

What iF

FFR and iFR[®] Worked Together on One System?

Simplifying Workflow

- The iFR modality provides a hyperemia-free measurement in as few as five heartbeats

Providing Choice

- One wire, One system, Multi-modality
- An iFR of 0.89 is equivalent to an FFR of 0.80¹

Building Evidence

- Over 4000 patients have been studied with iFR
- Numerous prospective iFR studies have been published in peer-reviewed journals
- Multicenter prospective outcome studies are currently enrolling

1. An iFR cut-point of 0.89 matches best with an FFR ischemic cut-point of 0.80 with a specificity of 87.8% and sensitivity of 73.0%. (iFR Operator's Manual 505-0101.23)

Using Pressure to Get Flow

- Coronary pressure is simple to measure
- Flow velocity is more challenging

Fundamental Equation for relating Pressure and Flow:

$$P = Q \times R$$

Pressure = Flow x Resistance

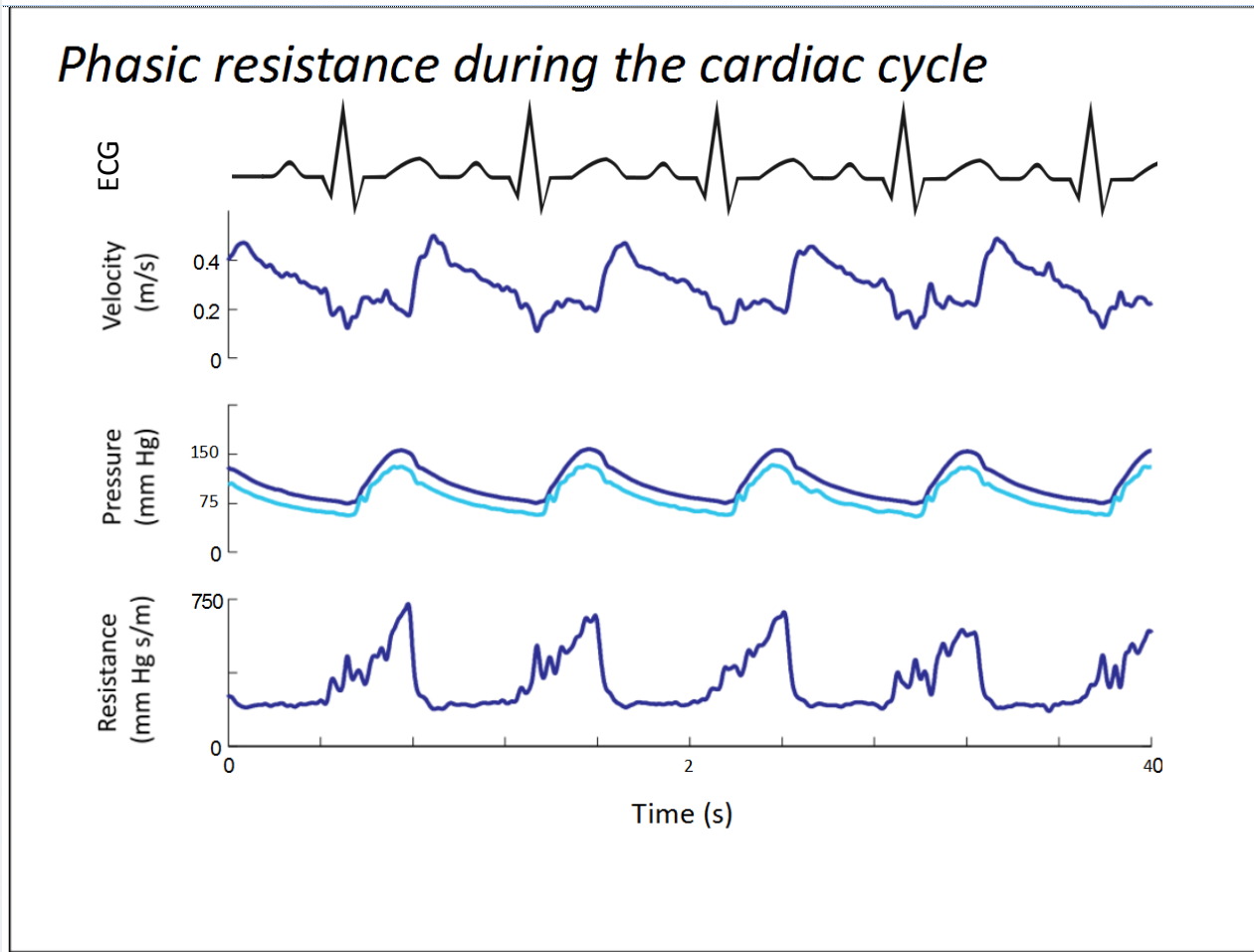
or

$$\Delta P \approx \Delta Q \times R$$

Change in Pressure = Change in Flow x Constant Resistance

When **Resistance is Constant**, changes in Pressure are proportional to changes in Flow

