

How Big Is The Gap Between Guidelines & Clinical Practice In CAD Patients?

Hosam Hasan, MD, PhD

Head of Cardiovascular Medicine Department, Assiut University



Value of CPGs

- Clinical practice guidelines (CPGs) are one of the major tools used to improve the **value (quality and cost)** of health care.
- CPGs are a way to the practice of **evidence-based medicine** transforming solid evidence into impactful patient care.

Value of CPGs

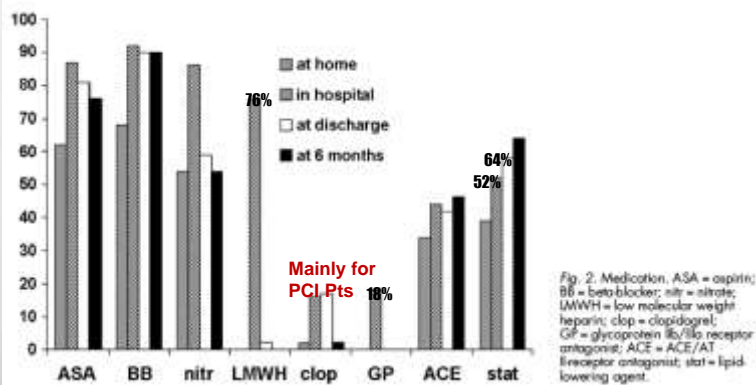
- Improved patients' outcomes; mortality & morbidity
- Improved cost-effectiveness of health care systems.

CPGs work through development of:

- **Statements:** to assist with practitioner and patient decisions for specific clinical circumstances
- **Clinical pathways:** Multidisciplinary management tools based on evidence-based practice for a specific group of patients with a predictable clinical course
- **Clinical protocols:** Plans for carrying out a patient's treatment regimen founded on evidence-based strategies and consensus statements by peers in the field
- **Clinical bundle:** Structured way of improving the processes of care and patient outcomes; a small, straightforward set of evidence-based practice

Do we really have a gap?

Finnish prospective follow-up survey



NSTEMI Pts

- The overall rate of coronary angiography was **40% in hospital** and **54% at 6 months**, but there was **large interhospital variation**.
- Overall, only **45% of very high-risk** patients underwent angiography during initial hospitalization.
- Very high-risk patients had longer waiting times for angiography** than low-risk patients (5.8 vs 4.5 days, $p < 0.05$).

Vikman et al. *Can Cardiovasc J* 2003; 37(4) 187-92

Finnish prospective follow-up survey

NSTEMI Pts

Multivariate analysis for probability of receiving in-hospital angiography

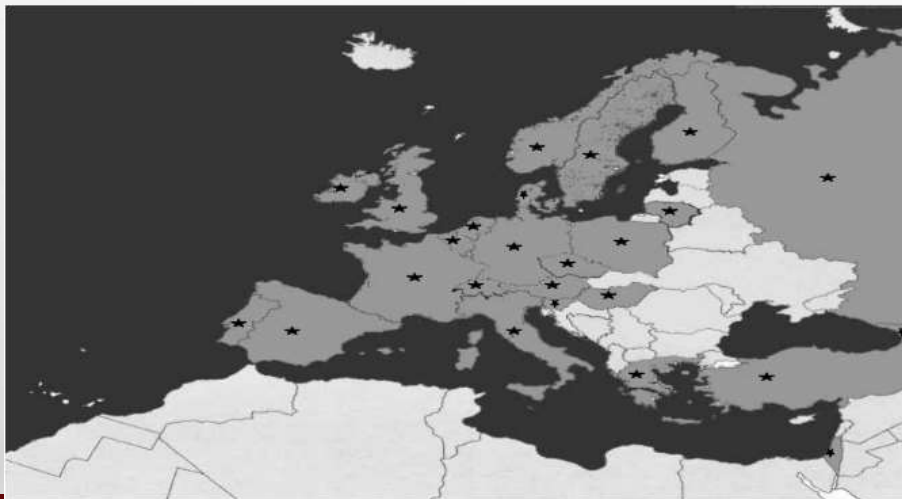
Factor	OR (95%CI)	P value
• Age; continuous	0.94 (0.92-0.96)	<0.0001
• Diabetes	0.63 (0.40-0.98)	<0.05
• T inversion on admission ECG	1.73 (0.98-3.04)	<0.05
• ST depression on admission ECG	2.06 (1.30-3.27)	<0.01
• Elevated troponin levels	1.86 (1.21-2.81)	<0.01
• Admission on university hospital	1.60 (1.03-2.49)	<0.05

Conclusion—

- Traditional medication with aspirin and beta-blocker is widely used in ACS, whereas statins, GPIIb/IIIa receptor antagonists and invasive therapy are underused.
- Well-known risk factors were poor predictors of receiving in-hospital angiography.
- Implementation of new ESC guidelines into clinical practice needs further education and more resources.

