# Quality Improvement Programs and Cardiovascular Disease: The International Experience

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Past President, American Heart Association
Past President, World Heart Federation

No Relationships with Industry

# Institute of Medicine Report: Quality Chasm

"In its **current form**, habits, and environment, American health care is **incapable** of providing the public with the **quality** health care it expects and deserves."

**Design Rule 5:** ***Current:*** ***Decision making is based on training and experience.*** ***New: Decision making is based on evidence.*** **Patients should receive care based on the best available scientific knowledge. Care should not vary illogically form clinician to clinician or from place to place.**

Institute of Medicine, *Crossing the Quality Chasm: A New Health System for the Twenty-first Century.* Washington: National Academy Press, 2001

The New York Times

THURSDAY, NOVEMBER 26, 2002

THE DOCTOR'S WORLD

# 'Standard' Heart Treatment Is Hit and Miss

By LAWRENCE K. ALTMAN, M.D.

CHICAGO — Important drugs, devices, procedures and operations to treat heart disease are widely available, and American specialty groups have issued guidelines that generally agree on their best use. So, ideally, heart patients should receive the same optimal therapy wherever they are treated. In reality, they do not.

Findings from a small number of studies reported at a meeting of the American Heart Association here last week highlighted a gap between what guidelines call for in preventing and treating particular heart conditions and what doctors actually prescribe for them. Differences in how often doctors apply guidelines for heart disease, which is the nation's leading cause of death, have exposed serious flaws in health care.

Focus on Quality

American Heart Association | American Stroke Association

# Cumulative Impact of Simple Cardiovascular Protective Medications

| | Relative-risk | 5yr CV event rate |
|---|---|---|
| None | - - | 20% |
| Aspirin | ↓25% | 15% |
| Beta blocker | ↓25% | 11.3% |
| ACE inhibitor | ↓25% | 8.4% |
| Statin Rx | ↓30% | 5.9% |
| Intensive Statin | ↓22% | 4.6% |

Fonarow Am J Cardiol 2001;85:10A-17A and Yusuf Lancet 2002;360:2-3



# Heart and Stroke Patient Treatment

**50%**

***More than half of all heart disease and stroke patients do not receive consistent preventive therapy upon discharge from the hospital…***


While evidence-based guidelines for AMI, HF, and Stroke care have been developed along with improved diagnostic and treatment modalities, there are gaps, variations, and disparities in how these are applied.

Furthermore many hospitals may not have the systems, organization, staff to provide highly reliable care at all times

**The Wall Street Journal, November 9, 2003, Physicians' Weekly, June 21, 2004, ADHERE Study*

American Heart Association | American Stroke Association

# Focus on Quality

**heart.org/quality**

GET WITH THE GUIDELINES® STROKE

GET WITH THE GUIDELINES® HEART FAILURE

GET WITH THE GUIDELINES® RESUSCITATION

GET WITH THE GUIDELINES® AFIB

ACTION Registry®-GWTG™

THE GUIDELINE ADVANTAGE™

MISSION: LIFELINE™

HOSPITAL Accreditation & Certification

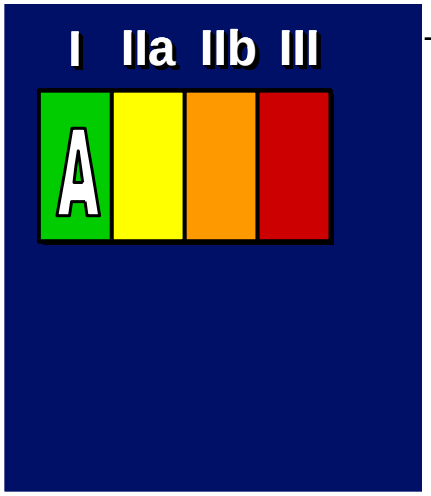
TARGET: STROKE™

TARGET: HF™



# Bridging the Gap Between Knowledge and Clinical Practice

## AHA/ACC Guidelines




- Clinical trial evidence
- National guidelines

## Systems

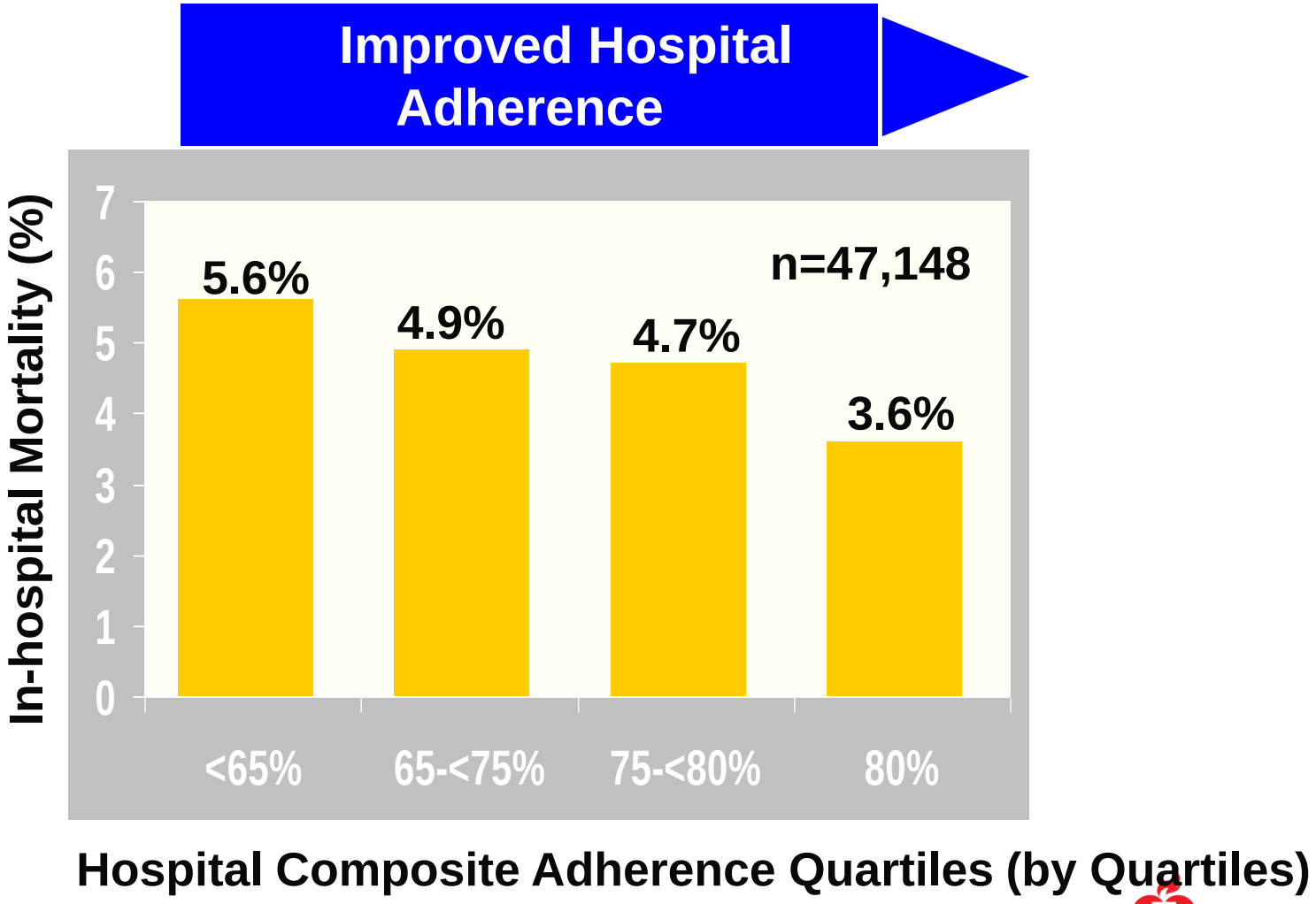
- Implement evidence-based care
- Improve communications
- Ensure compliance

