ACTION Registry – GWTG Research and Publications Update
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Pauley Heart Center, Virginia Commonwealth University

The following relationships exist:
Dr. Kontos: Provenceo, Wellpoint/Anthem

Session Objectives
Why is research important?

- Research: systematic investigation designed to develop or contribute to generalizable knowledge
- What is the process?
  - Starts by asking a question
  - Proceeds through protocol development, data analysis to manuscript development and publication

What does the Research and Publications Committee do?

- Recommend research priorities
- Review and approve funding for research and publications applications for the NCDR
- Describe gaps in the clinical research or opportunities which will impact a large number of patients
What does the Research and Publications Committee do?

- Mentor new researchers/authors/fellows in training to complete their research
- Provide feedback to investigators on research proposals

What are the Analytic Centers?

- Collect and analyze outcomes, economic and quality-of-life data for clinical research
- Conduct comparative studies
- Quality measure development, research on hospital quality including care disparities
- Develop clinical decision – making models and instruments

Data Quality Program

- Quality Assurance for analytic data files
- Accuracy and completeness of data ensures quality research → clinical practice guideline recommendations
- Data Audit Program

YOU are important!

• Quality improvement
  – Systematic, data-guided activities designed to bring about immediate improvements in healthcare delivery in a particular setting
• Research
  – Evaluates quality improvements efforts to generalize these efforts more broadly

ARS Question #1

Do you know where to find the publications from the ACTION Registry – GWTG on the NCDR Website?

A. Yes
B. No
ARS Question #1

Do you know where to find the publications from the ACTION Registry – GWTG on the NCDR Website?

A. Yes
B. No

ACTION Registry – GWTG Abstracts and Publications

- 49 total manuscripts currently published using ACTION Registry – GWTG data
- First published paper 2009
- 2013
  - 10 total manuscripts published
  - 12 abstracts approved and presented
STEMI Door-In-Door-Out Time

- Door-In-Door-Out ("DIDO") is defined as duration of time from arrival to discharge at the STEMI referral hospital

- Article reinforced DIDO as a measure of clinical performance

STEMI Door-In-Door-Out Time

- Median time 68 (43-120) minutes
- 11% ≤ 30 minutes

Longer DIDO time assoc. with increased Mortality!
Door-In-Door-Out
A Quality Improvement Journey Utilizing Research

Where were we at the time the research was published?

- Recognize variables associated with longer DIDO times:
  - Patient characteristics
  - Temporal trends
  - Community education opportunities
### Door-In-Door-Out

**A Quality Improvement Journey Utilizing Research**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Adjusted OR (95% CI)</th>
<th>q²</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate (per 10 beats/min increase)</td>
<td>1.06 (1.04, 1.09)</td>
<td>28,5</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Female</td>
<td>1.42 (1.02, 1.96)</td>
<td>21,4</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Race</td>
<td>1.38 (0.94, 2.04)</td>
<td>14,4</td>
<td>.128</td>
</tr>
<tr>
<td>Male sex</td>
<td>1.30 (0.98, 1.72)</td>
<td>15,4</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Malignant disease at presentation</td>
<td>1.55 (1.01, 2.37)</td>
<td>12,0</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Time from presentation to admission</td>
<td>1.29 (1.09, 1.52)</td>
<td>2,4</td>
<td>.010</td>
</tr>
<tr>
<td>Time from arrival to hospital</td>
<td>1.28 (1.08, 1.51)</td>
<td>9,4</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Prior stroke</td>
<td>1.51 (1.09, 2.10)</td>
<td>6,0</td>
<td>.012</td>
</tr>
<tr>
<td>Current cancer smoker</td>
<td>1.40 (0.71, 2.70)</td>
<td>5,0</td>
<td>.202</td>
</tr>
</tbody>
</table>

**Table 2.** Patient Characteristics Significantly Associated With a DIDO Time of 30 Minutes or Greater

- **Process Changes**
- **Developing Systems of Care**
- **Language is powerful (‘brand’ recognition e.g. D2B; DIDO developed as a recognizable measure to be achieved & reported)**

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### Door-In-Door-Out

**A Quality Improvement Journey Utilizing Research**

- Process Changes
- Developing Systems of Care
- Language is powerful (‘brand’ recognition e.g. D2B; DIDO developed as a recognizable measure to be achieved & reported)

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### Door-In-Door-Out

**A Quality Improvement Journey Utilizing Research**

Before and After
STEMI Door-to-Balloon Times Median Times for Transfer In and Non-Transfer In Patients

