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About OMICS Group Conferences

OMICS Group International is a pioneer and leading science event organizer, which publishes around 400 open access journals and conducts over 300 Medical, Clinical, Engineering, Life Sciences, Pharma scientific conferences all over the globe annually with the support of more than 1000 scientific associations and 30,000 editorial board members and 3.5 million followers to its credit.

OMICS Group has organized 500 conferences, workshops and national symposiums across the major cities including San Francisco, Las Vegas, San Antonio, Omaha, Orlando, Raleigh, Santa Clara, Chicago, Philadelphia, Baltimore, United Kingdom, Valencia, Dubai, Beijing, Hyderabad, Bengaluru and Mumbai.



Improving Health Care Quality in an Insolvent System: Who will lead?

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Director ACAP Cardiac Research Program

AHA Council of Quality Care and Outcomes Research

St. Luke's and Roosevelt Hospitals, New York

Columbia University, College of Physicians & Surgeons

Outline

- Understanding the challenges in the Current health care system
- Why there is a Gap between training and practicing?
- The new direction of services and how can a newly graduate fit in Being a leader in the community
- Closing the Gap in implementing care
- Successful models and how **SLRHC ACAP program** is a leader that will equip all its trainee to become pioneers in implementing care.
- Our Model story, clinical pathways, there implementation and results

Overview

- Variation in quality and outcomes is substantial and is driven (at least somewhat) by **provider behavior**
- Suboptimal health care quality and outcomes contribute to excess costs
- **Higher quality is not generally associated with higher overall costs**, but improving quality often reduces provider revenue under current payment systems



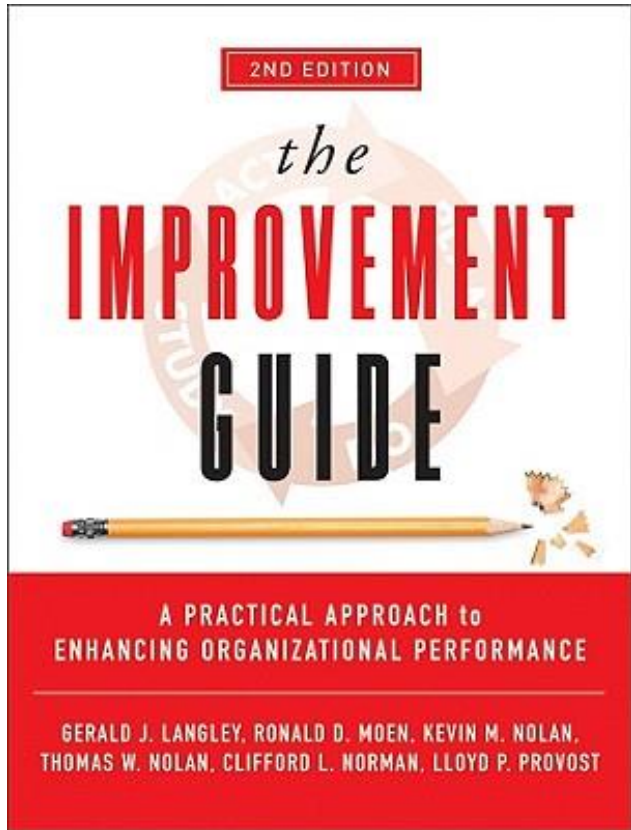
Cardiac Performance Measure Compliance in Outpatients

The American College of Cardiology and
National Cardiovascular Data Registry's PINNACLE
(Practice Innovation And Clinical Excellence) Program

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Compliance rates for cardiac performance measures among outpatients with CAD, heart failure, and atrial fibrillation vary substantially, ranging from **13% to 97%**. These results highlight important gaps in the quality of outpatient cardiac care and provide a valuable benchmark for future improvement.



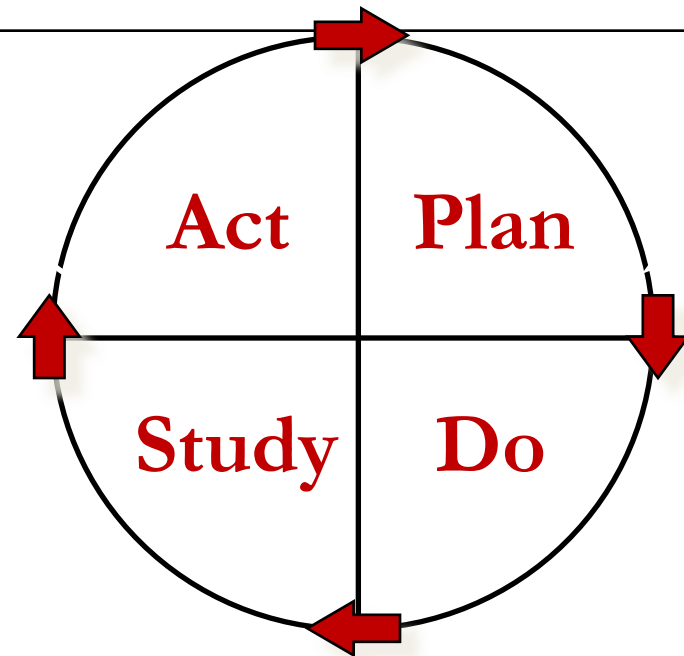
Every system is designed to give you exactly the results that you get from it

Model for Improvement

What are we trying to accomplish?

How will we know that a change is an improvement?

What changes can we make that will result in improvement?

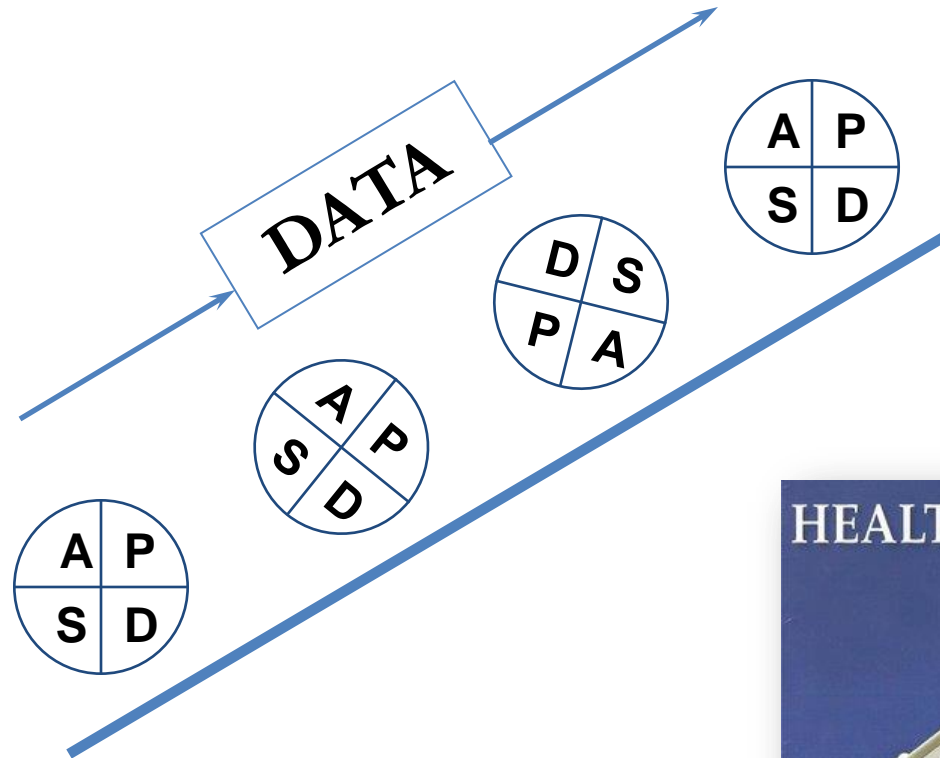


The Breakthrough Series known as the BTS Model

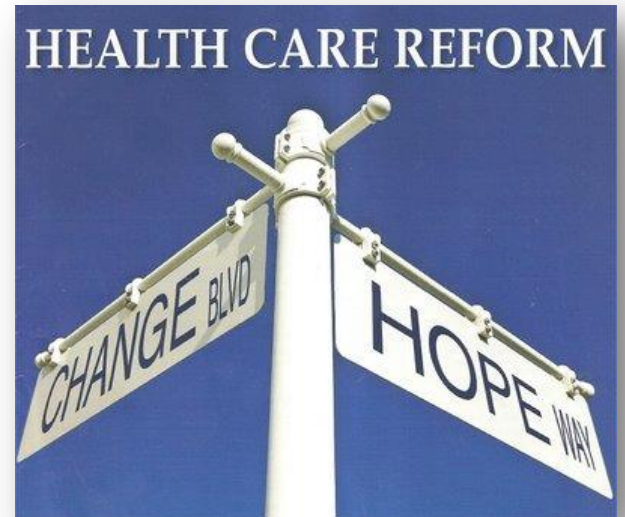
Repeated Use of the PDSA

Cycle

Changes That
Result in
Improvement

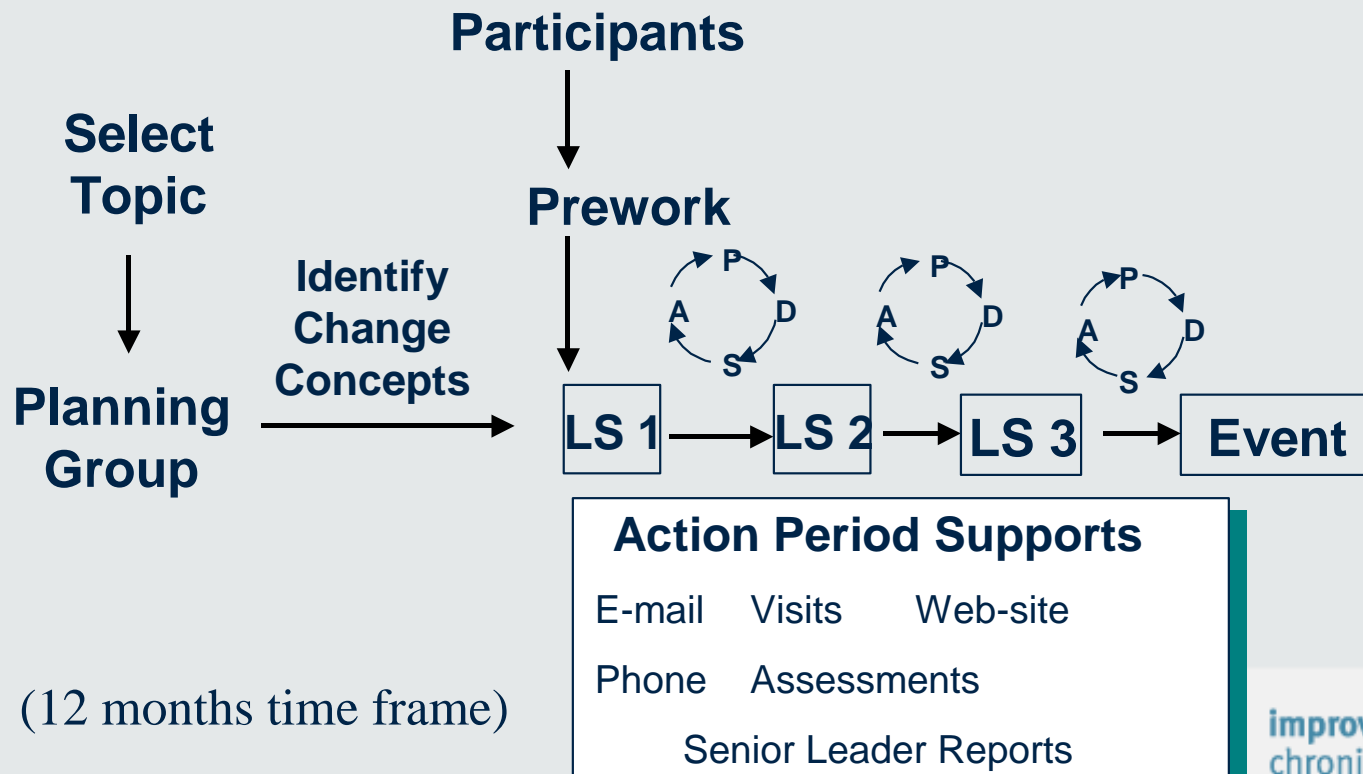


Hunches
Theories
Ideas



Improvement Model

The Collaborative Learning Model



(12 months time frame)

Action Period Supports

E-mail Visits Web-site
Phone Assessments
Senior Leader Reports

improving
chronic
illness care

Care Gap

- Failure to, translate, transfer and utilize medical knowledge effectively
- The difference between, what we know and what we do
- Usual Care \neq best care
- Population outcomes do not match results of clinical trials
- Patient, physicians & payers do not reap the benefits of validated medical knowledge
- The difference between achievable and actual outcomes

Knowledge Translation Definition

“Knowledge translation is the effective and timely incorporation of evidence-based information into the practices of health professionals in such a way as to affect optimal health care outcomes and maximize the potential of the health system.”

The Canadian Institutes for Health Research
definition, 2001

INTER-HEART: Risk of acute MI associated with risk factors in the overall population

Risk factor	Odds ratio adjusted for age, sex, and smoking (99% CI)	Odds ratio adjusted for all (99% CI)
A c c o u n t f o r o v e r 9 0 % o f t h e r i s k o f a c u t e m y o c a r d i a l i n f a r c t i o n		
All combined	129.2 (90.2-185.0)	129.2 (90.2-185.0)

INTER-HEART: Population-Attributable Risk (PAR) Acute MI in the overall population

1. **Nine** simple risk factors are strongly associated with AMI worldwide.
2. These risk factors are even more important in the young, and their effects are consistent in men and women, across all ethnic groups and all regions.
3. **Abnormal Apo-B/ApoA-1 ratio and smoking** are the most important risk factors and account for **>2/3** of the PAR. All 9 risk factors account for **>90%** of the PAR globally and in most regions.

IMPLICATIONS: Implementing preventive strategies based on our current knowledge would avert the majority of premature CHD worldwide.

Prevention Goals for CVD

Variable	Goal						
Smoking	Total Cessation						
Total Dietary Fat / Saturated Fat	< 30% calories / < 7% calories						
Dietary Cholesterol	< 200 mg/day						
Physical Activity	30-45 min. moderate intensity 5X/week						
Body Weight by Body Mass index	<table border="0"> <tr> <td><u>Initial BMI</u></td> <td><u>Weight Loss Goal</u></td> </tr> <tr> <td>25-27.5</td> <td>BMI < 25</td> </tr> <tr> <td>> 27.5</td> <td>10% relative weight loss</td> </tr> </table>	<u>Initial BMI</u>	<u>Weight Loss Goal</u>	25-27.5	BMI < 25	> 27.5	10% relative weight loss
<u>Initial BMI</u>	<u>Weight Loss Goal</u>						
25-27.5	BMI < 25						
> 27.5	10% relative weight loss						
LDL cholesterol (primary goal)	1.6 – 2.2 mmol/L (60-85 mg/dL)						
HDL cholesterol (secondary goal)	1.0 mmol/L (> 40 mg/dL)						
Triglyceride (secondary goal)	1.7 mmol/L (< 150 mg/dL)						
Blood Pressure	< 130/80 mmHg (< 120/80 for LVD)						
Diabetes	HbA1c < 7.0 %						

Potential Cumulative Impact of PRIMARY Prevention Strategies

Smoking Cessation $2/3$

BP reduction 20 mm Hg $1/2$

LDL reduction 1 mmol/L $1/6$

Cumulative Prevention $5/6$

Potential Cumulative Impact of SECONDARY Prevention Treatments

	RRR	Event rate	Event rate
None		8%	16%
ASA	25%	6%	12%
β -Blockers	25%	4.5%	9.0%
Lipid lowering	30%	3.0%	6.0%
ACE- inhibitors	25%	2.3%	4.6%
Cardiac Rehab	25%	1.7%	3.4%

CUMULATIVE BENEFITS ARE LIKELY TO BE IN EXCESS OF
78% RRR, WHICH IS SUBSTANTIAL

CVD 2^o Prevention

Cocktail

CAD, CVA, TIA, PVD, AAA, Type 2 DM

Same Disease/Same Rx:

- ASA
- Lipid Targets
 - TC < 4.5
 - LDL < 2.0 (1.8)
 - HDL > 1.2 ; TC/HDL <
 - TG < 1.7
- ACE inhibitor
 - **HOPE** Trial
 - **EUROPA** Trial
- β -blocker for post- MI, HPT or CAD





Top 10 Evidence Based Advances in CV Disease

- ASA/Plavix-CAD/ACS
- UF/LMW Heparin ACS
- Thrombolytic/PCI-STEMI
- β -blocker post-MI
- ACE-i/ARB
 - CHF/LV dysfunction
 - Post MI
 - Vascular disease/DM
- Anticoagulation in atrial fibrillation
- Lipid Lowering
 - 2° - CAD, CVD, PVD, DM
 - 1 Risk Factors
- HTN (hypertension):
 - LDD/ β -blocker/ACE-i/ARB/long-acting CCB
- Isolated Systolic HTN > 160:
 - LDD/long-acting DHP-CCB/ARB
 - (avoid β -blocker or alpha-blocker as initial Rx)
- β -blocker -CHF



Top 10 Failures to Implement Evidence Based Advances in CV Disease

- ASA/Plavix-CAD/ACS
- UF/LMW Heparin ACS
- Thrombolytic/PCI-STEMI
- β -blocker post-MI
- ACE-i/ARB
 - CHF/LV dysfunction
 - Post MI
 - Vascular disease/DM
- Anticoagulation in atrial fibrillation
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- β -blocker -CHF

Goals in **Cardiovascular** Prevention

- Identify all patients who could benefit
- Stratify according to all risk factors
- Initiate therapy in all where cost/benefit favorable
- Achieve appropriate targets or % reductions
- Provide long term follow-up to ensure adherence
- Achieve mortality/morbidity benefits attained in clinical trials
- Target every patient for optimal risk stratification and reduction

Where can we have **the greatest impact** in cardiovascular disease?

