2020 PCR e-Course

Two-year outcomes of patients with revascularisation deferral based on FFR or iFR measurements.

A pooled, patient level analysis of DEFINE FLAIR and iFR SWEDEHEART trials

Javier Escaned, Hakim-Moulay Dehbi, Matthias Gotberg, Justin Davies on behalf of the DEFINE FLAIR and iFR SWEDEHEART Trial Investigators

Potential conflicts of interest

Speaker's name : Javier Escaned

☑ I have the following potential conflicts of interest to declare:

Receipt of honoraria or consultation fees: Abbott, Boston Scientific, Philips

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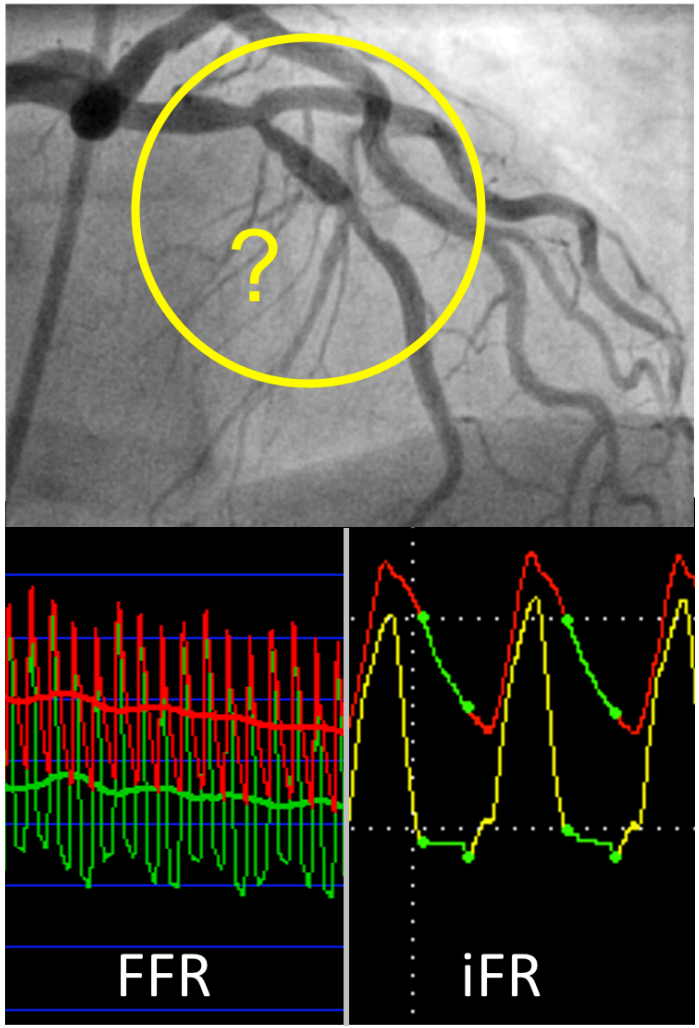
Why this study?

Revascularisation deferral (i.e. decision to treat medically) is a key aspect of physiology-based coronary revascularisation.

Evidence on the long-term safety of revascularisation deferral with iFR and FFR in contemporary scenarios is limited.

Since pivotal studies (DEFER, 1999), the demographics of patients undergoing pressure guidewire studies have changed significantly.

Understanding whether FFR/iFR-based deferral of revascularisation is equally safe in younger and older individuals is important.



What did we study?

Study design:

Pooled patient-level analysis of two randomized trials investigating the safety of iFR: DEFINE FLAIR (n= 2467) and IFR SWEDEHEART (n= 2019)

Study objectives:

