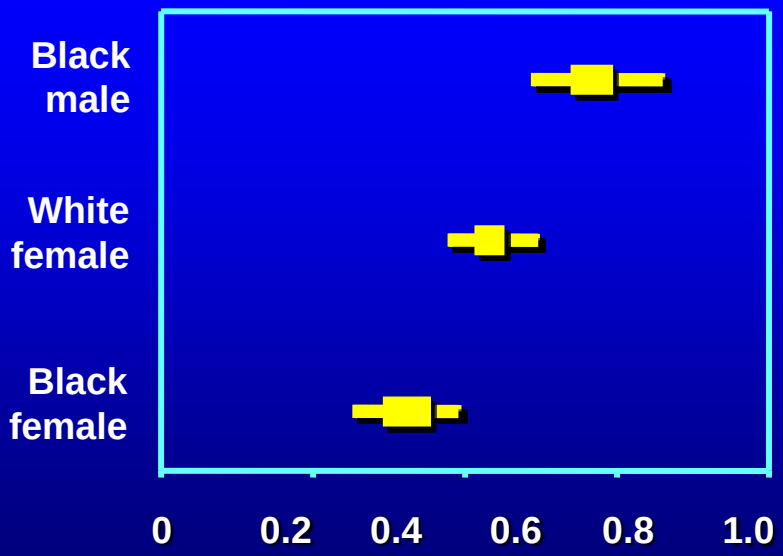


Table 3. Factors Associated With Implantable Cardioverter-Defibrillator Use (or Planned Use) at Discharge Among Eligible Patients With Heart Failure[a]

Characteristic[b]	Generalized Estimating Equations Model: Odds Ratio (95% Confidence Interval)	Generalized Estimating Equations Model: *P* Value	Hierarchical Model With Site as a Random Effect: Odds Ratio (95% Confidence Interval)	Hierarchical Model With Site as a Random Effect: *P* Value
Age, per 10-y increase	0.83 (0.80-0.86)	<.001	0.81 (0.78-0.84)	<.001
Sex and race				
Women	0.62 (0.56-0.68)	<.001	0.58 (0.52-0.65)	<.001
Black men vs white men	0.73 (0.60-0.88)	.001	0.68 (0.59-0.79)	<.001
Other men vs white men	0.74 (0.63-0.87)	<.001	0.71 (0.59-0.86)	<.001
Black women interaction[b]	1.25 (0.98-1.60)	.08	1.32 (1.07-1.61)	.008
Other women interaction[b]	1.48 (1.14-1.86)	.003	1.55 (1.13-2.12)	.007
Location				
Midwest vs West	1.37 (0.84-2.24)	.21		
Northeast vs West	1.13 (0.65-1.95)	.66		
South vs West	1.70 (1.03-2.80)	.04		
Insurance				
Other vs no insurance	1.92 (1.46-2.53)	<.001	2.07 (1.68-2.56)	<.001
Medicare vs no insurance	2.17 (1.65-2.85)	<.001	2.37 (1.89-2.98)	<.001
Medicaid vs no insurance	1.81 (1.33-2.47)	<.001	1.93 (1.50-2.49)	<.001
Systolic blood pressure, per 10-mm Hg increase	0.89 (0.88-0.91)	<.001	0.89 (0.87-0.90)	<.001
Anemia	0.76 (0.64-0.90)	.03	0.75 (0.65-0.86)	<.001
Atrial fibrillation	1.13 (1.01-1.27)	.03	1.14 (1.03-1.26)	.01
Chronic dialysis	0.67 (0.53-0.85)	.001	0.66 (0.51-0.86)	.002
Diabetes mellitus			0.91 (0.83-0.99)	.03
Hyperlipidemia	1.40 (1.26-1.55)	<.001	1.46 (1.33-1.60)	<.001
Hypertension	0.89 (0.81-0.99)	.03	0.89 (0.81-0.98)	.02
Ischemic heart disease	1.35 (1.19-1.52)	<.001	1.41 (1.28-1.56)	<.001
Smoking	0.72 (0.65-0.80)	<.001	0.69 (0.62-0.76)	<.001

[a] Empty table cells denote nonsignificance.
[b] Listed variables are significant factors in the final model that influenced implantable cardioverter-defibrillator use. Variables in the initial model included age, female sex, race, interaction of race and sex, systolic blood pressure, insurance (Medicare, Medicaid, other, and no insurance), medical history variables including anemia, atrial fibrillation, cerebrovascular accident/transient ischemic attack, depression, diabetes mellitus, dialysis, hypertension, hyperlipidemia, chronic obstructive pulmonary disease, peripheral vascular disease, renal insufficiency, smoker, and geographic region (West, Northeast, Midwest, South).

