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Fractional Flow Reserve–Guided PCI as Compared with Coronary Bypass Surgery

* [**1** Citing Article](https://www.nejm.org/doi/10.1056/NEJMc2202491?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed#article_citing_articles)

**TO THE EDITOR**

In the FAME 3 trial (Jan. 13 issue),[**1**](https://www.nejm.org/doi/10.1056/NEJMc2202491?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed) Fearon and colleagues found that revascularization by means of percutaneous coronary intervention (PCI) did not meet the criteria for noninferiority to coronary-artery bypass grafting (CABG) with respect to combined cardiovascular end points at 1 year in patients with three-vessel coronary artery disease.

Studies have shown the benefit of preprocedural “spot” fractional flow reserve–instantaneous wave-free ratio (FFR–iFR) measurement in identifying vessels that benefit from revascularization.[**2**](https://www.nejm.org/doi/10.1056/NEJMc2202491?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed) Although this approach was used in the PCI group in FAME 3, stent location, length, and diameters were chosen under the visual appreciation of angiography. With such methods, 10 to 30% of vessels remained ischemic according to the final FFR–iFR measurement after PCI,[**3-5**](https://www.nejm.org/doi/10.1056/NEJMc2202491?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed) which had a negative effect on clinical outcome.[**3**](https://www.nejm.org/doi/10.1056/NEJMc2202491?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed) Pilot data also suggest that this issue is largely related to remaining focal lesions that were not identified on angiography but by means of pressure pullback mapping,[**4**](https://www.nejm.org/doi/10.1056/NEJMc2202491?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed) and that it can be overcome.[**5**](https://www.nejm.org/doi/10.1056/NEJMc2202491?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%20%200pubmed)

The FAME 3 results may be due to a residual atherosclerotic burden in the PCI group, with 20 to 50% of patients remaining ischemic. Publication of post-PCI FFR data that were obtained in 60% of patients in FAME 3 is eagerly awaited. The Distal Evaluation of Functional Performance with Intravascular Sensors to Assess the Narrowing Effect: Guided Physiologic Stenting (DEFINE GPS) trial (ClinicalTrials.gov number, [**NCT04451044. opens in new tab**](http://clinicaltrials.gov/show/NCT04451044)), in which the clinical benefit of iFR mapping for the improvement of PCI outcome is being investigated, will add important information on the benefit of preprocedural coronary pressure mapping and “virtual PCI” to prevent post-procedural residual ischemia and clinical events.

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