Vikman et al. *Can Cardiovasc J* 2003; 37(4) 187-92

Euro Heart Survey ACS



a prospective survey

(103 hospitals, 25 countries)

10 484 patients

with a discharge diagnosis of acute coronary syndromes

Hasdai et al. *Eur. Heart J.* 2002, 23: 1190-1201

Euro Heart Survey ACS

	ST Elevation	No ST Elevation	Undetermined
• Aspirin	93.0	88.5	83.1
• Warfarin	5.3	5.7	11.4
• Ticlopidine	13.3	11.2	6.3
• Clopidogrel	23.3	16.6	16.6
• Heparin	64.0	43.3	40.2
• LMWH	47.8	58.1	56.7
• Heparin or LMWH	86.8	83.9	80.9
• IIb/IIIa	19.6	10.0	8.9
• ACE-Inhib	62.1	55.8	65.0
• Ang-II-Inhib	2.6	3.9	5.1
• IV beta-blocker	13.5	5.9	8.3
• PO beta-blocker	77.8	76.6	69.8

Hasdai et al. *Eur. Heart J.* 2002, **23**: 1190-1201

Euro Heart Survey ACS

	ST Elevation	No ST Elevation	Undetermined
• Dihyd. Ca-blocker	6.1	15.9	13.1
• Other Ca-blocker	6.8	13.8	12.0
• IV inotrope	11.3	3.6	14.4
• Morphine*	25.9	10.8	20.8
• IV nitrate	61.4	50.7	51.7
• PO/topical nitrate	50.6	68.2	61.5
• Statin	49.2	50.6	40.7
• Fibrate	1.3	2.0	1.0
• Coronary Angiography	56.3	52.0	-
• PCI	40.4	25.4	-
• CABG	3.4	5.4	-
• Reperfusion therapy:	55.8	-	-
• Fibrinolytic	35.1	-	-
• PPCI	20.7	-	-

Hasdai et al. *Eur. Heart J.* 2002, **23**: 1190-1201

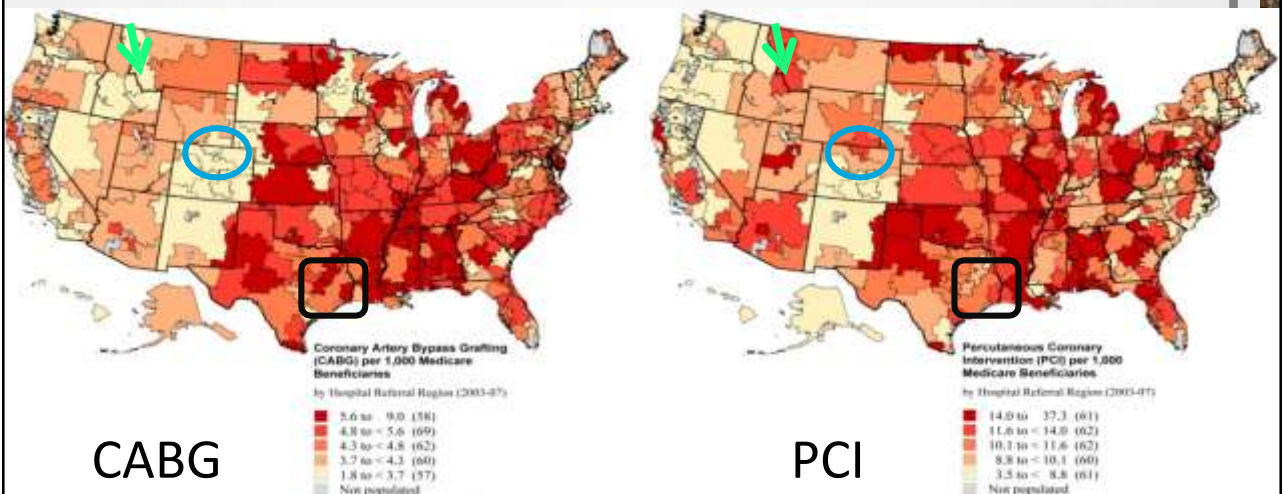
Euro Heart Survey ACS

- **Conclusions** This survey demonstrates the discordance between existing guidelines for ACS and current practice across a broad region in Europe and the Mediterranean basin and more extensively reflects the outcomes of ACS in real practice in this region.