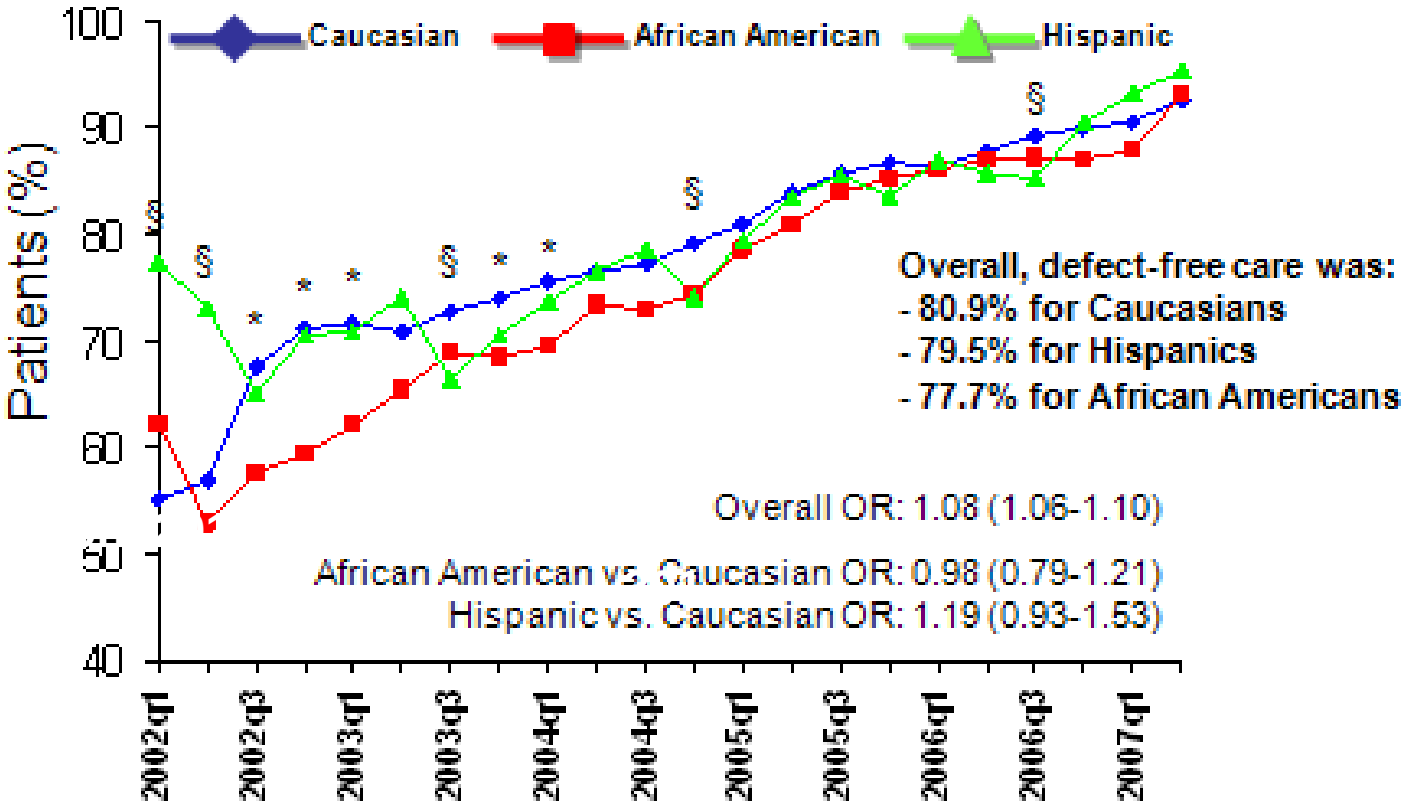
Hernandez, A. F. et al. JAMA 2007;298:1525-1532.

