NRMI
and the
American ACS Registries

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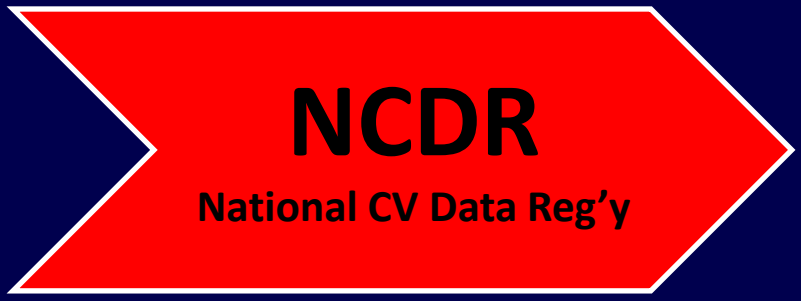
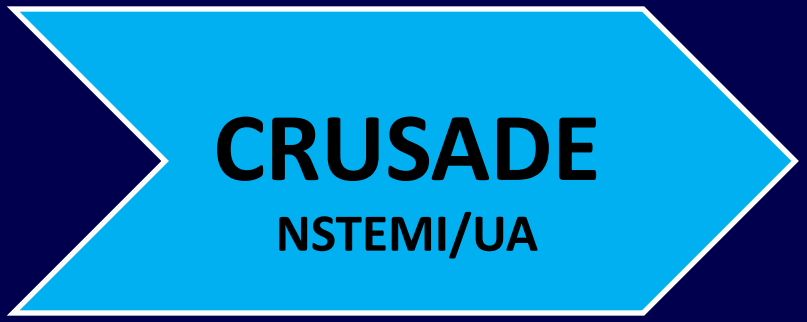
No Disclosures


NRMI
National Registry of MI


NCDR
National CV Data Reg'y


CRUSADE
NSTEMI/UA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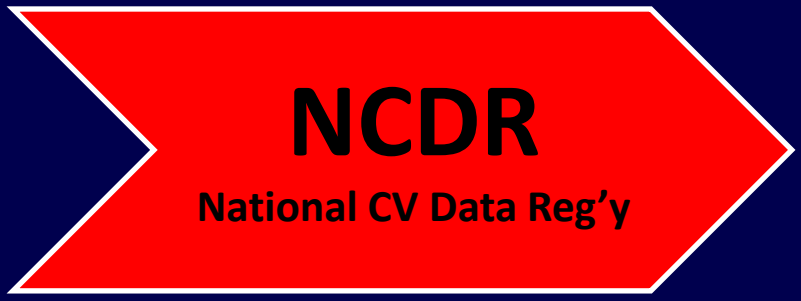
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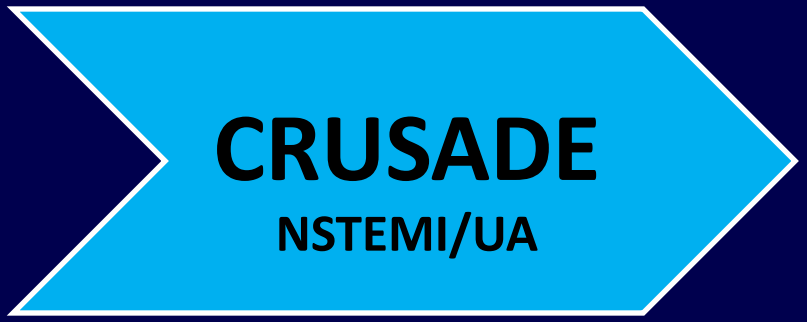
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National Registry of Myocardial Infarction (NRMI)

- **Initiated to monitor safety, efficacy of tPA (Genentech)**
- **1990-2006**
  - Leading US pt registry in size and duration
  - >2.5 million pts with MI
  - >1700 institutions (>25% of US hospitals)
- **130 publications, 170 abstracts**
- **Template for other registries, observational studies**

VIEWPOINT

JAMA 2012;308:771

Transforming Quality of Care and Improving Outcomes After Acute MI

Lessons From the National Registry of Myocardial Infarction

William J. French, MD

Vanessa S. Reddy, MS

Hal V. Barron, MD

THE NATIONAL REGISTRY OF MYOCARDIAL INFARCTION (NRMI) was the leading cardiovascular disease (CVD) patient registry from 1990 to 2006 in both size and duration. Notably, the various analyses and publications that resulted from the NRMI had direct and substantial effects in improving quality care for acute myocardial infarction (AMI) treatment in the United States.[1]

The NRMI has provided important lessons regarding effective observational study design, implementation and analysis, and the use and communication of findings pertinent to the broader clinical and research community. At the intersection between comparative effectiveness research and clinical quality improvement, the NRMI serves as a template for the development of future registries and large observational studies.

Although CVD continues to be the leading cause of death in the United States, major advances in AMI management, such as the introduction of thrombolytic therapy (1980s) and advanced invasive primary angioplasty techniques (1990s), have mitigated the disease burden over recent decades. These therapeutic milestones coincided with important changes in the US health care system, with demands for higher-quality and more

collection model was revolutionary in scope, and its growth was exponential, enrolling more than 2.5 million patients hospitalized for AMI from more than 1700 sites, representing more than 25% of US hospitals providing AMI care.

Ultimately evolving into a national observational tool, the NRMI helped transform the quality of AMI care through measurement and analysis of treatment patterns and patient outcomes. A major observation from the NRMI was the relationship between the time to reperfusion strategy and subsequent adverse in-hospital outcomes, which was previously unclear due to conflicting study results (TABLE).[2] Tracked through quality improvement initiatives using NRMI reports, door-to-needle (DTN) and door-to-balloon (DTB) times decreased significantly over time and were associated with improved in-hospital mortality.[3] By study end, median DTN and DTB times fell below guideline recommendations (Table).[3]

The NRMI findings have been communicated throughout the clinical community by regional presentations and by more than 130 published articles and 170 abstracts. Widespread and accelerated dissemination of results and best practices helped physicians and hospitals achieve remarkable improvements in AMI treatment delivery and outcomes. The AMI treatment knowledge base has also expanded through the multiple iterations of NRMI findings incorporated within multiple iterations of AMI clinical practice guidelines, reflecting