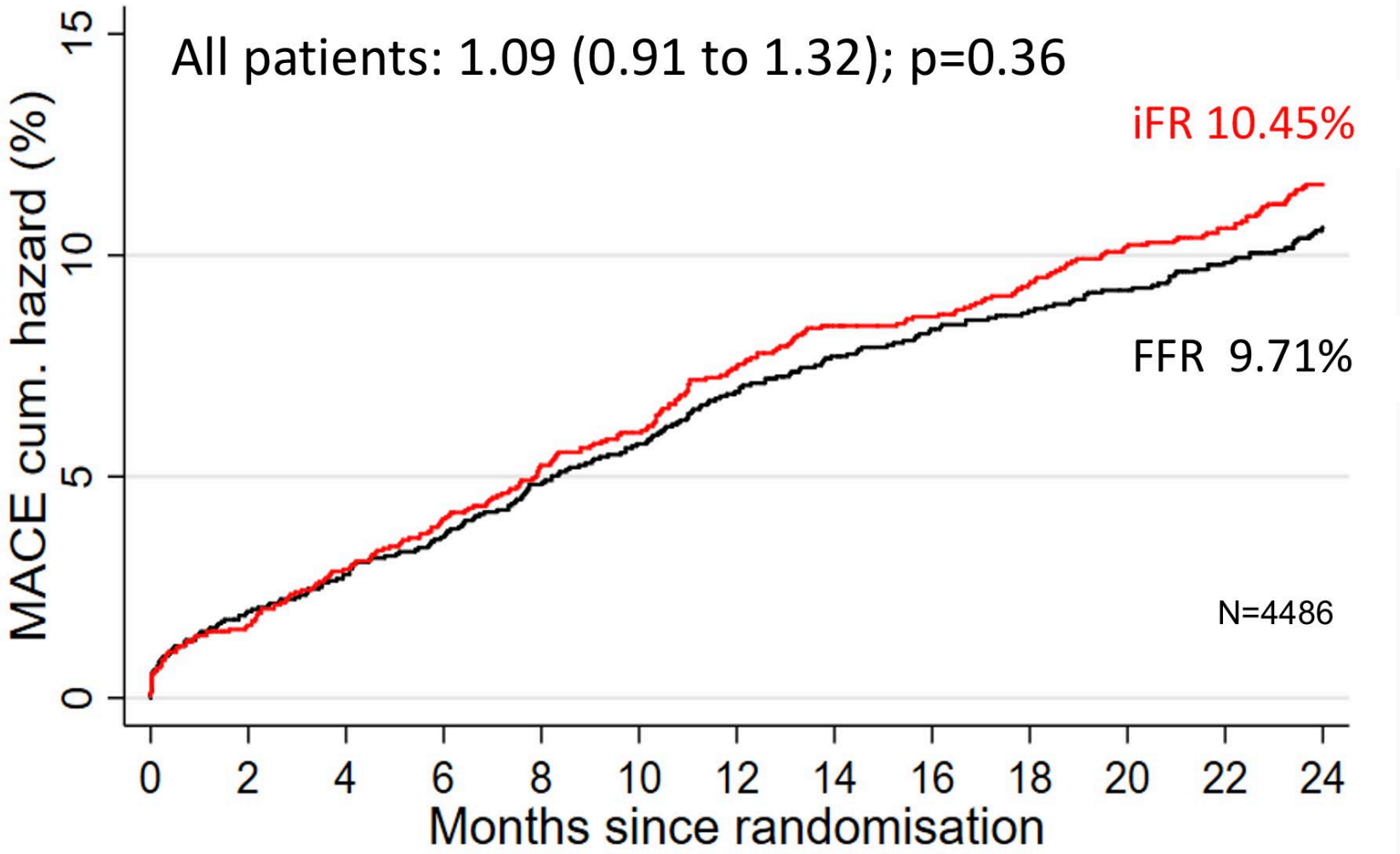
1) To investigate if 2-year outcomes of deferred revascularization are similar when the decision is based on FFR or iFR.

2) To investigate the relationship between patient age, deferral of revascularisation based on FFR or iFR, and clinical outcomes.

Primary endpoint:

Major adverse cardiac events (MACE), defined as a composite of death, non-fatal myocardial infarction and unplanned revascularisation, at 2 years.

2-year primary endpoint (all patients)



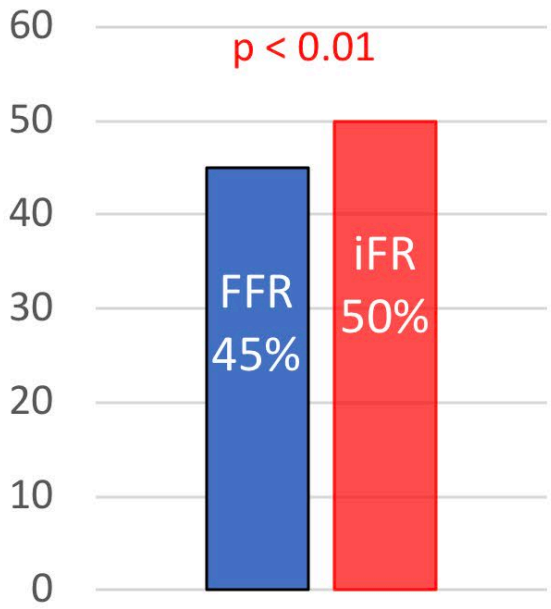
2-year secondary endpoints (all patients)