Racial and Ethnic Differences in the Treatment of Acute Myocardial Infarction Findings From Get With The Guidelines-CAD Program

Mauricio G. Cohen, MD; Gregg C. Fonarow, MD; Eric D. Peterson, MD, MPH; Mauro Moscucci, MD, MBA; David Dai, MHS; Adrian F. Hernandez, MD, MHS; Robert O. Bonow, MD; Sidney C. Smith, Jr., MD

Circulation. 2010 Jun 1;121(21):2294-301.

GWTG-CAD Eliminated Race/Ethnic-Based Disparities in AMI Care



* p<0.01 for difference between African-American and Caucasian patients

§ p<0.01 for difference between Hispanic and Caucasian patients

The significance level of p was changed to less than 0.01 to adjust for the multiple comparisons.

Association of Hospital Primary Angioplasty Volume in ST-Segment Elevation Myocardial Infarction With Quality and Outcomes

Dharam J. Kumbhani, MD, SM
Christopher P. Cannon, MD
Gregg C. Fonarow, MD
Li Liang, PhD
Arman T. Askari, MD
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Context Earlier studies indicate an inverse relationship between hospital volume and mortality after primary angioplasty for patients presenting with ST-segment elevation myocardial infarction (STEMI). However, contemporary data are lacking.

Objective To assess the relationship between hospital primary angioplasty volume and outcomes and quality of care measures in patients presenting with STEMI.

Design, Setting, and Patients An observational analysis of data on 29 513 patients presenting with STEMI and undergoing primary angioplasty in the American Heart Association's Get With the Guidelines registry. Patients were treated between July 5, 2001, and December 31, 2007, at 166 angioplasty-capable hospitals across the United States. Hospitals were divided into tertiles (<36 procedures per year, 36-70 procedures per year, and >70 procedures per year) based on their annual primary angioplasty volume.

Main Outcome Measures Door-to-balloon (DTB) times, length of hospital stay, adherence with evidence-based quality of care measures, and in-hospital mortality.

Results Compared with low- and medium-volume centers, high-volume centers had better median DTB times (98 vs 90 vs 88 minutes, respectively; *P* for trend < .001). High-volume centers were more likely than low-volume centers to follow evidence-based guidelines at discharge. Length of stay was similar between the 3 groups (*P* for trend = .13). There was no significant difference in the crude mortality between the tertiles of volume (incidence rate, 3.9% vs 3.2% vs 3.0% for low-, medium-, and high-volume centers, respectively; *P* = .26 and *P* = .99 for low- and medium- vs high-volume hospitals, respectively). Sequential multivariable modeling using generalized estimating equations revealed no significant association between hospital primary angioplasty volume and in-hospital mortality (adjusted odds ratio [OR], 1.22; 95% confidence interval [CI], 0.78-1.91; *P* = .38 and adjusted OR, 1.14; 95% CI, 0.78-1.66; *P* = .49 for low- and medium- vs high-volume hospitals, respectively).