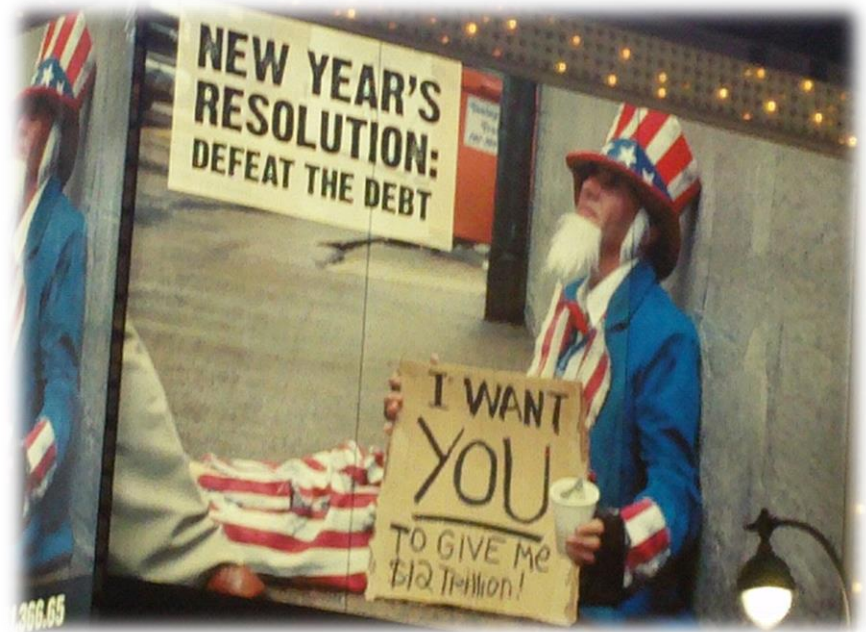
- **Stroke prevention**
 - Hypertension control
 - Anticoagulation in atrial fibrillation
- **CAD**
 - Secondary prevention cocktail
 - Medical management for symptoms
 - Appropriate revascularization
- **CHF**
 - Patient education
 - Medical management for prognosis and symptoms
 - Admission and readmission prevention programs

Ways to Influence Practice

- Consensus guidelines & Pathways
- Didactic CME
- Workshop CME
- Practice pattern review
- Specific recommendations by local experts
- Usual channels of communication
- Reminder strategies
- Evidence based application tools

Analyzing the Care Gap

- Evidence Gap
- Guideline Gap
- Diffusion Gap
- Dissemination Gap
- Implementation Gap
- Adherence Gap
- Outcome Gap
- Rising Health Care Costs



Barriers to Implementing Risk Factor Management in Patients With CHD

- Physician is focused on acute problems
- **Time constraints** and lack of incentives, including reimbursement
- **Lack of training**, including inadequate knowledge of benefits
- Lack of **resources and facilities**
- Lack of **specialist–generalist communication**; passing on responsibility

Why the Gap?

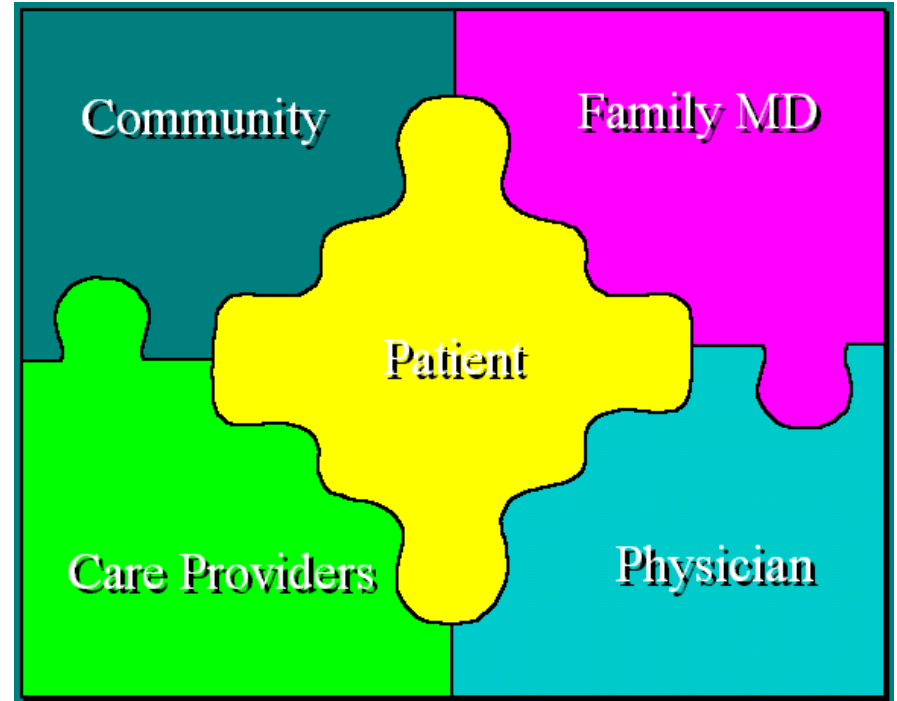
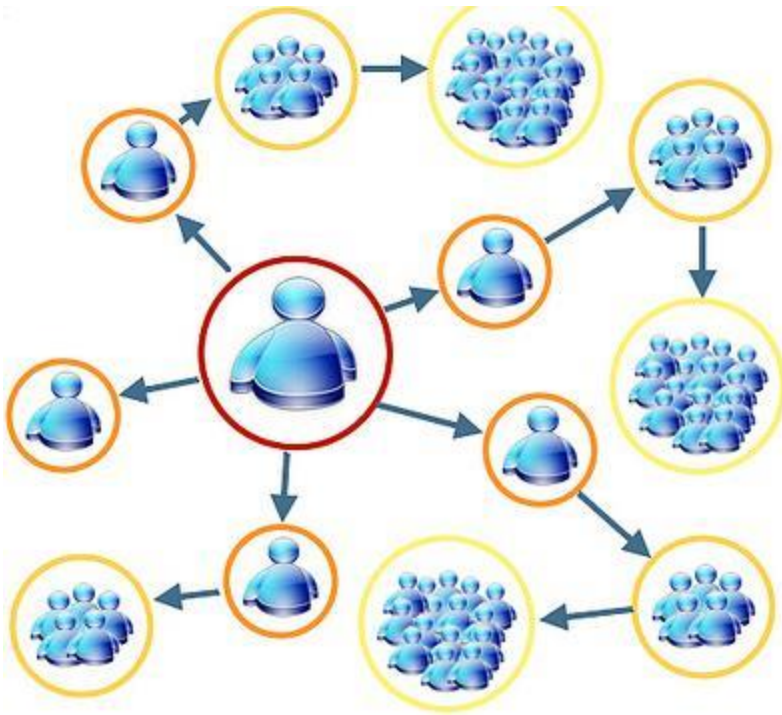
- Lack of information-knowledge gap
- Information overload-guideline overload
- Jurisdiction: Whose job is it?
- Too busy to read recommendations
- Patient overload/Physician shortage
- Issue overload/Patient priorities
- Lack of tools or resources
- Confusion - competing marketing strategies
- Medico-legal implications

Three-Pronged Approach



- Condensed evidence review and guideline distillation
- Patient information products
- Implementation tools

Implementation Network



With the **PATIENT** in the **FOCUSED** center

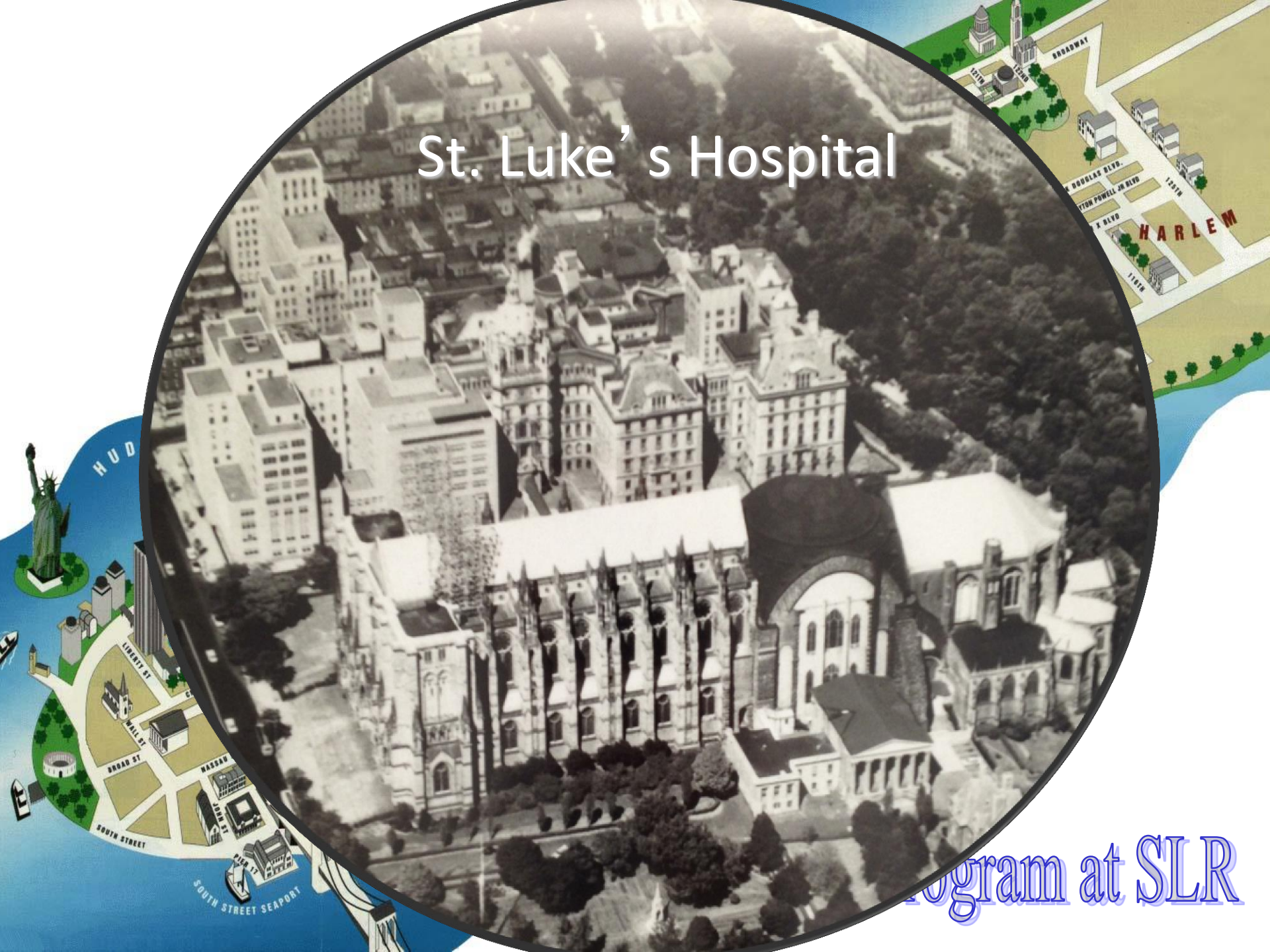
Opportunities to Improve Care for Patients With Cardiovascular Disease

- Despite overwhelming clinical trial evidence, expert opinion, national guidelines, and a vast array of educational conferences, evidence-based, life-saving therapies continue to be underutilized
- New approaches to improving the use of proven, guideline-recommended, life-saving therapies are clearly needed
- Implementation of critical pathways and management plans for hospitalized patients is becoming a mainstream in achieving the goal of optimal quality of care



ACAP Program at SLR

St. Luke's Hospital



Program at SLR

Advanced Cardiac Admission Program (ACAP)

- In 2004 a new program “Advanced Cardiac Admission Program” (ACAP) was developed and implemented at St. Luke’s - Roosevelt Hospital Center, New York, NY.
- ACAP consisted of tools and strategies for implementing ACC/AHA guidelines.
- Up-to-date the ACAP program include 9 state of the ART Pathways in management.

St. Luke's-Roosevelt Hospital Center
University Hospital of Columbia University
College of Physicians & Surgeons

ACAP Program

Division of Cardiology

The Advanced Cardiac Admission Protocol Program
An Evidence-Based Patient Care Novel Pathway driven System
For the Management Of all Cardiac Patients

PAIN Pathway (Acute Coronary Syndrome)
Acute Heart Failure Pathway
RACE Pathway (Atrial Fibrillation & Flutter)
SELF Pathway (Syncope)
Hyperglycemia Pathway
Hypertension Pathway
ESCAPE Pathway (Sudden Cardiac Death)
MOCHA Pathway (Hypothermia)

ACAP PROGRAM
(212) 636-1318

WWW.NYCardiologyPathways.ORG

St. Luke's Roosevelt

ACAP Main Projects

- Chest Pain Pathway, (**PAIN**) including STEMI and NSTEMI patients.
- **Heart Failure** Pathway. (for Acute management of Heart Failure)
- The **RACE** Pathway for Atrial fibrillation & Flutter.
- Pathway for management of **Hyperglycemia** in Critical & Cardiac Care Units.
- The **SELF** Pathway for Syncope.
- Pathway for management of **Hypertension**.
- The **ESCAP** Pathway, Sudden Cardiac Death Prevention.
- The **MOHCA** Pathway for the management of out of hospital cardiac arrest.
- **CHASER** Pathway for the management of pericardial disease.

Key features of the ACAP program and common to all Pathways

- Building partnerships with emergency room physicians.
- Flexibility to allow local adaptation
- Tools derived directly from published guideline
- Involvement of caregivers across the continuum of care (i.e., not just cardiologists)
- Involvement of patients in their care.
- Use of champions/opinion leaders (Attending, Specialists)
- Use of data to change behavior and measure effectiveness of the approach.

The PAIN

Pathway For The Management Of Acute Coronary Syndrome

CHEST PAIN or CHEST PAIN EQUIVALENT

CHEST PAIN EQUIVALENT

- Dyspnea
- Back (interscapular) discomfort
- Jaw or neck discomfort
- Left shoulder, elbow or arm discomfort
- Epigastric discomfort

- Initial Assessment : 12-lead EKG within 10 minutes, Vital signs, H&P
- Consider Non-ACS chest pain
- Labs: CBC, Basic Metabolic Panel, Cardiac Markers, (CPK, CPK-MB, Troponin), BNP, PT, PTT, INR, Mg, Lipid profile
- Patient **MUST** fall into one letter of the acronym **PAIN**

Non-ACS Chest Pain:

- Aortic Dissection
- Aortic Stenosis
- Pericarditis/Pericardial Effusion
- Hypertrophic Cardiomyopathy
- Pulmonary Emboli
- Consider immediate echocardiogram
- Evaluate and treat accordingly

P PRIORITY

Chest Pain \geq 30 min with:

- \geq 1mm ST elevation in \geq 2 contiguous leads or
- New LBBB or
- Acute Posterior wall MI (ST depression in leads V1-V3)

Give :

- IV
- O2
- Clopidogrel 300-600mg PO x1
- ASA 325mg PO - chewed stat
- NTG IV or SL
- Beta Blocker IV (if no contraindication)
- High dose statin (atrovastatin 80 mg PO)
- Heparin (unfractionated or enoxaparin)

Onset of Symptoms < 12 hours?

YES

On site PCI capability and door to balloon time < 90 min or Cardiogenic Shock?

YES

Activate MI team

Start Gp IIb-IIIa inhibitor and transfer immediately to the cath lab for revascularization

Admit to CCU

- Echocardiogram
- Evaluate LV function

- Life Style Modification:
 - Exercise
 - Weight and diet control
 - Smoking cessation
- Cardiac Rehabilitation

A ADVANCED RISK

Typical Anginal Symptoms

- Prolonged symptoms (> 20 min) relieved by nitro or rest
- Symptoms at rest
- Accelerated chest pain in prior 48 hours

Is there evidence of:

- Dynamic ST shifts (> 0.5 mm) and / or
- Elevated troponin > 0.2 ng/ml

YES

- Give :
- ASA 325mg PO x1
 - Clopidogrel 300mg PO x1
 - Heparin (unfractionated or enoxaparin)
 - Beta Blockers (if no contraindication)
 - NTG IV or SL
 - GP IIb-III a inhibitors
 - Statin

Admit to CCU

Early Catheterization (within 12-48 hours) and revascularization (PCI/ CABG) if necessary

Secondary Prevention

- ASA
- Plavix
- Beta Blocker
- High dose statin
- ACE inhibitors/ARB's

I INTERMEDIATE RISK

Give :

- ASA 325mg PO x1
- Heparin (unfractionated or enoxaparin)
- Beta Blockers (if no contraindication)

Admit to telemetry

Is there evidence of evolving ST changes or positive cardiac markers within 12-24 hours?

NO

Is there evidence of any of the following high risk features?

- New or worsening CHF symptoms
- Malignant ventricular arrhythmias
- Hemodynamic instability
- Recent PCI or CABG

YES

Early Catheterization (within 12-48 hours) and revascularization (PCI/ CABG) if necessary

N NEGATIVE or LOW RISK

- Atypical syndrome with limited CP (< 20 min)
- ECG normal or without ischemic changes during pain
- Cardiac markers not elevated

-ASA

-NTG prn

-F/U EKG

-F/U cardiac markers

Admit to medical floor or chest pain unit

Is there evidence of evolving ST changes or positive cardiac markers within 12-24 hours?

NO

Imaging stress testing (echo, nuclear)

Is there evidence of significant ischemia on stress test?