Hasdai et al. *Eur. Heart J.* 2002, **23**: 1190-1201

Regional Variance of revascularization procedures (US)

Number of procedures per 1000 Medicare beneficiaries



Hannan EL BMC Health Serv Res 2006

Widespread Patient Misconceptions Regarding the Benefits of elective PCI

498 ELECTIVE PATIENTS Jan 2006-Oct 2007: 70% responded		
Patient perception	%	Correct ?
PCI was emergent rather than elective	33%	X
PCI would help angina	31%	✓
PCI had saved their life	42%	X
PCI would extend their life	66%	X
PCI would prevent further heart attacks	70%	X
Discussion of alternative therapies	32%	X
Offer of medical therapy	18%	X
Discussion of CABG	13%	X

+ Presumably misunderstanding rather than misinformation but very worrying that so many patients completely misunderstood: 'ad hoc' PCI

+ No surgical opinion in 87% !!!

Lee JH, AHA 2008

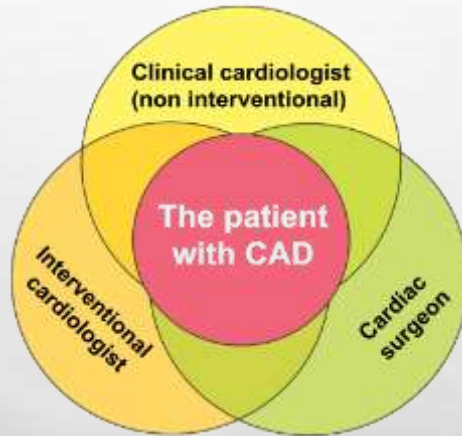
Patient misconception is common

- 8 studies (7 seven were relevant to PCI, 3 to CABG)
- 55% of patients correctly believed that PCI would improve symptoms
- 78% erroneously believed PCI would extend life expectancy
- 71% erroneously believed PCI would prevent future myocardial infarction
- 80% of patients correctly identified that CABG would improve symptoms, reduce the risk of MI and extend life expectancy
- 3 studies examined whether alternative therapies were discussed, 68% of PCI patients and 59% of CABG patients reported no such discussion

Chandrasekharan et al. Eur J Cardio-thoracic Surg. 2011, 39: 912—917

ESC/EACTS Myocardial Revascularization guidelines

The Heart Team concept



Kolh P, Windecker S et al. *EJCTS* 2014

TEAM

Definition:

- Treat
- Everything
- Always
- Multi-Stent

Potential conflicts impacting decision making in treatment of CAD

- Self-referral (you tend to do what you can do)
- No appreciation of personal therapeutic limits
- Preservation of patient-referral pathways
- 'Turf protection' (protection of patient access and salary)
- Personal conflict between interventional cardiologist and/or surgeon
- Conflict of interest with industry
- Patient/Physician Bonding

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Underutilization of High-Intensity Statin Therapy After Hospitalization for Coronary Heart Disease



Robert S. Rosenson, MD,* Shia T. Kent, PhD,† Todd M. Brown, MD,‡ Michael E. Farkouh, MD,*||
Emily B. Levitan, PhD,† Huifeng Yun, MD, PhD,‡ Pradeep Sharma, MS,† Monika M. Safford, MD,‡
Meredith Kilgore, PhD,§ Paul Muntner, PhD,† Vera Bittner, MD‡

Percentage of Medicare Beneficiaries 65 - <75 Years, 2007-2009 Filling Prescriptions for High-Intensity Statins After a CHD Event