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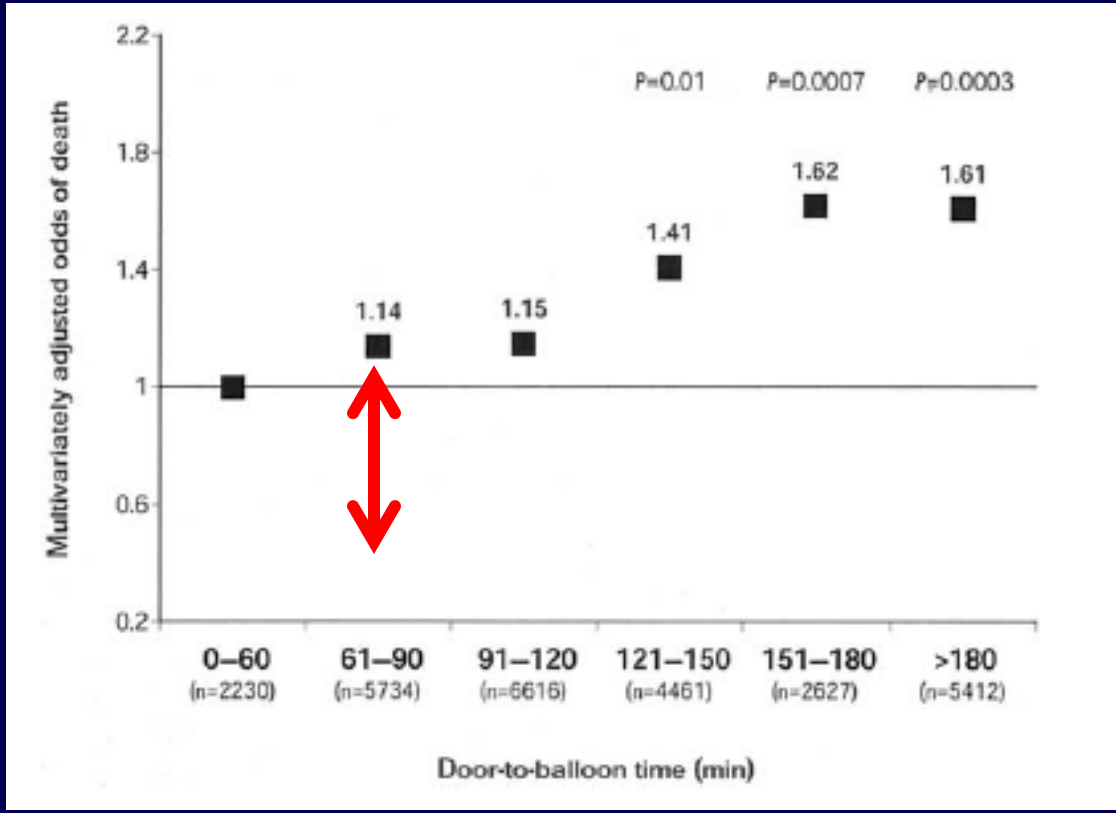
- **Decreased time to reperfusion yielded lower mortality**
  - Standards established for time to reperfusion

Primary PCI door-to-balloon time and mortality



Gibson, Am Heart J 2004;148:S29–33

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- **AMI performance and quality measurement**
  - Approval of NRMI data for JCH reporting


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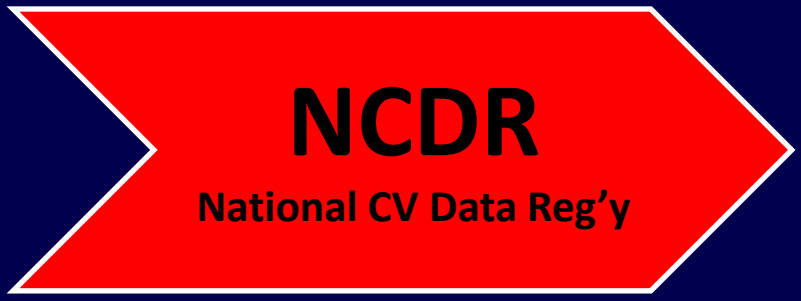
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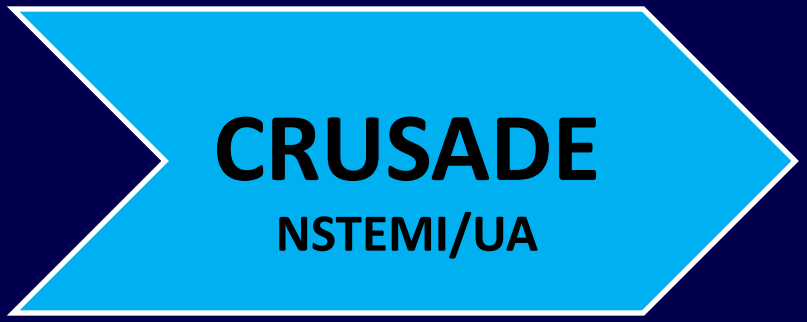
CRUSADE
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CRUSADE Initiative

A National Quality Improvement Initiative

- **Goal: Improve adherence to ACC/AHA guidelines**
- **Patients with NSTE MI and Unstable Angina**
  - >190,000 patients
  - >500 sites
- **Data: 7/2001-12/2006**
- **>50 publications**
- **Referenced in ACC/AHA guidelines**

