FFR is the Gold Standard For Revascularization Decision Making

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Raj Taught Me Everything I Know…But I Learned a Few Things From Paul

- **DON’T**
  - Ever give a talk or toast after Paul

- **DO**
  - Question accepted norms
Paul Also Taught Me Things That I Shouldn’t Do
Eventually, the child teaches the father....
“Look, the FFR is 0.81 and I couldn’t believe it so I did an IVUS and there is all this plaque!”
Paul Has Traded One Affliction From Another

Oculo-stenotic reflex

Oculo-atherosclerotic reflex
DEFER Trial: 15 Year FU of Lesions with FFR ≥0.75

Among 513 lesions deferred (FFR > 0.80):

- Only 1 (0.2%) resulted in a late MI
- Only 16 (3.2%) required revascularization
FAME 2: Primary Endpoint at 2 Years

MACE (Death, MI, Urgent Revascularization)

De Bruyne et al, NEJM 2014; online before print

FAME 2: Primary Endpoint at 2 Years

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FAME: MACE and Its Components At One-Year Follow-up

- Death: P=0.07
- MI: 8.7 (Angio-guided) vs 5.7 (FFR-guided)
P=0.08
- Repeat Revasc: 9.5 (Angio-guided) vs 6.5 (FFR-guided)
P=0.04
- Death/MI: 11.1 (Angio-guided) vs 7.3 (FFR-guided)
P=0.02
- MACE: 18.3 (Angio-guided) vs 13.2 (FFR-guided)
P=0.02

Tonino et al. NEJM 2009; 360:213-224
PST-ism #2

“I did the FFR and it was 0.81 and then I did it again and it was 0.79 – there is so much variability in this thing why should we believe it?”
The Change in Therapeutic Benefit With PCI Across the Grey Zone Is Minimal

8,418 patients from 90 cohorts with a total of 458 deaths, 235 non-fatal MI, 326 revascularizations

Normalized 1-Year MACE (%) vs. Mean Cohort FFR

PCI/CABG vs. medically treated

Technique Matters: Issues with FFR Waveforms

Signal drift

Aortic pressure ventricularization

Aortic waveform distortion

Matsumura et al, J Am Coll Cardiol Intv 2017;10:1392–401
Technically Poor FFR Measurement is Common, Even in “Expert” Cath Labs

- CONTRAST study:
  - 20% of patients had at least 1 disqualifying tracing
  - 31% had either signal drift or abnormal waveforms affecting at least 1 tracing

- ACIST-FFR trial:
  - 20% of patients excluded from study due to abnormal waveforms

Operators need to be aware of these issues and take advantage of technology that can ensure accurate waveforms as easily and efficiently as possible

- 20% of patients excluded from study due to abnormal waveforms

- Routine FFR to guide decision-making improves outcomes compared with decisions based on angiography (FAME 1)

- Leaving behind a lesion with $\text{FFR} \geq 0.80$, irrespective of intravascular imaging findings, in stable CAD is safe (DEFER, FAME 2)

- You still need to use your brain in patients with FFRs near the border zone
If you can figure out how to interpret all of these diagnostic gauges.....

You can figure out how to interpret this one, too.