Outcome	iFR Group N=2240 no.(%)	FFR Group N=2246 no. (%)	Hazard Ratio* (95% CI)	P value
Primary outcome: death from any cause, nonfatal myocardial infarction, or unplanned revascularisation	234 (10.45)	218 (9.71)	1.09 (0.91 to 1.32)	0.34
Death from any causes	72 (3.21%)	51 (2.27%)	1.43 (0.89 to 2.30)	0.14
Nonfatal myocardial infarction	74 (3.30%)	66 (2.94%)	1.14 (0.82 to 1.60)	0.43
Unplanned revascularisation	150 (6.70%)	157 (6.99%)	0.97 (0.77 to 1.21)	0.77

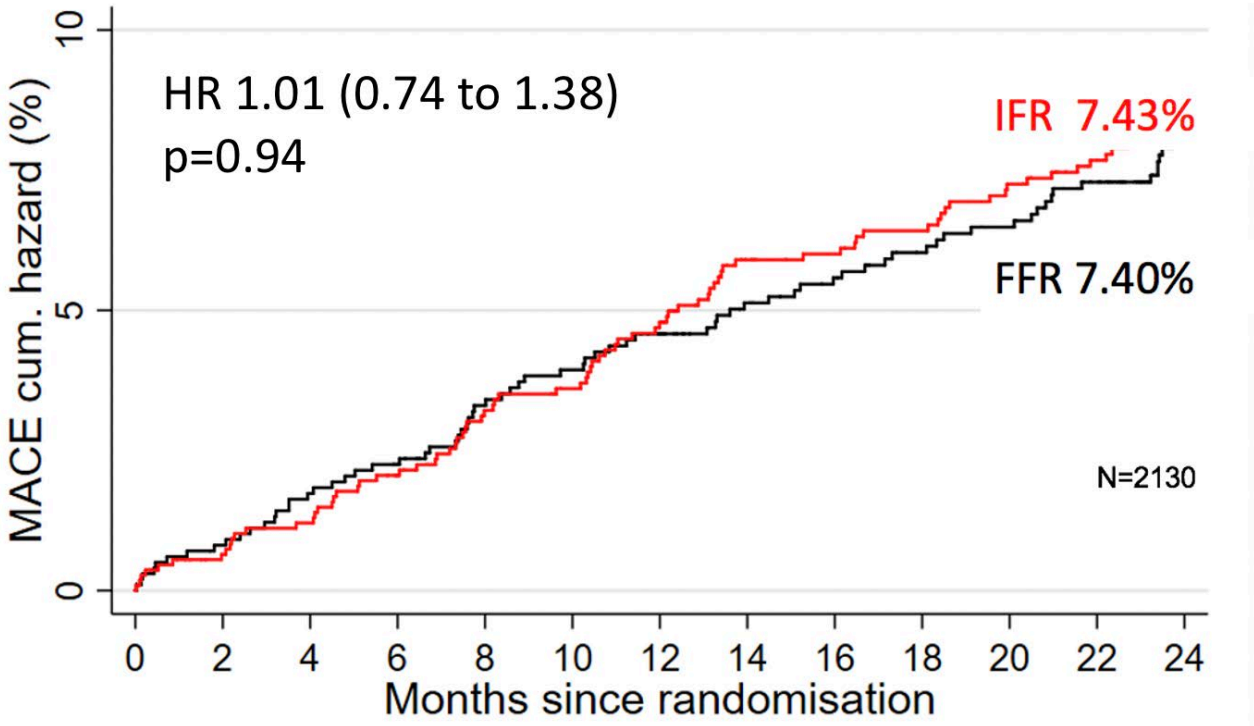
*Mixed-effect model with random intercept and slope per study

2-year primary endpoint (deferred patients)