## Clinical Practice

- Improve quality of care
- Improve outcomes

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

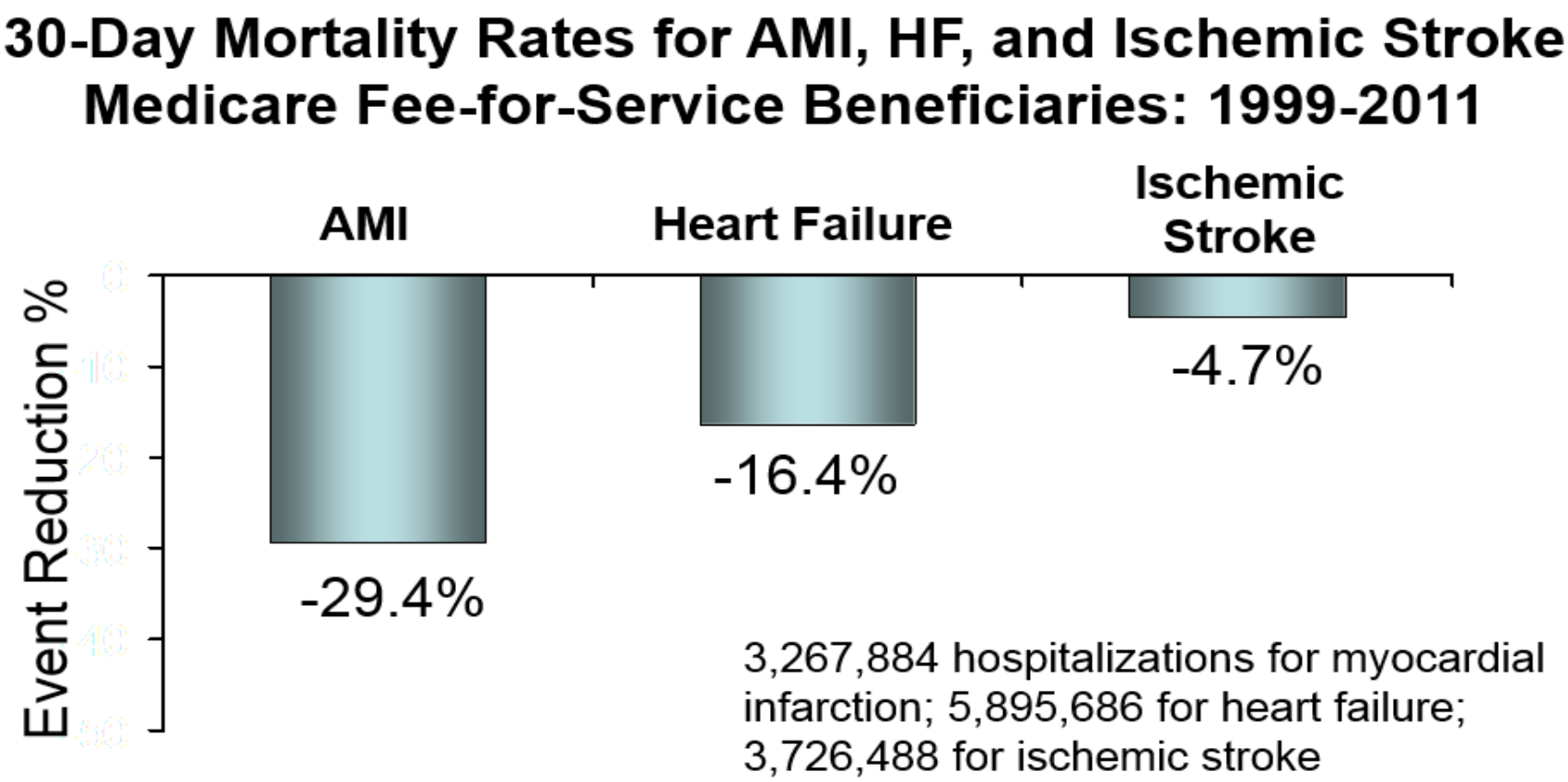
# In-Hospital Mortality and Guideline Adherence




National Report. Available at: http://www.crusadeqi.com.
Data collected from Nov, 2001– March, 2003.
Adapted with permission from CRUSADE Web site, available at:http://www.crusadeqi.com.
Accessed February 18, 2004.

American Heart Association | American Stroke Association
life is why™

# Population Level Impact USA: Declines in AMI, HF, and Ischemic Stroke Mortality



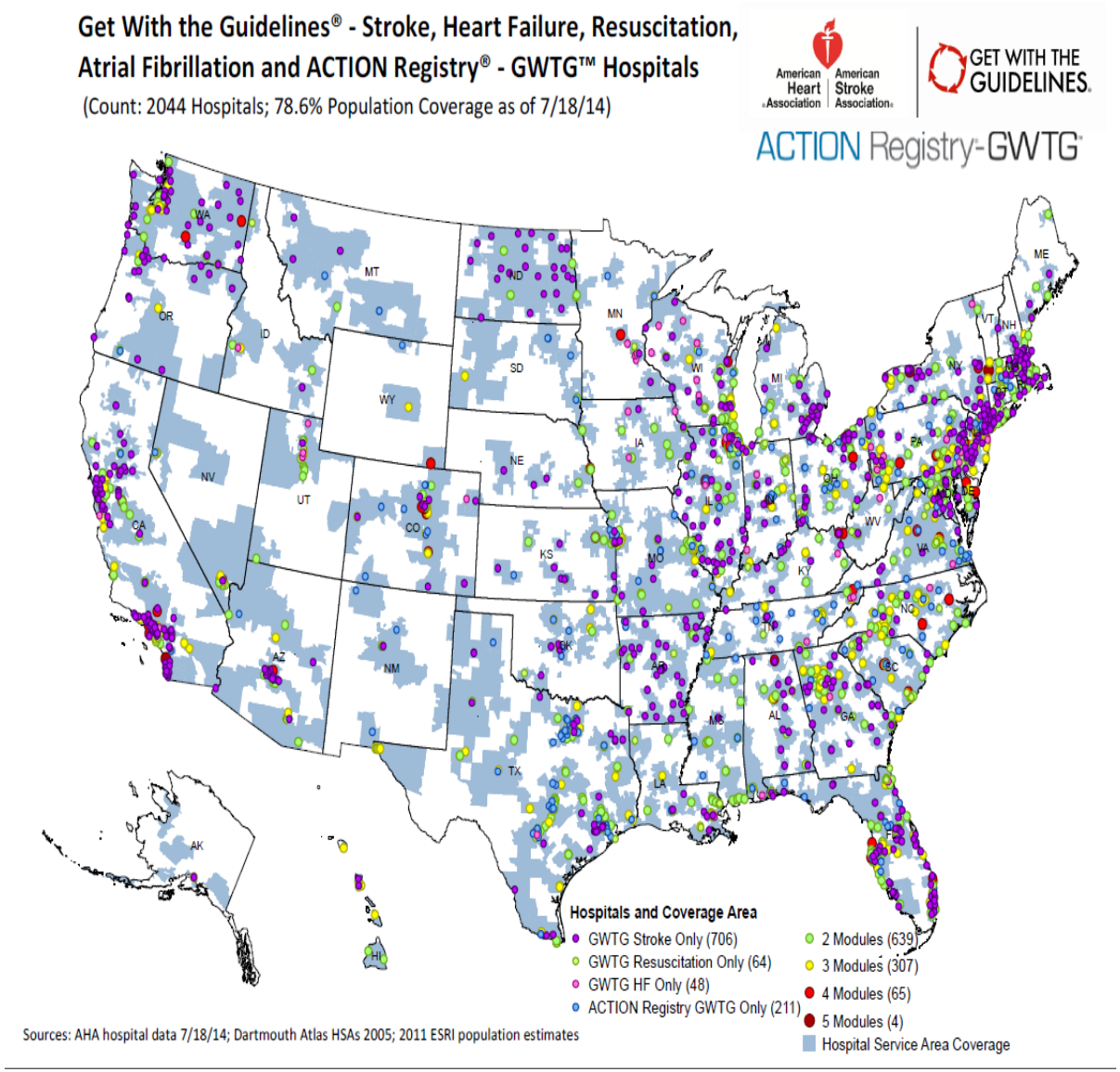

Krumholz H et al Circulation 2014 DOI: 10.1161/CIRCULATIONAHA.113.007787

## Since 2000: Get With The Guidelines Quality Improvement Programs

- **Over 2100 US Hospitals Nationwide**
- **Over 6.1 Million Patient Records**
- **Over 1300 Hospitals Receiving Recognition**
- **350+ Peer Reviewed Publications**

*As of September 2016*

# Population Impact




78% of US population within reach of a GWTG QIP Hospital

42% of all US hospital use one or more of our quality programs.

