Management of Stable Angina in Multivessel Disease: Reconciling the Results of the Randomized Trials

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Disclosure – Eric Cohen

Relevant to this presentation:

• Consulting / Advisory Board - Medtronic Vascular
Disclosure – Eric Cohen

Relevant to this presentation:

• Consulting / Advisory Board - Medtronic Vascular

• Volume dependent (i.e. mostly fee for service) interventional cardiologist
Management of Stable Angina in Multivessel Disease: Reconciling the Results of the Randomized Trials

• Management, not revascularization . . .
Management of *Stable* Angina in Multivessel Disease: Reconciling the Results of the Randomized Trials

- How relevant is it to distinguish the acuity of the presentation?
Management of Stable *Angina* in Multivessel Disease: Reconciling the Results of the Randomized Trials

- Is it angina that matters or is it ischemia?
re·con·cile (verb)

• to find a way of making (two different ideas, facts, etc.) exist or be true at the same time

• to cause people or groups to become friendly again after an argument or disagreement
Management of Stable Angina in Multivessel Disease:

*Reconciling the Results of the Randomized Trials*

Reconcile because . . .

- various trials yield discordant results?
- the trial results don’t match our pre-conceived notions?
- the patients in the trials don’t look like those in our day to day practice?
Management of Stable Angina in Multivessel Disease:
Reconciling the Results of the Randomized Trials

And in the end . . .

I think I promise to tell you whether surgery is truly better than PCI
1. Does revascularization matter?
Meta-Analysis of CABG vs. Medical Therapy: 7 Randomized Trials

Yusuf S et al, Lancet 1994
Extension of Survival (in months) at 10 Years After CABG in Various Subgroups

Relevance today is unclear. There was minimal or no use of effective medical therapy (ASA, statins, beta-blockers, ACE inhibitors).

STITCH: CABG + OMT vs. OMT in CAD/CHF
Primary Endpoint: All-Cause Mortality (ITT)

HR 0.86 (0.72, 1.04)
Adjusted HR 0.82 (0.68, 0.99)

As treated
HR 0.70 (0.58, 0.84)
Adjusted P = 0.039

Per protocol
HR 0.76 (0.62, 0.92)
P = 0.005

Velazquez E et al., NEJM 2011;364:1607-16
PCI Did Not Reduce Death or MI

2,287 SIHD patients randomized to PCI+OMT vs. OMT

Optimal Medical Therapy (OMT)

PCI + OMT

Hazard ratio: 1.05
95% CI (0.87-1.27)
P = 0.62

Number at Risk

<table>
<thead>
<tr>
<th>Treatment</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Therapy</td>
<td>1138</td>
<td>1017</td>
<td>959</td>
<td>834</td>
<td>638</td>
<td>408</td>
<td>192</td>
<td>30</td>
</tr>
<tr>
<td>PCI</td>
<td>1149</td>
<td>1013</td>
<td>952</td>
<td>833</td>
<td>637</td>
<td>417</td>
<td>200</td>
<td>35</td>
</tr>
</tbody>
</table>

Boden et al NEJM 2007
BARI 2D

- 2,368 SIHD patients with diabetes randomized to revascularization + OMT or OMT alone
- Primary endpoint: all-cause death
1. Does revascularization matter?

• What prevents mortality from stable CAD?
  • PCI vs CABG

• Large group of pts for which the *mode* of revascularization does not seem to matter

• What prevents mortality from the common cold?
  • decongestant vs cough suppressant
2. Does the acuity of presentation matter?