Resistance is Constant in the Wave-Free Period

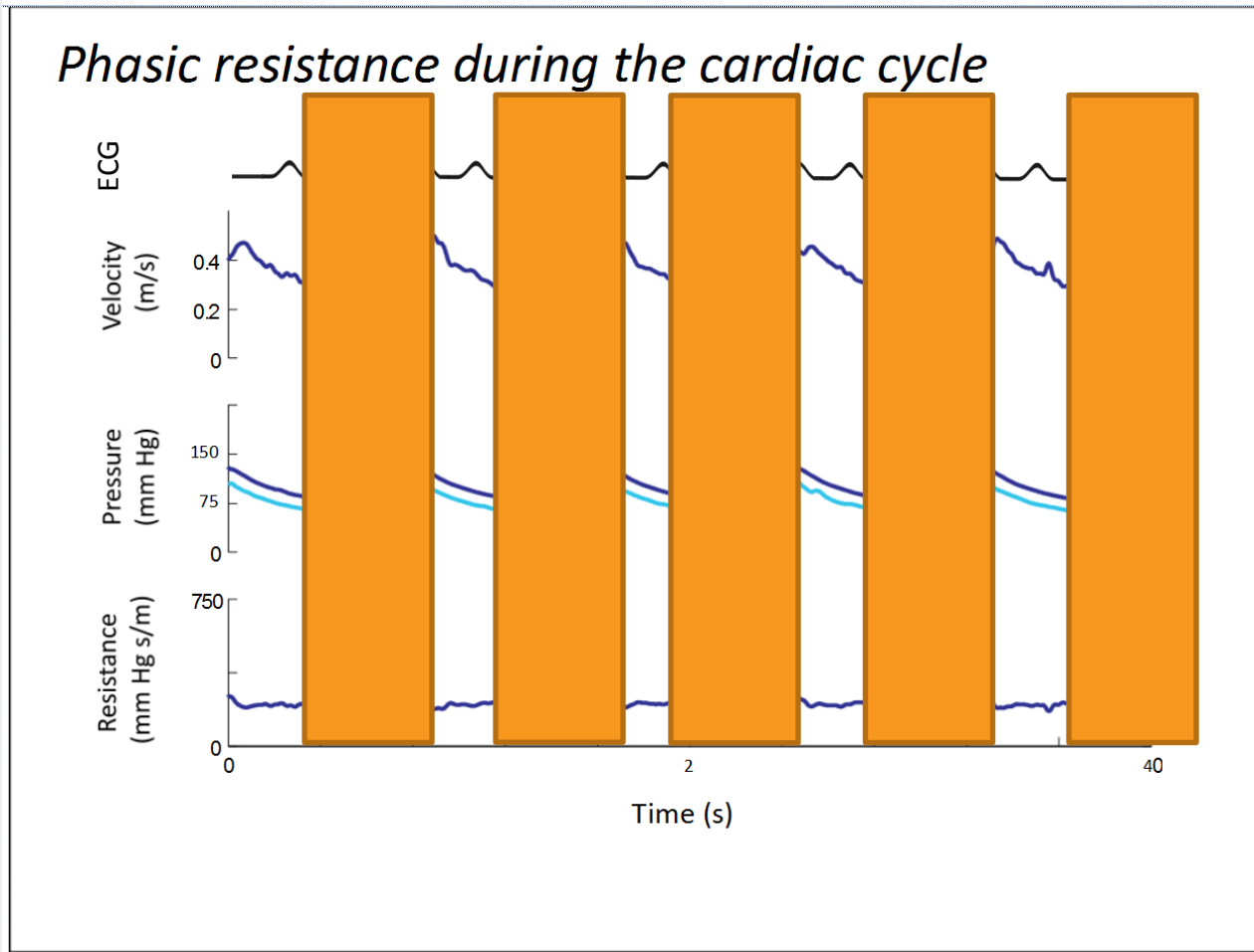


Davies J. PRIMARY Results of ADVISE. TCT 2011. Lecture conducted from San Francisco, CA.

iFR[®]
Instant wave-Free Ratio™