American Heart Association | American Stroke Association
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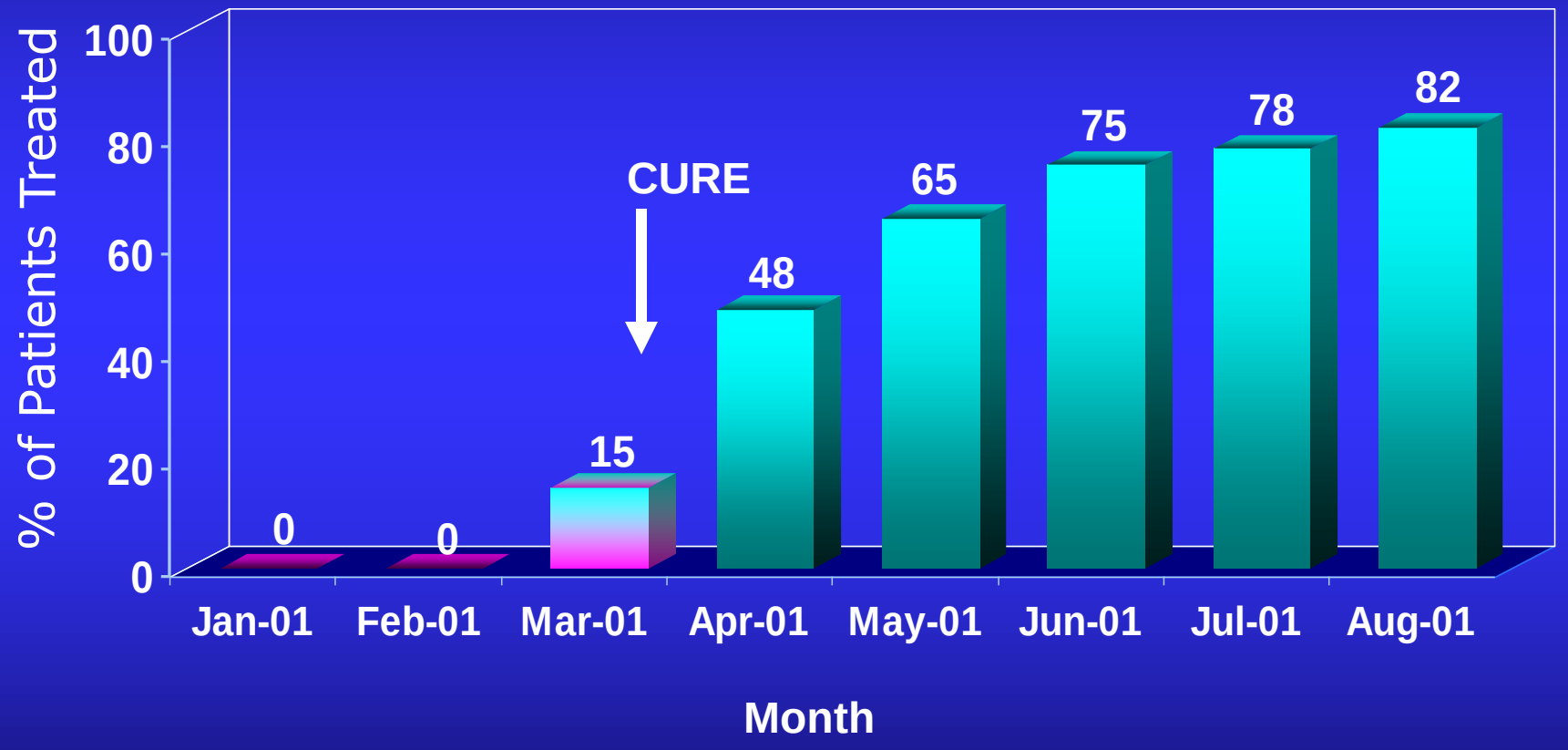
# Ability to Rapidly Translate New Clinical Trial Results into Clinical Practice with CHAMP



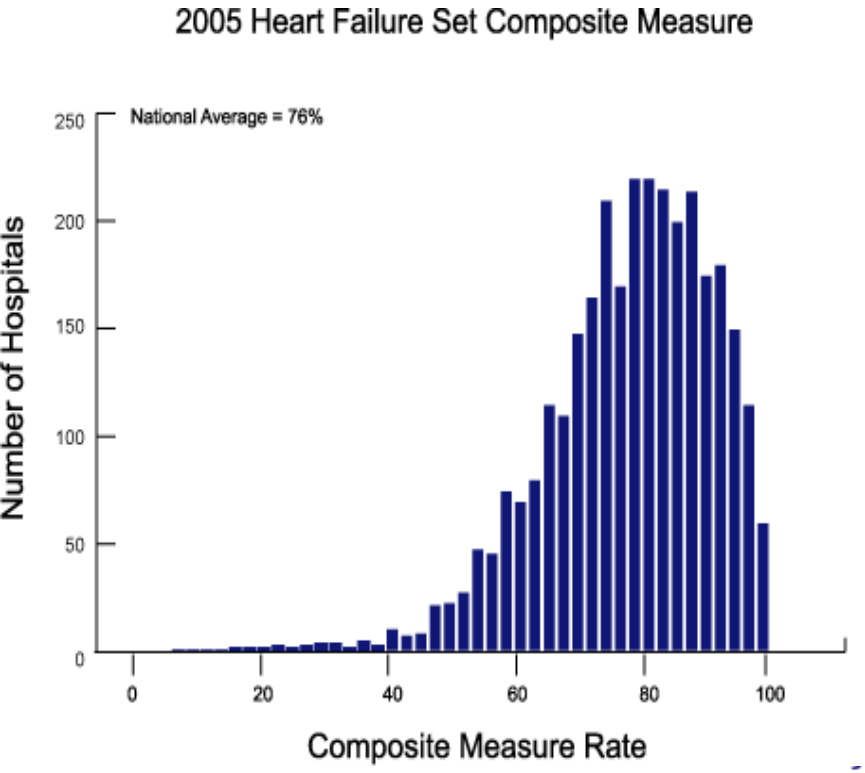

**Impact of CHAMP on use combined aspirin-clopidogrel (exclude post-stent pts)**

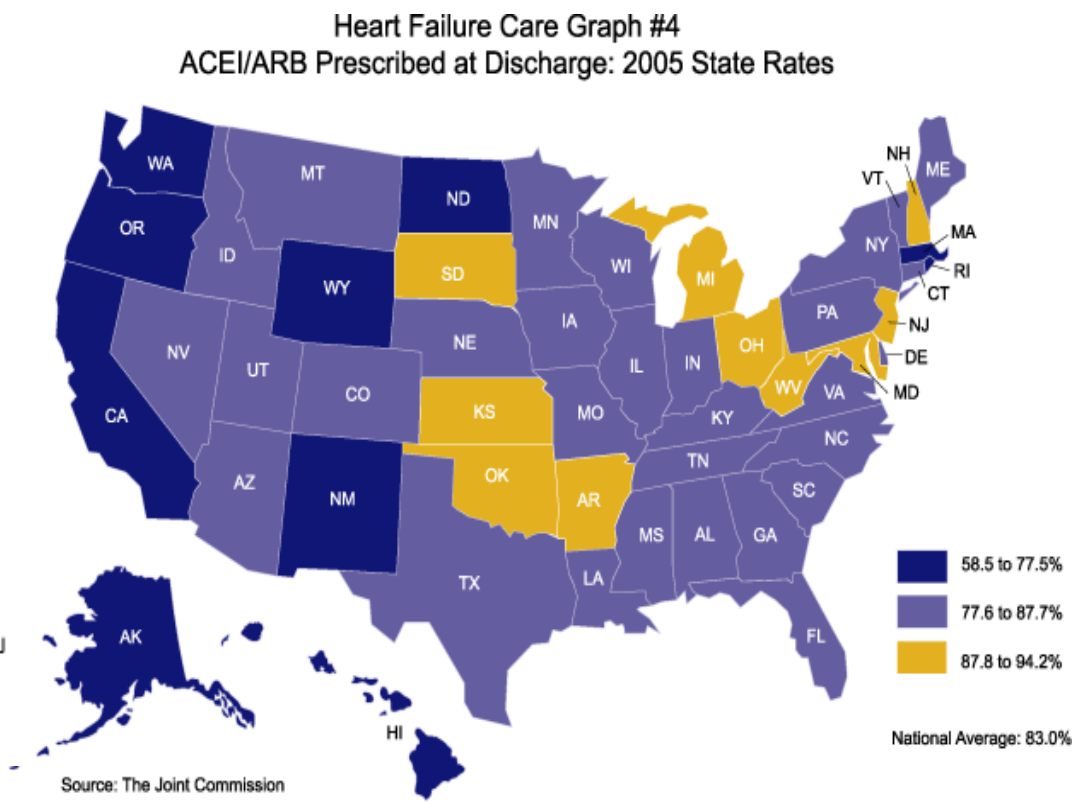
*CURE presented March 19,2001, Implemented in CHAMP Hospital Tool Kit March 22,2001*