- Data on revascularization vs med Rx more compelling in ACS

- Very little comparative data on PCI vs CABG in unstable disease

- More pts are identified and treated in the acute phase, thus fewer who present in a chronic phase

- More challenging to do trials involving management of stable CAD
3. Are the trial results fundamentally different?
10 RCTs 7812 Pts: CABG vs. PCI: No Difference in Death and MI

Revascularization in Diabetic Patients:

**Randomized Trials - Diabetic Subgroup**

**BARI Trial - Main Results**

![Graph showing survival rates for different patient groups.](image)

- Non-Diabetic - CABG
- Non-Diabetic - PTCA
- Diabetic - CABG
- Diabetic - PTCA

*Patients with treated diabetes, P = 0.003
All other patients, P = 0.73*
Revascularization in Diabetic Patients:

Registry Data - Diabetic Subgroup

BARI Trial - Registry vs Randomized; Insulin vs Oral
CABG vs PCI: Death and Diabetic Status

Comparison of coronary artery bypass surgery and percutaneous coronary intervention in patients with diabetes: a meta-analysis of randomised controlled trials

Subodh Verma, Michael E Farkouh, Bobby Yanagaw, David H Fitchett, Muhammad R Ahsan, Marc Ruel, Sachin Sud, Milan Gupta, Shantanu Singh, Nandini Gupta, Asim N Cheema, Lawrence A Leiter, Paul W M Fedak, Hwee Teoh, David A Latter, Valentin Fuster, Jan O Friedrich

Summary

Background The choice between coronary artery bypass surgery (CABG) and percutaneous coronary intervention (PCI) for revascularisation in patients with diabetes and multivessel coronary artery disease, who account for 25% of revascularisation procedures, is much debated. We aimed to assess whether all-cause mortality differed between patients with diabetes who had CABG or PCI by doing a systematic review and meta-analysis of randomised controlled trials (RCTs) comparing CABG with PCI in the modern stent era.

Methods We searched Medline, Embase, and the Cochrane Central Register of Controlled Trials from Jan 1, 1980, to March 12, 2013, for studies reported in English. Eligible studies were those in which investigators enrolled adult patients with diabetes and multivessel coronary artery disease, randomised them to CABG (with arterial conduits in at least 80% of participants) or PCI (with stents in at least 80% of participants), and reported outcomes separately in patients with diabetes, with a minimum of 12 months of follow-up. We used random-effects models to calculate risk ratios (RR) and 95% CIs for pooled data. We assessed heterogeneity using I². The primary outcome was all-cause mortality in patients who had CABG compared with those who had PCI at 5-year (or longest) follow-up.

Findings The initial search strategy identified 3414 citations, of which eight trials were eligible. These eight trials included 7468 participants, of whom 3612 had diabetes. Four of the RCTs used bare metal stents (BMS; ERACI II, ARTS, SoS, MASS II) and four used drug-eluting stents (DES; FREEDOM, SYNTAX, VA CARDS, CARDia). At mean or median 5-year (or longest) follow-up, individuals with diabetes allocated to CABG had lower all-cause mortality than did those allocated to PCI (RR 0.67, 95% CI 0.52–0.86; p=0.002; I²=25%; 3131 patients, eight trials). Treatment effects in individuals without diabetes showed no mortality benefit (1·03, 0·77–1·37; p=0·78; I²=46%; 3790 patients, five trials; Pinteraction=0.03). We identified no differences in outcome whether PCI was done with BMS or DES. When present, we identified no clear causes of heterogeneity.

Interpretation In the modern era of stenting and optimum medical therapy, revascularisation of patients with diabetes and multivessel disease by CABG decreases long-term mortality by about a third compared with PCI using either BMS or DES. CABG should be strongly considered for these patients.
In the modern era of stenting and optimum medical therapy, revascularisation of patients with diabetes and multivessel disease by CABG decreases long-term mortality by about a third compared with PCI using either BMS or DES. CABG should be strongly considered for these patients.
# Fastest growing industries - 2013