Some Lessons from CRUSADE

A National Quality Improvement Initiative

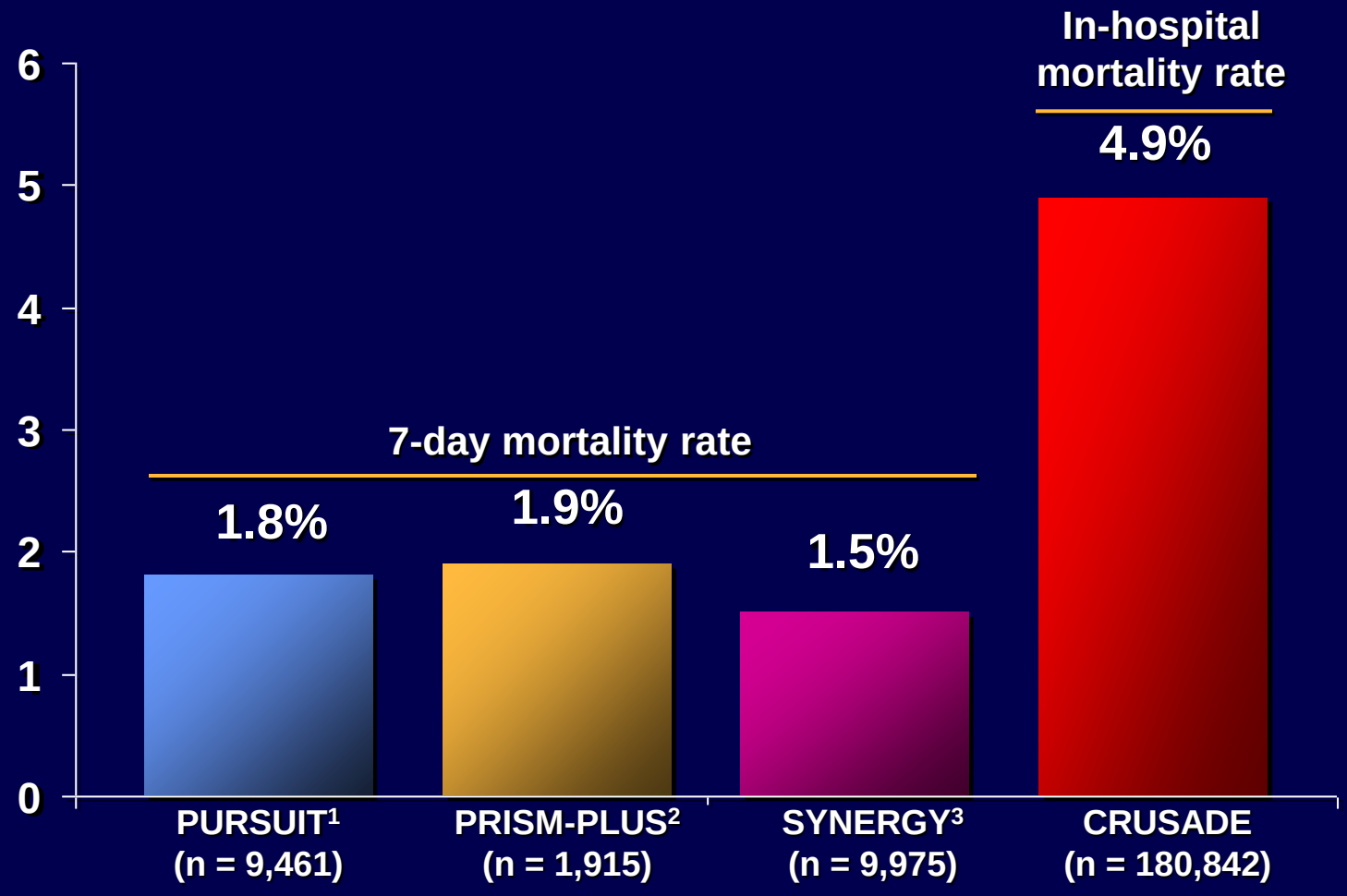
E. Peterson, Duke Clin Res Inst

Lesson: Complexity of NSTEMI Pts

STEMI vs. NSTEMI Characteristics

Variable	CRUSADE STEMI (n = 8,011)	CRUSADE NSTEMI (n = 180,842)
Mean age ± SD (yrs)	62 ± 12	69 ± 14
Female sex (%)	31	40
Diabetes mellitus (%)	22	33
Prior MI (%)	18	30
Prior CHF (%)	6	18
Prior PCI (%)	17	21
Prior CABG (%)	7	19

Lesson
Mortality: Clinical Trials vs. CRUSADE

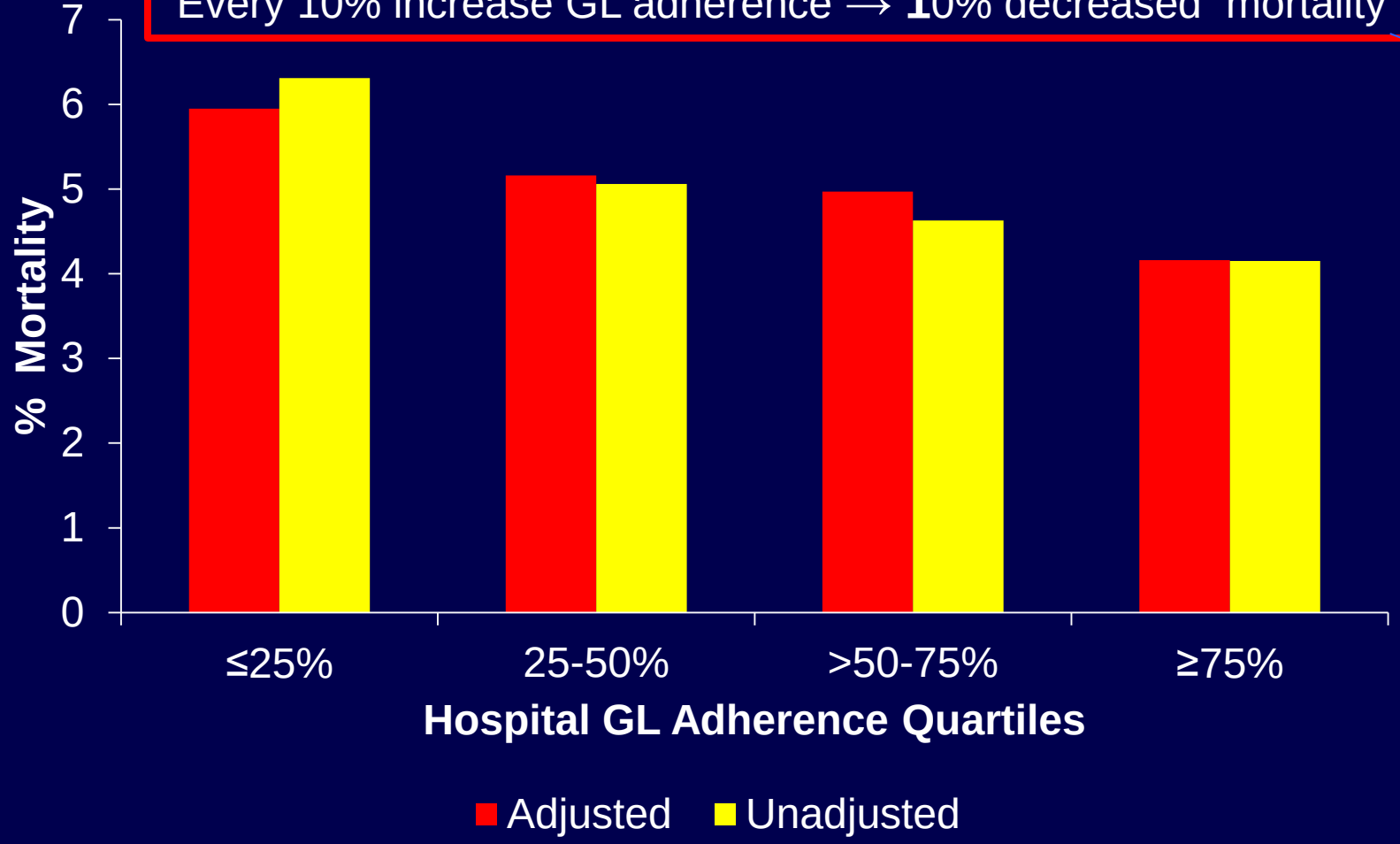


1.The PURSUIT Trial Investigators. N Engl J Med 1998
2.The PRISM-PLUS Study Investigators.
N Engl J Med 1998
3. The Synergy Study JAMA 2004

