

Physiology

Proven outcomes^{1,2,3}
Superior value^{1,3}

Contact us



Home

Coronary physiology

iFR evidence

iFR Co-registration

iFR is the gold standard among resting indices backed by patient outcomes that reduces costs, procedural time and patient discomfort^{1,2,3} while providing advance guidance with co-registration.

Learn about the latest iFR studies: [DEFINE PCI](#) and [LAD deferral](#).

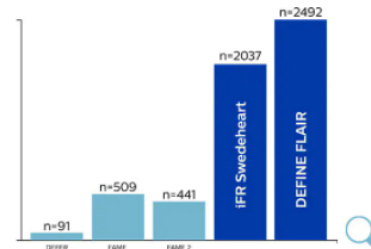
Proven outcomes

DEFINE FLAIR & iFR Swedeheart

The largest physiology clinical outcome studies

More than 4500 patients, 2 prospective randomized controlled trials, published in the prestigious The New England Journal of Medicine.

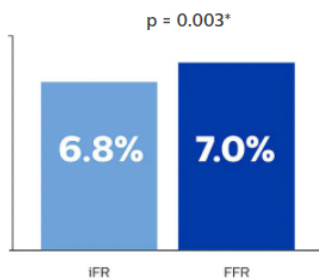
Learn more [DEFINE FLAIR](#) and [iFR Swedeheart](#).



Consistent patient outcomes using iFR guided strategy, as with FFR

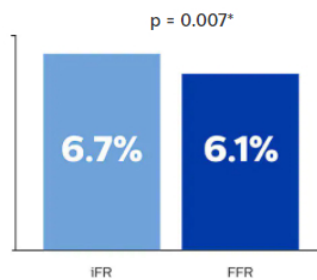
DEFINE FLAIR

One year outcome results



iFR Swedeheart

One year outcome results



* p-values are for non-inferiority of an iFR-guided strategy versus an FFR-guided strategy with respect to 1-year MACE rates; pre-specified non-inferiority margins were 3.4% and 3.2% in DEFINE FLAIR and iFR Swedeheart, respectively

0.89 dichotomous cut-point, backed by clinical outcomes data ^{1,2,4}

Both DEFINE FLAIR and iFR Swedeheart used a dichotomous 0.89 cut-point in their protocols to assess patient outcomes. Physicians can feel confident in simplifying their clinical decision-making strategy.



Superior value

Reduced costs per patient³

DEFINE FLAIR and iFR Swedeheart found that on average, compared to FFR, iFR resulted in:



10%
cost reduction



\$896
dollars saved

Less procedural time¹

DEFINE FLAIR found that an iFR-guided strategy resulted in:



10%
reduction in
procedural time



40.5 minutes (iFR arm)
VS.
45.0 minutes (FFR arm)

[$p < 0.001$]

Improved care^{1,2}

The two trials further established that an iFR-guided strategy enables a faster procedure while almost completely eliminating severe patient symptoms compared to an FFR-guided strategy.



DEFINE FLAIR reported a **90%**
reduction in patient
discomfort



iFR Swedeheart reported that with no hyperemic agent, you can achieve a **95.7% reduction** in patient discomfort using an iFR-guided strategy

[Learn more about iFR Modality](#)

Guidelines

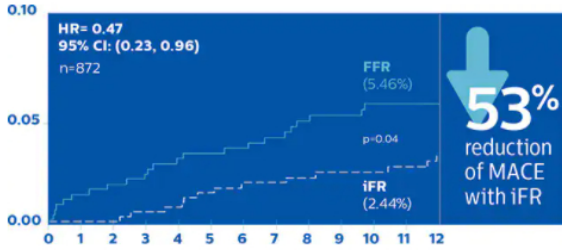
iFR is recognized in key industry guidelines

- Only iFR has been included in both the AUC (ACC Appropriate Use Criteria)⁵ and NCDR (National Cardiovascular Data Registry)⁶
- Only iFR has been designated as "Definitely Beneficial" by SCAI (Society of Cardiac Angiography and Interventions)⁷

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- Only iFR has received a Class 1A ESC (European Society of Cardiology) guideline.⁸

LAD deferral is safer with iFR

Proportion with MACE



Months since randomization

DEFINE FLAIR Substudy

Sen S, Ahmad Y, et al. Journal Am Coll Cardiol 2019 in press

Dr. Sayan Sen, Consultant Cardiologist, Hammersmith Hospital & Imperial College London, discusses details of the LAD sub-study of DEFINE-FLAIR

“In this study, we have clearly demonstrated that it is safe to defer on the basis of iFR. If I see a patient with an LAD lesion, I’m only reassured for medical therapy if the iFR is negative.”