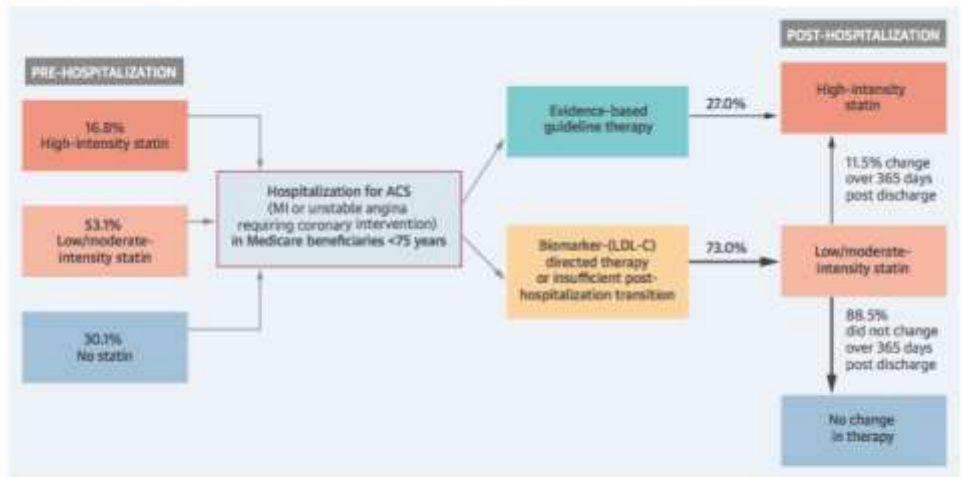
	First Fill After CHD Event (n = 8,762)	Any Statin Fill Within 365 Days (n = 8,019)
Any high-intensity statin	2,364 (27.0)	2,810 (35.0)
Atorvastatin 40 or 80 mg	1,377 (15.7)	1,499 (18.7)
Atorvastatin 80 mg	565 (6.4)	679 (8.5)
Simvastatin 80 mg	684 (7.8)	1,037 (12.9)
Rosuvastatin 20 or 40 mg	303 (3.5)	491 (6.1)

Values are n (%).

CHD = coronary heart disease.

Rosenson et al. JACC, 2015 65(3), 270-7

CENTRAL ILLUSTRATION Change in Statin Intensity Pre- and Post-Hospitalization for Acute Coronary Syndrome



Rossman, R.S. et al. J Am Coll Cardiol. 2013; 61(10):270-7.

Despite experiencing an acute coronary syndrome (ACS), the majority of Medicare beneficiaries do not fill high-intensity statin prescriptions after hospitalization for their event. LDL-C = low-density lipoprotein cholesterol, MI = myocardial infarction.

How to explain the gap?

In conclusion, worthwhile benefits have not been clearly demonstrated with high-intensity statins, as compared to lower doses, with respect to "hard" end-points such as total mortality or CV mortality.

It is doubtful that the small, if any, benefits of high-potency statins on soft and less patient-relevant outcomes, outcomes that are highly susceptible to biases (5), would outweigh the combined risks of acute kidney injury, rhabdomyolysis, diabetes, and severe muscular failure, not to mention dozens of other adverse reactions (2). Because the benefits do not bear scrutiny of the evidence, the harms caused may be substantial and the societal costs incurred by abiding to the new AHA/ACC guidelines would be enormous. We therefore suggest that until proven otherwise, a cause for concern is not with "underutilization of high-intensity statins" but rather may be with their "overutilization."

*Paul V. Nguyen, MD
Pierre Biron, MD

*Centre Hospitalier Universitaire de Montréal
Department of Medicine
3840 Rue Saint-Urbain
Montréal, Québec H2W1T8
Canada

Underutilization of High-Intensity Statin Therapy After Hospitalization for Coronary Heart Disease



A Cause for Concern,
But a Few Words of Caution

Chronic Stable Angina

- TNT
- IDEAL
- SEARCH

Acute Coronary Syndromes

- A to Z
- PROVE IT-TIMI 22

Nguyen and Biron. JACC:, 2015 65(25),
2768-9

In 2007 a cross-sectional questionnaire survey was conducted among 837 physicians from cardiology departments in 35 tertiary hospitals in China, Knowledge of CAD 2ry prevention ACC/AHA guidelines

Tested Variable	Knowledge
BP goal	80.8%
LDL goal	84.2%
HBA1C goal	36.2%
All 3 goals	27.5%
lifestyle modification (all 5 questions about dietary therapy and aerobic exercise goals and requirements)	2.3%
All 6 basic questions related to medication	87%
ACEI in CAD	54.6%
Dual antiplatelet therapy in CAD	33.5%

Jiang et al. Eur. J. Prev. Cardiol. 2011: 19(5) 991-998

Other Explanations:

- **System- related issues**
- **Physician- related issues**
- **Patient side:**
 - Real or perceived medication cost issues,
 - Polypharmacy (especially in the elderly),
 - Non-compliance, and non-adherence.
 - Patients' lack of understanding about the long-term benefits of specific drugs and little, if any, disease- specific education emphasizing the risk of future events and how the drugs prescribed help prevent or decrease event risk.