YES

Cardiology consult

Refer for cardiac cath

Primary Prevention:

- Consider:
 - ASA
 - Lipid management (consider statin)
 - Beta Blocker
 - ACE inhibitors/ARB's

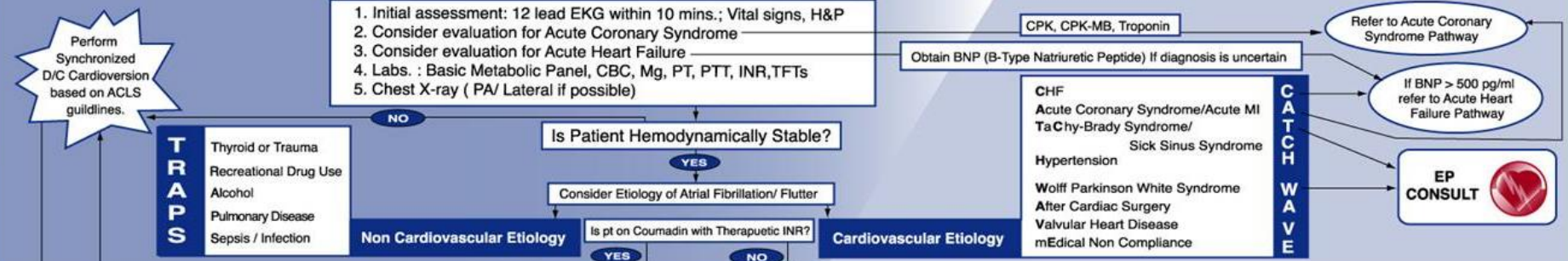
NO

Discharge home and risk factor modification

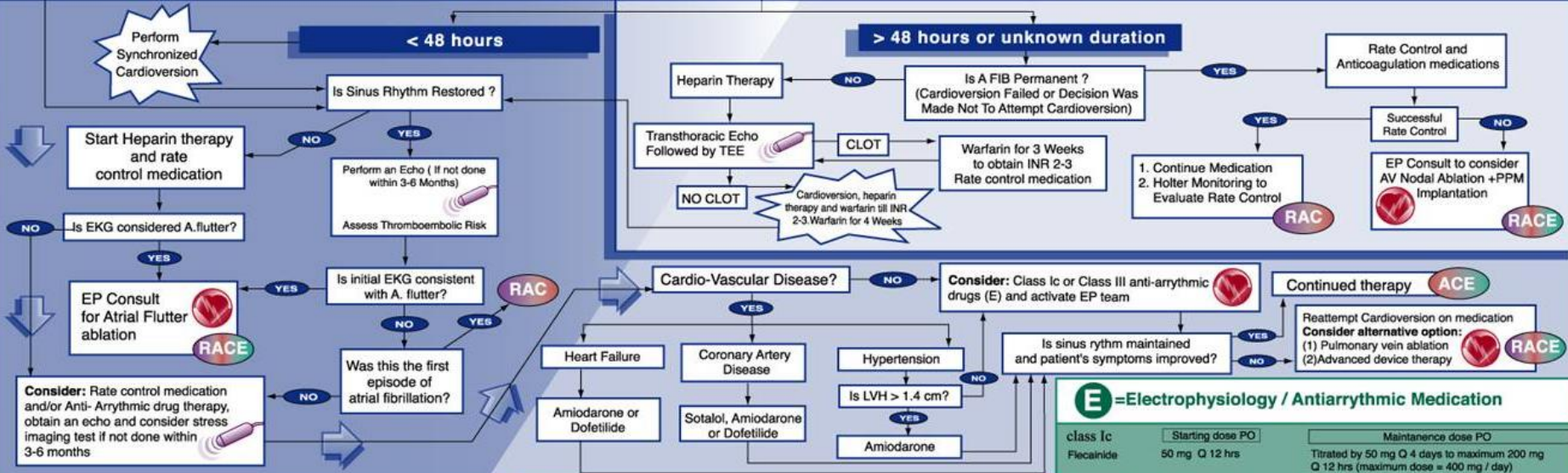
Life Style Modification:

- Exercise
- Weight and diet control
- Smoking cessation

The RACE Pathway For the Management of Atrial Fibrillation and Atrial Flutter



Assess Duration of Atrial Fibrillation / Flutter



R = Rate Control: Target Heart rate < 80 bpm at rest (< 120 -130 bpm with exercise)

	IV	PO
β Blocker		
Metoprolol	2.5 to 5mg IV bolus over 2 min up to 3 doses	NA
Esmolol	0.5 mg/kg over 1 min	0.05 to 0.2 mg/ kg/ min
Calcium Blocker	Caution if pt has HF or EF < 35% - Consider IV Amiodarone	
Diltiazem	0.25 mg/kg IV over 2 min	5 -15 mg/ hour infusion
Verapamil	0.075 to 0.15mg/kg IV over 2 min	120 - 360 mg / d in divided doses
Digoxin	0.25 mg IV Q2h up to 1.5 mg	0.125 to 0.25 mg daily

AC = AntiCoagulation Therapy: (Chronic Therapy) Based on Thromboembolic Risk Assessment

(1) Rheumatic heart disease (mitral stenosis) (2) Prosthetic heart valve (3) Prior thromboemboli on warfarin (4) Persistent atrial thrombus on TEE	Warfarin with INR 2.5 - 3.5
(1) Heart Failure (2) Left Ventricular Ejection Fraction < 35% (3) Hypertension (4) Diabetes Mellitus (5) Prior Thromboemboli (6) Coronary Artery Disease (7) Thyrotoxicosis (8) Left Atrial Enlargement on Echo (9) Above 65-75 years of age	Warfarin with INR 2 - 3
Age < 60-65 years with no heart disease (lone AF)	Aspirin 325 mg po daily

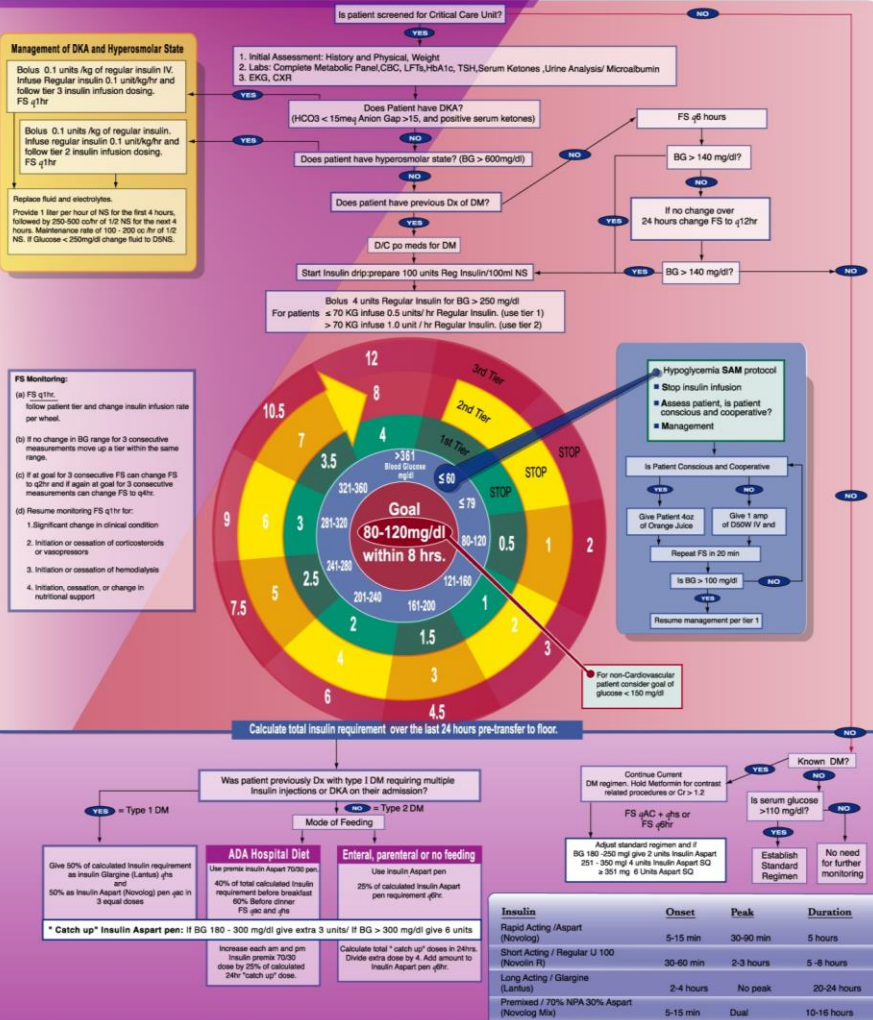
E = Electrophysiology / Antiarrhythmic Medication

	Starting dose PO	Maintenance dose PO
class Ic		
Flecainide	50 mg Q 12 hrs	Titrated by 50 mg Q 4 days to maximum 200 mg Q 12 hrs (maximum dose = 400 mg / day)
Propafenone	150 mg Q 8 hrs	Increase to 225mg Q 8hrs, then 300 mg Q 8 hrs, in 3 - 4 day intervals (maximum dose = 900 mg/ day)
class III		
Amiodarone	800 - 1600 mg daily in divided doses x 1 - 3 weeks	1) 150 mg IVSS over 10 minutes then 2) 1 mg/ min x 6 hrs. then 3) 0.5 mg/ min x 18 hrs.
* (Should be used with a beta - blocker or calcium channel blocker for AV Nodal blockade)		
	Starting dose (PO)	Maintenance dose (PO)
Sotalol	80 mg bid	80 mg to 160mg bid
Dofetilide	> 60 mg/ min 500 mcg bid 40 - 60 ml/ min 250 mcg bid 20 - 60 ml/ min 125 mcg bid < 20 ml/ min Contraindicated	Adjust dose based on QTC 2 - 3 hours after initial dose.
* Requires 72 hours of telemetry and 12 lead EKG every 12 hours		

Pathways for Management of Hyperglycemia & Unexplained Syncope

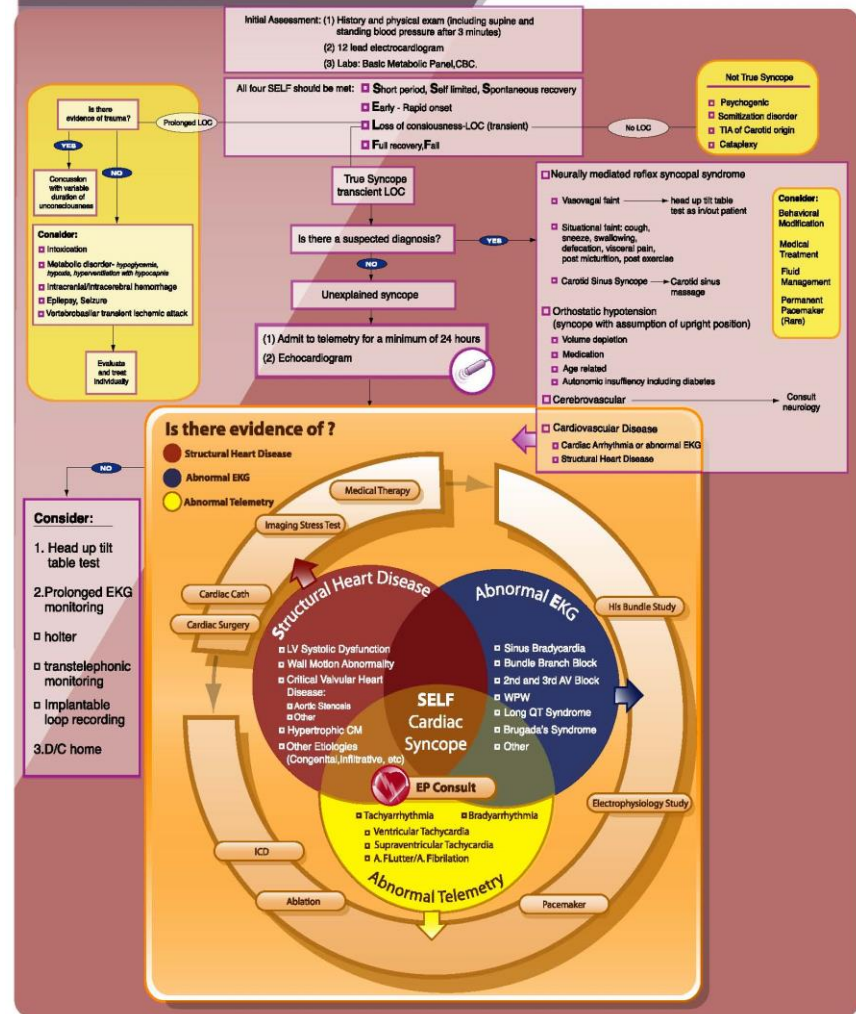
Pathway For The Management Of Hyperglycemia In Critical Care Units

St. Luke's Roosevelt University Hospital of Columbia University College of Physicians & Surgeons
Continuum Health Partners, Inc.



The SELF Pathway for the Management of Syncope

St. Luke's Roosevelt University Hospital of Columbia University College of Physicians & Surgeons
Continuum Health Partners, Inc.



Pathway for the Management of In-Hospital Hypertension

(at least two measurements of BP > 140/90 mm Hg)



University Hospital of Columbia University College of Physicians & Surgeons



Continuum Health Partners, Inc.

Initial Assessment: History and Physical Examination
 Does the patient have clinically "significant" hypertension? (High blood pressure which will acutely have adverse outcome).

Obtain: ■ Labs: complete metabolic panel, CBC, urine analysis, PT, PTT, INR ■ ECG, CXR, Echocardiogram

Obtain advanced cardiac imaging to confirm diagnosis
 ■ CT chest and abdomen with contrast ■ TEE

Diagnosis confirmed | Diagnosis excluded

Does patient have hypertensive emergency with aortic or neurologic target organ disease?
 ■ Suspicion of Acute Aortic Syndrome? (Aortic Dissection, Aortic Ulcer, Aortic Hematoma) ■ Suspicion of Acute Neurologic Syndrome?
 Obtain brain imaging ■ Head CT without contrast

Acute Aortic Syndrome

Goal: Rapidly (Within 10-20 minutes) lower SBP to 110-120 mm Hg
Use: ■ IV Labetalol or other β Blockers ■ IV Nicardipine ■ IV Nitroprusside

Admit to CCU

Is there evidence of type A aortic dissection?
 YES: Stat Consult CT surgery for emergency surgery
 NO: Titrate IV meds to keep SBP < 120mm Hg

Continue IV meds

Is there evidence of decreased end organ perfusion such as?
 ■ ↓ Urine output to < 30cc/hour or < 50% baseline
 ■ Peripheral arterial insufficiency
 ■ Evidence of ischemic bowel

Convert IV drugs to PO within 24-48 hours
 ■ PO Labetalol (or other β Blocker) ■ Add PO Ca Blocker (eg. amlodipine) ■ Consider RAS Blockers

Is there evidence of Hypertensive Emergency with?

Acute Heart Failure

Goal: Within 1 hour lower BP to <130/80 mm Hg
 Do not lower DBP < 60mmHg

Use: ■ Loop Diuretics
 ■ Nitroglycerin
 ■ RAS Blockers
 ■ β Blockers
 ■ Non Dihydropyridine Ca. Blockers

Acute Coronary Syndrome

Goal: Within 3 hours lower BP to <130/80 mm Hg
 Do not lower DBP < 60mmHg

Use: ■ Nitroglycerin
 ■ RAS Blockers
 ■ β Blockers

Renal Failure

Goal: Within 12 hours lower SBP < 140 mm Hg.
 Consider Renal Consult.

Use: ■ Dihydropyridine Ca. Blockers
 ■ β Blockers
 ■ Loop Diuretics
 ■ RAS Blocker
 ■ Clonidine

Does patient have Obstructive Hypertrophic Cardiomyopathy?
 YES: ■ Nitroglycerin
 ■ β Blockers (if not wet)
 ■ Loop Diuretics
 NO: ■ Nitroglycerin
 ■ RAS Blockers
 ■ β Blockers
 ■ Loop Diuretics

Acute Neurologic Syndrome

Goal: Rapidly (Within 5-10 minutes) lower mean arterial pressure to 110-130 mm Hg
Use: ■ IV Labetalol ■ IV Nicardipine

Activate Neuro Surgery Team

Is there evidence of intracranial bleeding?
 YES: ■ IV Labetalol ■ IV Nicardipine
 NO: Is there evidence of focal neurological deficit?

NO - Hypertensive encephalopathy
 YES: Is patient at goal of SBP < 220 mm Hg or DBP < 120 mm Hg?
 YES: Observe patient
 NO: Is DBP > 140 mm Hg?
 YES: IV Nitroprusside
 NO: Onset of symptoms between 3-6 hours?
 YES: ■ IV Labetalol or ■ IV Nicardipine
 NO: Are symptoms onset < 3 hours?
 YES: Activate Stroke Team

YES - Ischemic stroke
 Consider IV rt-PA Pre- thrombolytic therapy
Goal: Systolic SBP < 185 mm Hg
 Diastolic DBP < 110 mm Hg
 Do not administer rt-PA if higher
 Use ■ IV Labetalol ■ IV Nicardipine

SBP > 180 mm Hg or DBP > 105 mm Hg?
 YES: ■ IV Labetalol
 NO: SBP > 220 mm Hg or DBP 121-140 mm Hg?
 YES: ■ IV Labetalol ■ IV Nicardipine
 NO: Is DBP > 140 mm Hg?
 YES: IV Nitroprusside
 NO: Observe patient

During and after thrombolytic therapy: Check BP every 15 min for 2 hours than every 30 min for 6 hours than every 1 hour for 16 hours

Consider TTE / TEE when the patient is stable

Secondary Hypertension

Consider the pathology based on **ABCDE:**
A) Accuracy, Apnea (Obstructive Sleep Apnea)
B) Bruits, Bad kidneys (Renovascular HTN)
C) Coarctation- of aorta
D) Drugs: (ETOH, NSAIDs, COX-2 inhibitors, Oral Contraceptives, Immunosuppressive therapy) Diet:
E) Endocrine Disorders

Renovascular Disease

■ MRA or CT angio of kidney

Endocrine Causes

Pheochromocytoma

■ 24 hr urine metanephrine if > 1.2 mg/day
 ■ Adrenal CT or MRI or MIBG scan

Primary hyperaldosteronism

■ K < 3.5 meq plasma aldo/renin ratio (oft diuretics) > 20 and plasma aldo > 15mg/l
 ■ MRA or CT angio of kidney

Cushing's syndrome

■ 24 hr urine of cortisol > 50 mcg/day
 ■ High dose dexamethasone suppression

HTN / Endocrine Consult

Is there evidence for inappropriate hypertension? (Severity of hypertension is inappropriate for "essential hypertension")

YES: ■ Age < 30 or > 50
 ■ Sudden increase in well controlled BP
 ■ Poor control in spite of 3 HTN meds
 ■ SBP in legs > 20mm Hg than SBP in arms

NO: ■ Cushing's Stigmata
 ■ Hypokalemia off diuretics
 ■ Elevated creatinine, renal bruits, or abnormal U/A

In-Hospital Hypertension

■ Exclude reactive hypertension (pain, anxiety, respiratory distress, urinary retention) and treat respectively
 ■ Resume pre hospital hypertensive medication

Is repeated SBP > 180mm Hg and/or DBP > 120mm Hg?
 YES: ■ IV Labetalol
 NO: Is repeated SBP 150-179mm Hg and/or DBP 100-119mm Hg?
 YES: ■ IV Labetalol
 NO: Mild Hypertension
 SBP 140 -149 mm Hg
 DBP 90 - 100 mm Hg
 No drug therapy
 BP measurement q shift

Severe Hypertension without end organ disease

Goal: Within 24 hours lower BP to < 140/90 mm Hg
Use: ■ Dihydropyridine Ca Blockers
 ■ RAS Blockers
 ■ Diuretics
 ■ β Blockers
 (combine anti hypertensive meds, start with combination of the first two)

Moderate Hypertension

Goal: Within 24 hours lower BP to < 140/90 mm Hg
Use: ■ Dihydropyridine Ca Blockers
 ■ RAS Blockers

ESCAPE Pathway for Primary Prevention of Sudden Cardiac Death

- Definite Indication**
- Cardiac arrest due to VT/VF
 - Sustained VT
 - Unexplained Syncope
 - High Risk Disorders
 - Brugada's Syndrome
 - Long QT
 - HCM

EF $\leq 35\%$
By Cardiac Imaging
Echo, Nuclear, Cath

- Exclusion criteria**
- NYHA Class IV (unless eligible for CRT)
 - Cardiogenic shock or hypotension
 - Irreversible brain damage from preexisting cerebral disease
 - Other disease with survival < 1 yr



Evaluate: Heart Failure Class Evidence of Prior Myocardial Infarction

NYHA Class I **NYHA Class II - III** **NYHA Class IV**

- Heart Failure Functional Class NYHA Class**
1. Asymptomatic
 2. Moderate Exertion
 3. Mild Exertion
 4. At rest

AMI < 40 days or elective CABG/PCI < 3 Month

Ischemic
AMI ≥ 40 days
MADIT II

Ischemic & Non-Ischemic Cardiomyopathy
Optimal HF Therapy at Least 3 Months
SCD-HeFT, MADIT II