Feedback



Study aims



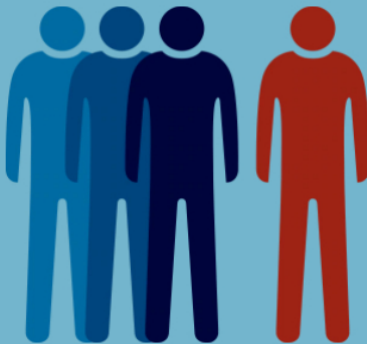
iFR and FFR results



Value of iFR and Co-registration

DEFINE PCI: Unseen focal lesions cause residual ischemia

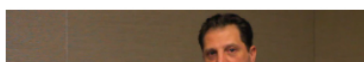
The DEFINE PCI study used iFR pullback to understand the rate and causes of residual ischemia in 500 patients undergoing contemporary PCI. Early results find that residual ischemia is common, and causes are treatable.¹⁰

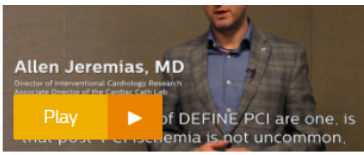


1 in 4 patients with angiographically successful PCI left the cath lab with residual ischemia.¹⁰

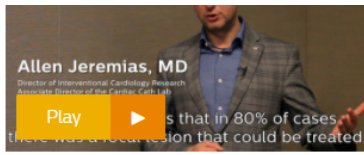
N=500 patients with angiographically successful PCI

Dr. Allen Jeremias, Director of Interventional Cardiology Research and Associate Director of the Cardiac Catheterization Laboratory, St. Francis Hospital, New York, and principal investigator of DEFINE PCI, discusses the study findings at ACC 2019.

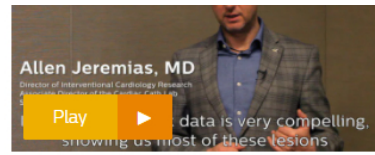




Study findings: Residual ischemia
- Dr. Allen Jeremias



Can the residual ischemia be treated?
- Dr. Allen Jeremias



Role of physiologic guidance
- Dr. Allen Jeremias



DEFINE PCI TCTMD series

Find out what Drs. Allen Jeremias, Gregg Stone, Habib Samady and Manesh Patel will discuss in the TCTMD roundtable series: Is physiologic guidance the solution to residual ischemia? A closer look at DEFINE PCI.



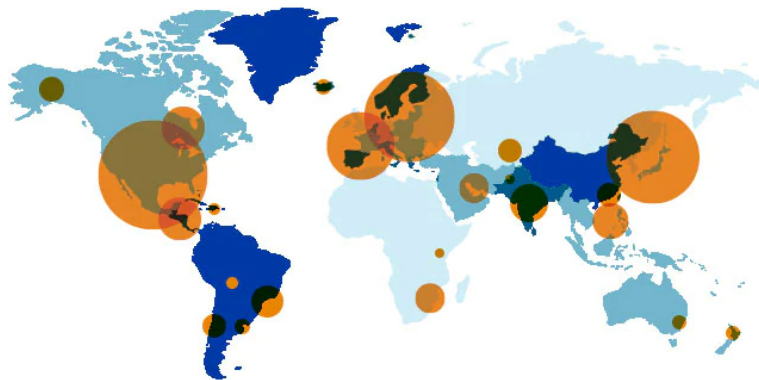
Decide not just whether to treat, but where to treat with iFR Co-registration

Only Philips co-registers iFR values directly onto the angiogram, allowing you to see precisely which parts of the vessel are causing ischemia, and uses virtual stenting to predict treatment results.

[Learn more about iFR Co-registration](#)

Philips is dedicated to the advancement of physiology-guided PCI. Since the introduction of hyperemia-free iFR modality in 2014, iFR has been studied in nearly 15,000 patients and used in >5,000 cath labs around the world.⁹

iFR adoption worldwide



Watch the late breaking presentations and summaries for DEFINE FLAIR and iFR Swedeheart



Resources

[iFR outcomes brochure \(PDF\)](#)

[iFR clinical infographic \(PDF\)](#)

[iFR Co-registration flyer \(PDF\)](#)

[TCTMD Series evolution of iFR](#)

1. Davies JE, et al., Use of the Instantaneous Wave-free Ratio or Fractional Flow Reserve in PCI. *N Engl J Med.* 2017 May 11;376(19):1824-1834.
2. Gotberg M, et al., iFR-SWEDEHEART Investigators.. Instantaneous Wave-free Ratio versus Fractional Flow Reserve to Guide PCI. *N Engl J Med.* 2017 May 11;376(19):1813-18233.
3. Patel M. "Cost-effectiveness of instantaneous wave-free Ratio (iFR) compared with Fractional Flow Reserve (FFR) to guide coronary revascularization decisionmaking." Late-breaking Clinical Trial presentation at ACC on March 10, 2018.
4. 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%. (From ADVISE II and iFR Operator's Manual 505-0101.23)
5. Patel M, et al., ACC/AATS/AHA/ASE/ASNC/SCAI/SCCT/STS 2017 Appropriate Use Criteria for Coronary Revascularization in Patients with Stable Ischemic Heart Disease. *J Am Coll Cardiol.* 2017 May 2;69(17):2212-2241.
6. ACC CathPCI Hospital Registry.
7. Lofti A, et al. Focused update of expert consensus statement: Use of invasive assessments of coronary physiology and structure: A position statement of the society of cardiac angiography and interventions. *Catheter Cardiovasc Interv.* 2018;1-12.
8. 2018 ESC/EACTS Guidelines on myocardial revascularization: The task force on myocardial revascularization of the European society of cardiology (ESC) and European association for cardio-thoracic surgery (EACTS). *Eur Heart J.* 2018;00:1-96.
9. Data on file at Philips
10. Jeremias A et al. The DEFINE PCI Trial: Blinded Physiological Assessment of Residual Ischemia after Successful Angiographic Percutaneous Coronary Intervention, presented at ACC 2019.

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