<table>
<thead>
<tr>
<th>Q1 11</th>
<th>Q4 11</th>
<th>Q3 10</th>
<th>Q4 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>145</td>
<td>144</td>
<td>141</td>
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<tr>
<td>61</td>
<td>112</td>
<td>111</td>
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<tr>
<td>46</td>
<td>110</td>
<td>108</td>
<td>104</td>
</tr>
<tr>
<td>46</td>
<td>104</td>
<td>108</td>
<td>104</td>
</tr>
</tbody>
</table>

Transfer in DTB Times
Non-Transfer in DTB Times

ACTION Registry-GWTG Data: July 01, 2012 - June 30, 2013
### Outcome Report Detail Lines – Arrival Performance Measures

- Line 1612 D$_2$B Non – Transfers median time (mins)
- Line 1614 D$_2$B Transfer – In median time (mins)
- Line 1621 Door-In-Door-Out for Transfer – In patients median time (mins)

A Report of the ACCF/AHA Task Force on Practice Guidelines

Authors: Developed in Collaboration With the American College of Emergency Physicians and Society for Cardiovascular Angiography and Interventions. WRITING COMMITTEE MEMBERS †ACCF/AHA TASK FORCE MEMBERS

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### Onset of Myocardial Infarction

Regional Systems of STEMI Care, Reperfusion Therapy, and Time-to-Treatment Goals
Reperfusion Therapy for Patients with STEMI

*Patients with cardiogenic shock or severe heart failure initially seen at a non-PCI-capable hospital should be transferred for cardiac catheterization and revascularization as soon as possible, irrespective of time delay from MI onset (Class I, LOE: B).†Angiography and revascularization should not be performed within the first 2 to 3 hours after administration of fibrinolytic therapy.

Regional Systems of STEMI Care, Reperfusion Therapy, and Time-to-Treatment Goals

Immediate transfer to a PCI-capable hospital for primary PCI is the recommended triage strategy for patients with STEMI who initially arrive at or are transported to a non–PCI-capable hospital, with an FMC-to-device time system goal of 120 minutes or less.*

In the absence of contraindications, fibrinolytic therapy should be administered to patients with STEMI at non–PCI-capable hospitals when the anticipated FMC-to-device time at a PCI-capable hospital exceeds 120 minutes because of unavoidable delays.

*The proposed time windows are system goals. For any individual patient, every effort should be made to provide reperfusion therapy as rapidly as possible.

Metric #18 – “DIDO”

Time from ED arrival at STEMI referral facility to ED discharge from STEMI referral facility in patients transferred for P-PCI
Metric #19 – D1D2B
Time from ED arrival at STEMI referral facility to P-PCI at STEMI receiving facility among transferred patients

Indications for Fibrinolytic Therapy When There Is a >120-Minute Delay From FMC to Primary PCI

<table>
<thead>
<tr>
<th>Condition</th>
<th>COR</th>
<th>LOE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischemic symptoms &lt; 12 h</td>
<td>I</td>
<td>A</td>
</tr>
<tr>
<td>Evidence of ongoing ischemia 12 to 24 h after symptom onset and a large area of myocardium at risk or hemodynamic instability</td>
<td>Ia</td>
<td>C</td>
</tr>
<tr>
<td>ST depression, except if true posterior (inferior) MI is suspected or when associated with ST elevation in lead aVR</td>
<td>III</td>
<td>B</td>
</tr>
</tbody>
</table>

Metric #13 – STEMI patients & Fibrinolytic Therapy ≤ 30 minutes
Proportion of STEMI patients with a time from hospital arrival (or if subsequent ECG when STEMI first noted) to fibrinolytics ≤ 30 minutes
Current & Future Research

• Up & Coming!


  - Nicholson BD, Dhindsa HS, Roe MT, Chen AY, Jollis JG, Kontos MC. Distance, Treatment Strategy, and Mode of Transfer for Primary PCI in Patients Presenting to a Hospital Without PCI Capability: A Report from ACTION Registry(R)-GWTG; and The AHA Mission: Lifeline Program. Circulation. 2012;126:A9241

Current & Future Research

• Future:

  - Direct transfer into the cath lab & minimizing reperfusion delays for patients transferred to STEMI Receiving Centers

  - Linking clinical research to Centers for Medicare & Medicaid Services (payor) data

  - Longitudinal patient outcomes

Quality Improvement for Institutions (QII)

• Door to Balloon (D2B)
• Hospital to Home (H2H)
• Surviving MI (SAMI)
• Patient Navigator Program