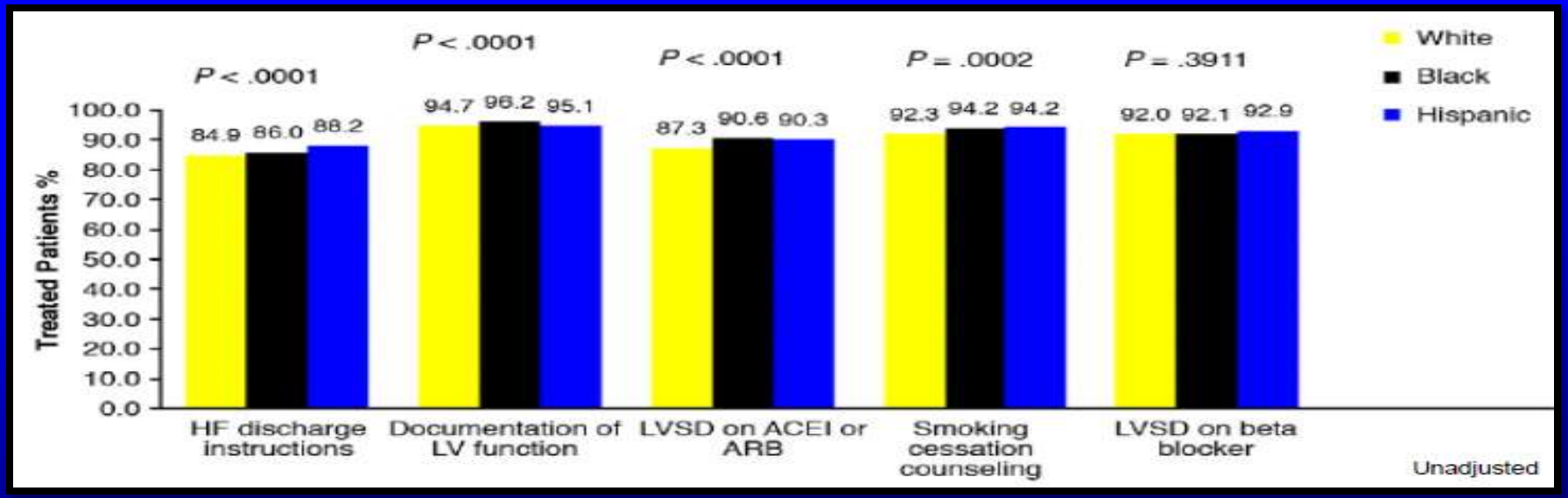
Conclusion In a contemporary registry of patients with STEMI, higher-volume primary angioplasty centers vs lower-volume centers were associated with shorter DTB times and more use of evidence-based therapies, but not with adjusted in-hospital mortality or length of hospital stay.

JAMA. 2009;302(20):2207-2213 www.jama.com

SEVERAL STUDIES HAVE DEMONstrated an inverse relationship between hospital primary angioplasty volume and mortality in patients presenting with ST-segment elevation myocardial infarction (STEMI).[1-5] Analysis of data by the National Registry of Myocardial Infarction 2 investigators between 1994 and 1998 indicated that high primary angioplasty volume hospitals (>33 procedures per year) had a 28% lower in-hospital mortality compared with low primary angioplasty volume hospitals (5-11 procedures per year).[2] Another recent analysis using the same data set, but slightly different thresholds (<12

Thomas K, Hernandez A, Dai D, Heidenreich P, Fonarow G, Peterson E, Yancy C. Association of Race/Ethnicity with Clinical Risk Factors, Quality of Care, and Acute Outcomes in Patients Hospitalized with Heart Failure. *Am Heart J* 2011;161:746-54.

U.S. hospitals participating in the American Heart Association's *Get With The Guidelines-Heart Failure* Quality Improvement program provided **Improved and Equitable Care** for black, Hispanic and white patients.



GWTG-HF Associated with Equitable Care for Women and Men

Characteristic (of non missing values in eligible patients) ǂ	Unadjusted OR
Complete set of written instructions at time of discharge	0.95
Documentation of evaluation of left ventricular function	0.91
ACE - I or ARB prescription for LVSD	1.01
Adult smoking cessation counseling	1.01
β-blocker prescription for LVSD	0.89
Defect-free measure (100% compliance with all 5 primary measures)	1.13
Composite quality measure	0.97
Warfarin at discharge for patients with atrial fibrillation	0.85
Evidence based β-blockers prescription for LVSD	0.93
Aldosterone antagonists prescription for LVSD	0.95
African Americans with LVSD prescribed hydralazine/ isosorbide dinitrate	0.82
ICD in patients with LVEF ≤ 35% (before admission or placed during admission)	0.61

Klein L, Grau-Sepulveda MV, Bonow RO, Hernandez AF, William MV Bhatt DL, Fonarow GC

Quality of Care and Outcomes in Women Hospitalized for Heart Failure CIRCHEARTFAILURE.

Get With The Guidelines-Heart Failure

Improved Overall Quality of Care

in men and women.