NYHA Class IV
QRS ≥ 120 mSec
COMPANION CARE HF
+ CRT-D

- Optimal HF Therapy**
1. ACEI/ARBs
 2. BB
 3. Spironolactone
 4. Statins

$\leq 30\%$

$\leq 35\%$

CRT-D

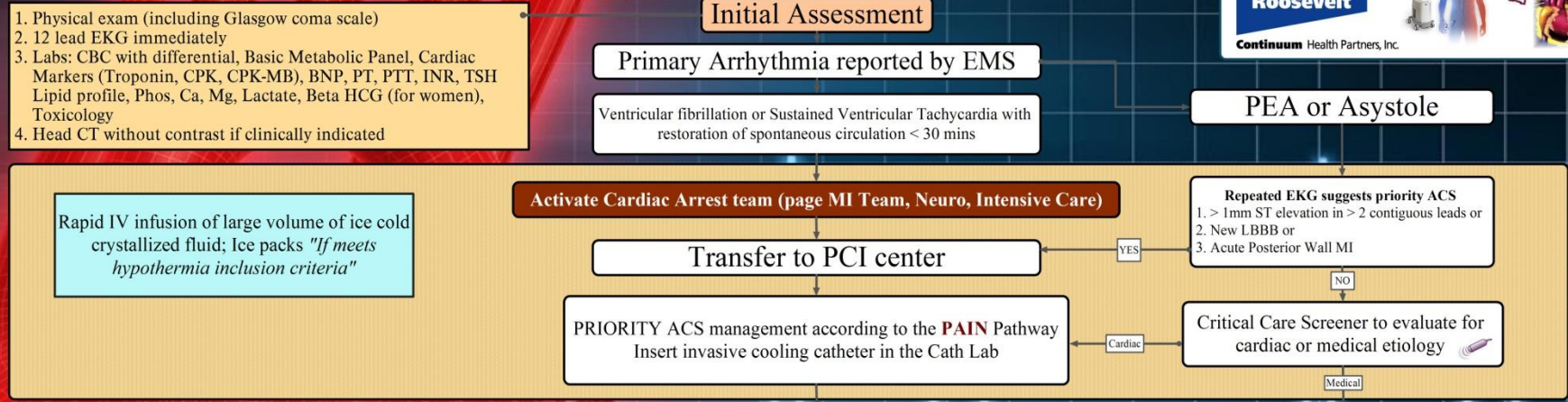
ICD Implantation for Primary Prevention

The Comprehensive Pathway for the Management of Survivors of Out of Hospital Cardiac Arrest

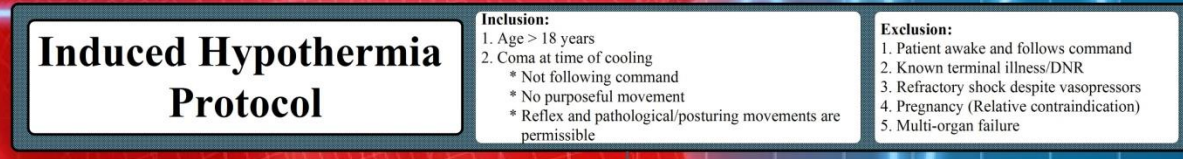
Pathway for the Management of Survivors of Out of Hospital Cardiac Arrest



STEP (I)

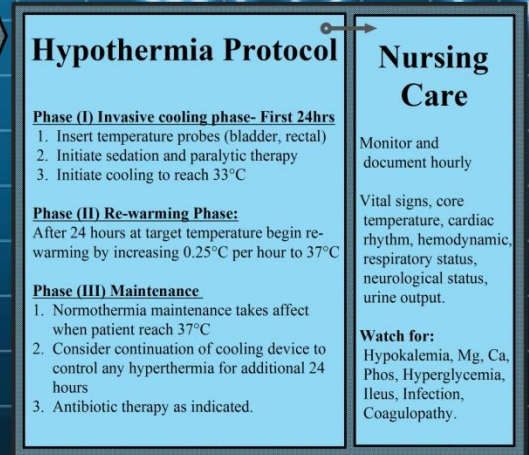
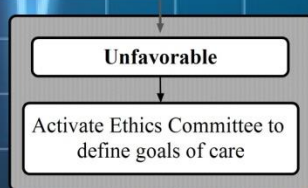
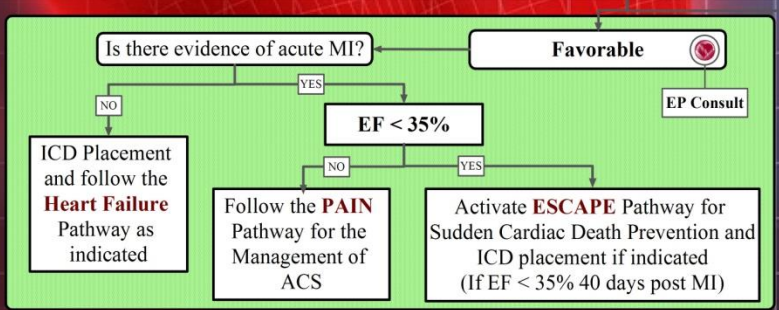


STEP (II)



At least 72 hours post cardiac arrest define neurological outcome

STEP (III)



How ACAP was Implemented?

- We Published focused treatment guidelines, in a form of **novel pathways**.
- All residents **admission notes** were transformed into Printed color coded standardized duplicated sheets.
- **Educational lectures and materials** supplemented to all house staff.
- An **integrated database** was developed to incorporate all collected in data.



ACAP Program Admission and Discharge Forms

St. Luke's-Roosevelt Hospital Center

1042 FL
OFFICE DEPOT
PROOF 1
4/2/07

Advanced Cardiac Admissions Protocol (ACAP)

ADMISSION NOTE

To be completed on all Advanced Cardiac Admission Protocol patients

ADDRESSOGRAPH AREA

Demographics:
Age: _____ Gender: _____
Date: _____ Time of triage: _____
Race: Black White Hispanic Asian Other
Primary care physician: _____
Cardiologist (if any): _____
Admit to: Service: CCU service Medicine Team
Floor: Telemetry Non Telemetry CCU
 Teaching Non Teaching

History Of Present Illness:
Cardiovascular Risk Factors:
 Hypertension (yrs _____) Dyslipidemia (yrs _____)
 Diabetes (yrs _____) LDL > 130mg/dl
 Family Hx of early CAD HDL < 40mg/dl
Smoking: Active Ex-smoker Non-Smoker
• Prior MI Yes No Date (if yes): _____
• Prior PCI Yes No Date (if yes): _____
• Prior CABG Yes No Date (if yes): _____
• Known CHF Yes No Date (if yes): _____
• Prior Imaging Yes No Date (if yes): _____
 2D Echo Stress Echocardiogram Nuclear Test
Results: _____

Past Medical & Surgical History:
PMH: _____
Surgical: _____
Alcohol: _____ Allergies: _____
Substance Abuse: _____

Medications (Home):
 Aspirin Insulin
 Clopidogrel Oral hypoglycemics
 Beta blocker Anti Retroviral
 ACEI/ARB Antibiotics
 Ca channel blocker Nebulizer/inhalers
 Diuretic Corticosteroids
 Digoxin NSAIDS
 Aldosterone antagonist Statins
 Others (please specify) _____

Physical Exam:
Height: _____ Weight: _____
Vital: Pulse _____ BP _____ RR _____ Temp _____
HEENT: _____ Extremities _____
Respiratory System: _____
CVS: _____
Abdomen: _____
CNS: _____

Laboratory:
Tropinin: 1st _____ 2nd _____ 3rd _____
CPK: 1st _____ 2nd _____ 3rd _____
CK-MB: 1st _____ 2nd _____ 3rd _____
Lipids: LDL _____ HDL _____
Triglycerides _____

Resident Name: _____
Beeper No: _____
Signature: _____

4876 (04/07)

PART 1 - MEDICAL RECORDS PART 2 - CARDIOLOGY

St. Luke's-Roosevelt Hospital Center

1043 FL
OFFICE DEPOT
PROOF 1
4/2/07

Advanced Cardiac Admissions Protocol (ACAP)

Chest Pain and CHF Pathway (PAIN)

To be completed on patients with a diagnosis of ACS or CHF

ADDRESSOGRAPH AREA

CHEST PAIN PROTOCOL:

Priority **Advance** **Intermediate** **Negative**

ST Elevation ACS: CP (> = 30 mins) With:
 > = 1 mm ST in 2 leads or
 New LBBB or
 Acute Posterior Wall MI

At Least TWO features:
 Prolonged CP (> 20 mins)
 Dynamic ST shifts (> 0.5 mm)
 New BBB other than LBBB
 New or worse MR
 New or worse rales
 Bradycardia or hypotension
 > = 75 yrs. of age
 Elevated Troponin
 Tachycardia
 Cardiogenic shock

At Least TWO features but NO advanced features:
 Limited CP but responsive to rest or nitroglycerine
 Dynamic T changes/ Pathological Q wave
 Prior MI
 Prior PCI/CABG
 Presence of PVD or CVA
 70-74 yrs. of age
 Troponins indeterminate

Plan:
Heparins: UFH (Unfractionated Heparin) Can't Use Heparin
 Enoxaparin (1 mg/kg SQ q 12 h) Because _____

Beta Blockers: Metoprolol (25-100 mg) _____ mg po q 12 h
 Carvedilol (3.125-25 mg) _____ mg po q 12 h
 Cannot take beta blocker because _____

Antiplatelet Agents: Aspirin (For acute MI first dose 325 mg non enteric coated STAT followed by 75-325 mg po enteric coated daily)
 81 mg 162 mg 325 mg
 Cannot take aspirin because _____

ACE Inhibitors: Drug _____ mg po (daily) 12 h q 8 h
 Cannot take ACEI because _____

Statins: Drug _____ mg po daily
 Cannot take statins because _____

Other Medications: _____

HEART FAILURE PROTOCOL

New Onset Heart Failure **Acute Exacerbation of Chronic Heart Failure**

Cardiac Etiology
 V Valvular Heart Disease, HOCM
 A Acute Coronary Syndrome
 M Myocarditis
 P Peripartum/Postpartum

Non-Cardiac Etiology
 T Thyrotoxicosis, Trauma
 R Renal Failure
 A Anemia
 P Pulmonary disease/emboli
 S Sepsis/Infection

Clinical Assessment

CONGESTION	COLD	WARM
	WET	DRY

PERFUSION

Plan:
1. Admit to CCU Medicine floor Telemetry Non teaching
2. Strict intake/output and daily weights measurement
3. Furosemide _____ mg IVPB (daily) 12 h q 12 h q 6 h
4. Inotropes/Vasodilator therapy: None Norepinephrine
 Dopamine Dobutamine Nitroglycerin Nesiritide Milrinone
5. ACE inhibitors/ARB _____ mg po (daily) 12 h q 8 h
6. Beta Blockers _____ mg po (daily) 12 h
7. Aldosterone antagonist _____ mg po (daily)
8. Digoxin _____ mg po daily

Usual Body Weight: _____
Admission Body Weight: _____
Excess Body Weight: _____
ER Lasix dose & route: _____
Time dose given: _____
Response to dose: _____

4876 (04/07)

PART 1 - MEDICAL RECORDS PART 2 - CARDIOLOGY

St. Luke's-Roosevelt Hospital Center

1046 FL
OFFICE DEPOT
PROOF 1
4/2/07

Advanced Cardiac Admissions Protocol (ACAP)

Cardiac Discharge Summary

To be completed on all Advanced Cardiac Admission Protocol patients

ADDRESSOGRAPH AREA

Tests/Procedures:
 2-D Echocardiography: Date: _____
Results: _____
EF: _____
 Stress Test: Date: _____
Type: Echo Nuclear
Modality: Exercise Pharmacological
Results: _____
 Cardiac Catheterization: Date: _____
Intervention: _____
 CABG: Date: _____
 Implantable Cardiac Defibrillator: Date: _____
 Pacemaker: Date: _____
 Dual Chamber Single Chamber
 Biventricular
 Other Devices: _____

Heart Failure Discharge Summary:
Weight at discharge _____ lbs.
Serum Creatinine at discharge _____ Date: _____
B-type Natriuretic Peptide (BNP) _____ Date: _____ (if drawn)
Beta Blockers:
 Carvedilol (3.125-25 mg) _____ mg po q 12 h
 Toprol XL (12.5-200 mg) _____ mg po daily
 Cannot take beta blocker because _____
 Advanced Heart Block Hypotension Bronchospastic Disease
 Severe Bradycardia Decompensated (Worsening) CHF
ACE Inhibitors/ARBs:
 Drug _____ mg po (daily) q12h q8h
 Cannot take ACEI/ARBs because _____
 ACEI/ARBs Hypersensitivity Renal Failure
 Moderate/Severe Aortic Stenosis Other _____
Diuretics:
 Drug _____ mg po (daily) q12h q8h
Digoxin: (0.125-0.25 mg) _____ mg po daily
Aldosterone Antagonist: (Avoid with K > 5 &/or Cr > 2.5)
 Drug _____ mg po daily
Assess the patient's need for Antithrombotic and Statins and check the appropriate medication under the Chest Pain Pathway.
 Weigh yourself daily before breakfast using the same scale. Write your weight in your weight diary and bring it with you to your doctor's office visits.
 Call your doctor for worsening symptoms:
- increased shortness of breath.
- increased swelling of feet, legs or belly.
- increased fatigue (more tired than usual).
- weight gain of 2 pounds in a day or 5 pounds in a week.
- side effects from medications.
 I have been treated for chest pain and/or heart failure. To follow up on the progress of my condition, I agree to be called for followup over the next year.
Have you smoked in the last year (12 Months)? No Yes
 I have been advised to stop smoking. Information about smoking cessation including ongoing support, nicotine replacement and avoiding second hand smoke has been given to me.
 I have been advised to exercise 3-5 times a week for 30 mins.

Discharge Category:
 Priority Advance Intermediate Negative

Antiplatelet Agents: Aspirin (75-325 mg po enteric coated daily)
 81 mg 162 mg 325 mg
 Cannot take aspirin because _____
 Clopidogrel (75 mg po daily) PIA

Beta Blockers: Metoprolol (25-100 mg) _____ mg po q 12 h
 Carvedilol (3.125-25 mg) _____ mg po q 12 h
 Toprol XL (50-200 mg) _____ mg po daily
 Cannot take beta blocker because _____
 Advanced Heart Block Hypotension
 Decompensated CHF Severe Bradycardia
 Bronchospastic disease

ACE Inhibitors: Drug _____ mg po (daily) q12h q8h
 Cannot take ACEI because _____

Statins: Drug _____ mg po daily
 Cannot take statins because _____

Patient's Signature: _____
Patient's Phone: _____
RN Signature: _____ Date: _____
House Staff Name: _____
Signature: _____ Date: _____

4876 (04/07)

PART 1 - PATIENT COPY PART 2 - MEDICAL RECORDS PART 3 - CARDIOLOGY PART 4 - PHYSICIAN COPY

The Research group comprised of
a great variety of personnel that
complement each other



The ACAP Research Group Personnel

Director: Emad F Aziz, DO, MB CHB, FACC

Cardiology Fellows:

Alexander Benjo, MD
Juan Cordova, MD
Balaji Pratap, MD
Eric Bader, MD

FMGs Research Associates:

Catalin Florita, MD
Chaithanya Pamidimukala, MD
Urvi Pai, MD
Shuaib Mohamed, MD
Joseph Bastawrose, MD
Balaji Pratap, MD
Sahil Jaiswal, MD
Arvind K Garg, MD
Rajan Garg, MD
Raja Singh, MD
Anshu Alok, MD
Rishi Malhan, MD
DJ Sandhu, MD
Debasmita Saha, MD

Current St. Luke's-Roosevelt Internal Medicine Residents:

Jonathan Kahan, MD
Sandeep Pulimi, MD.
Raffy Khan, MD.
Joseph Mathews, MD.
Mathew Pierce, MD
Natalie Slowik, MD.
Costantine Albany, MD.
Moustafa Hazin, DO
Sunil Kumar, MD
Geena Varghese, DO.
Clenton Coleman, MD.
Sherryl Croitor, MD, RN.
Mary Ibraheim, DO
Afag Seidova, DO
Bhatia Vivek, MD
Ashita Gupta, MD
Madhuri Devabhaktuni, MD
Maria De Benedetti Zunino, MD
Javad Fahed, MD
Carlos Alviar, MD
Balaji Pratap, MD
Anshu Alok, MD

Medical and Pre-Medical Students Research Associates:

Aaron Zigelbaum.
Ashraf Fawzy.
Saurabh Verma.
Steven Lee.
Alexander Ritter.
Darnell Dennis
Emiri Hirokawa
Sadia Maysood
Amanda Schneider
Evan Schneidmesser
Anish Shah
Nicholas Gulati
Jennifer Beck-Esmay
Danielle Dubosie
Jeanette Huaman
Scott Safir
Ambreen Rahman
Yutaro Furukawa
Jessica DeJesus
Tamon Charles
Mina Botross
Joshua Aziz

Success in Implementing a Hospital-wide Evidence-based Clinical Pathways System for the Management of Cardiac Patients

The ACAP Program Experience

*Emad F. Aziz, DO, MB ChB, Balaji Pratap, MD, Maria E. De Benedetti Zunino, MD,
Deborah Tormey, RN, MS, Fahad Javed, MD, Olivier Frankenberger, MD, Mun K. Hong, MD,
and Eyal Herzog, MD*

Abstract: There is robust evidence to support the concept that critical pathways, derived from evidence-based guidelines, are an effective strategy for bridging the gap between published guidelines and clinical practice. It was with this idea in mind that in 2004 we developed an innovative novel program at our institution, that is, the “Advanced Cardiac Admission Program.” The Advanced Cardiac Admission program consists of tools and strategies for implementing American College of Cardiology or American Heart Association guidelines into daily clinical practice. The program is composed of 8 novel critical pathways for the management of cardiac patients. In this article, we describe our experience in successfully implementing this program at our institutions.

Key Words: critical pathways, evidence-based guidelines, implementation, bridging the gap, algorithm in clinical practice

(Crit Pathways in Cardiol 2011;10: 22–28)

of tools and strategies for implementing American College of Cardiology/American Heart Association (ACC/AHA) guidelines. It is composed of 8 novel critical pathways for the management of cardiac patients.