CRUSADE cumulative data through 6/30/2006

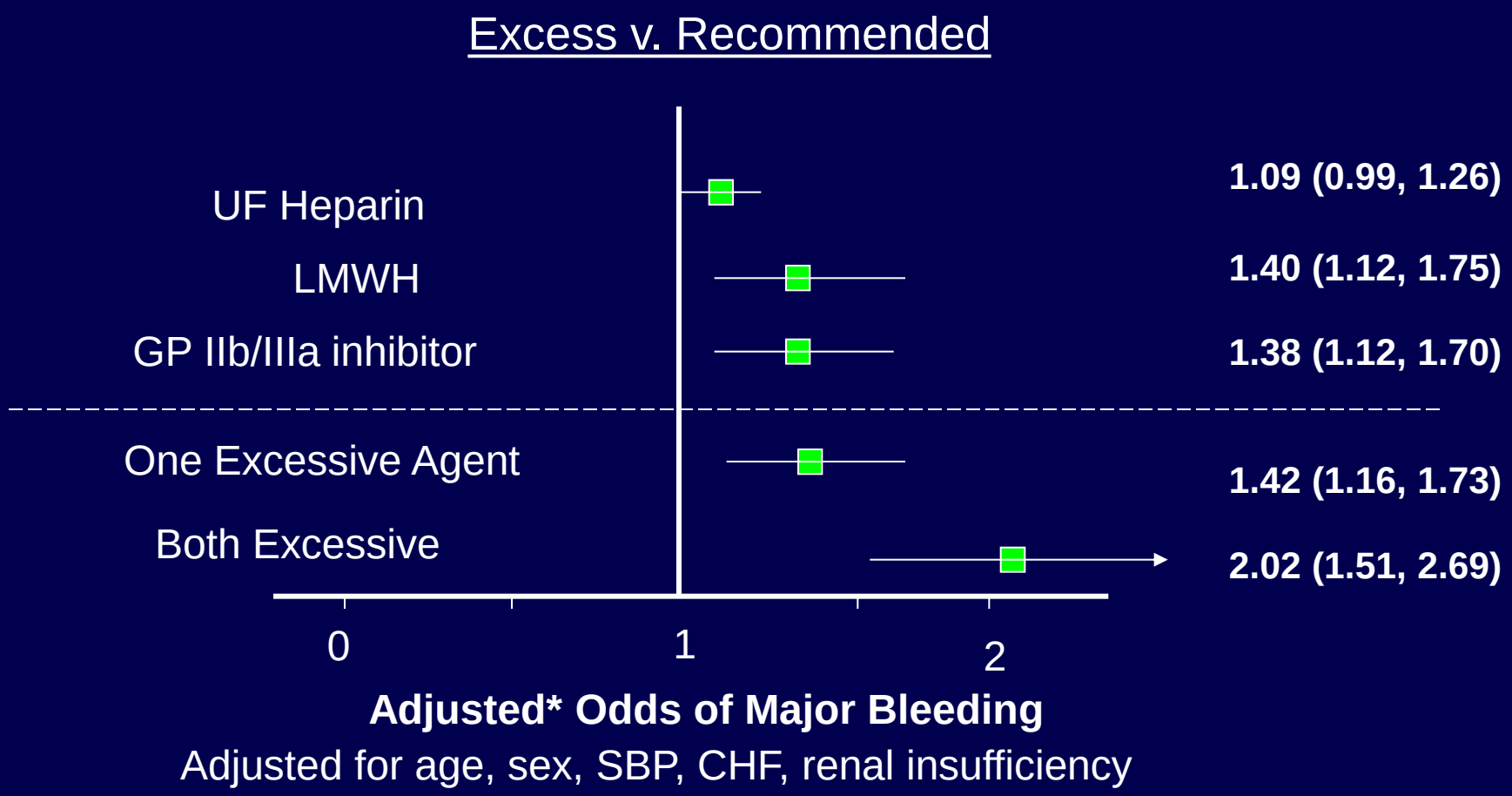
Lesson: Hospital Mortality and Guideline Adherence

Every 10% increase GL adherence → **1**0% decreased mortality



Peterson, JAMA 2006;295:1863

Lesson: Major Bleeding with Excess Anti-thrombotic Dose



Alexander KA, JAMA 2005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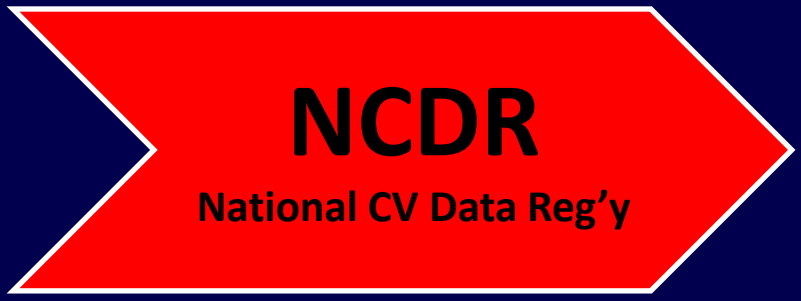
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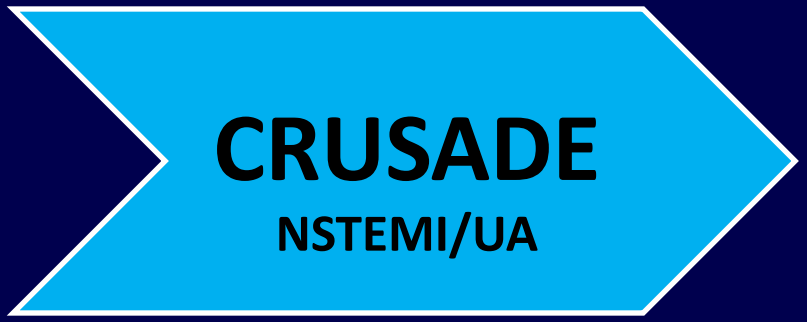
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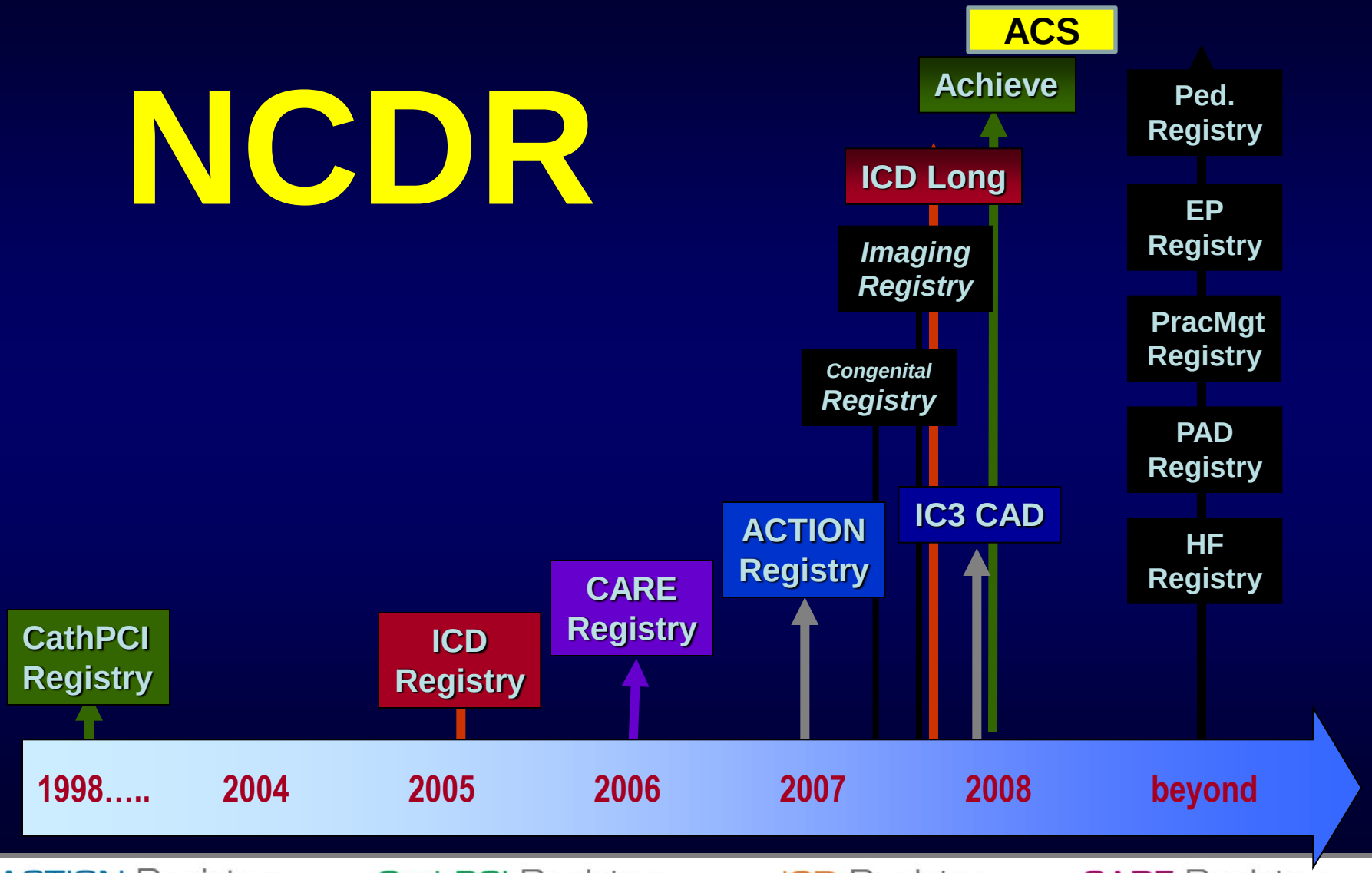
CRUSADE and NRMI to ACTION™ ACTION (ACC)