Risks of Intracranial Hemorrhage Among Patients With Acute Ischemic Stroke Receiving Warfarin and Treated With Intravenous Tissue Plasminogen Activator

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Context Intravenous tissue plasminogen activator (tPA) is known to improve outcomes in ischemic stroke; however, patients receiving long-term chronic warfarin therapy may face an increased risk for intracranial hemorrhage when treated with tPA. Although current guidelines endorse administering intravenous tPA to warfarin-treated patients if their international normalized ratio (INR) is 1.7 or lower, there are few data on safety of intravenous tPA in warfarin-treated patients in clinical practice.

Objectives To determine the risk of symptomatic intracranial hemorrhage (sICH) among patients with ischemic stroke treated with intravenous tPA who were receiving warfarin vs those who were not and to determine this risk as a function of INR.

Design, Setting, and Patients Observational study, using data from the American Heart Association Get With The Guidelines–Stroke Registry, of 23 437 patients with ischemic stroke and with INR of 1.7 or lower, treated with intravenous tPA in 1203 registry hospitals from April 2009 through June 2011.

Main Outcome Measure Symptomatic intracranial hemorrhage. Secondary end points include life-threatening/serious systemic hemorrhage, any tPA complications, and in-hospital mortality.

Results Overall, 1802 (7.7%) patients with stroke treated with tPA were receiving warfarin (median INR, 1.20; interquartile range [IQR], 1.07-1.40). Warfarin-treated patients were older, had more comorbid conditions, and had more severe strokes. The unadjusted sICH rate in warfarin-treated patients was higher than in non–warfarin-treated patients (5.7% vs 4.6%, $P < .001$), but these differences were not significantly different after adjustment for baseline clinical factors (adjusted odds ratio [OR], 1.01 [95% CI, 0.82-1.25]). Similarly, there were no significant differences between warfarin-treated and non–warfarin-treated patients for serious systemic hemorrhage (0.9% vs 0.9%; adjusted OR, 0.78 [95% CI, 0.49-1.24]), any tPA complications (10.6% vs 8.4%; adjusted OR, 1.09 [95% CI, 0.93-1.29]), or in-hospital mortality (11.4% vs 7.9%; adjusted OR, 0.94 [95% CI, 0.79-1.13]). Among warfarin-treated patients with INRs of 1.7 or lower, the degree of anticoagulation was not statistically significantly associated with sICH risk (adjusted OR, 1.10 per 0.1-unit increase in INR [95% CI, 1.00-1.20]; $P = .06$).

Conclusion Among patients with ischemic stroke, the use of intravenous tPA among warfarin-treated patients (INR ≤1.7) was not associated with increased sICH risk compared with non–warfarin-treated patients.

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INTRAVENOUS TISSUE PLASMINOGEN activator (tPA) is currently the only effective treatment to improve outcomes for acute ischemic stroke[1,2]; however, treatment with intravenous tPA carries the risk of symptomatic intracranial hemorrhage (sICH). Of patients who receive intravenous tPA for stroke, 2.4% to 8.8% experience this potentially life-threatening complication.[3-6] Warfarin-treated patients may be at an increased risk of sICH, but the true absolute risk of sICH in this population remains a matter of significant debate, because warfarin-treated patients were excluded from major trials of tPA.[3-8] Furthermore, observational studies of bleeding risk among warfarin-treated patients receiving intravenous tPA have been small and inconsistent.[9-13] Based on limited data, current guide-

Duration of resuscitation efforts and survival after in-hospital cardiac arrest: an observational study

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Summary

Background During in-hospital cardiac arrests, how long resuscitation attempts should be continued before termination of efforts is unknown. We investigated whether duration of resuscitation attempts varies between hospitals and whether patients at hospitals that attempt resuscitation for longer have higher survival rates than do those at hospitals with shorter durations of resuscitation efforts.

Methods Between 2000 and 2008, we identified 64 339 patients with cardiac arrests at 435 US hospitals within the Get With The Guidelines—Resuscitation registry. For each hospital, we calculated the median duration of resuscitation before termination of efforts in non-survivors as a measure of the hospital's overall tendency for longer attempts. We used multilevel regression models to assess the association between the length of resuscitation attempts and risk-adjusted survival. Our primary endpoints were immediate survival with return of spontaneous circulation during cardiac arrest and survival to hospital discharge.