VOLCANO
PRECISION GUIDED THERAPY
600-9900.07/002

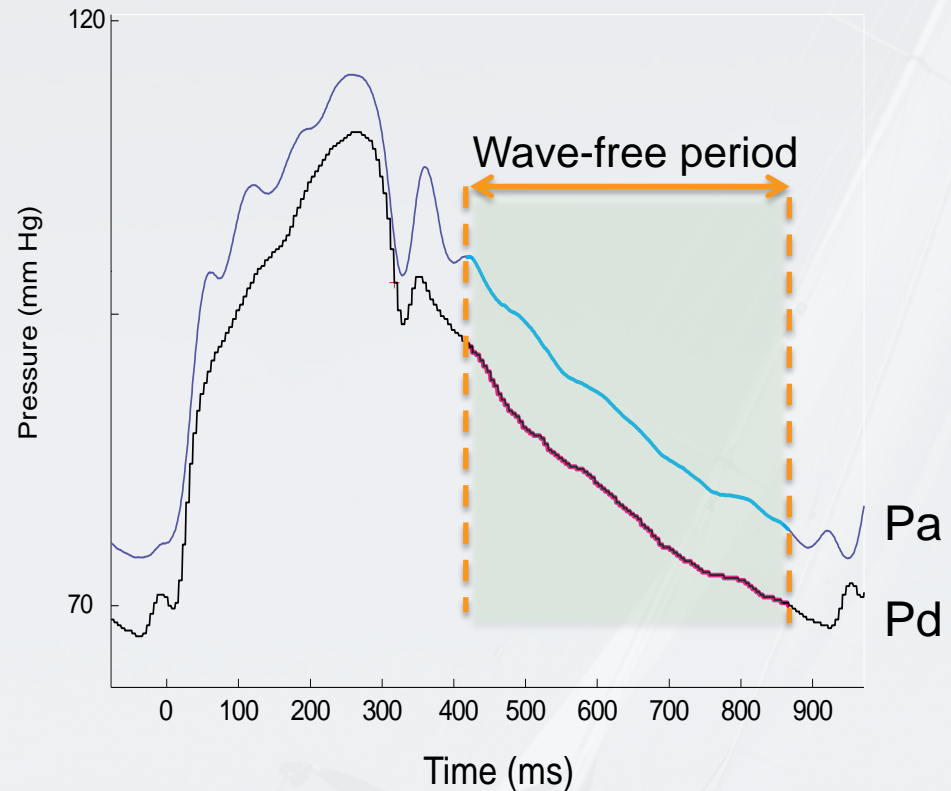
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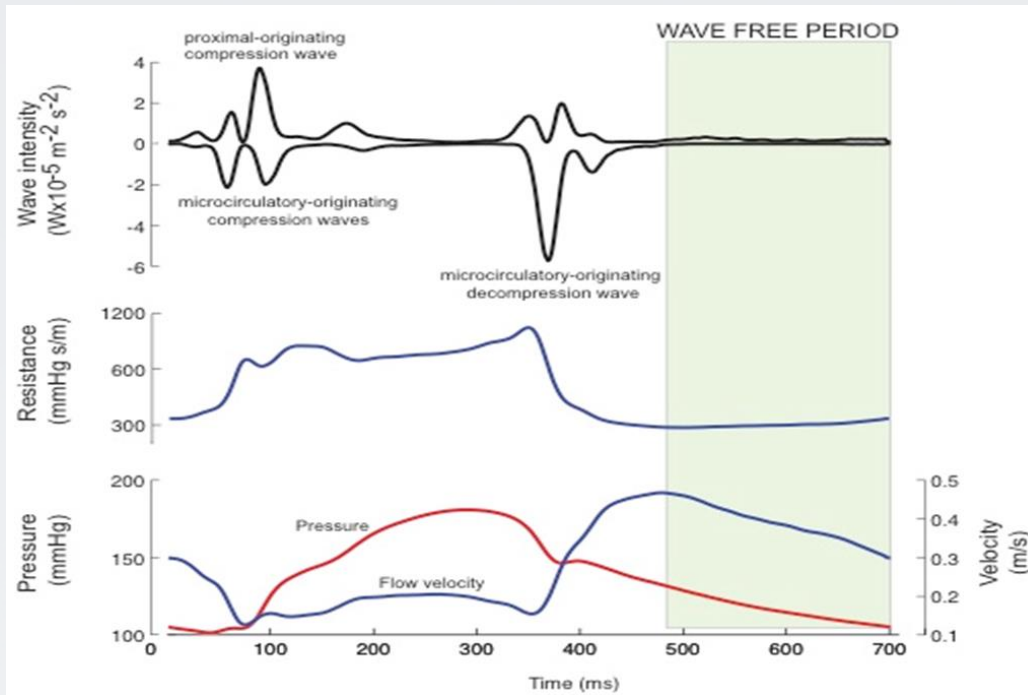
Introduction of the iFR[®] Modality