- **Need for Growth**
  - Many US hospitals not in CRUSADE/NRMI
- **Need for Alignment**
  - Several similar US registries (AHA GWTG, ACC PCI, NRMI)
- **Need for National Policy Change**
  - Single source on ACS for providers, payers and policy makers

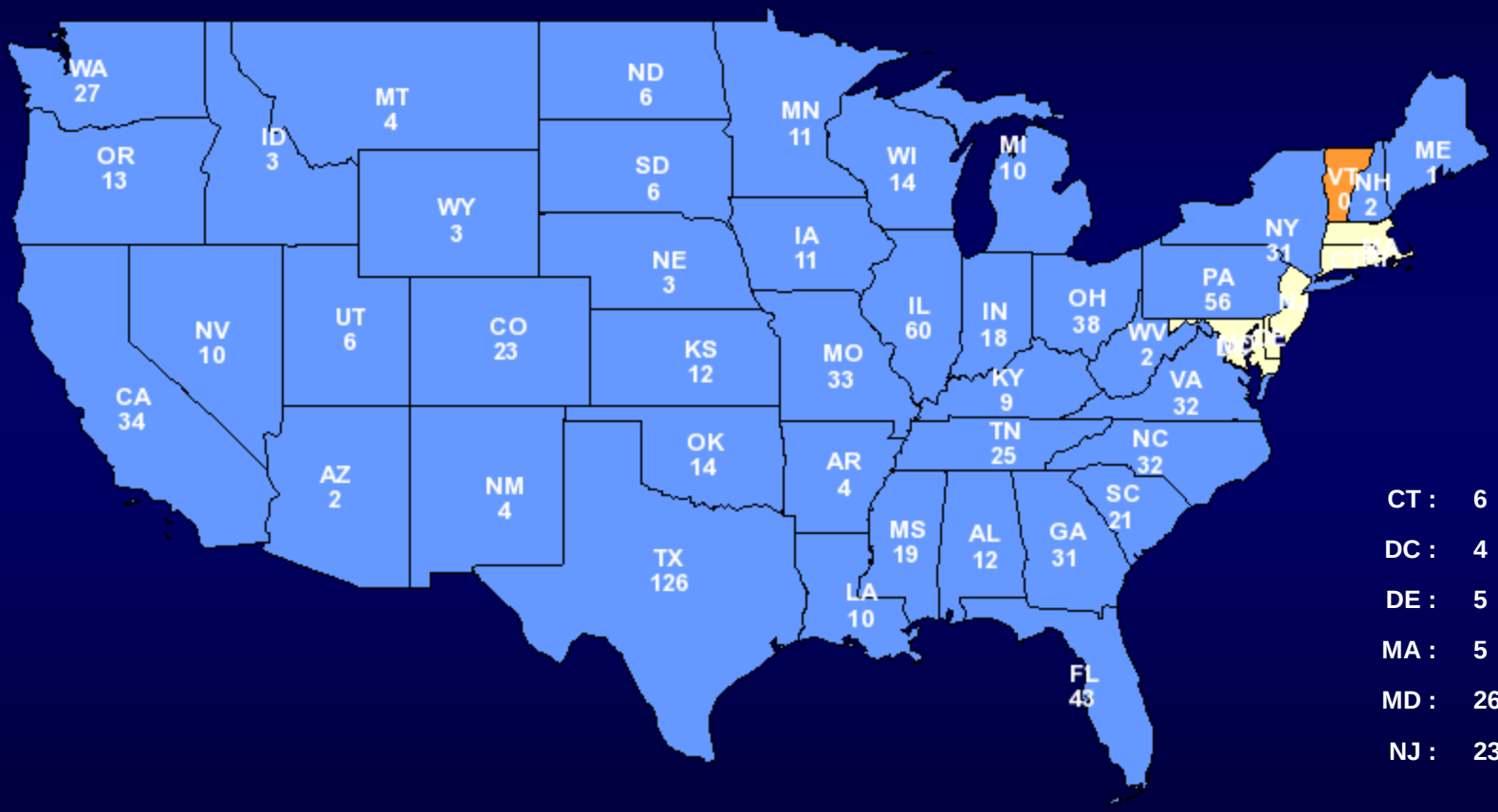
NCDR™
National Cardiovascular Data Registry