Focus on Quality

American Heart Association | American Stroke Association

# Variability in Care Quality

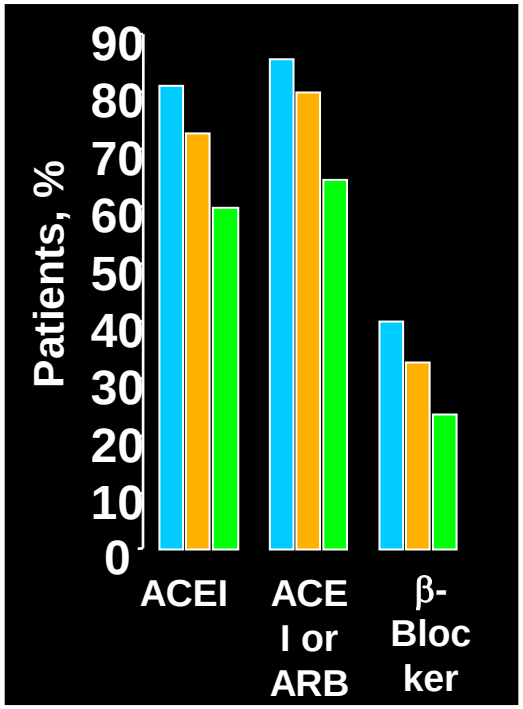



http://www.jointcommissionreport.org

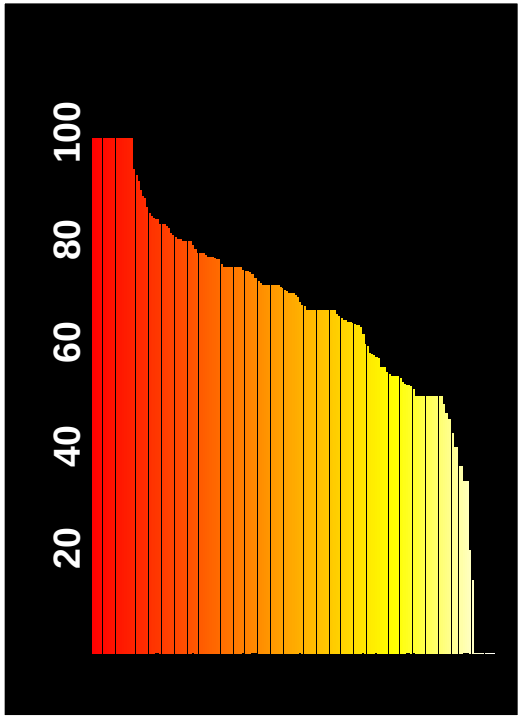
# Gaps, Variations, and Disparities in Care

## Gaps



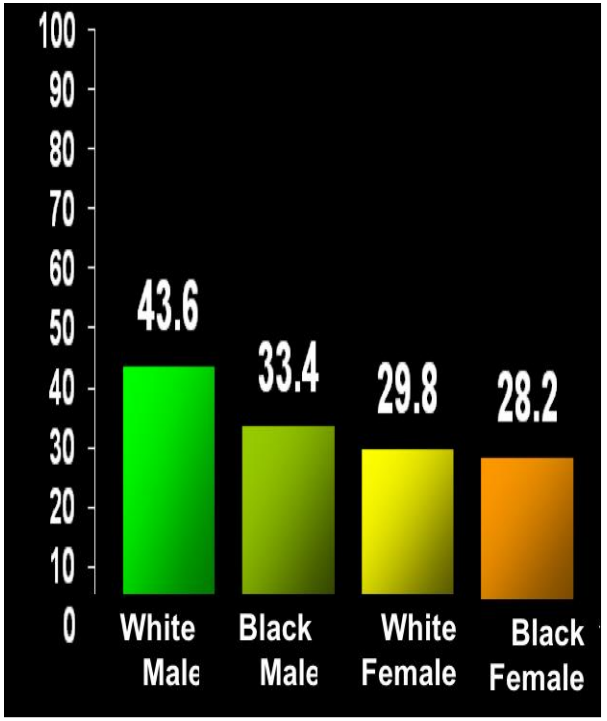

HF Therapy at Hospital Discharge Risk-Treatment Mismatch Paradox

## Variations




ACEI/ARB at Hospital Discharge Variation By Hospital

## Disparities



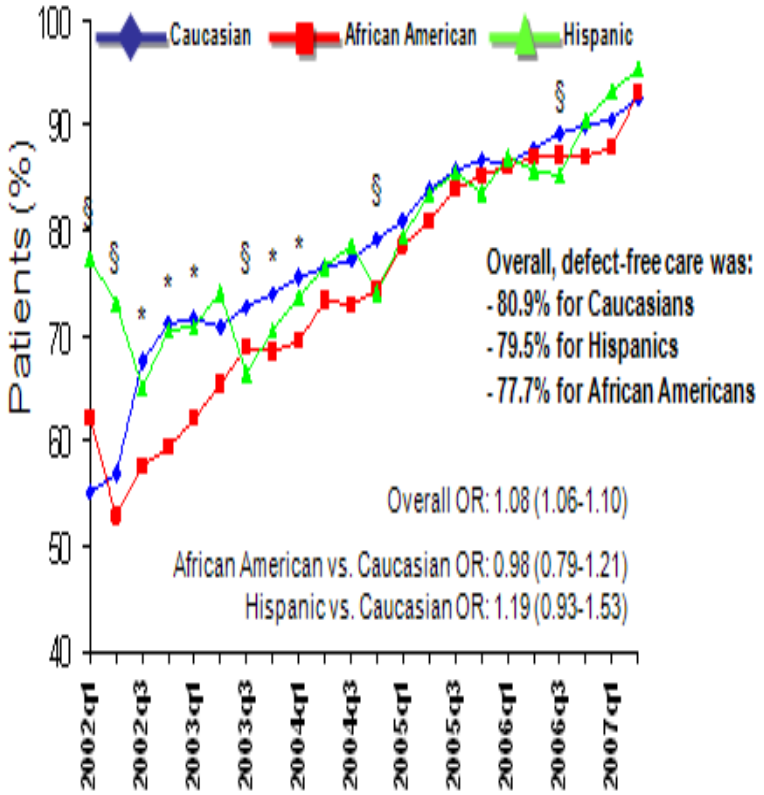

Race/Ethnic and Sex Based Disparities in ICD Use


Lee D. *JAMA*. 2005;294:1240-1247.

