Commentary on:

Screening For Asymptomatic Obstructive Coronary Artery Disease Among High-Risk Diabetic Patients Using Coronary CT Angiography: Primary Results of FACTOR-64, a Randomized Controlled Trial

Pamela S Douglas, MD, MACC, FASE, FAHA
Ursula Geller Professor of Research in Cardiovascular Diseases
Duke University School of Medicine
Better CV Risk Prediction: Is There a Need? Can We Do It? Does It Matter?

PROs:
• Diabetes is a common disease with high CV mortality
• NI testing (ischemia, anatomy) can identify a high risk group

CONs:
• Population risk is not the same as individual risk
• Diabetes is a CVD risk equivalent; Pts should be receiving aggressive 2° prevention management
• There is no established role for revascularization in asymptomatic CAD, especially without ischemia
• DIAD: RCT of risk stratification strategies in asx type 2 DM
  • High risk adenosine mibi associated w ↑ events
  • Adenosine mibi strategy did not reduce events vs no scan
How Can an Imaging Strategy Improve Clinical Outcomes?

- Technical capabilities
- Diagnostic performance
- Diagnostic thinking
- Therapeutic thinking
- Therapeutic strategy
- Clinical outcomes
  - Change outcomes
  - Patient satisfaction
  - Costs

- Describe anatomy
- Disease mechanisms
- Risk assessment
- Direct treatment
FACTOR 64 - Major Findings

• Although atherosclerosis is prevalent in DM, ‘actionable’ CAD was not common
• CCTA data led to improved preventive treatment, even in a very well managed cohort, and more interventions
• Event rates were very low, such that the trial is underpowered to detect an effect at 4 years
Why Didn’t Improved Risk Prediction Translate Into Better Outcomes-1?

- There is a need to improve risk prediction in DM
  - *Diabetics are a high risk group, with 75% CV mortality*
  - *How can we identify an even higher risk population?*
- CTA (and other imaging tools) detect CAD
  - *Nuclear (DIAD) and CTA (FACTOR 64) were both effective in identifying a group with higher event rate*
  - *How can we identify even higher risk individuals?*
  - *Events were not confined to those with obstructive disease*
  - *What is the value of identifying ischemia vs atherosclerosis vs vulnerable plaque vs Omics targets?*
Why Didn’t Improved Risk Prediction Translate Into Better Outcomes-2?

- Proven interventions were implemented
  - *While 70% of CTA group changed CV prevention goals, actual values of A1c, BP and lipids were minimally affected*
  - *Nationally <10% of diabetics are at goal for CV prevention*
- Revascularization was more frequent in the CTA group
  - *COURAGE and BARI suggest no benefit even if symptomatic*
  - *Unlikely to have greater benefit in asymptomatic group*

✔️ We need to explore new strategies for
  - Risk prediction in individuals
  - Primary prevention, incl adherence strategies
Cardiac Outcomes After Screening for Asymptomatic Coronary Artery Disease in Patients With Type 2 Diabetes
The DIAD Study: A Randomized Controlled Trial

- 1123 patients with Type 2 Diabetes mellitus
- Randomized to adenosine SPECT vs no screening
- Overall low event rate: 2.9% over 4.8 y
- No difference between arms; HR 0.88 (0.44-1.88)
- Mod/Large defects assoc w worse outcomes (2.4% vs 0.4%)

JAMA 2009;301:1547
EISNER Trial: Primordial Prevention

- N=2047; RCT in asymptomatic subjects
- CAC vs No Scan; All: one 1° prevention consult
- Primary Endpoint: Δ FRS at 4 y F/U
- Scan assoc w favorable Δ in:
  - SBP (p=0.02)
  - LDL-Cholesterol (p=0.04)
  - Waist circumference (p=0.01 in obese)
  - Weight loss (p=0.07 in obese)
- No increase in downstream costs

Rozanski, et al. JACC 2011
Reproducibility of coronary artery plaque volume and composition quantification by 64-detector row coronary computed tomographic angiography: An intraobserver, interobserver, and interscan variability study

<table>
<thead>
<tr>
<th></th>
<th>R value</th>
<th>95% CI</th>
<th>LOA, mm³</th>
</tr>
</thead>
<tbody>
<tr>
<td>TPV</td>
<td>0.81</td>
<td>0.62-0.92</td>
<td>21.5-26.3</td>
</tr>
<tr>
<td>Ca++ PV</td>
<td>0.87</td>
<td>0.72-0.94</td>
<td>18.1-26.3</td>
</tr>
</tbody>
</table>