NCDR



Current Site Distribution

Active Sites = 896



CT :	6
DC :	4
DE :	5
MA :	5
MD :	26
NJ :	23

Alaska : 1 Hawaii: 7 Puerto Rico: 3 International Participants: 3

Hospital Presentation Characteristics: STEMI

Variable	STEMI (n = 56,761)
Qualifying Criteria	
Persistent ST Elevation	97%
New LBBB	**2%**
High Risk Presenting Signs	
Tachycardia	17%
Hypotension	7%
Signs of HF	7%
Cardiogenic shock	8%
Pre-Hospital Cardiac Arrest	8%

ACTION Registry-GWTG DATA: January 01, 2012 - December 31, 2012

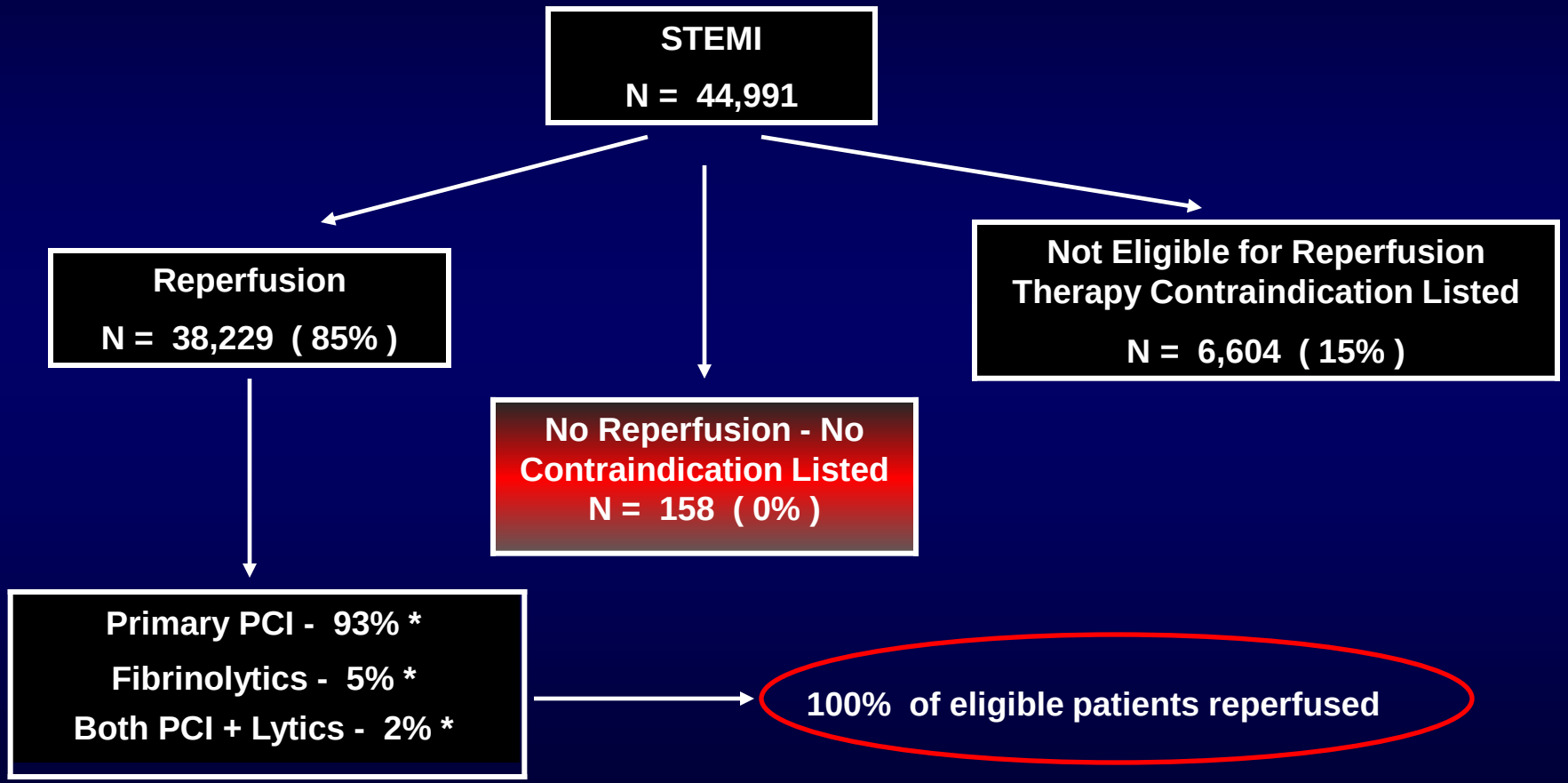
In-Hospital Outcomes: STEMI

Variable	STEMI (n = 56,761)
Median hospital LOS	3
Death*	6.4%
Re-infarction	0.7%
HF	5.0%
Cardiogenic Shock	4.6%
Stroke	0.5%
RBC Transfusion**	3.3%
Suspected Bleeding Event**	3.1%