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

# GWTG Narrows or Eliminates Disparities in Care

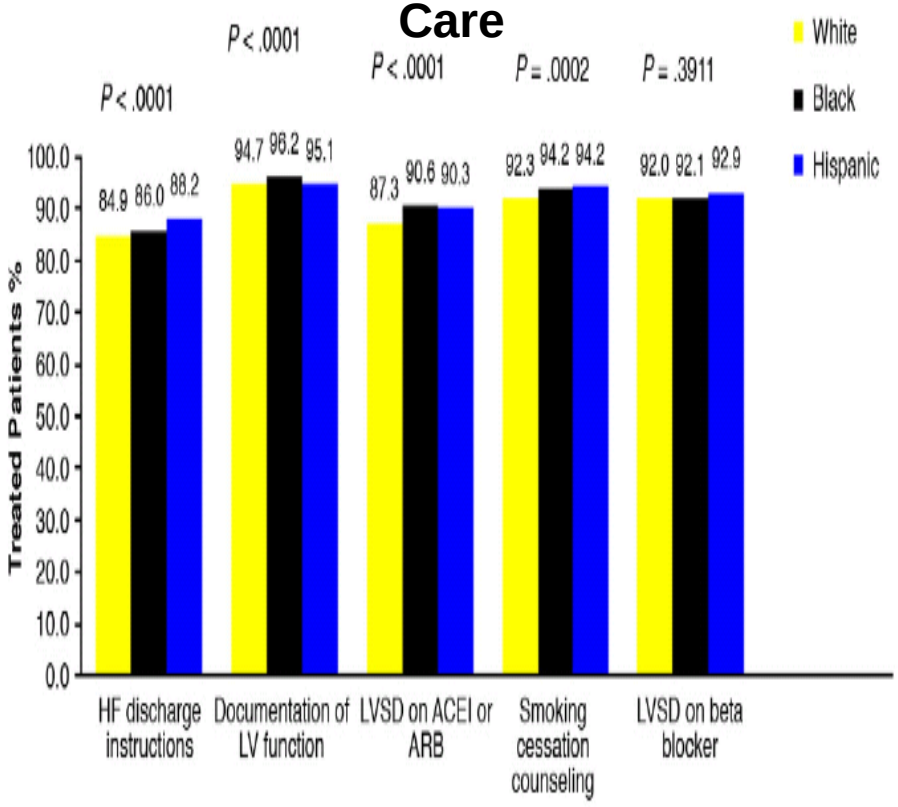
## Elimination of Race-Ethnic Disparities in Defect Free Care in Coronary Artery Disease




* 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.

Cohen M, et al. Circulation. 2010 Jun 1;121(21):2294-301.

## Elimination of Race-Ethnic Disparities in Multiple Measures of Heart Failure Care




Thomas K et al. Am Heart J. 2011;161:746-54.

American Heart Association | American Stroke Association
life is why™

# Improving Care for Cardiovascular Disease in China: A collaborative project of AHA and CSC

# (The CCC Project)

# Project Progress

**Beijing Anzhen Hospital, Capital Medical University**

**Beijing Institute of Heart Lung and Blood Vessel Diseases**

# Landmark Events

| | Meeting | Data | Education |
|---|---|---|---|
| 03/2014 | 1st SMG meeting | | |
| 09/2014 | Launching meeting | | |
| 10/2014 | 2nd SMG meeting | | 1st training course |
| 11/2014 | | ACS Phase 1 began | |
| 02/2015 | | AF Phase 1 began | |
| 03/2015 | 3rd SMG meeting | | 2nd training course |
| 05/2015 | | ACS Phase 2 began | 1st webinar |
| 06/2015 | | ACS: 10000 | |
| 08/2015 | | AF Phase 2 began | |
| 09/2015 | | ACS: 20000 | 1st recognition meeting |
| 12/2015 | | AF: 10000 | 1st regional workshop |
| 01/2016 | | ACS: 30000 | 2nd webinar |
| 02/2016 | 4th SMG meeting | | 3rd webinar |
| 05/2016 | | | 2nd regional workshop |
| 09/2016 | | ACS: 45000， AF: 20000 | 2nd recognition meeting |
| 07/2017 | | ACS: 62694， AF: 30667 | 3nd training course |

# Infrastructure Set-up

- The CCC website
- Electronic data collection (EDC) system
- WeChat official accounts and groups
- Web-based education platform (webinar)
- Monthly feedback system for quality of care
- Regional workshop
- Annual recognition meeting

# Achievements of Scientific Research

## List of SCI papers

| Type | Title | Journal |
|---|---|---|
| Protocol | Rationale and design of the Improving Care for Cardiovascular Disease in China (CCC) project: A national effort to prompt quality enhancement for acute coronary syndrome | Am Heart J |
| Protocol (revised) | Rationale and design of the Improving Care for Cardiovascular Disease in China (CCC) Project: A national effort to improve management of atrial fibrillation | Circ Cardiovasc Qual Outcomes |
| Result | Invasive management strategies and antithrombotic treatments in patients with non-ST-segment-elevation acute coronary syndrome in China | Circ Cardiovasc Intervention |

Trial Design

**Rationale and design of the Improving Care for Cardiovascular Disease in China (CCC) project: A national effort to prompt quality enhancement for acute coronary syndrome**

Yongchen Hao, PhD,[a] Jing Liu, MD, PhD,[a] Jun Liu, MD,[a] Sidney C. Smith, Jr., MD,[b] Yong Huo, MD,[c] Gregg C. Fonarow, MD,[d] Changsheng Ma, MD,[e] Junbo Ge, MD, PhD,[f] Kathryn A. Taubert, PhD,[g] Louise Morgan, MSN,[b] Yang Guo, MD,[a] Qian Zhang, MD,[a] Wei Wang, MD,[a] and Dong Zhao, MD, PhD[a], on behalf of the CCC-ACS Investigators *Beijing, Shanghai, China; Chapel Hill, NC; Los Angeles, CA; and Basel, Switzerland*

**Background** A sizeable gap exists between guideline recommendations for treatment of acute coronary syndrome (ACS) and application of these recommendations in clinical practice. The CCC-ACS project is a novel national quality enhancement registry designed to help medical care providers bridge this gap, thereby improving clinical outcomes for ACS patients in China.

**Methods and Results** The CCC-ACS project uses data collection, analysis, feedback, rapid-cycle improvement, and performance recognition to extend the use of evidence-based guidelines throughout the health care system and improve cardiovascular health. The project was launched in 2014, with 150 centers recruited representing the diversity of care for ACS patients in tertiary hospitals across China. Clinical information for patients with ACS is collected via a Web-based data collecting platform, including patients' demographics, medical history, symptoms on arrival, in-hospital treatment and procedures, in-hospital outcomes, and discharge medications for secondary prevention. Improvement in adherence to guideline recommendations is facilitated through monthly benchmarked hospital quality reports, recognition of hospital quality

Coronary Interventions

**Invasive Management Strategies and Antithrombotic Treatments in Patients With Non–ST-Segment–Elevation Acute Coronary Syndrome in China**

**Findings From the Improving CCC Project (Care for Cardiovascular Disease in China)**

Qing Yang, MD*; Ying Wang, PhD*; Jing Liu, MD, PhD; Jun Liu, MD; Yongchen Hao, PhD; Sidney C. Smith, Jr, MD; Yong Huo, MD; Gregg C. Fonarow, MD; Changsheng Ma, MD; Junbo Ge, MD, PhD; Kathryn A. Taubert, PhD; Louise Morgan, MSN; Yang Guo, MD; Wei Wang, MD; Yujie Zhou, MD; Dong Zhao, MD, PhD; on behalf of the CCC-ACS Investigators

*Background*—Early invasive strategies and antithrombotic treatments are key treatments of non–ST-segment–elevation acute coronary syndrome (NSTE-ACS). Few studies have examined the use of these strategies in patients with NSTE-ACS in China. This study aimed to assess the applications of invasive strategies and antithrombotic treatments in patients with NSTE-ACS and compare their outcomes.

*Methods and Results*—A nationwide registry study, Improving CCC (Care for Cardiovascular Disease in China) ACS project, was launched in 2014 as a collaborative study of the American Heart Association and Chinese Society of Cardiology (CSC), with 142 participating hospitals reporting details of clinical management and outcomes of patients with NSTE-ACS. The use of invasive strategies and antithrombotic treatments was examined based on updated guidelines. Major adverse cardiovascular events were analyzed. A total of 9953 patients with NSTE-ACS were enrolled. Angiography was performed in 63.1% of these patients, and 58.2% underwent percutaneous coronary intervention (PCI). However, 40.6% of patients did not undergo early risk assessment, and very-high-risk patients had the lowest proportion of PCI (41.7%). PCI was performed within recommended times in 11.1% of very-high-risk patients and 26.3% of high risk patients.