<table>
<thead>
<tr>
<th>Industry (NAICS code)</th>
<th>Sales Growth (Last 12 Months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support activities for mining (2131) - Drilling, taking core samples, making</td>
<td>21%</td>
</tr>
<tr>
<td>geological observations at prospective sites for oil, gas, minerals</td>
<td></td>
</tr>
<tr>
<td>Oilseed and grain farming (1111) - Wheat, corn, soybeans</td>
<td>20%</td>
</tr>
<tr>
<td>Beverage manufacturing (3121) - Soft drinks, bottled water, breweries, wineries,</td>
<td>20%</td>
</tr>
<tr>
<td>distilleries</td>
<td></td>
</tr>
<tr>
<td>Agriculture, construction, and mining machinery manufacturing (3331)</td>
<td>20%</td>
</tr>
<tr>
<td>Other crop farming (1119) - Hay, cotton, sugarcane, tobacco</td>
<td>18%</td>
</tr>
<tr>
<td>Computer systems design and related services (5415) - Programming,</td>
<td>16%</td>
</tr>
<tr>
<td>systems design and integration, facilities management</td>
<td></td>
</tr>
<tr>
<td>Offices of real estate agents and brokers (5312)</td>
<td>16%</td>
</tr>
<tr>
<td>Chemical and allied products merchant wholesalers/distributors (4246) - Basic</td>
<td>16%</td>
</tr>
<tr>
<td>chemicals; chemical products used in manufacturing (synthetics, plastics);</td>
<td></td>
</tr>
<tr>
<td>finished chemical products (fertilizers, soaps, etc.)</td>
<td></td>
</tr>
<tr>
<td>Personal and household goods repair and maintenance (8114) - Fixing</td>
<td></td>
</tr>
<tr>
<td>home and garden equipment, furniture, leather goods, jewelry, bicycles</td>
<td>16%</td>
</tr>
<tr>
<td>Employment services (5613) - Placement/executive search/temp firms</td>
<td>15%</td>
</tr>
</tbody>
</table>

Source: Sageworks
The single fastest growing industry . . .

<table>
<thead>
<tr>
<th>Decade</th>
<th>PubMed listings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960’s</td>
<td>0</td>
</tr>
<tr>
<td>1970’s</td>
<td>2</td>
</tr>
<tr>
<td>1980’s</td>
<td>254</td>
</tr>
<tr>
<td>1990’s</td>
<td>2455</td>
</tr>
<tr>
<td>2000’s</td>
<td>9912</td>
</tr>
<tr>
<td>2010 - 2014</td>
<td>18635</td>
</tr>
</tbody>
</table>

With “meta-analysis” in the title

In the same time period there were 6565 entries with “clinical trial” in the title
4. Are my patients similar to the patients in these trials?
Indications for CABG vs PCI in stable patients with lesions suitable for both procedures and low predicted surgical mortality

<table>
<thead>
<tr>
<th>Subset of CAD by anatomy</th>
<th>Favours CABG</th>
<th>Favours PCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1VD or 2VD – non proximal LAD</td>
<td>IIb C</td>
<td>I C</td>
</tr>
<tr>
<td>1VD or 2VD – proximal LAD</td>
<td>IA</td>
<td>IIa B</td>
</tr>
<tr>
<td>3VD simple lesions, full functional revascularization achievable with PCI, SYNTAX score ≤ 22</td>
<td>IA</td>
<td>IIa B</td>
</tr>
<tr>
<td>3VD complex lesions, incomplete revascularization achievable with PCI, SYNTAX score &gt; 22</td>
<td>IA</td>
<td>III A</td>
</tr>
<tr>
<td>Left main (isolated or 1VD, ostium/shaft)</td>
<td>IA</td>
<td>IIa B</td>
</tr>
<tr>
<td>Left main (isolated or 1VD, bifurcation)</td>
<td>IA</td>
<td>IIb B</td>
</tr>
<tr>
<td>Left main + 2VD or 3VD, SYNTAX score ≤ 32</td>
<td>IA</td>
<td>IIb B</td>
</tr>
<tr>
<td>Left main + 2VD or 3VD, SYNTAX score ≥ 33</td>
<td>IA</td>
<td>III B</td>
</tr>
</tbody>
</table>

ESC guidelines 2010
4. Are my patients similar to the patients in these trials?
“In theory, theory and practice are the same. In practice, they are not.”