The recommendations of the guidelines in terms of using a cardiac team approach should help alleviate many of these issues

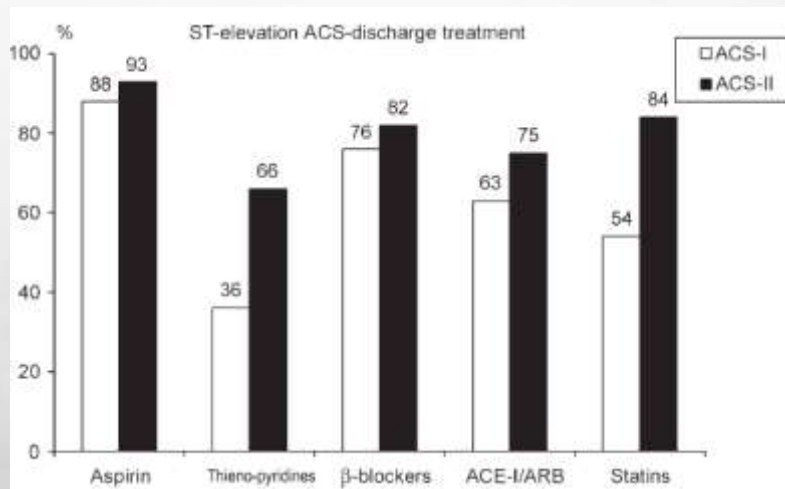
Deedwania. JACC:, 2015 65(25), 2778-80

Gap Between Theory & Practice

- Attributed to either:
 - **Guidelines are poorly developed**
 - ✓ Is there enough evidence for the recommendations?
 - ✓ How prescriptive are the recommendations?
 - ✓ How much applicable are the recommendations?
 - **Guidelines are ineffectively implemented**
 - ✓ Health care system
 - ✓ Physicians knowledge, attitude, and practice behavior
 - ✓ Patients' awareness & compliance

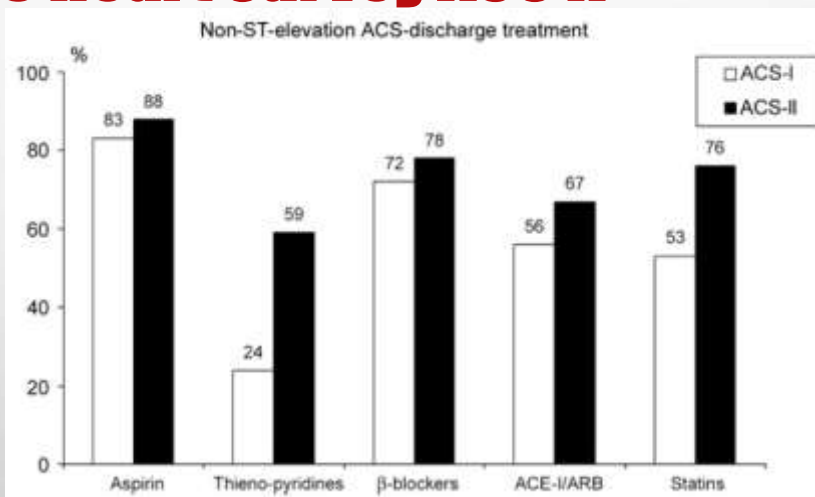
Can we improve the gap?

Euro Heart Survey ACS II



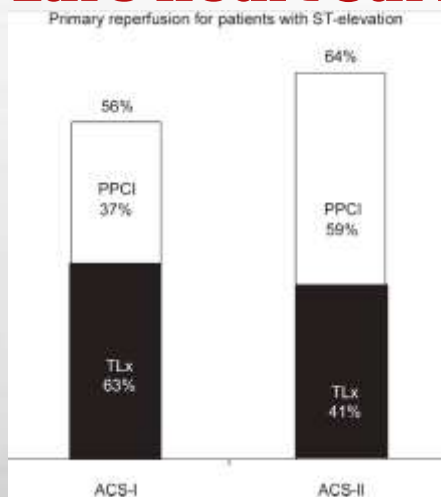
Mandelzweig et al. *Eur. Heart J.* 2006, 27, 2285-93