instant wave-Free Ratio[™]

Definition: Instantaneous pressure ratio, across a stenosis during the wave-free period, when **resistance is naturally constant** and minimized in the cardiac cycle



Three Benefits to the iFR[®] Window



- 1 Noise from compression and suction waves is minimized
- 2 Resistance is constant so ΔP is proportional to ΔQ (flow)
- 3 Velocity is higher so better power to discriminate

Sen S, *et al.* Development and validation of a new adenosine-independent index of stenosis severity from coronary wave-intensity analysis: results of the ADVISE (ADenosine Vasodilator Independent Stenosis Evaluation) study. *J Am Coll Cardiol.* 2012 Apr 10;59(15):1392-402.

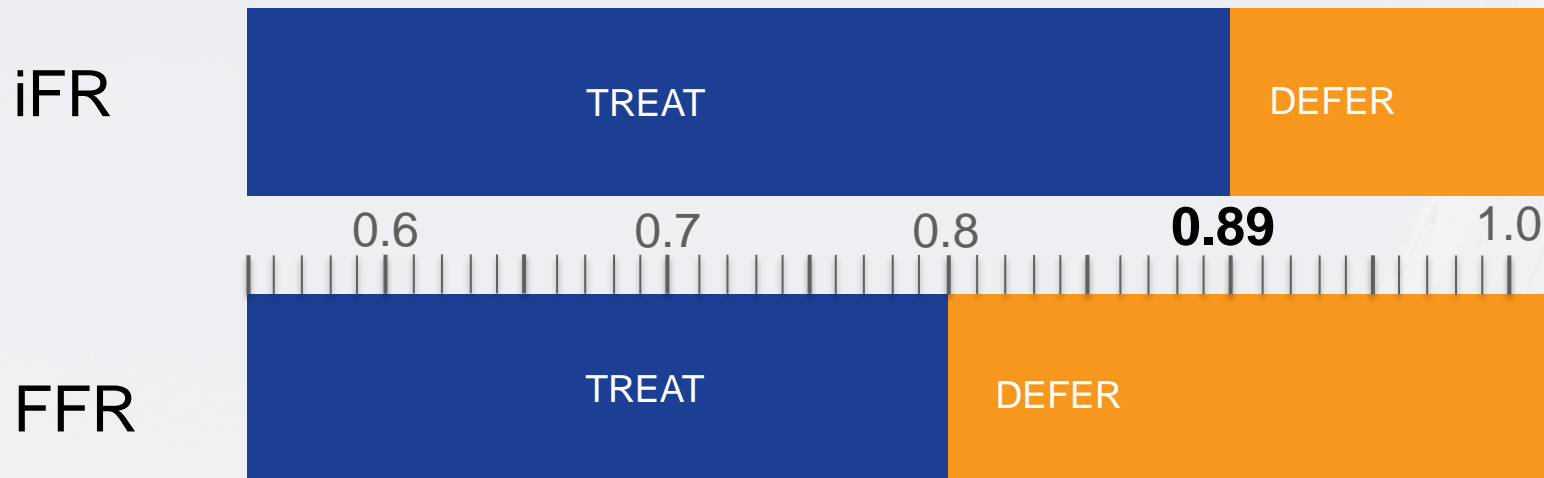
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The iFR[®] Modality Cut Point