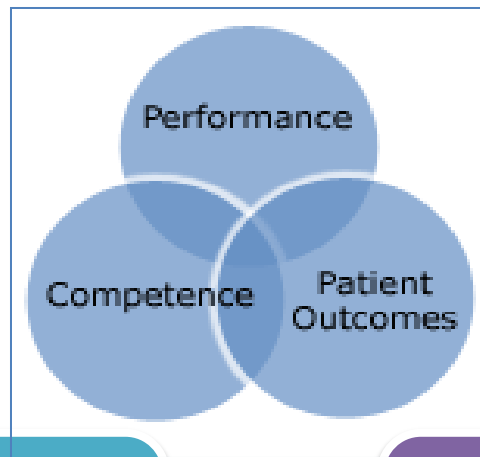
Even though the specifics of each project differ, there are key features which are common to all projects including building partnerships with emergency medicine physicians, flexibility to allow for local adaptation, tools being directly derived from published national clinical guidelines, involvement of all caregivers across the continuum of care (ie, not just cardiologists), involvement of patients in their own medical care, use of champions/opinion leaders (ie, attending, specialists), and the use of updated relevant clinical data to change behavior as well as measuring the effectiveness of our approach.

The Five Pillars of the ACAP Program



Clinical Task Force
Developing Pathways for Management

Quality Management
Data Driven
Information



Medical Staff
Defining Standard of
Care

Nursing
Changing practice & Enhancing
Competency

Residents/Fellows
Didactic Sessions & Projects





ACAP-ACS

ACS

ACAP-HF

HF

ACAP-RACE

A. Fib

ACAP-SELF

Syncope

ACAP-DM

Hyperglycemia

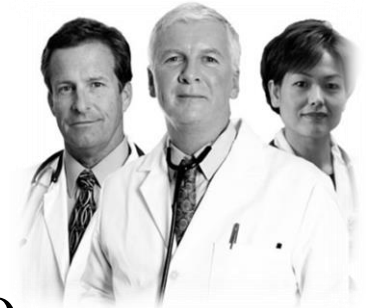
ACAP-HTN

HTN

ACAP-ESCAPE

SCD

Hospital Administration



- **Defining Standard of Care**
- Getting the Hospital Administration to acknowledge the importance of implementation of performance measures.
- Getting approval from the IRB to make all admission as a part of hospital wide policy and approve the discharge summery as a patients contract with the hospital for follow up.

Residents / Fellows



- Regularly Scheduled Conferences
- Live Conferences and Workshops
- Internet-Based Education
- Enduring Materials - Print and electronic enduring materials are also offered to learners.
- Research Projects Involvement

Nursing



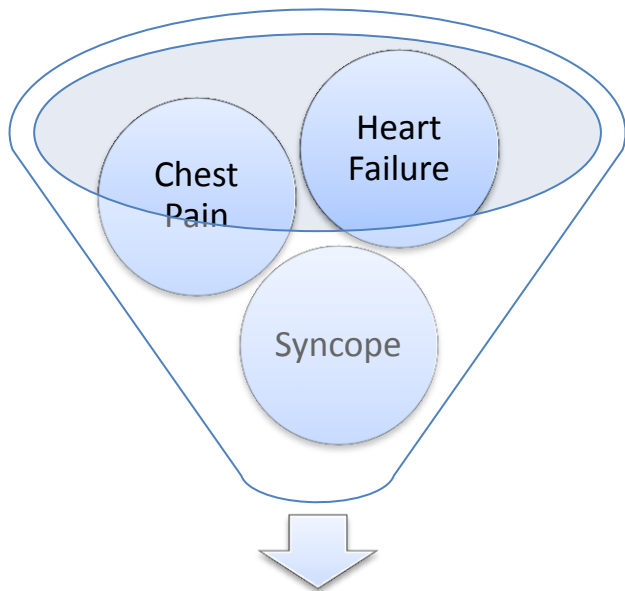
- Changing practice & Enhancing Competency
- The Nursing Department designated a part-time nurse at each participating site to remind clinical staff about the ACAP program, to check and verify that the forms were being completed on correct patient populations, and to provide periodic reports to nursing administrators regarding experience with the program and the need for additional in-servicing.
- **This presented a win-win situation wherein**
 - hospital physicians could be further educated in the need for detailed and specific documentation at all stages of the patient's hospital stay and
 - there existed an opportunity to join forces with evidence-based health care assessment and documentation tools



Quality Management

- This pillar helps measure the performance and competency of our ACAP program.
- Data Driven Information
- Demonstrate changes in competence,
- Improvement in performance-in-practice, and/or improved patient outcomes.
- Metrics for determination of success





ACAP Research Team



Fill

- Residents
- PA

Clean

- FMG's
Volunteers

Enter

- Pre-Medical
Students



Data Analysis
& Publication

Success of the Program

- The successful utilization and integration of these five main target areas, we believe are integral in the institution wide acceptance of the ACAP program and eventually our positive outcome data.
- We used the following assessment factors to routinely monitor the status of our ACAP program and the need for any revision

How can we amplify the impact of preventative strategies?

Interventions-Revascularization-Devices-

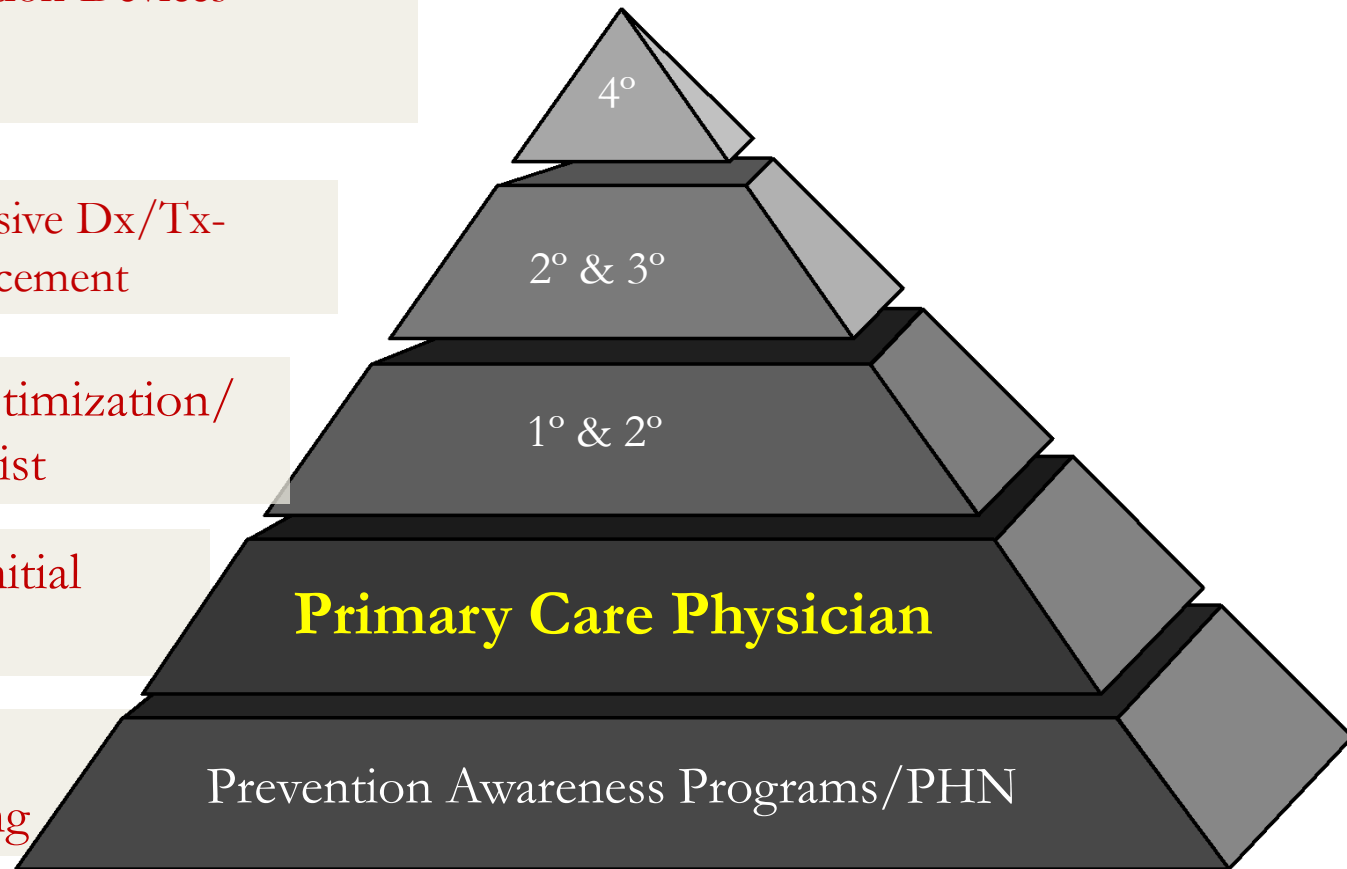
Procedures

Specialist/Cardiologist-Invasive Dx/Tx-Monitoring/Rehab/Reinforcement

Risk Stratification-Rx Optimization/Adherence-FD & Specialist

Recognition-Screening-Initial Therapy- Family MD

Community Based Awareness/Understanding



Changing the Culture

Putting all parts of the Puzzle Together



Some of the ACAP Pathways Outcome Results

**St. Luke's-Roosevelt
Hospital Center**
University Hospital of Columbia University
College of Physicians & Surgeons

ACAP Program

Division of Cardiology

**The Advanced Cardiac Admission
Protocol Program**
**An Evidence-Based Patient Care
Novel Pathway driven System
For Management
Of all Cardiac Patients**

**Acute Coronary Syndrome (ACS)
Acute Decompensated Heart Failure
Atrial Fibrillation & Flutter
Syncope
Hyperglycemia
Hypertension
Pericardial Disease**

ACAP PROGRAM
(212) 636-1318
WWW.NYCardiologyPathways.ORG

Implementing a Pathway for the Management of Acute Coronary Syndrome Leads to Improved Compliance With Guidelines and a Decrease in Angina Symptoms

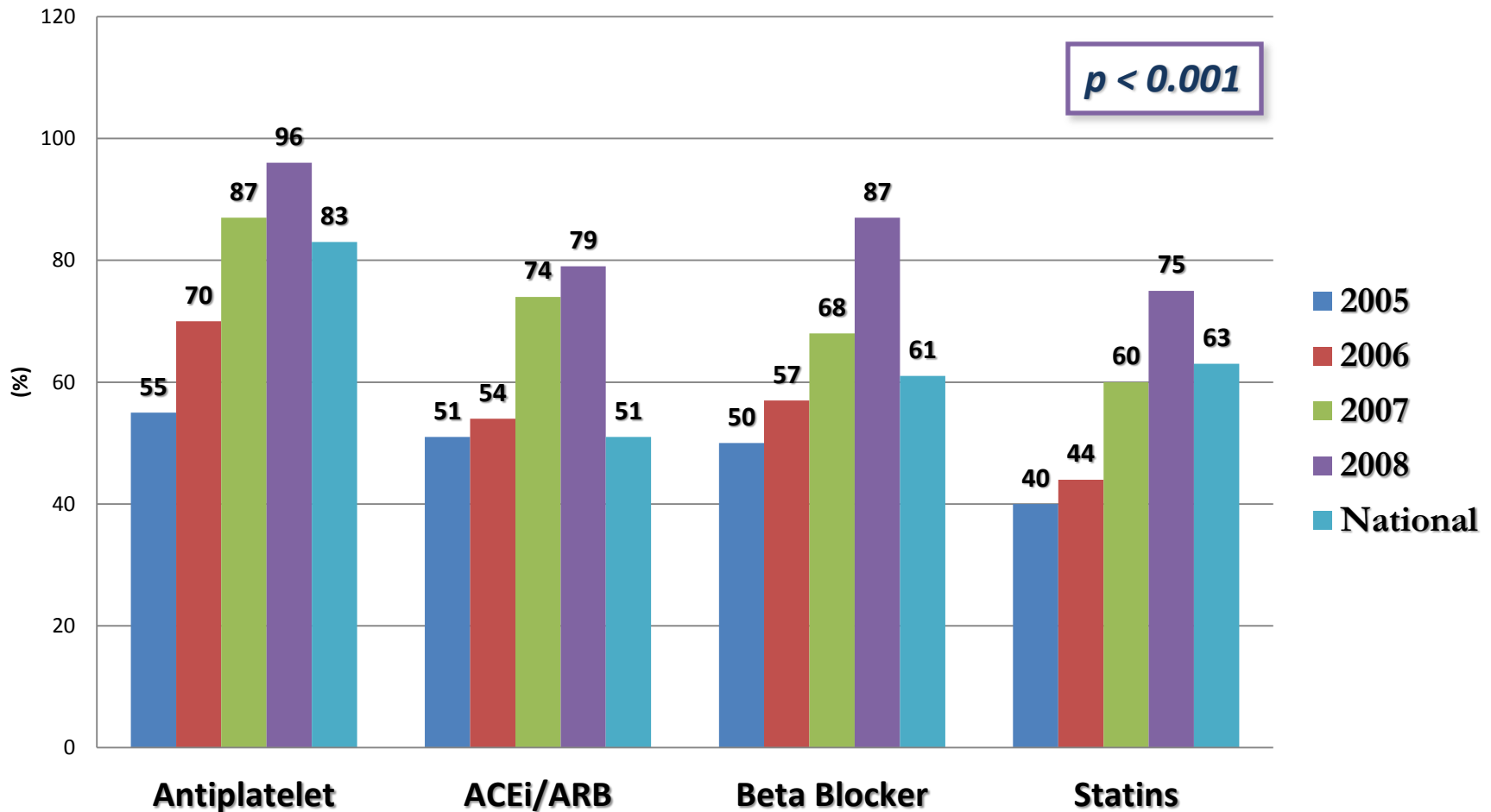
Emad F. Aziz, Fahad Javed, Sandeep Pulimi, Balaji Pratap, Maria E. De Benedetti Zunino, Deborah Tormey, Mun K. Hong, Eyal Herzog

Numerous strategies are being tested by health-care professionals in recent past to find new tactics which can increase awareness and enhance the utilization of evidence-based therapies in critical scenarios (Blomkalns et al., 2007; Cannon et al., 2002). These efforts are an attempt to bridge the gap (Cabana et al., 1999) between updated published guidelines and real-life clinical practice. Nurses were pioneers in developing earlier critical pathways in hospitals for nursing care alone (Ethridge & Lamb, 1989; Miller & Miller, 1997), but multidisciplinary teams soon began developing pathways to encompass all aspects of care for hospitalized patients (Coffey, Othman, & Walters, 1995; Goodman, 1997). As a direct result of this, the implementation of critical pathways and management plans for hospitalized patients is emerging as a useful tool to achieve goals of optimal quality of patient care (Calligaro, Dougherty, Raviola, Musser, & De-Laurentis, 1995; Patterson et al., 1997; Roebuck, 1998). *The Cardiac Hospitalization Athlete*

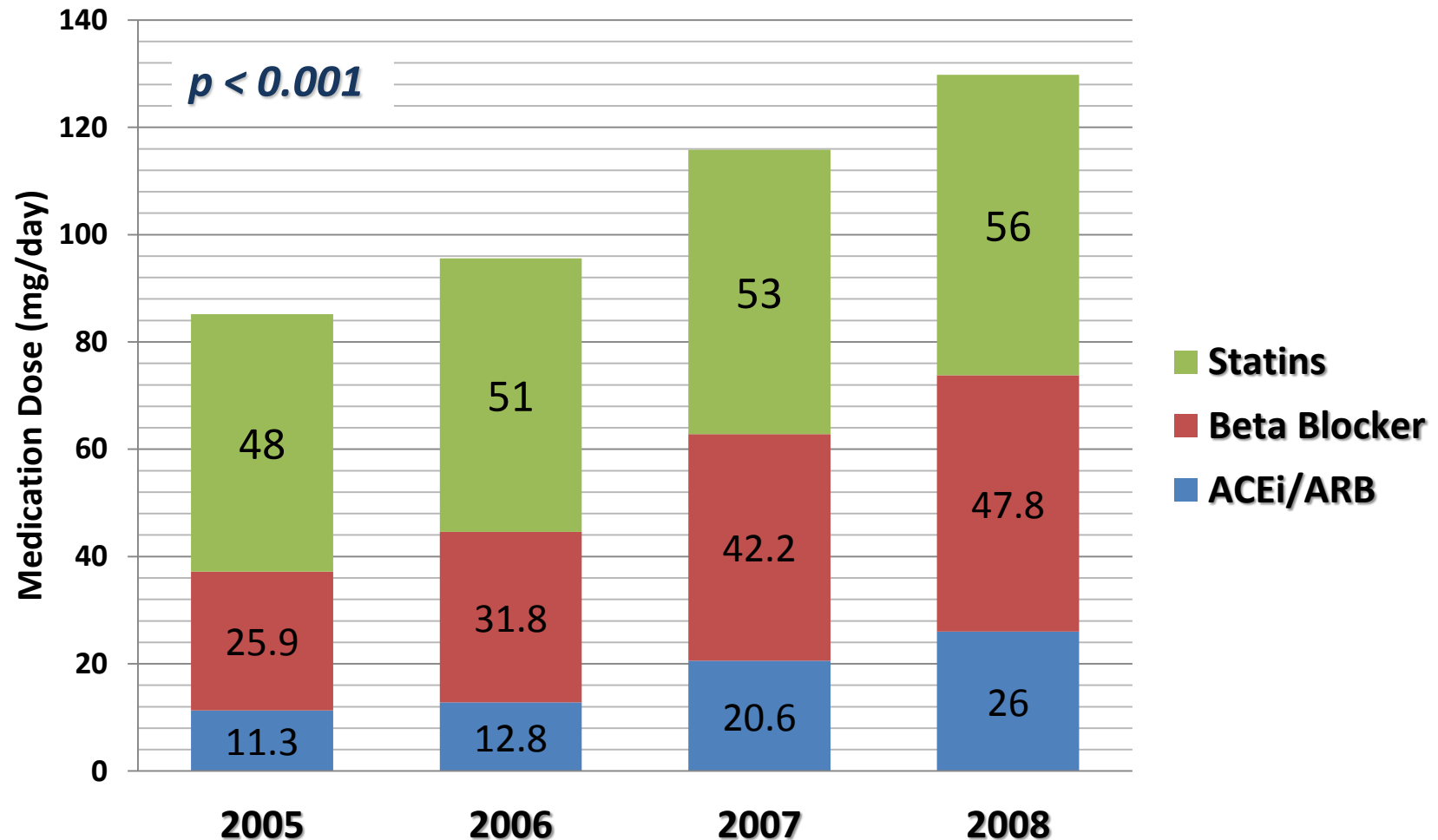
Abstract: We describe our experience with the Advanced Cardiac Admission Program (ACAP) at our institution. The ACAP program is a hospital-wide implementation of critical pathways-based management of all cardiac patients. Data review of patients admitted for acute coronary syndromes from the ACAP-PAIN database and a comparative study of outcomes before and after implementation of the pathways-based assessment and treatment protocols. In the pre-ACAP and post-ACAP patient groups, antiplatelet use at admission improved from 50% to 75% ($p < .01$), ACE-I use improved from 32% to 54% ($p < .0001$), statins use increased from 35% to 62% ($p < .0001$), and smoking cessation awareness increased from 15% to 86% ($p < .0001$). At 1-year follow-up, 84% of patients with CAD were treated with statins, and 47% had LDL cholesterol < 100 mg/dL, compared with 20% and 9%, respectively, with conventional treatment before ACAP implementation ($p < .0001$). Recurrent angina symptoms and nonfatal myocardial infarction rates decreased from 28.5% to 13% ($p = .02$), and 15% to 5% ($p = 0.03$), respectively. Pathway-based programs like ACAP significantly enhance administration of guidelines-based cardioprotective medications both during hospital stay and at 1-year follow-up.