Albert Einstein
## Trials of PCI vs CABG: generalizability

### Table 1
Summary of 15 RCT PCI vs. CABG in multivessel disease

<table>
<thead>
<tr>
<th>Trial</th>
<th>No. Screened</th>
<th>% Randomized</th>
<th>Stent</th>
<th>% 3-vessel disease</th>
<th>Proximal LAD</th>
<th>EF &gt; 50%</th>
<th>% Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERACI [12]</td>
<td>127</td>
<td>9</td>
<td>–</td>
<td>45</td>
<td>–</td>
<td>100</td>
<td>11</td>
</tr>
<tr>
<td>EAST [19]</td>
<td>392</td>
<td>4</td>
<td>–</td>
<td>40</td>
<td>70</td>
<td>100</td>
<td>25</td>
</tr>
<tr>
<td>GABI [22]</td>
<td>359</td>
<td>4</td>
<td>–</td>
<td>18</td>
<td>–</td>
<td>–</td>
<td>10</td>
</tr>
<tr>
<td>CABRI [18]</td>
<td>1054</td>
<td>3</td>
<td>–</td>
<td>40</td>
<td>–</td>
<td>100</td>
<td>12</td>
</tr>
<tr>
<td>MASS [23]</td>
<td>142</td>
<td>69</td>
<td>–</td>
<td>–</td>
<td>100</td>
<td>100</td>
<td>21</td>
</tr>
<tr>
<td>BARI [15]</td>
<td>1829</td>
<td>12</td>
<td>–</td>
<td>41</td>
<td>36</td>
<td>100</td>
<td>24</td>
</tr>
<tr>
<td>SIMA [24]</td>
<td>121</td>
<td>–</td>
<td>–</td>
<td>0</td>
<td>100</td>
<td>100</td>
<td>11</td>
</tr>
<tr>
<td>LAUSANNE [25]</td>
<td>134</td>
<td>3</td>
<td>–</td>
<td>100</td>
<td>–</td>
<td>–</td>
<td>12</td>
</tr>
<tr>
<td>RITA [16]</td>
<td>1011</td>
<td>4</td>
<td>–</td>
<td>12</td>
<td>–</td>
<td>–</td>
<td>6</td>
</tr>
<tr>
<td>TOULOSE [26]</td>
<td>152</td>
<td>3</td>
<td>–</td>
<td>29</td>
<td>–</td>
<td>–</td>
<td>14</td>
</tr>
<tr>
<td>AWESOME [27]</td>
<td>454</td>
<td>–</td>
<td>+</td>
<td>45</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>ERACI-II [20]</td>
<td>450</td>
<td>2</td>
<td>+</td>
<td>56</td>
<td>–</td>
<td>–</td>
<td>17</td>
</tr>
<tr>
<td>ARTS [4]</td>
<td>1205</td>
<td>5</td>
<td>+</td>
<td>32</td>
<td>–</td>
<td>100</td>
<td>19</td>
</tr>
<tr>
<td>SOS [14]</td>
<td>988</td>
<td>5</td>
<td>+</td>
<td>38</td>
<td>45</td>
<td>100</td>
<td>14</td>
</tr>
<tr>
<td>MASS II [28]</td>
<td>408</td>
<td>2</td>
<td>+</td>
<td>41</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Summary</strong></td>
<td><strong>8826</strong></td>
<td><strong>5</strong></td>
<td><strong>35</strong></td>
<td><strong>41</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

RCT, randomized clinical trials; PCI, percutaneous coronary interventions; CABG, coronary artery bypass surgery; LAD, left anterior descendin ejection fraction.

- Highly selected population
- Mainly 1 or 2 vessel disease
- With preserved LVEF
- Few diabetic patients
SYNTAX score – randomized vs registry
PCI:CABG Ratio
2000/01 - 2010/11
Groupings of Hospitals by PCI:CABG ratio for VRPO cohort (N=8,972)

Overall Ratio = 2.7

Low Ratio
- Hotel Dieu: 1.33
- London: 1.40
- Thunder Bay: 1.79
- St. Mary’s: 1.92
- Peterborough: 2.14
- Rouge Valley: 2.14
- Trillium: 2.24
- Hamilton: 2.39