An iFR cut point of 0.89 matches an FFR cut point of 0.80¹

- FFR and iFR have a different scale
- Celsius & Fahrenheit both measure temperature, but have a different scale



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The Hybrid iFR[®]/FFR Approach

- 94.0% match to FFR¹
- 65.1% of patients may be free from hyperemic agents²

An iFR[®] cut point of 0.89 approximates an FFR cut point of 0.80³



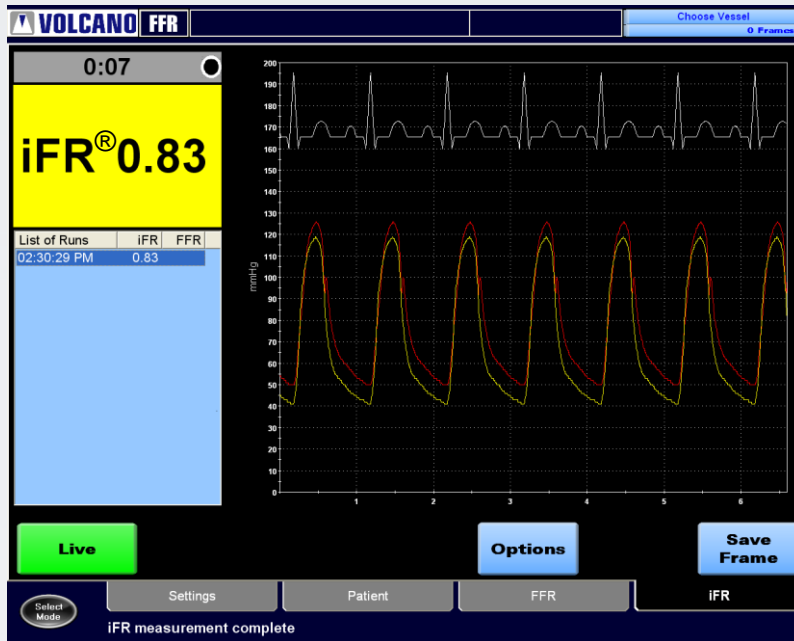
1. Using the iFR cut points of 0.85 and 0.94 matches best with an FFR ischemic cut-point of 0.80 with a specificity of 90.7% and sensitivity of 96.2%.

2. The ADVISE II study illustrated a 5.8%, i.e. (17+23)/690, classification discordance between the iFR Hybrid Approach and FFR. Among 477 lesions that would be assessed without hyperemia by the iFR Hybrid Approach, 40 (17+23) were due to classification discordance.