*Unadjusted mortality
** Among non-CABG patients

ACTION Registry-GWTG DATA: January 01, 2012 - December 31, 2012

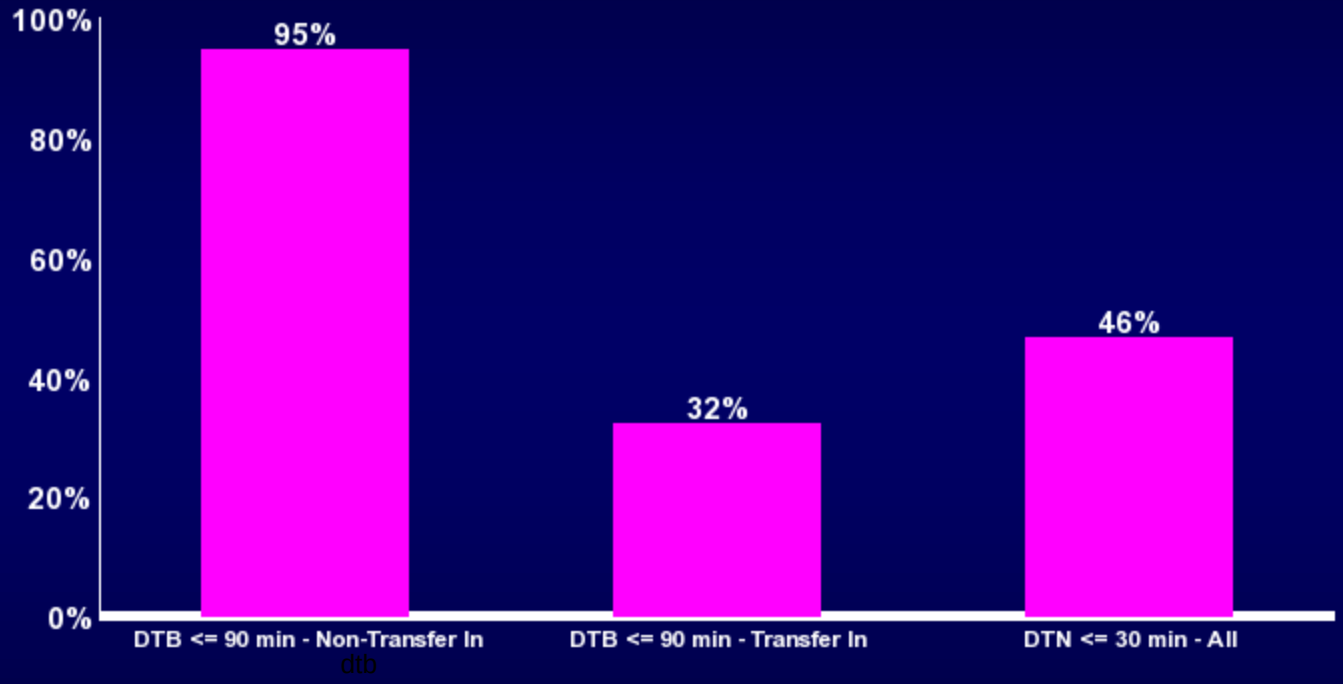
Reperfusion Therapy for STEMI



* *Among patients receiving reperfusion*

ACTION Registry-GWTG DATA: January 01, 2012 - December 31, 2012

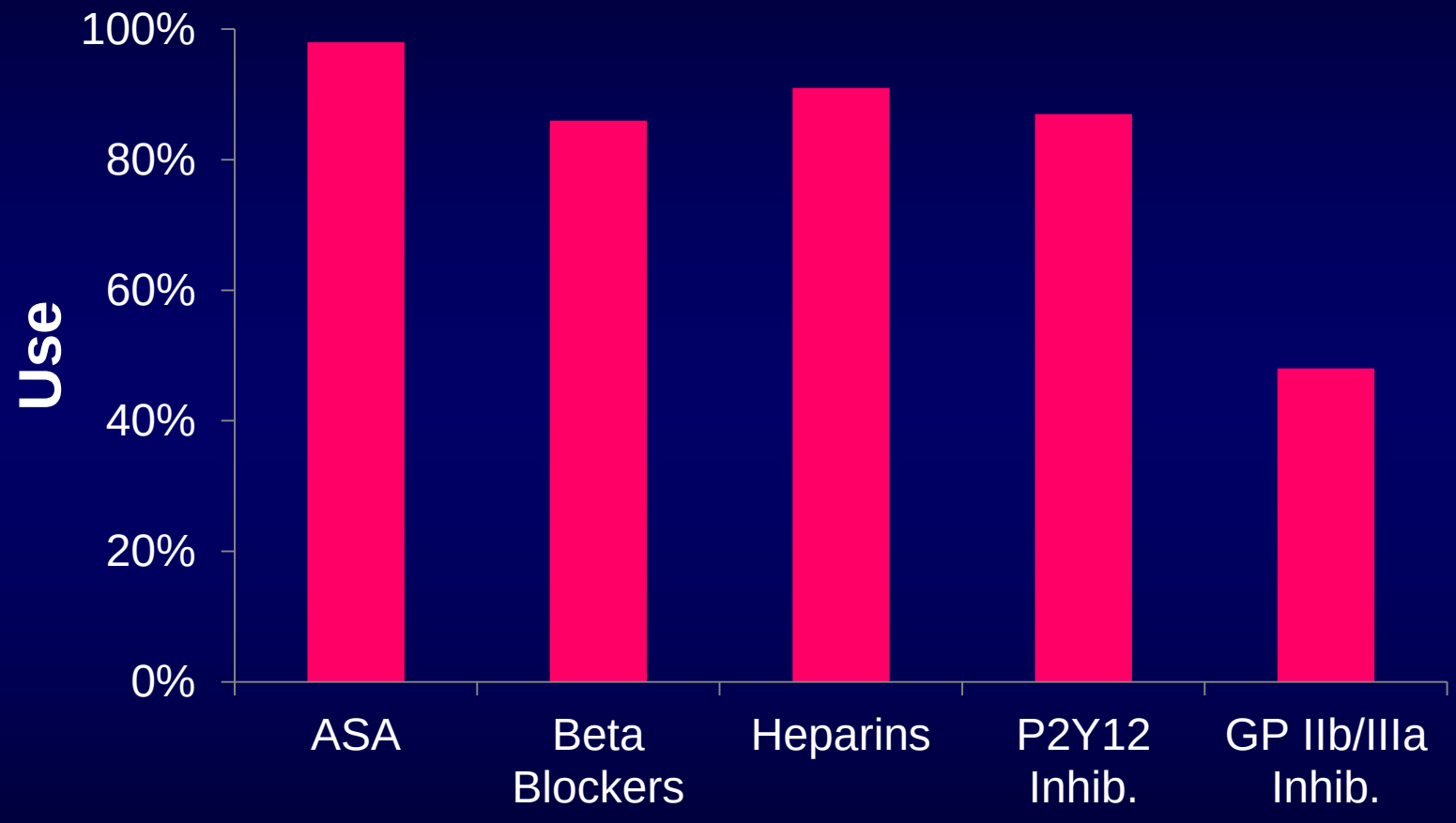
STEMI – Door to Balloon and Door to Needle Times 1 yr Results



DTB = 1st Door to Balloon for Primary PCI
DTN = Door to Needle for Lytics

ACTION Registry-GWTG DATA: January 01, 2012 - December 31, 2012

STEMI: Acute Medications (<24 hr)