**4 Abstracts were accepted in the International Conference:** 2 in AHA annual meeting , 1 in ACC annual meeting, and 1 in Global health systems Symposium

# Hospital Enrollment

**150** tertiary hospitals were recruited

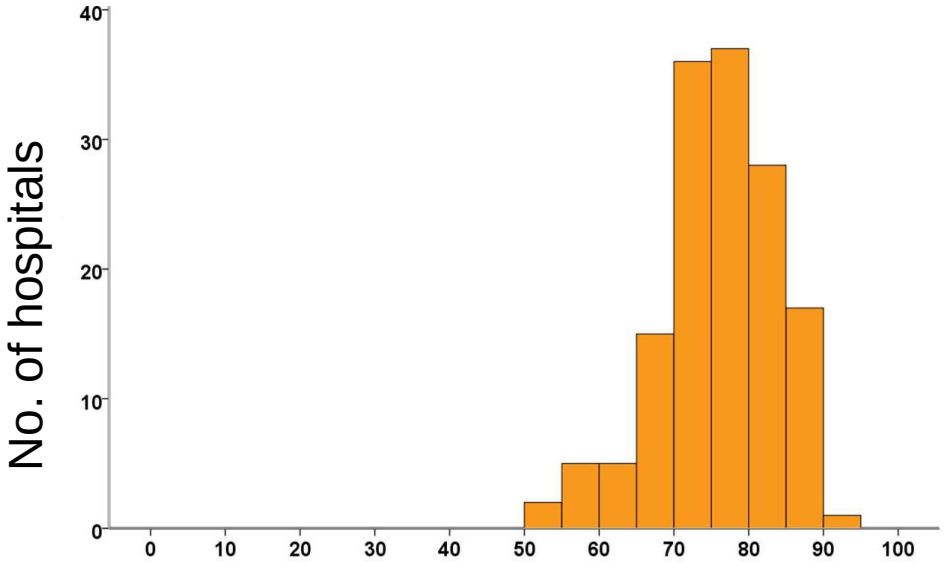
| | |
|---|---|
| Northern China | 25 |
| Northeast China | 20 |
| Eastern China | 45 |
| Central China | 19 |
| Southern China | 15 |
| Southwest China | 13 |
| Eastern China | 13 |


Second Level hospital: 42

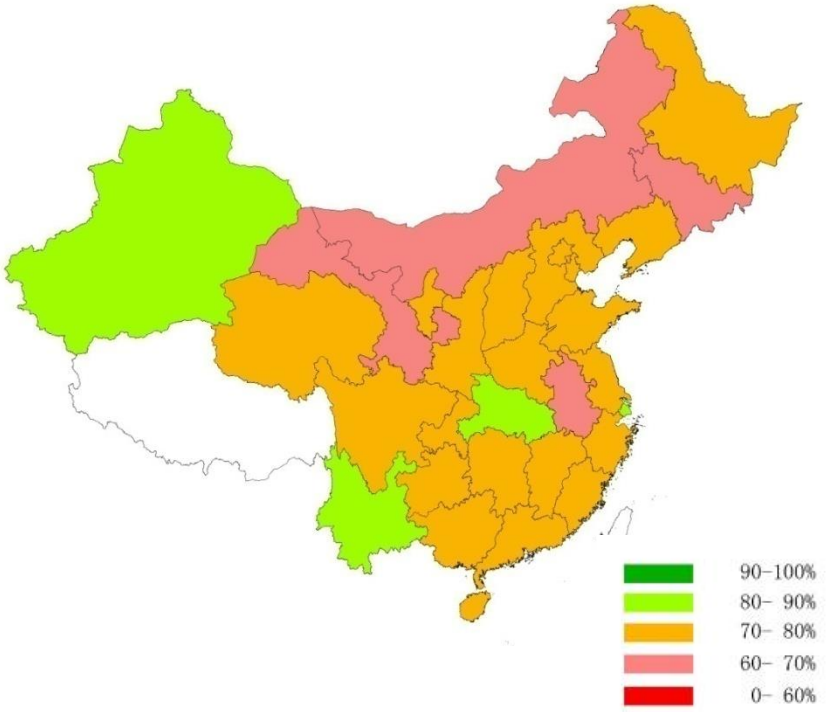
Hospital sampling frame
stratified by **geographic-economic** level

| Region | Economic level | Provinces | No. of hospitals in the area# | No. of hospitals needed (10%) | Enrolled hospitals in phase 1 | Enrolled hospitals in phase 2 | Total |
|---|---|---|---|---|---|---|---|
| Northern China | Low | NA | -- | -- | -- | -- | -- |
| | Medium-low | Shanxi | 49 | 5 | 4 | 1 | 5 |
| | Medium-high | Hebei | 55 | 5 | 4 | 2 | 6 |
| | High | Beijing, Tianjin, Inner Mongolia | 123 | 12 | 13 | 1 | 14 |
| Northeast China | Low | NA | -- | -- | -- | -- | -- |
| | Medium-low | Heilongjiang | 77 | 7 | 1 | 5 | 6 |
| | Medium-high | Jilin | 39 | 4 | 2 | 1 | 3 |
| | High | Liaoning | 101 | 10 | 2 | 9 | 11 |
| Eastern China | Low | Anhui, Jiangxi | 84 | 8 | 3 | 5 | 8 |
| | Medium-low | NA | -- | -- | -- | -- | -- |
| | Medium-high | Fujian, Shandong | 129 | 12 | 1 | 12 | 13 |
| | High | Shanghai, Jiangsu, Zhejiang | 240 | 23 | 13 | 11 | 24 |
| Central China | Low | NA | -- | -- | -- | -- | -- |
| | Medium-low | Henan, Hunan | 134 | 13 | 7 | 7 | 14 |
| | Medium-high | Hubei | 60 | 6 | 0 | 5 | 5 |
| | High | NA | -- | -- | -- | -- | -- |
| Southern China | Low | Guangxi | 50 | 5 | 2 | 2 | 4 |
| | Medium-low | Hainan | 11 | 1 | 2 | 0 | 2 |
| | Medium-high | NA | -- | -- | -- | -- | -- |
| | High | Guangdong | 105 | 10 | 5 | 4 | 9 |
| Southwest China | Low | Guizhou, Yunnan, Tibet | 82 | 8 | 3 | 2 | 5 |
| | Medium-low | Sichuan | 83 | 8 | 0 | 5 | 5 |
| | Medium-high | Chongqing | 22 | 2 | 3 | 0 | 3 |
| | High | NA | -- | -- | -- | -- | -- |
| Northwest China | Low | Gansu | 34 | 3 | 2 | 0 | 2 |
| | Medium-low | Qinghai, Xinjiang | 29 | 3 | 5 | 0 | 5 |
| | Medium-high | Shaanxi, Ningxia | 51 | 5 | 3 | 3 | 6 |
| | High | NA | -- | -- | -- | -- | -- |
| **Total** | | | **1558** | **150** | **75** | **75** | **150** |