Low-Medium Ratio
- Southlake: 2.79
- Toronto East: 2.91
- UHN: 3.01
- Kingston: 3.24
- Sunnybrook: 3.24

Medium-High Ratio
- St. Michael’s: 3.91
- Ottawa: 4.75
- Sudbury: 4.90
- Sault Ste Marie: 6.15

Overall PCI / CABG Ratio

Hospital
Multivariate Logistic Regression Model for Predicted Probability of Being Treated with PCI Rather than CABG (N=4,285)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio Est</th>
<th>Lower 95% CL</th>
<th>Upper 95% CL</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy (vs 3 vessel)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 vessel</td>
<td>37.6</td>
<td>28.1</td>
<td>50.2</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>2 vessel</td>
<td>5.6</td>
<td>4.5</td>
<td>7.0</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Left main</td>
<td>0.3</td>
<td>0.2</td>
<td>0.4</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Prior CABG</td>
<td>28.7</td>
<td>17.9</td>
<td>45.9</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Indication (vs Elective stable CAD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unstable angina</td>
<td>0.9</td>
<td>0.7</td>
<td>1.1</td>
<td>0.3</td>
</tr>
<tr>
<td>NSTEMI</td>
<td>1.3</td>
<td>1.1</td>
<td>1.7</td>
<td>0.02</td>
</tr>
<tr>
<td>Non-emergent STEMI</td>
<td>1.6</td>
<td>1.0</td>
<td>2.4</td>
<td>0.03</td>
</tr>
<tr>
<td>Emergent STEMI</td>
<td>7.6</td>
<td>5.1</td>
<td>11.3</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Physician factors (vs. Non-interventionalist)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interventionalist</td>
<td>1.4</td>
<td>1.2</td>
<td>1.7</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Hospital factors (vs Low Ratio Hospitals)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-Medium ratio hospitals</td>
<td>1.3</td>
<td>1.0</td>
<td>1.7</td>
<td>0.02</td>
</tr>
<tr>
<td>Medium-High ratio hospitals</td>
<td>2.0</td>
<td>1.5</td>
<td>2.6</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>High Ratio Hospitals</td>
<td>3.7</td>
<td>2.7</td>
<td>4.9</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

C-statistic=0.89
*Also adjusted for age/gender, diabetes and previous PCI
CL = Confidence limit

CARDIAC CARE NETWORK

Mgmt of Multivessel Disease

ICES Institute for Clinical Evaluative Sciences
Percentage of Revascularized Patients who Received PCI by Hospital PCI:CABG Ratio Category

- **1 vessel**
- **2 or 3 vessel**
- **Left main**
- **Prior CABG**

Legend:
- **Low**
- **Low-Medium**
- **Medium-High**
- **High**
5 Factors Contribute to PCI vs. CABG Decision Making

1. Patient factors
2. Clinical evidence
3. Physician/practice preferences
4. Relationships amongst providers
5. Institutional factors (physical and “cultural”)

CARDIAC CARE NETWORK

ICES Institute for Clinical Evaluative Sciences
### Table 5  Potential indications for *ad hoc* percutaneous coronary intervention vs. revascularization at an interval

<table>
<thead>
<tr>
<th><strong>Ad hoc PCI</strong></th>
<th><strong>Revascularization at an interval</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemodynamically unstable patients (including cardiogenic shock).</td>
<td>Lesions with high-risk morphology.</td>
</tr>
<tr>
<td>Culprit lesion in STEMI and NSTE-ACS.</td>
<td>Chronic heart failure.</td>
</tr>
<tr>
<td>Stable low-risk patients with single or double vessel disease (proximal LAD excluded) and favourable morphology (RCA, non-ostial LCx, mid- or distal LAD).</td>
<td>Renal failure (creatinine clearance &lt;60 mL/min), if total contrast volume required ≥4 mL/kg.</td>
</tr>
<tr>
<td>Non-recurrent restenotic lesions.</td>
<td><strong>Stable patients with MVD including LAD involvement.</strong></td>
</tr>
<tr>
<td></td>
<td>Stable patients with ostial or complex proximal LAD lesion.</td>
</tr>
<tr>
<td></td>
<td>Any clinical or angiographic evidence of higher periprocedural risk with <em>ad hoc</em> PCI.</td>
</tr>
</tbody>
</table>

**Stable patients with MVD including LAD involvement.**
Class I Recommendation
“Heart Team Approach to Revascularization Decisions”

• Interventional cardiologist, cardiac surgeon and cardiologist

• Reviews medical condition & coronary anatomy

• Determines that PCI and/or CABG are reasonable and feasible.