ACAP effect on Discharge Orders

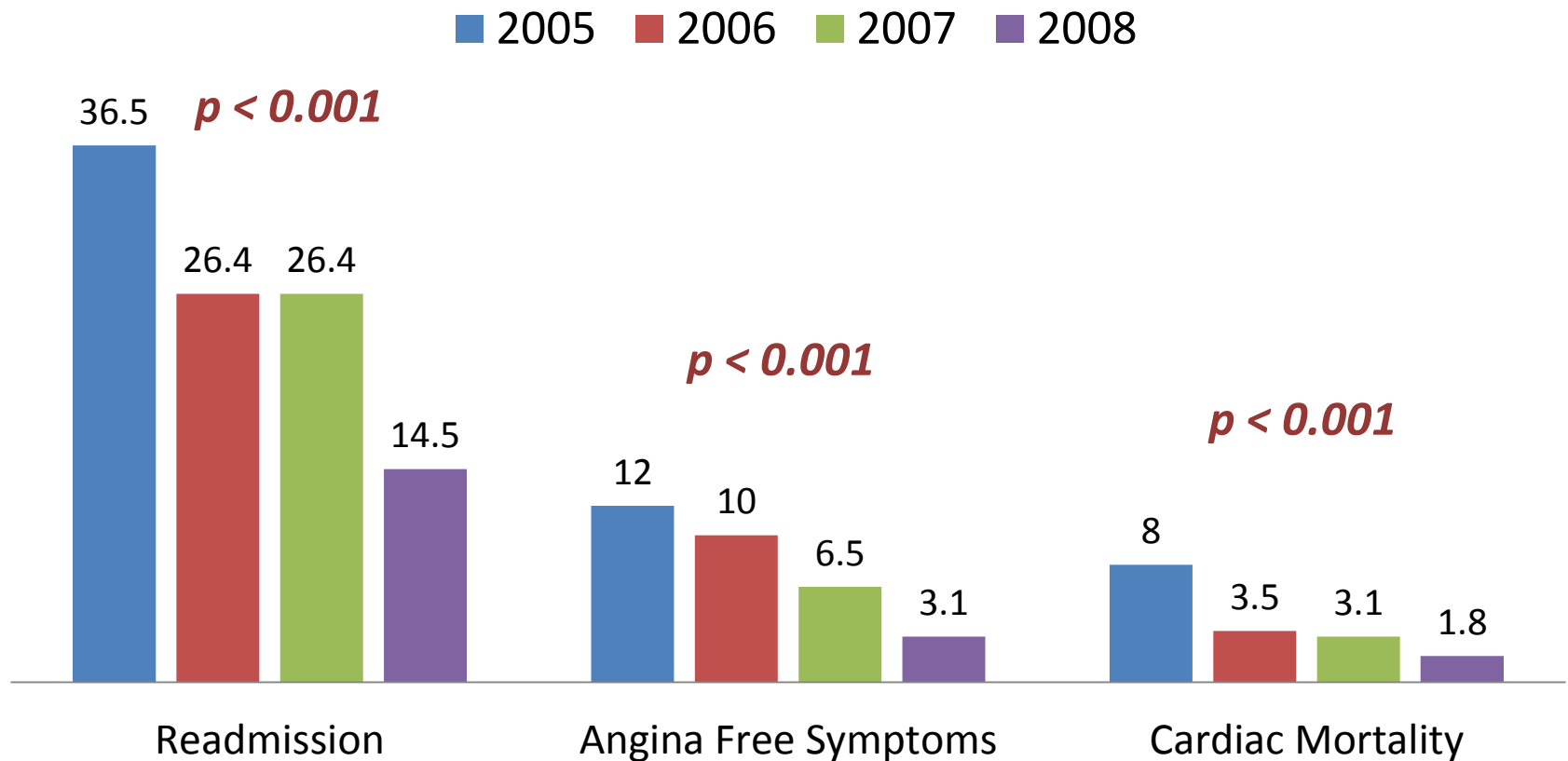
The Use of Evidence-based Therapies in ACS



ACAP effect on Discharge Orders



Clinical Events Post-pathway Implementation at Four Years Following Hospital Discharge



Multivariate Logistic Regression Predictors of Outcomes*

Variable	Odds Ratio	95% CI	p
Age	1.06	1.03 – 1.10	0.0001
History of CAD	0.41	0.17 – 0.98	0.044
Known Heart Failure	2.07	0.99 – 4.35	0.052
Admission Creatinine	1.10	1.03 – 1.17	0.001
EF	0.97	0.95 – 0.99	0.003
Pathway Implementation	0.49	0.33 – 0.73	0.0004
TIMI Risk Score	1.33	0.96 – 1.84	0.076

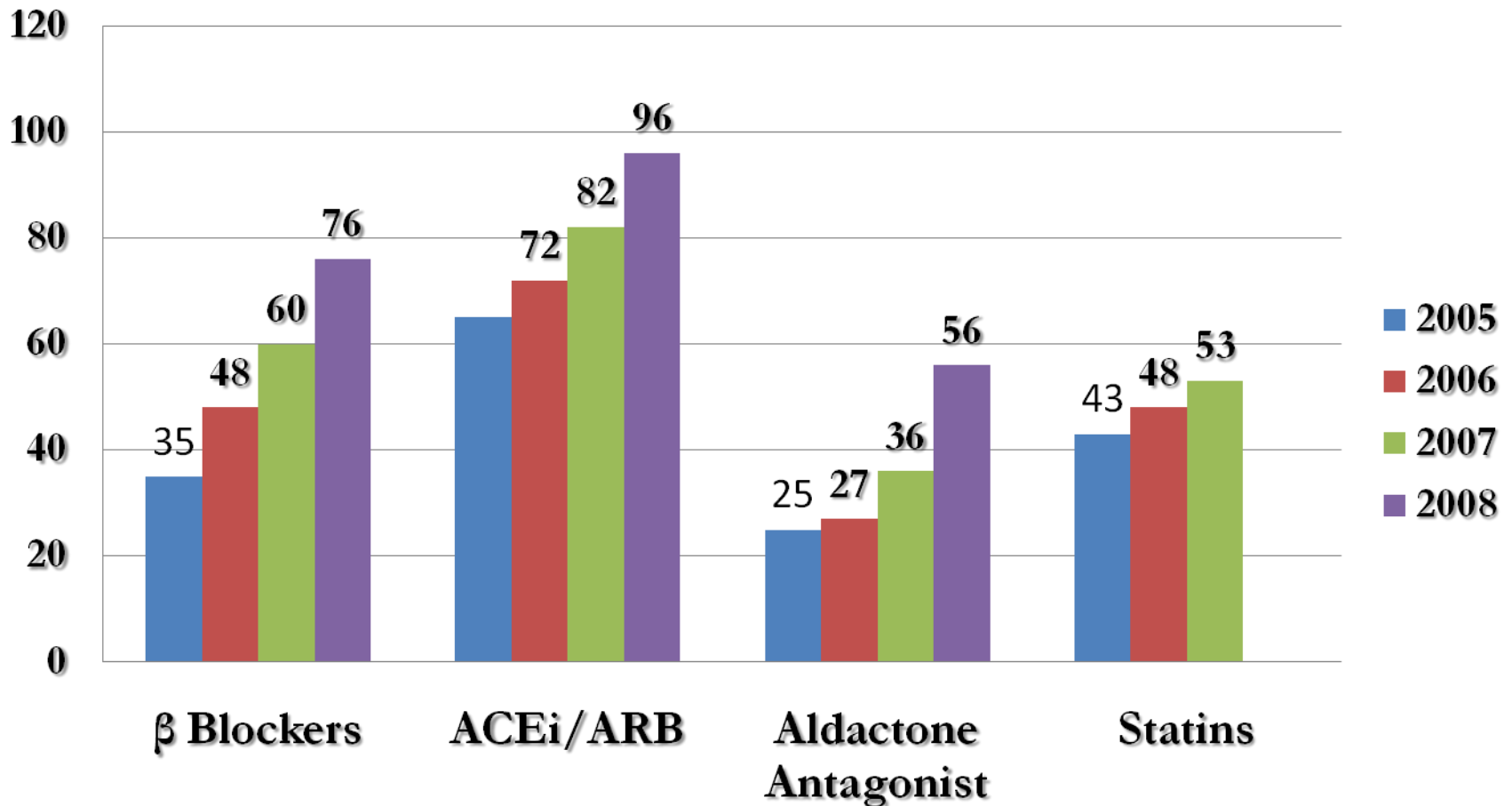
* Over all Model Chi-square Fit= 74.3; $p < 0.0001$

**Implementation of a Novel Pathway for
Management of Acute Decompensated
Heart Failure Improves Guidelines
Adherence and Remarkably Decrease
Mortality and Readmission Rates**

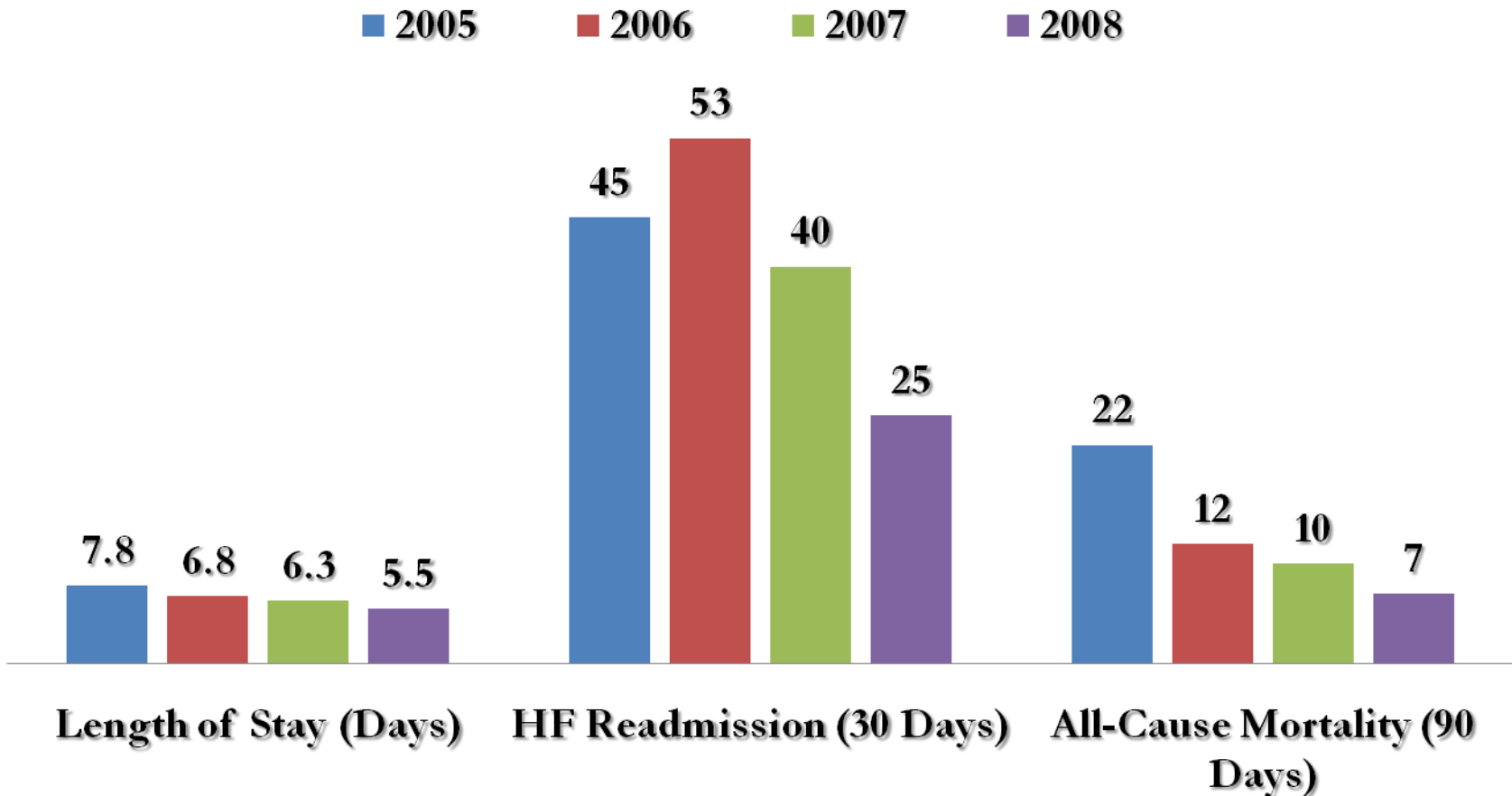
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Olivier Frankenberger, Eyal Herzog

St. Luke's-Roosevelt Hospital Center, University Hospital of Columbia
University, College of Physicians and Surgeons, New York City, NY

The Results of ACAP Implementation on the Usage of Evidence-based Therapies for ADHF Management



Clinical Events Post-pathway Implementation - Four Years Analysis Post-Hospital Discharge



Multivariate Logistic Regression Predictors of Outcomes*

Variable	OR	95% CI	<i>p</i>
Age	1.06	0.98 – 1.02	<i>0.840</i>
Known Heart Failure	1.05	0.54 – 2.0	<i>0.864</i>
ACEi/ARBs	0.50	0.25 -0.97	<i>0.04</i>
EF	1.00	0.98– 1.01	<i>0.93</i>
Pathway Implementation	0.49	0.33 – 0.75	<i>0.0009</i>
TIMI Risk Score	1.28	0.96 – 1.84	<i>0.011</i>

** Over all Model Chi-square Fit= 30; p=0.0006*

Right Ventricular Dysfunction is a Strong Predictor of Developing Atrial Fibrillation in Acutely Decompensated Heart Failure Patients, ACAP-HF Data Analysis

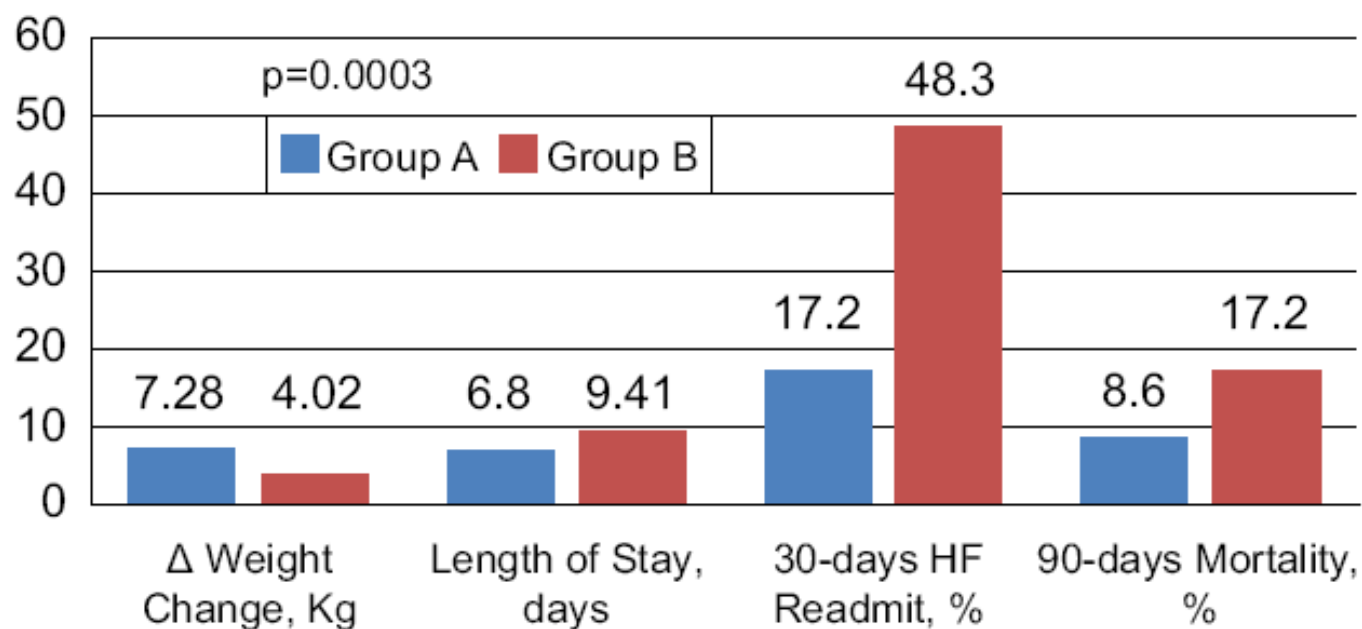
EMAD F. AZIZ, DO, MB, ChB, MARRICK KUKIN, MD, FAHAD JAVED, MD, DAN MUSAT, MD, AMJAD NADER, MD, BALAJI PRATAP, MD, AJAY SHAH, MD, JORGE SILVA ENCISO, MD, FAROOQ A. CHAUDHRY, MD, AND EYAL HERZOG, MD

New York, New York

Winner of the 10th Annual Joan Barber Memorial Research Award The New York Echo Society Meeting, June 2009

Original Research

Continuous Infusion of Furosemide Combined with Low-Dose Dopamine Compared to Intermittent Boluses in Acutely Decompensated Heart Failure is Less Nephrotoxic and Carries a Lower Readmission at Thirty Days



PARK,

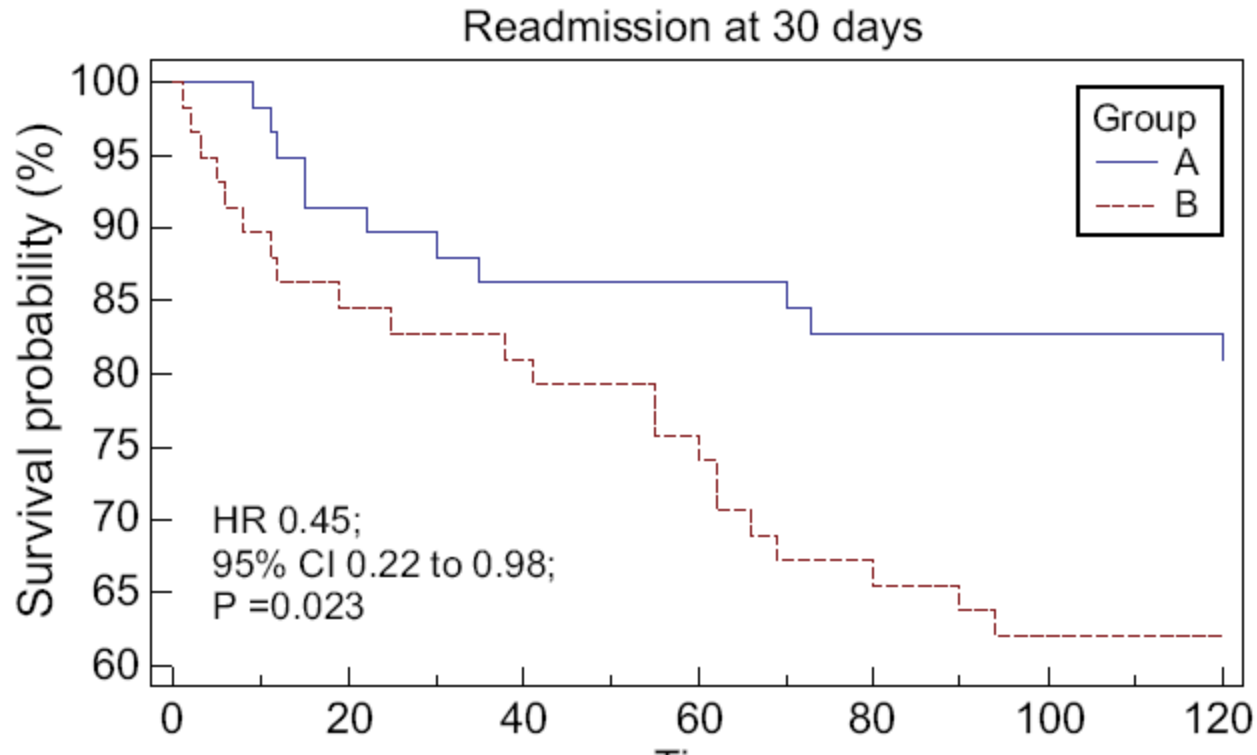
College of

Hospital Practice

HOSPITALIST, INTENSIVIST, LABORIST, INTERVENTIONAL CARDIOLOGIST

Effect of Adding Nitroglycerin to Early Diuretic Therapy on the Morbidity and Mortality of Patients with Chronic Kidney Disease Presenting with Acute Decompensated Heart Failure

Emad F. Aziz, DO, MB, ChB; Marrick Kukin, MD; Fahad Javed, MD; Balaji Pratap, MD; Manpreet Singh Sabharwal, MD; Deborah Tormey, RN; Olivier Frankenberger, MD; and Eyal Herzog, MD



Do Emergency Room Physicians Correctly Identify Patients Presenting with Unexplained Syncope who Warrant Hospitalization?