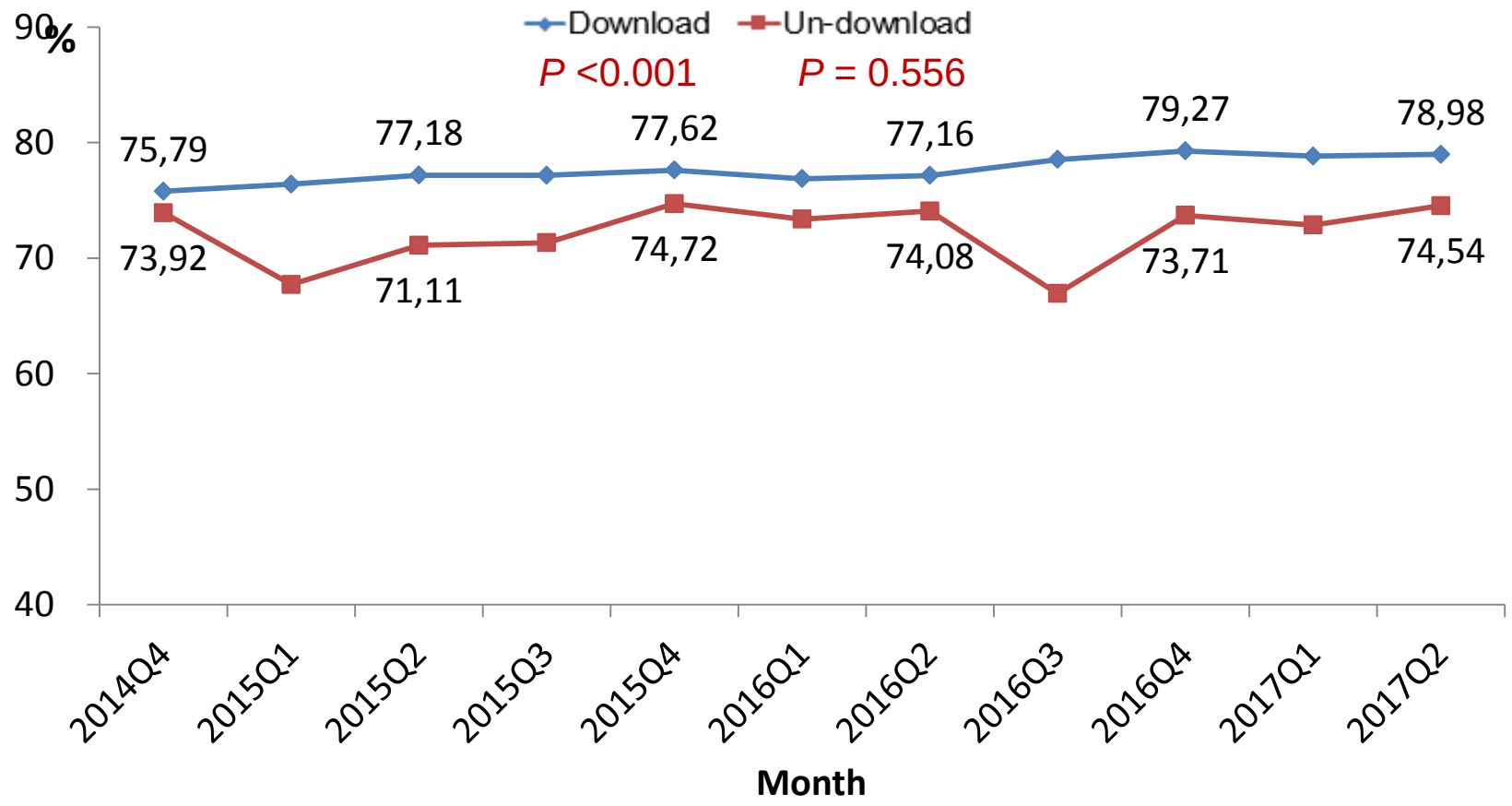
# National Distribution of Composite Scores of ACS Primary Performance Measures




Composite scores of ACS primary performance measures

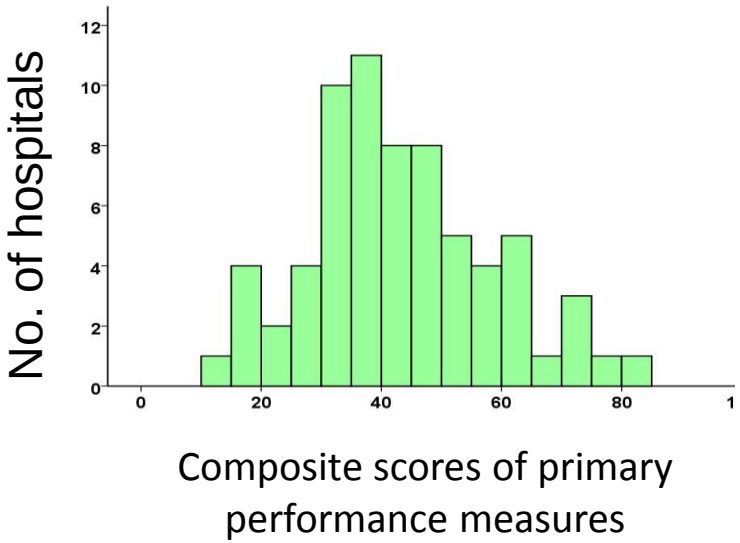


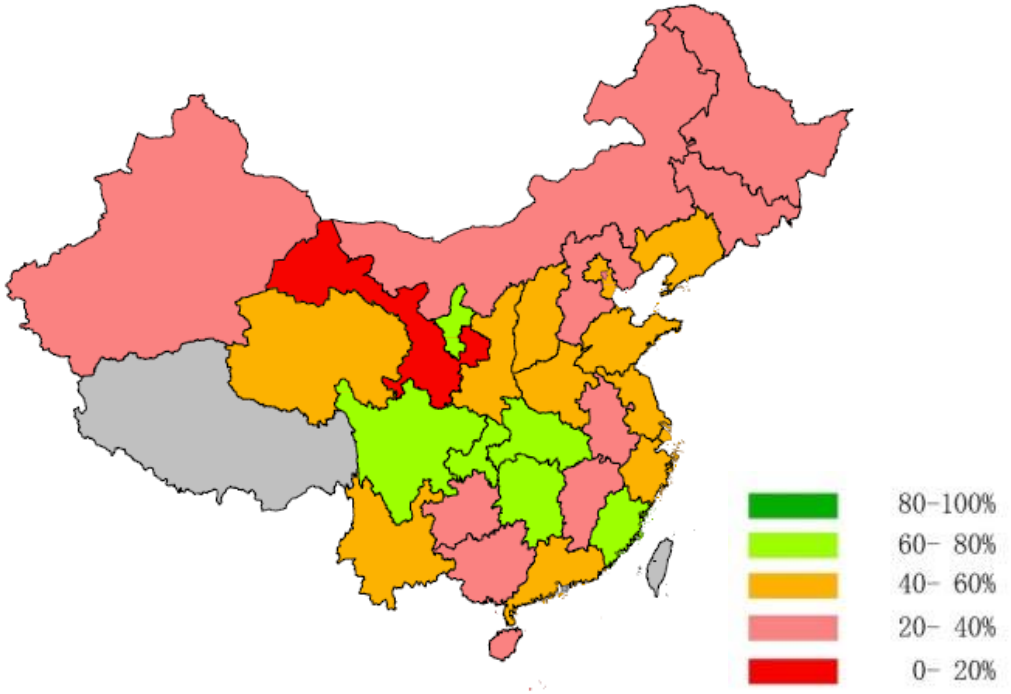
# Composite Scores of ACS Primary Performance Measures Improved Significantly in Hospitals which Downloaded Reports