Findings 31198 of 64 339 (48·5%) patients achieved return of spontaneous circulation and 9912 (15·4%) survived to discharge. For patients achieving return of spontaneous circulation, the median duration of resuscitation was 12 min (IQR 6–21) compared with 20 min (14–30) for non-survivors. Compared with patients at hospitals in the quartile with the shortest median resuscitation attempts in non-survivors (16 min [IQR 15–17]), those at hospitals in the quartile with the longest attempts (25 min [25–28]) had a higher likelihood of return of spontaneous circulation (adjusted risk ratio 1·12, 95% CI 1·06–1·18; p<0·0001) and survival to discharge (1·12, 1·02–1·23; 0·021).

Interpretation Duration of resuscitation attempts varies between hospitals. Although we cannot define an optimum duration for resuscitation attempts on the basis of these observational data, our findings suggest that efforts to systematically increase the duration of resuscitation could improve survival in this high-risk population.

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Expansion of QI Suite with GWTG-Atrial Fibrillation

Work is underway to develop and launch Get With The Guidelines-AF by June 2013

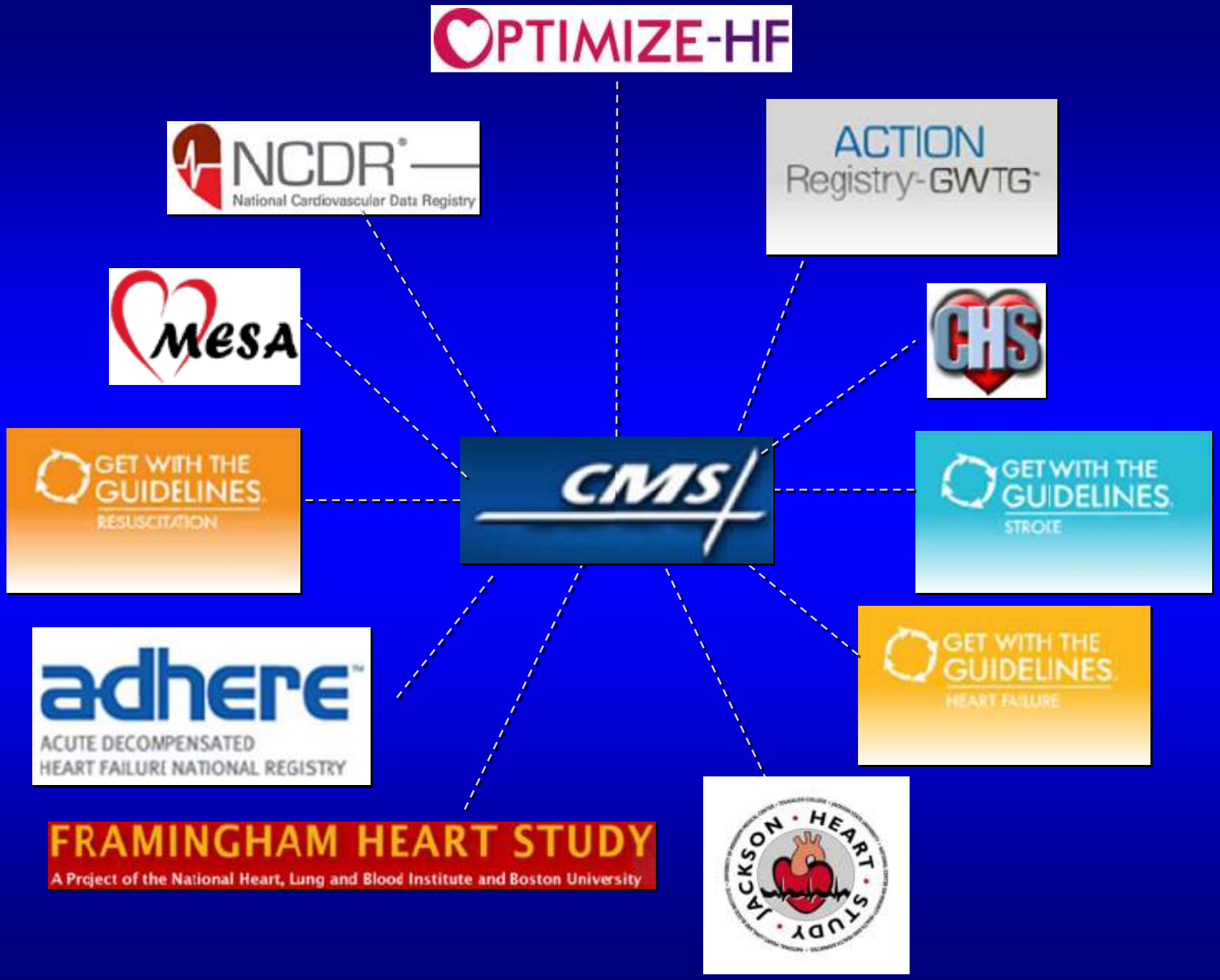
Clinical Work Group has been formed

inclusive of Clinical Cardiologist, Electrophysiologist, Neurologist, Pharmacist, Advanced Practice Nurse, Heart Failure specialist, and Hematologist

Patient Population has been defined as:

Patients with primary diagnosis with AF or secondary diagnosis with AF requiring hospitalization

All specifications related to case report forms and data definitions on track for December 15, 2012 submission


OPTIMIZE-HF
NCDR
National Cardiovascular Data Registry
ACTION
Registry-GWTG
MESA
CHS
GET WITH THE GUIDELINES
RESUSCITATION
CMS
GET WITH THE GUIDELINES
STROKE
adhere
ACUTE DECOMPENSATED
HEART FAILURE NATIONAL REGISTRY
GET WITH THE GUIDELINES
HEART FAILURE
FRAMINGHAM HEART STUDY
A Project of the National Heart, Lung and Blood Institute and Boston University
JACKSON HEART STUDY

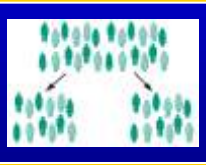