Emad F. Aziz, DO, MB.ChB, Balaji Pratap, MD, Chaithanya K.
Pamidimukala, MD, Joseph H. Bastawrose, MD, Terrence Park,
MD, Joseph Kim, Claire Murphy, Joanna Verzosa,
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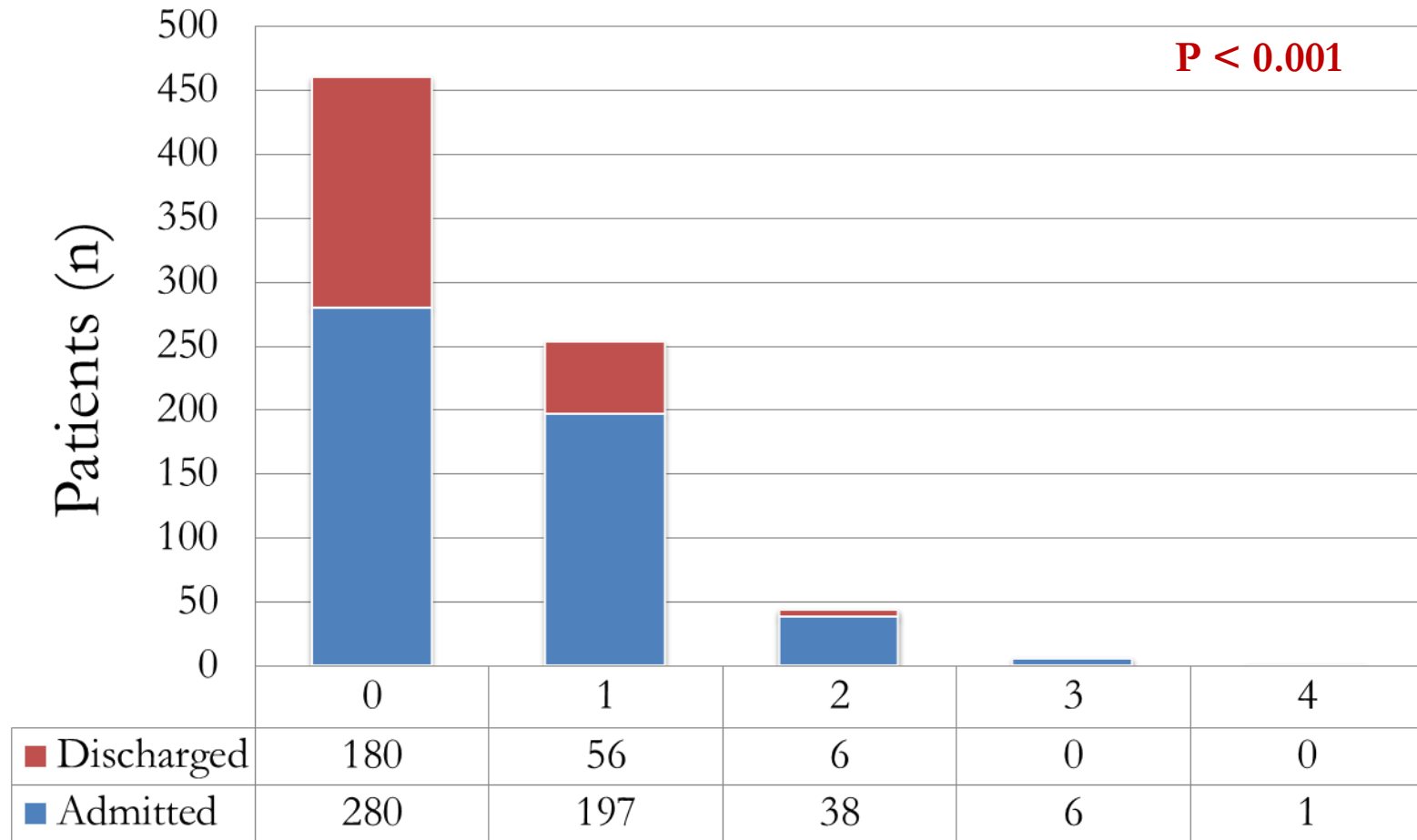


International Academy of
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**16th WORLD CONGRESS
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Annual Scientific Sessions 2011

SELF Pathway Management Plan

- Initial assessment of a patient with syncope
- Definition of true syncope (**SELF-1**)
 - **S** - Short period, self limited, spontaneous recovery
 - **E** - Early-rapid onset
 - **L** - Loss of consciousness- transient
 - **F** - Full recovery- fall
- Classification of syncope when there is a certain or suspected diagnosis (*Neurally mediated, Orthostatic hypotension, etc.*)
- Initial management of patients with unexplained syncope
- Management of cardiac syncope (**SELF-2**)
- Management of patients with unexplained syncope but with no evidence of cardiac etiology

Patient Distribution According to The San Francisco Syncope Rule (SFSR)

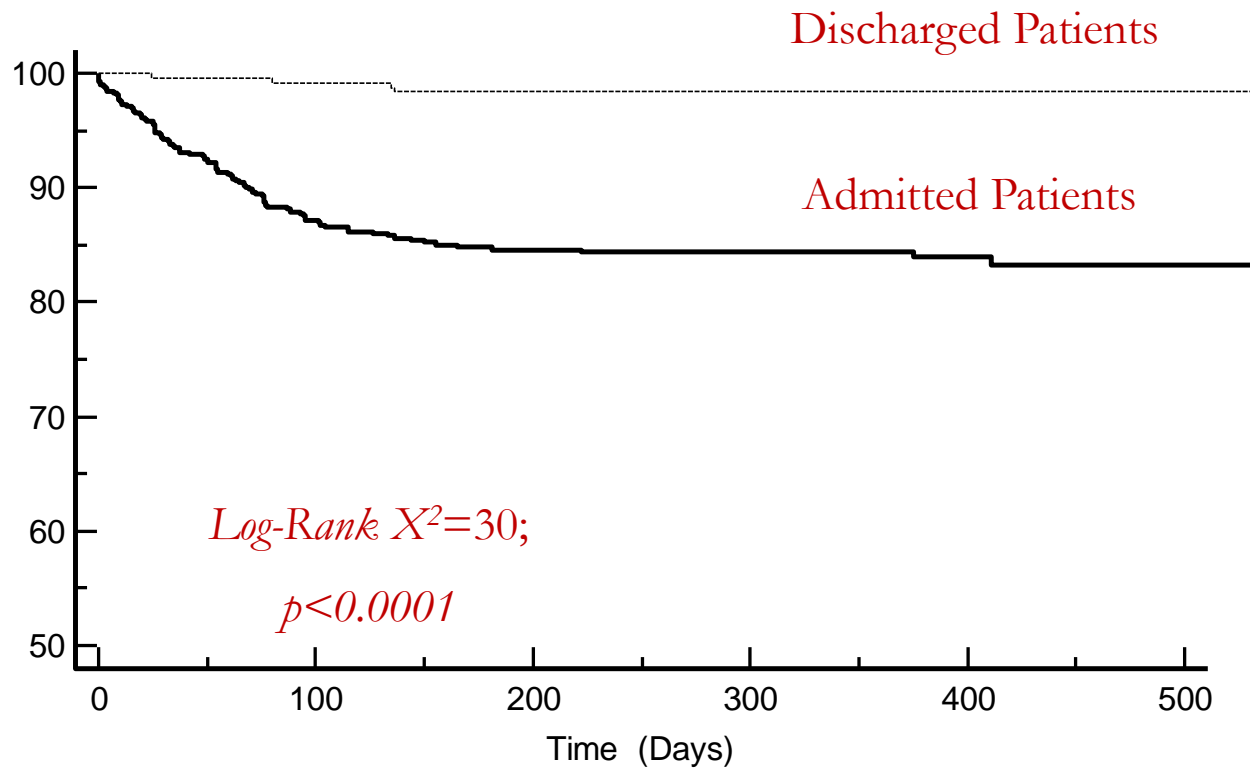


Clinical Outcomes at one Year Follow-up

	Group (A) Admitted Patients N = 523 (69)	Group (B) Discharged Patients N = 242 (31)	<i>p</i>
ROS, %	49 (9)	4 (1.6)	0.0002
MI, %	26 (5)	1 (1)	0.001
PCI, %	40 (8)	2 (1)	0.0001
TIA & Stroke, %	5 (1)	0 (0)	0.02
Mortality, %	12 (2)	0 (0)	0.04

ROS = Readmissions for Recurrent Syncope, MI = myocardial infraction,
PCI = Percutaneous Coronary Intervention, TIA = Transient Ischemic Attack

Kaplan-Meier Survival Curve

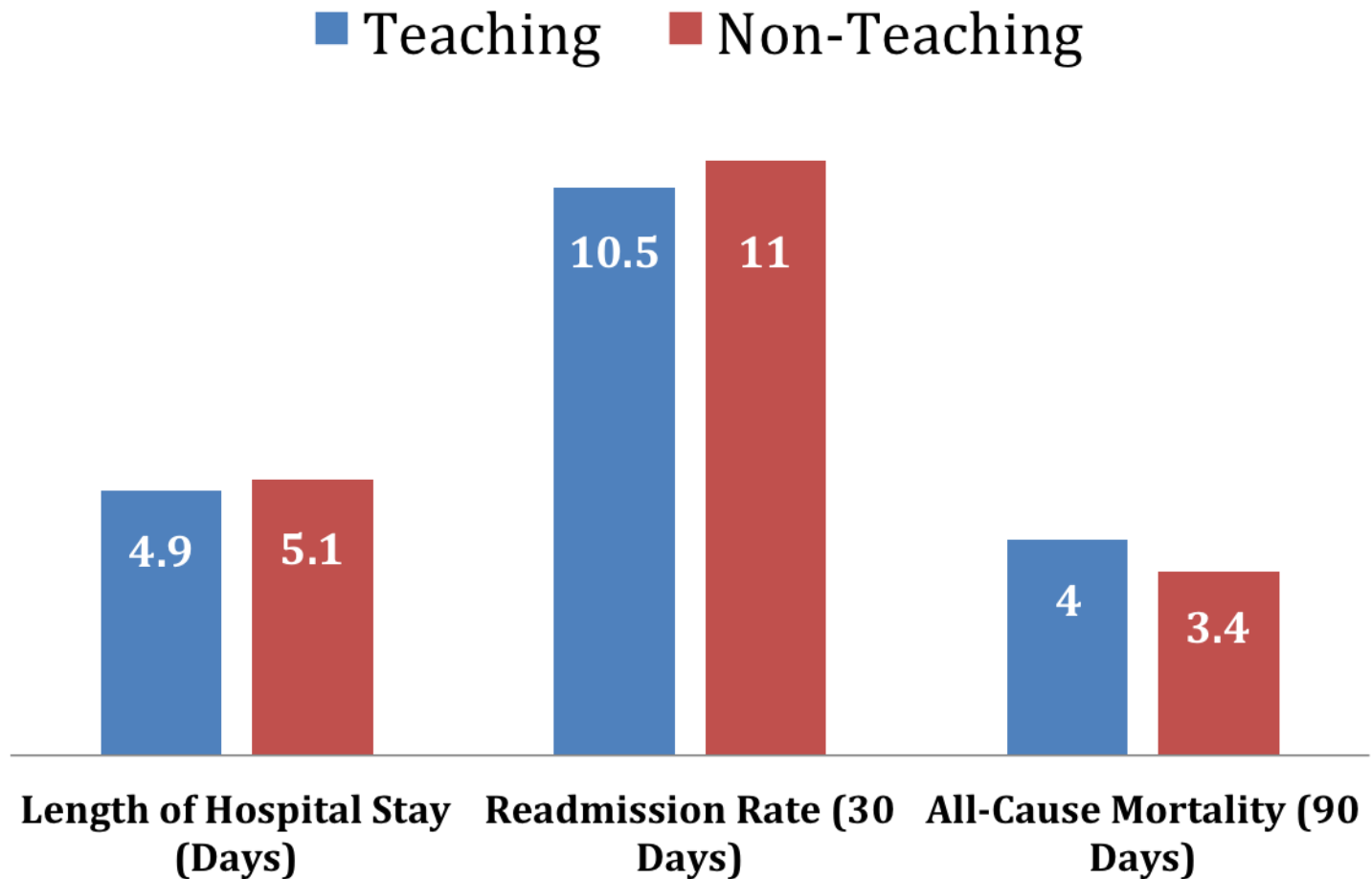


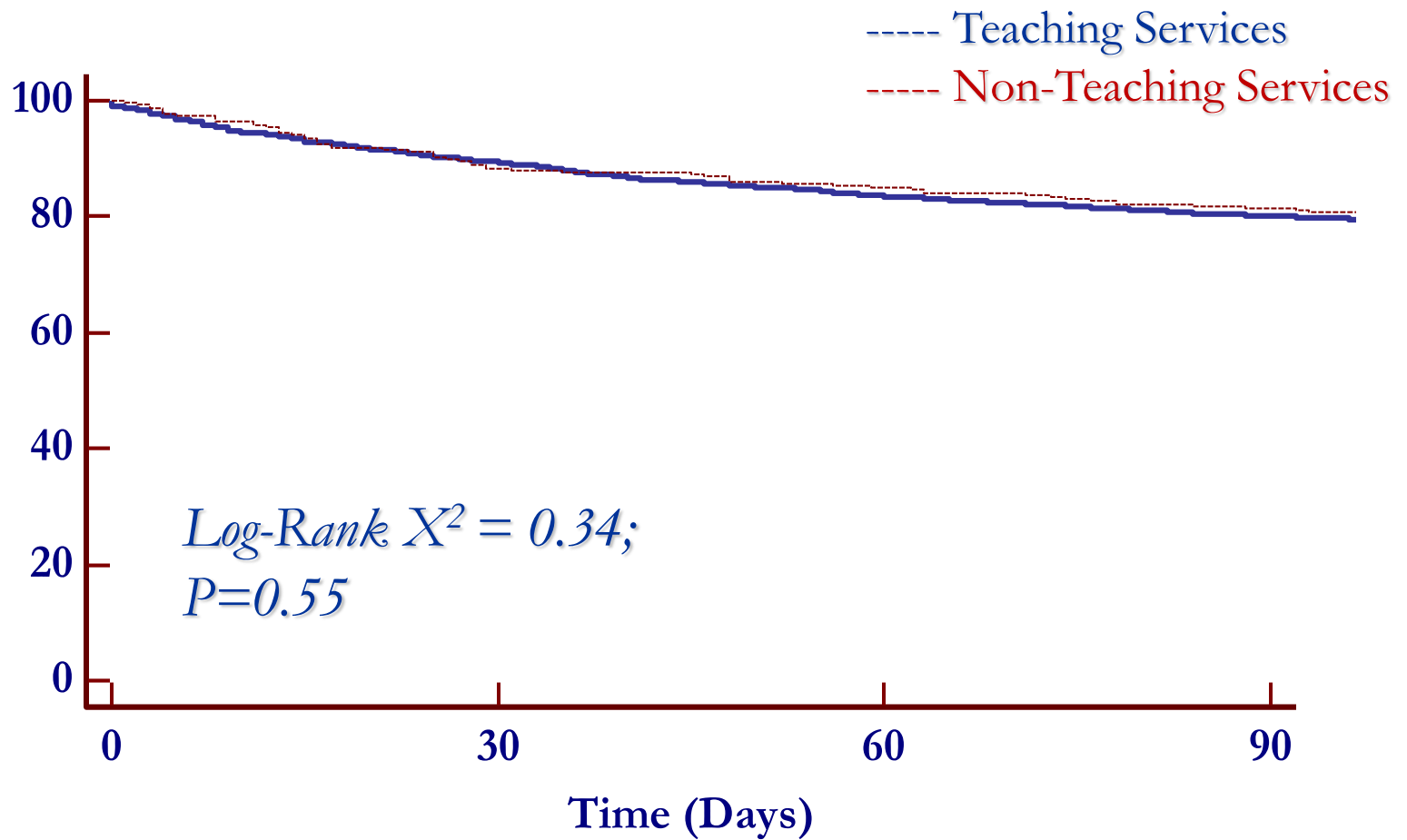
HR 3.8, 95% CI: 2.35-5.73; $p<0.0001$

Comparison of the Utilization of Evidence-Based Therapies and Clinical Outcomes between Teaching and Non-teaching Medical services After the Implementation of Novel Clinical Pathways for the Management of Cardiac Patients