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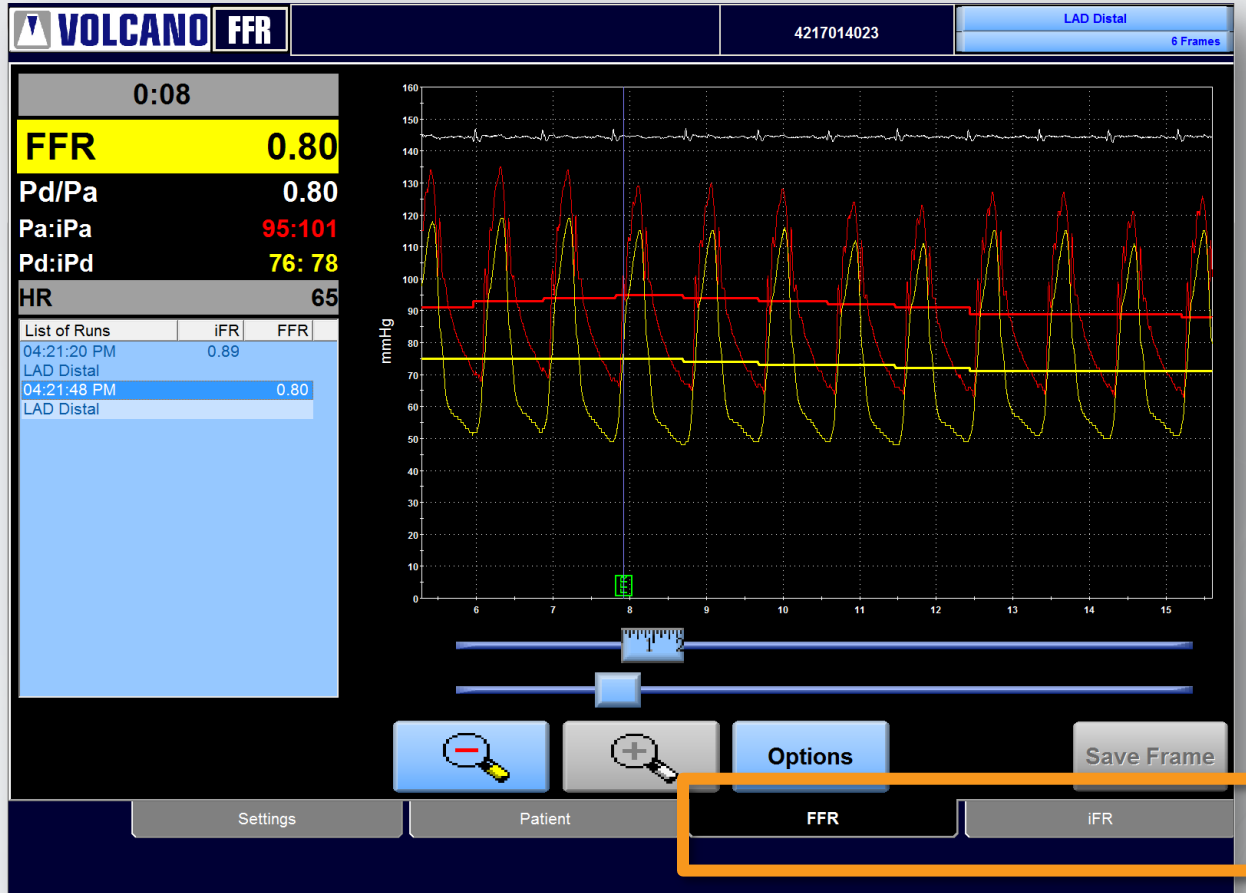