Euro Heart Survey ACS II



Mandelzweig et al. Eur. Heart J. 2006, 27, 2285-93

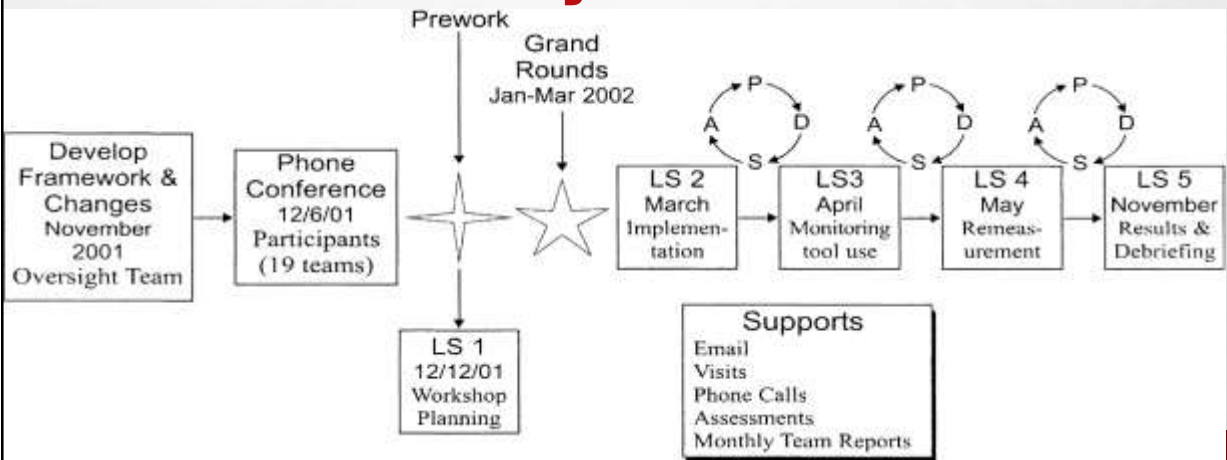
Euro Heart Survey ACS II



Conclusion: Data from EHS-ACS-II suggest an increase in adherence to guidelines for treatment of ACS in comparison with EHS-ACS-I.

Mandelzweig et al. Eur. Heart J. 2006, 27, 2285-93

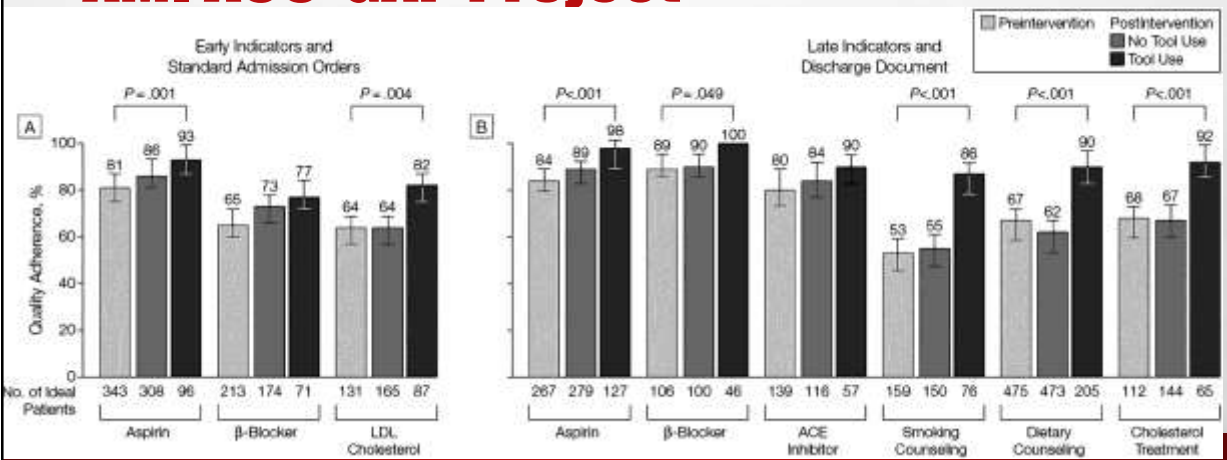
AMI ACC-GAP Project



GAP (Guidelines Applied in Practice)

Montoye et al. JACC. 2005, 46(10), 1B-28B

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Montoye et al. JACC. 2005, 46(10), 1B-28B

Take Home Message

- A wide gap is present between guidelines and clinical practice.
- It has multifactorial causes.
- Applying implementation programs can help in reducing such gaps.

Thank You