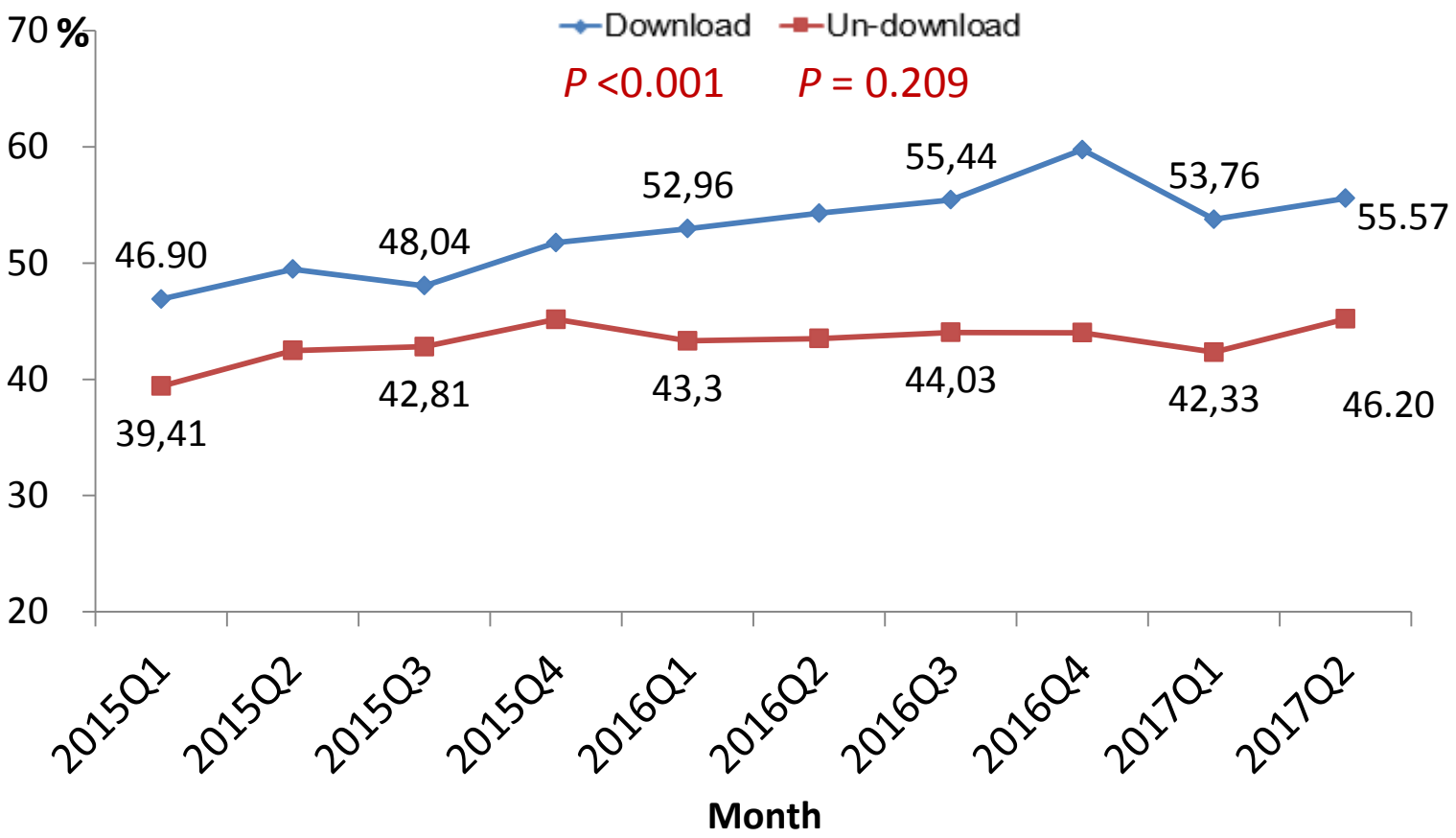

* Trend Chi-square test

# National Distribution of Composite Scores of AF Primary Performance Measures



# Composite Scores of AF Primary Performance Measures Improved Significantly in Hospitals which Downloaded Reports




* Trend Chi-square test

# Hospital Awards of CCC Project

| Awards | ACS-2016 | | AF-2016 | |
|---|---|---|---|---|
| | No. | % | No. | % |
| **Medical Quality** | | | | |
| Gold | 14 | 12.0 | 7 | 6.1 |
| Silver | 23 | 19.7 | 2 | 1.7 |
| Bronze | 23 | 19.7 | 1 | 0.9 |
| Progress | 3 | 2.6 | 3 | 2.6 |
| **Data Quality** | 3 | 2.6 | 3 | 2.6 |
| **Active Participation** | 3 | 2.6 | 3 | 2.6 |
| **Total** | 69 | 59.0 | 19 | 16.5 |
| No. of Hospitals | 117 | 100 | 115 | 100 |

**Annual Awards Conference**

# AHA Presidential Address 1995

**"Although the cardiovascular physician must play a leadership role in risk-reduction efforts, I believe success will depend upon a team approach involving nurses and other healthcare providers. Recent work from the Stanford Cardiac Rehabilitation MULTIFIT program revealed significant improvement in risk-reduction therapies with a nurse-managed program. Most agree our healthcare delivery system must change to include greater involvement by nurses and other healthcare providers if we expect risk-reduction efforts to be successful."**

MULTIFIT

| | Usual Care (n-292) | Nurse-Managed Care (n=293) | *P* |
|---|---|---|---|
| Smoking cessation | 53% | 70% | .03 |
| Plasma LDL, mg/dL | 132±30 | 107±30 | .001 |
| Functional capacity | 8.4±2.5 | 9.3±2.4 | .001 |

Smoking cessation and LDL levels were assessed at 6 months; functional capacity, at 12 months. Adapted from Reference 35.

Table 5. Nurse Case-Management System for Risk Modification After Acute Myocardial Infarction (MULTIFIT)

Smith, SC Circulation 1996; 93: 2205-2211

# China :Specialized Nurse Project

- Independent Grants for Learning and Change (approval 9/ 2017)
- Collaboration with the Chinese Nurses Association(CNA) and Chinese Society of Cardiology endorsed by NHFPC
- Conduct specialized training using the MULTI FIT approach for 2 nurses from 12 hospitals
- Nurses work with Cardiologist on patient education ,behavior modification, and adherence to secondary prevention Rx with one year follow up
- After successful completion pilot project can be expanded to CCC and other hospitals
- Cardiovascular Specialized Nurse Certification of Course Completion given by CNA/AHA upon successful completion at 12 months.

# Brazil:
# BPC Sites - Phases One and Two


Phase One 7 sites
Phase Two 9 sites

| ESTADO | CIDADE | CENTRO | PI |
|---|---|---|---|
| MINAS GERAIS | UBERLANDIA | Hospital da Clínicas - Universidade Federal de Uberlândia | Elmiro Resende |
| TOCANTINS | PALMAS | Hospital Geral de Palmas | Wallace Silva |
| MATO GROSSO | CUIABA | Hospital Universitário Júlio Müller | Luiz Scala |
| PARÁ | BELEM | Fundação Pública Estadual Hospital das Clínicas Gaspar Vianna | Dilma Souza |
| ALAGOAS | ARAPIRACA | Universidade Federal de Alagoas | Maria Alayde Mendonça da Silva |
| PARANA | CURITIBA | IRMANDADE DA SANTA CASA DE MISERICORDIA DE CURITIBA | Lídia Zytynski Moura |

# BPC Program Progress

- Patient Records Entered:  2,229
- ACS 809 patients
- Heart Failure 607 patients
- Atrial Fibrillation 813 patients
- Site Engagement Activities:
- Workshops
- July 2016
- IHI Focused Workshop March 2017
- Scheduled November 2nd Workshop
- Webinars every other month

# BPC Program Progress

- First Recognition Event Planned for November 2017 associated with the Brazilian Society of Cardiology Annual Congress
- One AHA and SBC Joint Session during the Congress will be dedicated to Quality Improvement and highlight some of the hospitals accomplishments
- Draft Manuscript of BPC Project Design and Methods under review by Senior Management Group

# GWTG Middle East

*AHA Implementation Support*:

- In country AHA staff
- Stakeholder meetings
- Workshops and Webinars
- Data entry into Quintiles IMS PMT®

*Program Activities*

- Quality Suite of Programs:
- GWTG-HF available May 1, 2017
- GWTG-Stroke available December 2017
- GWTG-CAD and GWTG-AFIB available February 2018
- GWTG-Resuscitation available April 2018

Program endorsed by the Emirates Cardiac Society

American Heart Association | American Stroke Association
life is why™

# QI Program Differentiators

- Moving *beyond* traditional registries with the overlay of a quality improvement framework and supporting tactics- *making data 'actionable'*!
- AHA's 14+ years experience in quality improvement programs and demonstrated success in improving guidelines-based care and patient outcomes.
  - Successful model in China, underway in Brazil, starting in Dubai in adapting quality improvement internationally.
- Program oversight and governance structure includes the in-country and global key opinion leaders.
  - Programs "owned" in-country;
  - AHA is a collaborator alongside in-country champions.
- Endorsement by ministry of health and collaboration with country society are important for long-term sustainability consideration.
- Recognition for successful performance improvements provides hospitals and healthcare professionals incentive to commit resources, time, and energy to initiative

# UN Forum on Sustainable Development Goals (SDG's) July 10-19, 2017

- Related to the World Health Organizations efforts to reduce premature death related to NCD's (Non Communicable Diseases)
  - CV death leading cause of death in majority of countries

- The July Forum was a platform for countries to report on the actions and progress toward their SDG's

- AHA hosted side event, in NYC, in collaboration with governments of China and Brazil to demonstrate action taken to address CV disease in both of these countries, via AHA quality improvement program activities.

- The event featured the collaborative QI programs of Triple C (China) and BPC (Brazil) and serve to showcase a CVD specific solution to reduce M/M of CVD NCDs.

American Heart Association | American Stroke Association
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Hospital do Coração
HCor
Associação do Sanatório Sírio

PROADI-SUS

SOCIEDADE BRASILEIRA DE CARDIOLOGIA
SBC
MCMXLIII

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