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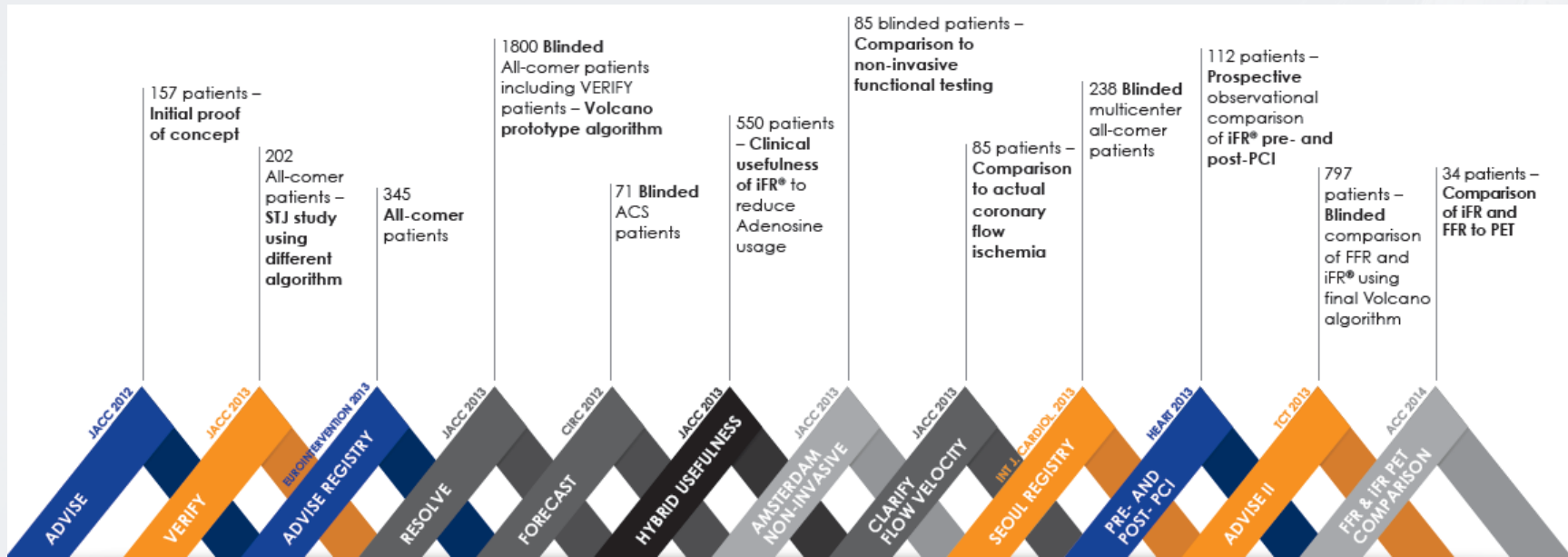
Adjacent tabs on the screen



Building Evidence

iFR[®] modality clinical progress

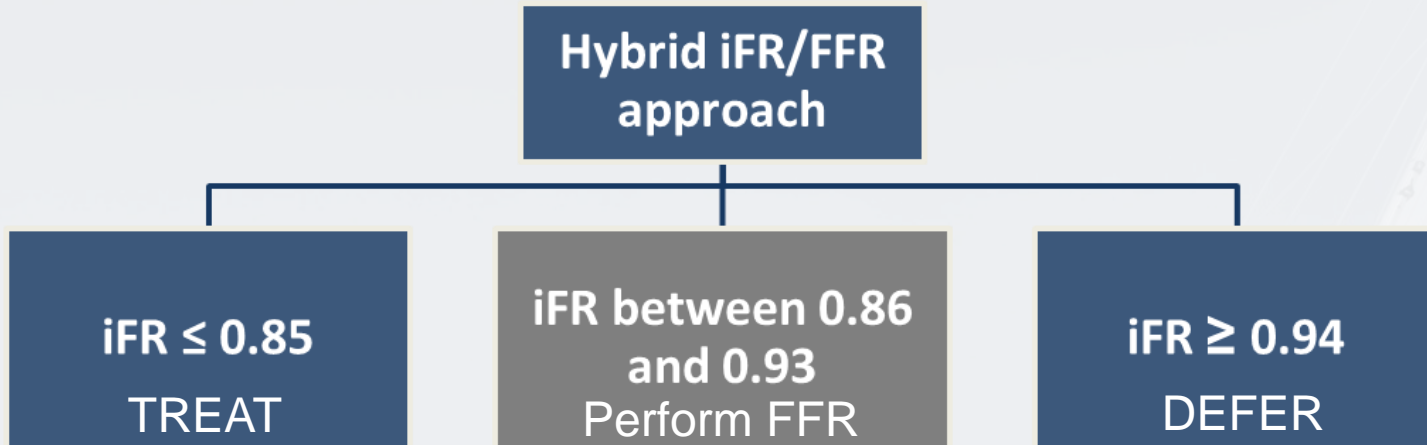
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Hybrid iFR[®]/FFR Approach: ADVISE II

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