Expanding Capacity of Clinical Registries

Clinical Registry → Cross sectional Studies

Clinical Registry + Claims Data → Longitudinal Evaluations

Clinical Registry +   Biomarker Gentics Samples → Longitudinal Outcomes → Translational Discovery

Clinical Registry +   Detailed Pharm + Device Info → Longitudinal Outcomes → CER-Safety Surveillance

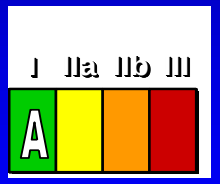
Clinical Registry +  Device/Drug RCT → Longitudinal Outcomes → Practical Clinical Trials

Evidence-Based, Guideline-Driven, Patient-Centered Cardiovascular Care

Evidence

Guidelines

Clinical Decision Support



Integrated Multidisciplinary Care Teams

Patients and Families

Process Measures

Outcome Measures

Health Status Measures

Timely | Safe | Efficient | Effective | Patient Centered | Equitable

Potential Impact of Optimal Implementation of Evidence-Based HF Therapies on Mortality

Guideline Recommended Therapy	HF Patient Population Eligible for Treatment, n*	Current HF Population Eligible and Untreated, n (%)	Potential Lives Saved per Year	Potential Lives Saved per Year (Sensitivity Range*)
ACEI/ARB	2,459,644	501,767 (20.4)	6516	(3336-11,260)
Beta-blocker	2,512,560	361,809 (14.4)	12,922	(6616-22,329)
Aldosterone Antagonist	603,014	385,326 (63.9)	21,407	(10,960-36,991)
Hydralazine/Nitrate	150,754	139,749 (92.7)	6655	(3407-11,500)
CRT	326,151	199,604 (61.2)	8317	(4258-14,372)
ICD	1,725,732	852,512 (49.4)	12,179	(6236-21,045)
Total	-	-	67,996	(34,813-117,497)

Fonarow GC, et al. Am Heart J 2011;161:1024-1030.

"Humanity's greatest advances are not in its discoveries – but in how those discoveries are applied"

Bill Gates, June 7, 2007
Harvard Commencement Address

Conclusions

- There are excellent opportunities to launch your career focused on cardiovascular quality of care, performance improvement, and outcomes
- GWTG can provide you with terrific opportunities for early career mentoring, research, and publishing
- The GWTG Young Investigator Database Seed Grant Program is accepting applications
- There are opportunities to serve on various GWTG oversight committees