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*P2Y12's may overlap

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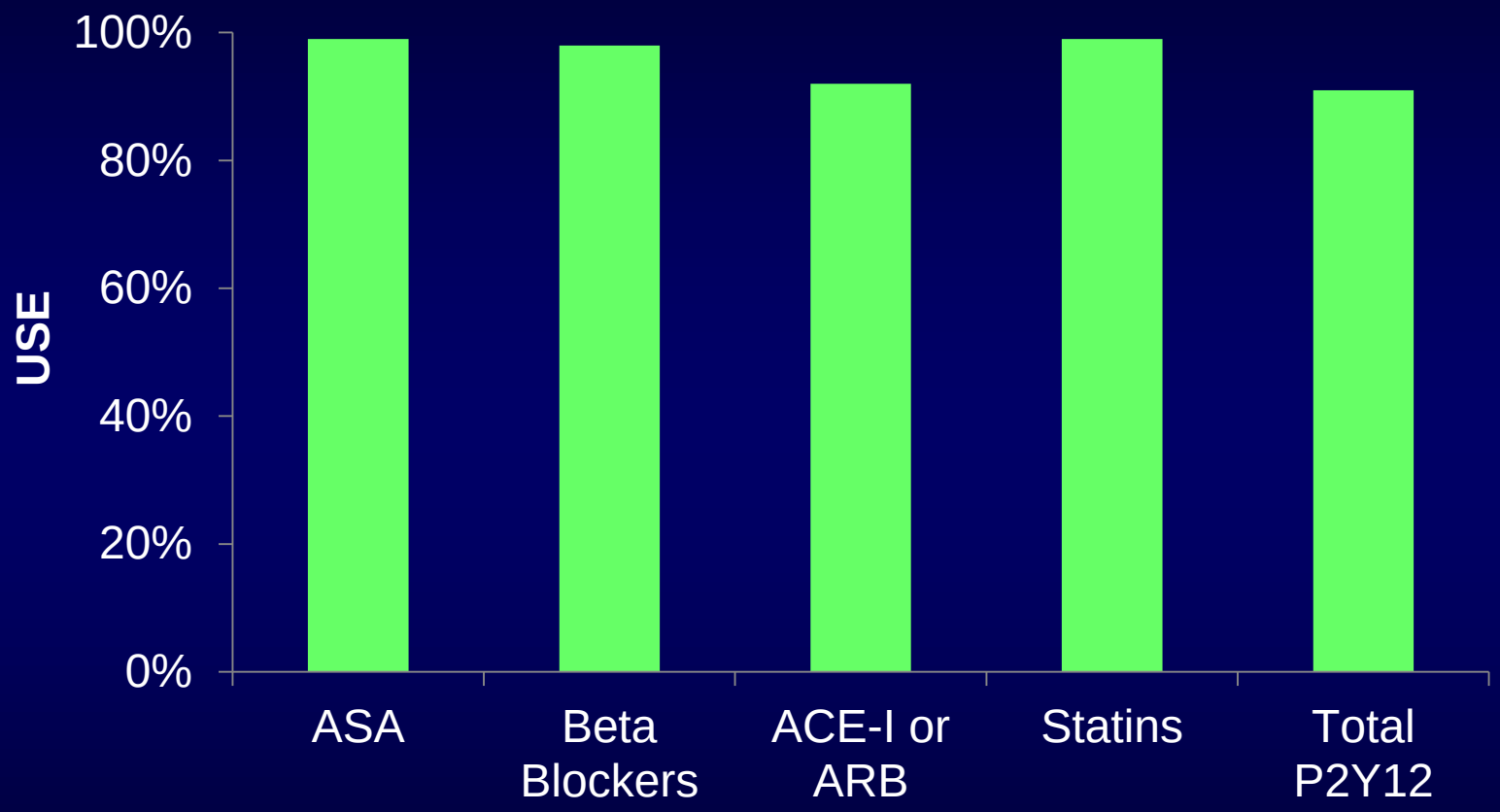
STEMI Discharge Medications



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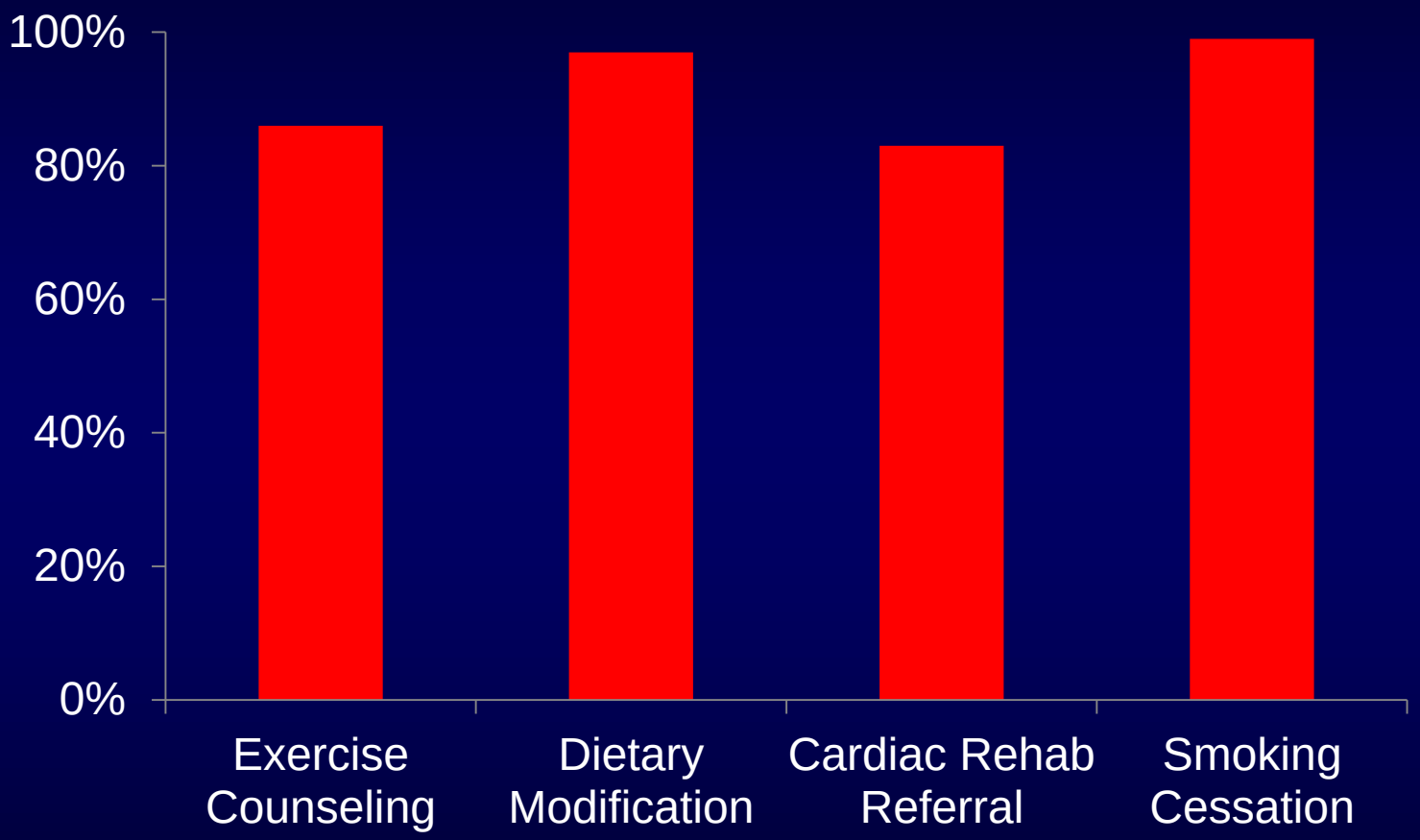
STEMI Discharge Interventions



ACTION Registry-GWTG DATA: January 01, 2012 - December 31, 2012

Summary of US ACS Registries

- Basic practice patterns for MI patients
- Comparison of STEMI and NSTEMI patients
- Importance of time to reperfusion
- Guideline adherence and relation to clinical outcomes
- Identification of undertreated populations
- Importance of “real world” data
- Impact on databases, guidelines, outcome measures