• Discusses options with patient before a treatment strategy is selected
Sobering?

- That we can start and end our careers still trying to answer the same question
Interactions...
Interactions...

Syntax score, AGE, Cr Cl, EF, 3VD, LMS, F, M, COPD, Diabetes
FFR-guided SYNTAX Score (FSS) versus Conventional SYNTAX Score (SS) and Clinical Outcome

- 497 patients of the FFR-arm of FAME I
- Syntax scored re-calculated by 3 independent reviewers
- 3 tertiles based on SS

### Risk Groups

**SS**
- **LOW risk**: 33%
- **MEDIUM risk**: 33%
- **HIGH risk**: 33%

**FSS**
- **LOW risk**: 59%
- **MEDIUM risk**: 21%
- **HIGH risk**: 21%

32% of patients moved to a lower-risk group

Nam, C.W. et al. JACC 2011
SYNTAX II

- 3-vessel-disease, all comers, any SYNTAX score
- contemporary PCI practice
  - contemporary stent with thinner struts, biodegradable polymer, limus-based drug
  - use of pressure wire assessment (FFR and iFR) to allow for ischemia-driven revascularisation
  - intravascular ultrasound (IVUS) guidance to optimise stent deployment
  - treatment of CTO lesions with contemporary techniques
  - all of these differ from PCI practice in the original SYNTAX trial

clinicaltrials.gov (accessed March 9, 2014)
A Trial to Evaluate a New Strategy in the Functional Assessment of 3-vessel Disease Using the SYNTAX II Score in Patients Treated With PCI
Forces in play

Patient with stable CAD
Forces in play

Medical Rx
- Appropriate Use Criteria
- Bad press, overutilization

Revascularization
- Importance of ischemia, viability, complete revasc, CTO’s
- CASS, VA
- COURAGE Nuclear
- Old silent ischemia studies (ACIP, SWISS)

Patient with stable CAD

Mgmt of Multivessel Disease
Mgmt of Multivessel Disease

Forces in play

Medical Rx
- COURAGE
- BARI-2D
- STICH

Revascularization
- CASS, VA
- COURAGE Nuclear
- Old silent ischemia studies (ACIP, SWISS)

PCI
- FAME II
- BARI (no diabetes)

CABG
- SYNTAX
- BARI (diabetes)
- FREEDOM

Hybrid procedures
- Anatomic complexity and diabetes
- Completeness of revascularization
- LV dysfunction

Patient with stable CAD
- Appropriate Use Criteria
- Bad press, overutilization
- Importance of ischemia, viability, complete revascularization, CTO’s

• Comorbidity, renal disease
• Combined functional & anatomic assessment
• Better stents
• CTO technology

• Anatomic complexity and diabetes
• Completeness of revascularization
• LV dysfunction
Forces in play

Medical Rx
- Appropriate Use Criteria
- Bad press, overutilization

Revascularization
- Importance of ischemia, viability, complete revasc, CTO’s
- CASS, VA
- COURAGE Nuclear
- Old silent ischemia

Heart Team
- Comorbidity, renal disease
- Combined functional & anatomic assessment
  - Better stents
  - CTO technology
- Hybrid procedures
- FAME II

Patient with stable CAD
- Anatomic complexity and diabetes
- Completeness of revascularization
- LV dysfunction

PCI
- Synergy of revascularization

CABG
- BARI (no diabetes)
- SYNTAX
- FREEDOM
- BARI (diabetes)