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).

**Finnish prospective follow-up survey**

**NSTE MI Pts**

*Multivariate analysis for probability of receiving in-hospital angiography*

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

**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.


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**Euro Heart Survey ACS**

a prospective survey

(103 hospitals, 25 countries)

10 484 patients

with a discharge diagnosis of acute coronary syndromes

### 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


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**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: | | | |
  - Fibrinolytic | 55.8 | - | -
  - PPCI | 35.1 | - | -

**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.


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**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

| 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% !!!

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

ESC/EACTS Myocardial Revascularization guidelines

The Heart Team concept

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

<table>
<thead>
<tr>
<th>Treatment</th>
<th>First Fill After CHD Event (n=8,762)</th>
<th>Any Statin Fill Within 365 Days (n=8,019)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any high-intensity statin</td>
<td>2,364 (27.0)</td>
<td>2,810 (35.0)</td>
</tr>
<tr>
<td>Atorvastatin 40 or 80 mg</td>
<td>1,377 (15.7)</td>
<td>1,499 (18.7)</td>
</tr>
<tr>
<td>Atorvastatin 80 mg</td>
<td>565 (6.4)</td>
<td>679 (6.5)</td>
</tr>
<tr>
<td>Simvastatin 80 mg</td>
<td>684 (7.8)</td>
<td>1,037 (12.9)</td>
</tr>
<tr>
<td>Rosuvastatin 20 or 40 mg</td>
<td>303 (3.5)</td>
<td>491 (6.1)</td>
</tr>
</tbody>
</table>

Values are n (%).
CHD = coronary heart disease.

Rosenson et al. JACC:, 2015 65(3), 270-7
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" endpoints 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 (6), would outweigh the combined risks of acute kidney injury, rhabdomyolysis, diabetes, and severe muscular failure, not to mention dozens of other adverse reactions (8).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 "under-utilization of high-intensity statins" but rather may be with their "overutilization."

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In 2007 a cross-sectional questionnaire survey was conducted among 837 physicians from cardiology departments in 35 tertiary hospitals in China.

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

Other Explanations:

• System-related issues
• Physician-related issues
• Patient side:
  o Real or perceived medication cost issues,
  o Polypharmacy (especially in the elderly),
  o Non-compliance, and non-adherence.
  o 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:
  o Guidelines are poorly developed
    ✓ Is there enough evidence for the recommendations?
    ✓ How prescriptive are the recommendations?
    ✓ How much applicable are the recommendations?
  o 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

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

GAP (Guidelines Applied in Practice) Montoye et al. JACC. 2005, 46(10), 1B-28B

AMI ACC-GAP Project

GAP (Guidelines Applied in Practice) 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