Emad F Aziz, Balaji Pratap, Omar Wever-Pinzon, Fahad Javed, Yoon K Yang, Kiran K Kalal, Venkat Rao, Resmi Premji, Putun Patel, Andre Tojino, Jeannette Huaman, Yousef Chodakiewitz, and Eyal Herzog

The Clinical Outcome Results of ACAP Implementation Between Teaching and Non-Teaching Services

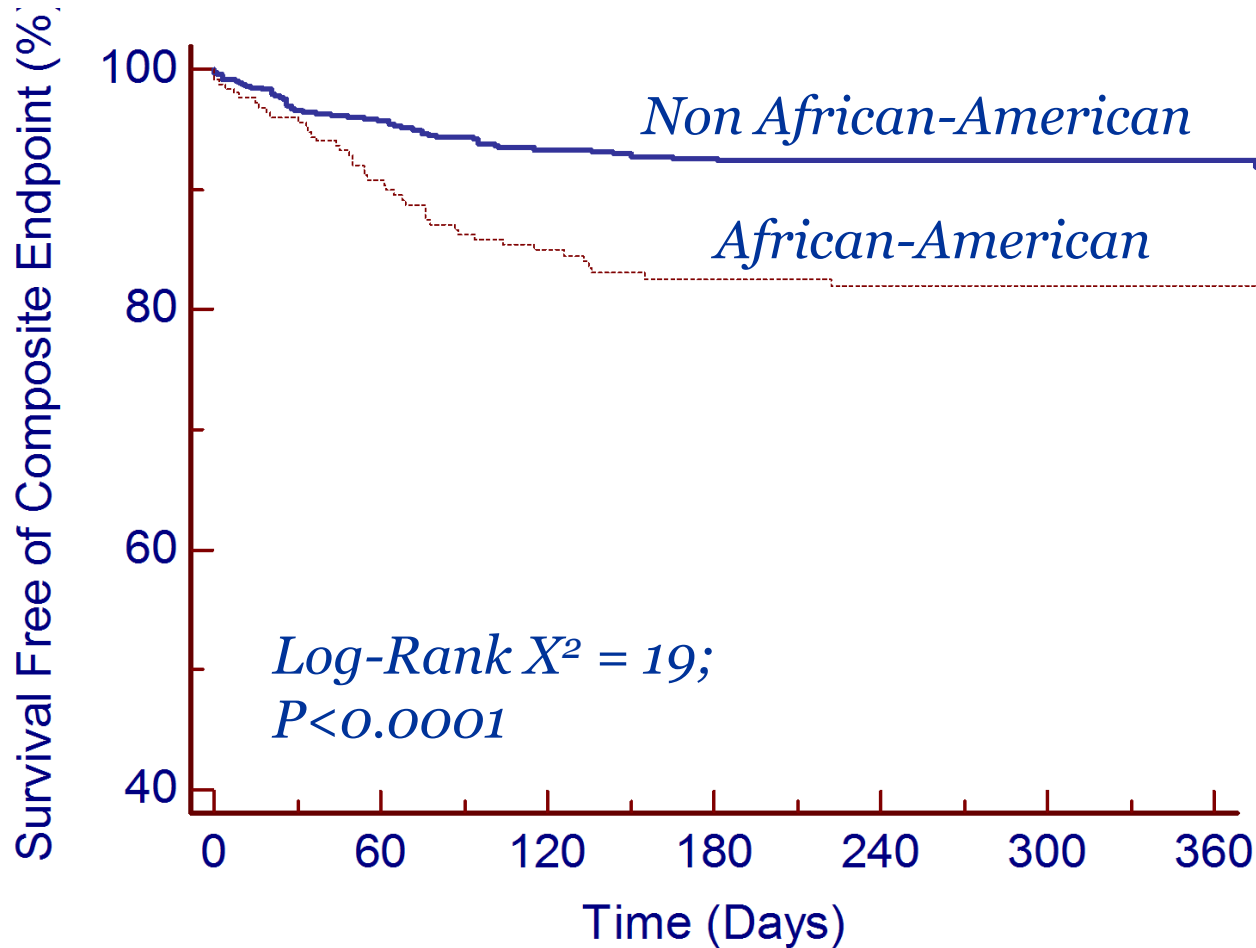




Number at risk				
Teaching Services	3815	3438	3214	3082
Non-Teaching Services	259	229	220	211

African-American Patients Presenting with Unexplained Syncope Have Significantly Worse 1-year Outcome When Compared to Non-African Americans

Emad F Aziz, Balaji Pratap, Dan Musat, Kiran K Kalal, Juan Pablo Cordova, Carlos L Alviar, Nischala Dhanekula, Venkat Rao, Andre Tojino, Teresita O Aziz, Robin Knox, and Eyal Herzog



- African American patients presenting with unexplained syncope have significantly worse 1-year outcome when compared to non African Americans.
- This is likely due in part to higher incidences of significant co-morbidities in African American Patients.

Women with Atrial Fibrillation are Significantly More Likely to have a Stroke than Men, an ACAP-RACE Analysis

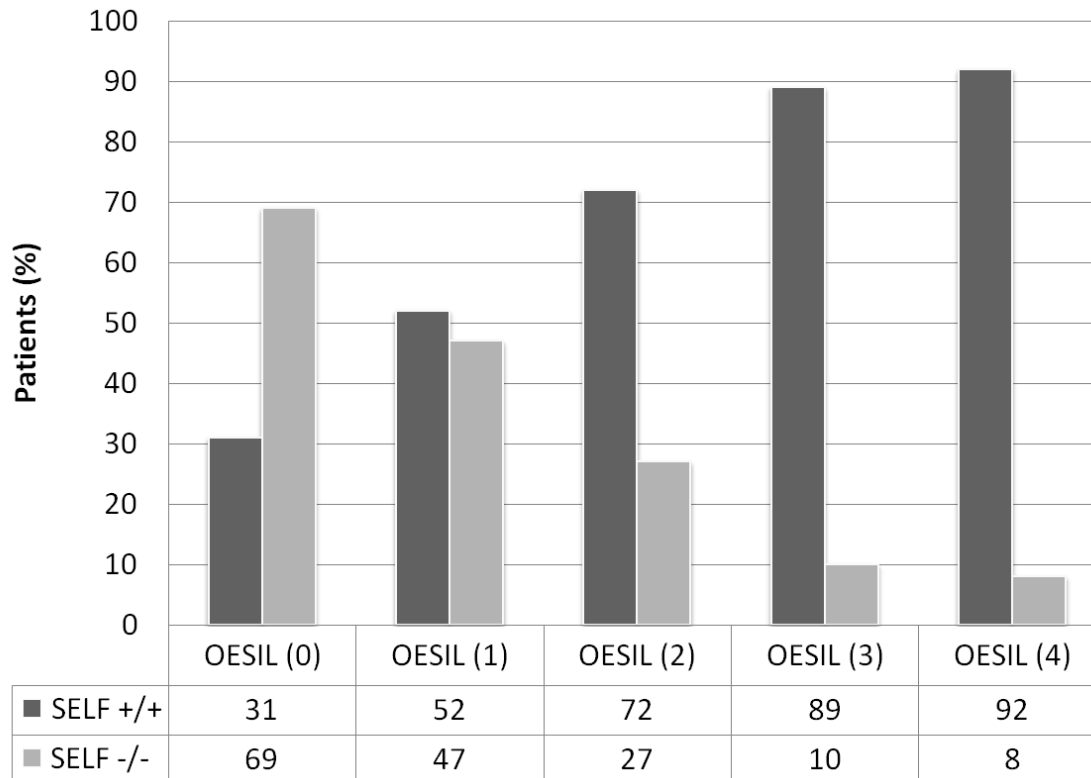
Author Block: Emad F. Aziz, Terrence Park, Balaji Pratap, Kalyan K. Bandavaram, Andre Tojino Tojino, Joseph Hanna Bastawrose, Chaithanya K. Pamidimukala, Shubha D. Bhat, Sejal Mehta Mehta, Yagnang K. Vyas, Eyal Herzog, St. Luke's-Roosevelt Hospital Center, Columbia University Hospital of Physicians and Surgeons, New York, NY



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Exhibits: April 3 – 5

A Simple Novel SELF-Pathway Appropriately Identify High Risk Patients When Admitted with Unexplained Syncope

Author Block: Emad F Aziz, Chaithanya K. Pamidimukala, Balaji Pratap, Joseph H Bastawrose, Terrence Park, Steven Lee, Fahad Javed, Eyal Herzog, St. Luke's-Roosevelt Hosp Ctr, New York, NY



Chest Pain Management Team

The Heart and Vascular Institute



**WILKES-BARRE
GENERAL HOSPITAL**

**St. Luke's
Roosevelt**

Results

- ◆ From December 2010 through February 2011, **187** patients were treated in observation status with “chest pain.”
 - ◆ Approximately 50% of those patients were treated using the chest pain protocol/dedicated unit on 2CS.
- ◆ All cardiologists had patients in the treatment protocol, and not in the protocol

Results

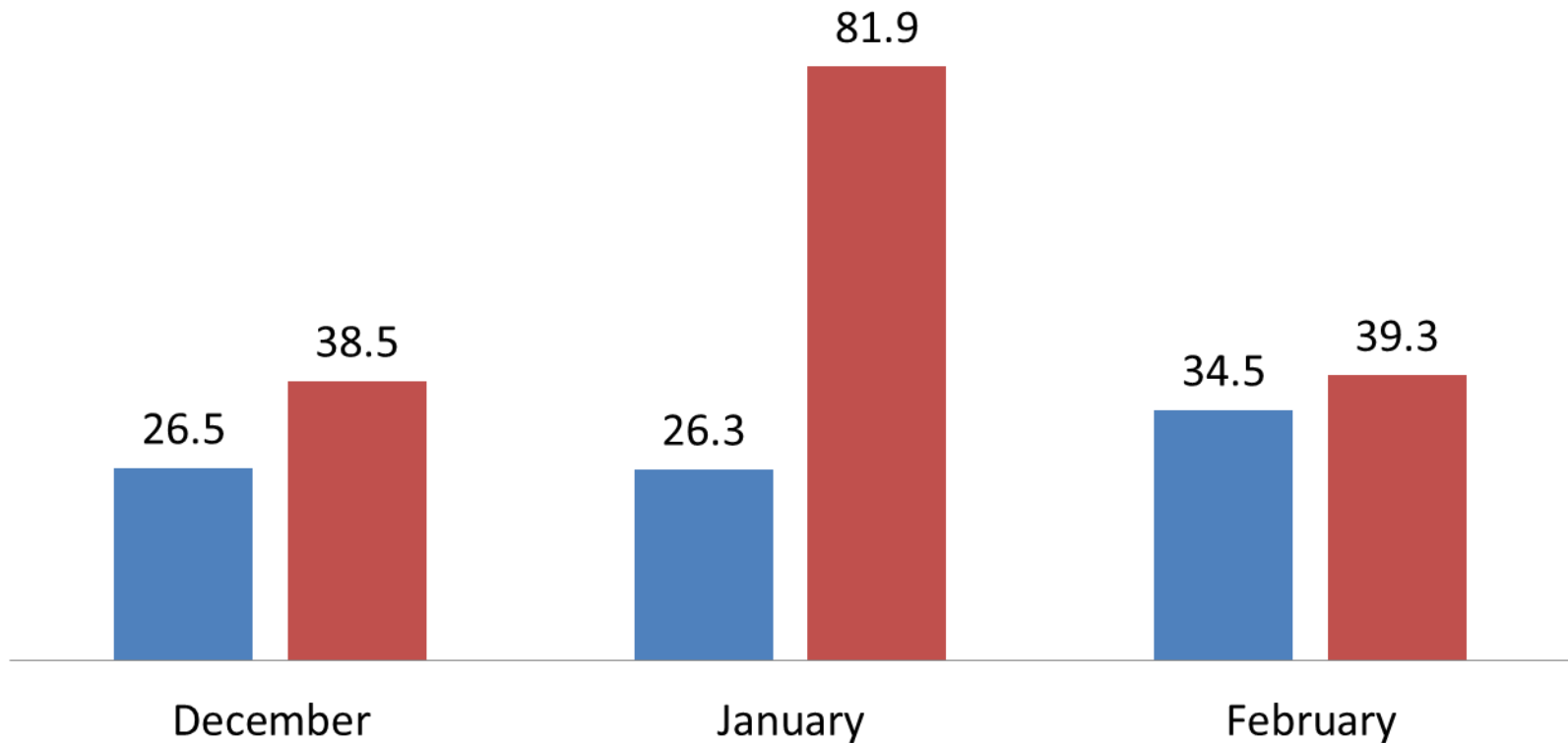
- ◆ Data was analyzed for the **three months** for:
 - **ALOS Total** – With and without protocol
 - **ALOS by physician** - With and without protocol
 - **ALOS by day of the week** - With and without protocol
 - Financials – Dollar value of the unit and treatment protocol

Using conservative daily hospital bed rate of \$1960

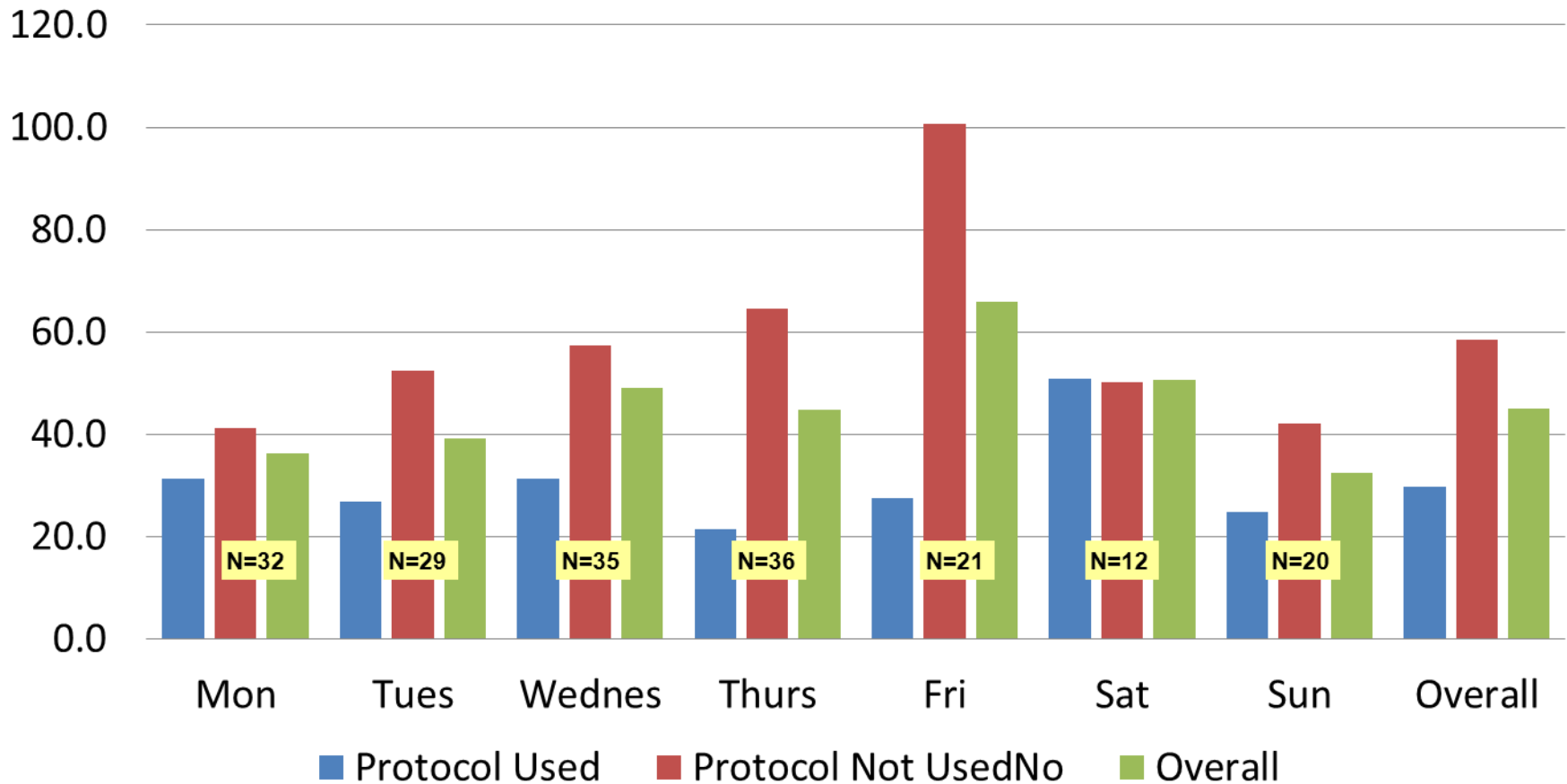
Results Service and Quality

Order Set Usage and ALOS (Hours)

■ Order Set Used ■ Order Set Not Used



Placed in Obs by Day of Week December 2010 through February 2011



Results Service and Quality

	Hours	Total COST
HOURS With protocol - 2CS	2,391	\$ 195,265
HOURS Without Protocol	5,158	\$ 421,237
Cost per day (AHA Estimate for PA)	\$1,960	
Cost Per Hour	\$ 82	
	Patients	
Cost Per Patient <u>WITH</u> Protocol	92	2,122.45
Cost Per Patient <u>WITHOUT</u> Protocol	81	5,200.45

Net Reduction in COST

\$ 225,972

Summary

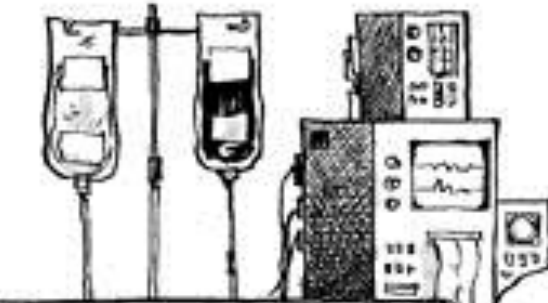
- Cardiovascular diseases pose a huge clinical and economic burden
- Prevention is sub-optimal/proven therapies are underutilized-there remains a huge Care Gap
- Comprehensive primary & secondary prevention strategies are required
- Multiple interventions are required to Bridge the Care Gap

Summary

- Educational resources and management tools are necessary at point of care
- Development of critical pathways can ensure that patients are more likely to receive the recommended therapeutics.
- Cardiac performance measures might be the basis for payment in the future
- Our physicians & our profession must lead in improving our health care system.

THIS PATIENT IS IN CRITICAL CONDITION

WE NEED A BAND-AID! STAT!



SEAN © 2009



Thank You
& Let's Get with The Guidelines

The ACAP Cardiac Research Group
www.NYCardiologyPathways.Org



Thanks' for your kind attention!!!!!!



Let Us Meet Again

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