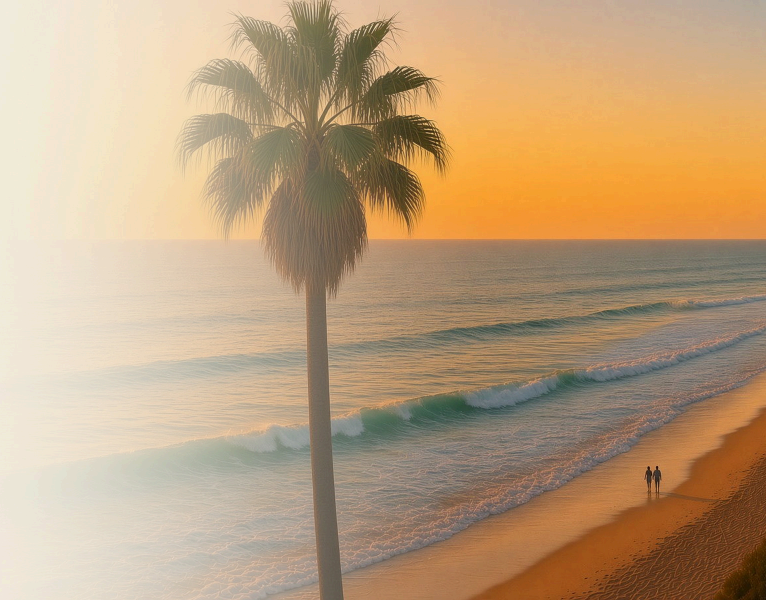
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Does It Need a Stent?

FFR and iFR measure whether a narrowed heart artery is limiting blood flow, so a stent goes only where it helps.

0.80
the FFR cutoff. A reading at or below it means the narrowing limits flow

0.89
the iFR cutoff, measured without adenosine or a similar drug

5 to 15 min
added to the angiogram for each narrowing measured

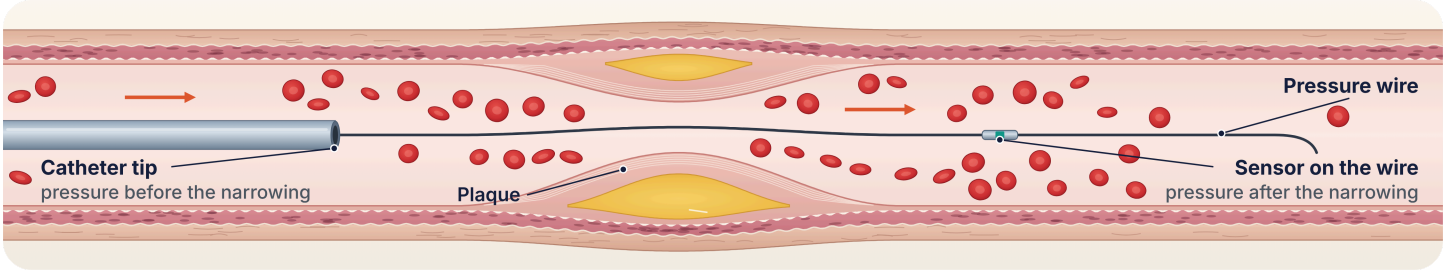
THE PROBLEM WITH PICTURES

How tight it looks isn't how much it blocks

An angiogram is a flat X-ray picture of a three-dimensional artery, and judging a narrowing by eye is famously unreliable. One that looks 70 percent may not limit flow at all, and one that looks 50 percent may.

DURING YOUR ANGIOGRAM

A pressure wire measures the drop



Your cardiologist passes a thin pressure wire across the narrowing. For FFR, a drug given through the IV, usually adenosine, opens the tiny downstream vessels fully, and the pressure after the narrowing is divided by the pressure before it. A normal artery scores 1.0. iFR uses a natural resting moment in each heartbeat and needs no adenosine. In large trials it guided treatment as well as FFR.

AN EXAMPLE

Measured, then left alone

1. **The picture**
   An angiogram for chest pain shows a 60 percent narrowing in a main heart artery, and some doctors would stent it.

2. **The measurement**
   A pressure wire crosses it and adenosine is given. The FFR is 0.85, comfortably above the cutoff.

3. **The decision**
   The narrowing isn't limiting flow, so there's no stent and treatment continues with the right medicines.

Measure, then decide

Stenting only the narrowings that limit blood flow, and leaving the others alone, produces better outcomes than stenting based on how they look.

WHAT YOUR NUMBERS MEAN IS ON THE BACK

YOUR RESULTS

What the numbers mean for you

Above 0.80	0.75 to 0.80	Below 0.75	Below 0.50
iFR above 0.89	**iFR 0.86 to 0.89**	**iFR below 0.86**	**FFR only**
Not limiting flow, so medicine alone serves you better.	A gray zone, treated as limiting flow.	Clearly limiting flow, and a stent is likely to help.	Very severe and a strong reason to treat, sometimes with bypass surgery.

A reading of 0.80 or below (iFR 0.89 or below) means the narrowing limits flow. Readings from 0.75 to 0.80 (iFR 0.86 to 0.89) are a gray zone where repeat measurements can land on either side. Treatment decisions still use the cutoff, so these readings are treated as limiting flow. An abnormal number doesn't always mean a stent. The anatomy, the option of bypass surgery and how you're doing all count too.

WHEN IT'S USED

In-between narrowings	The most common use, for a narrowing that looks 50 to 70 percent when it's unclear whether it limits flow.
Several narrowed arteries	In the FAME trials, measuring first meant fewer stents per patient and better outcomes than stenting by appearance.
After a stent	A reading above 0.90 generally means the stent did its job.
FFR-CT, without a catheter	A computer estimate from a CT scan of the heart arteries that uses the same 0.80 cutoff and can spare some people a catheterization.

GOOD TO KNOW

Will I feel it?	Adenosine causes chest pressure, flushing and shortness of breath for about 30 seconds, and iFR avoids these entirely.
Is it safe?	The wire is small and flexible, and complications from the measurement itself are very low.
My FFR was normal, so why the chest pain?	The narrowings in the large arteries aren't the cause. Your cardiologist may look at the tiny vessels, artery spasm or causes outside the heart.
Readings can mislead	Tiny-vessel disease, a recent heart attack, severe aortic stenosis or a thickened heart muscle can all affect the numbers.

WHEN TO GET HELP

Call 911	Severe chest pain, shortness of breath or symptoms that suggest a heart attack.
Call the same day	New chest pain, palpitations with chest pressure, or any worry about heart symptoms in the days or weeks after an FFR-guided decision.
Within 1 to 2 weeks	Book a clinic visit for steady, predictable chest pain you've been managing on your own.

WORTH ASKING

If you're told a moderate narrowing needs a stent based on the angiogram alone, it's reasonable to ask whether FFR, iFR or FFR-CT could settle the question.

READ THE FULL ARTICLE

damianrasch.com/
ffr-ifr-functional-assessment

For education only, and not a substitute for advice from your own physician. Sources include the FAME (NEJM 2009) and FAME 2 (NEJM 2012) trials, the DEFINE-FLAIR and iFR-SWEDEHEART trials (NEJM 2017), the 2021 ACC/AHA/SCAI coronary revascularization guideline and Norgaard and colleagues on FFR-CT (JACC 2014).

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