% deferred cases



MACE in deferred patients



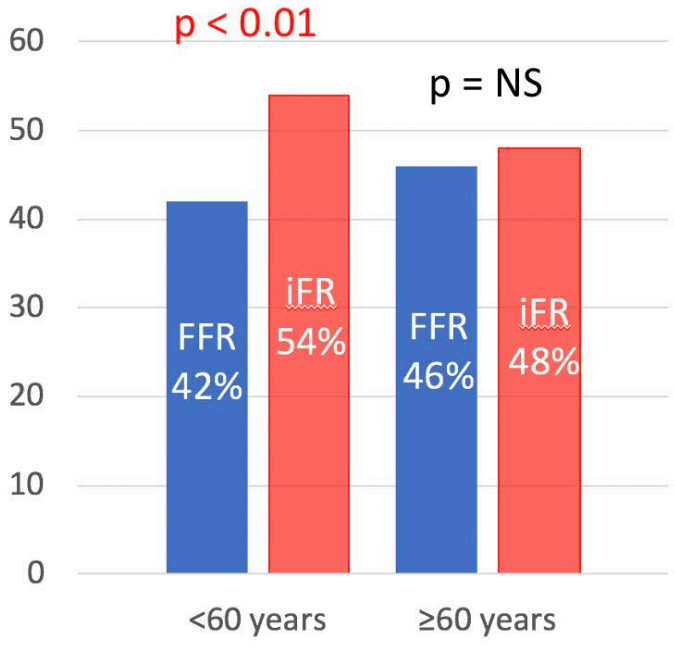
2-year secondary endpoints (deferred)

Outcome	iFR Group N=1117 no.(%)	FFR Group N=1013 no. (%)	Hazard Ratio* (95% CI)	P value
Primary outcome: death from any cause, nonfatal myocardial infarction, or unplanned revascularisation	83 (7.43%)	75 (7.40%)	1.01 (0.74 to 1.38)	0.94
Death from any cause	24 (2.15%)	21 (2.07%)	1.05 (0.58 to 1.89)	0.87
Nonfatal myocardial infarction	21 (1.88%)	23 (2.27%)	0.91 (0.41 to 2.02)	0.81
Unplanned revascularisation	55 (4.92%)	52 (5.13%)	0.97 (0.69 to 1.48)	0.86

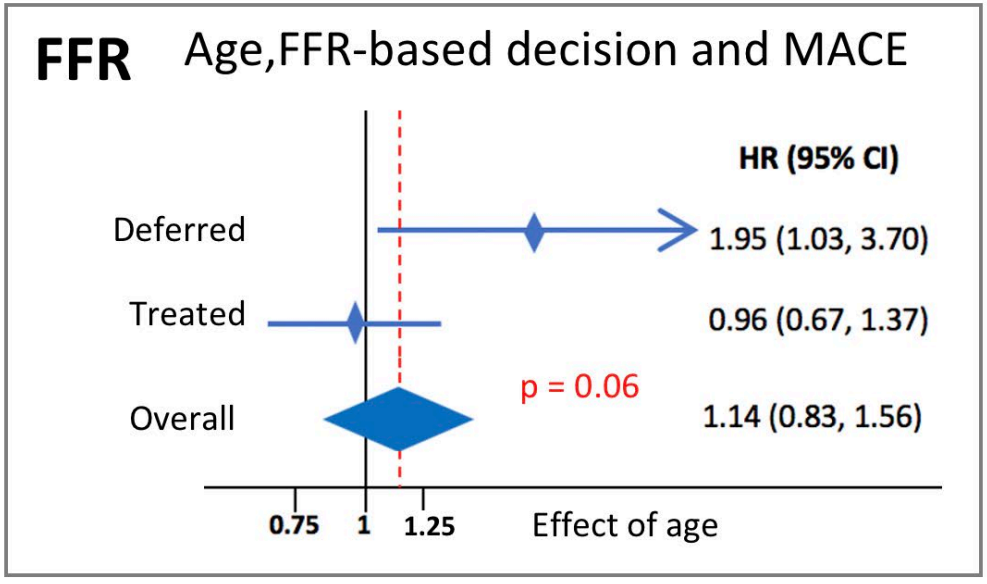
*Mixed-effect model with random intercept and slope per study

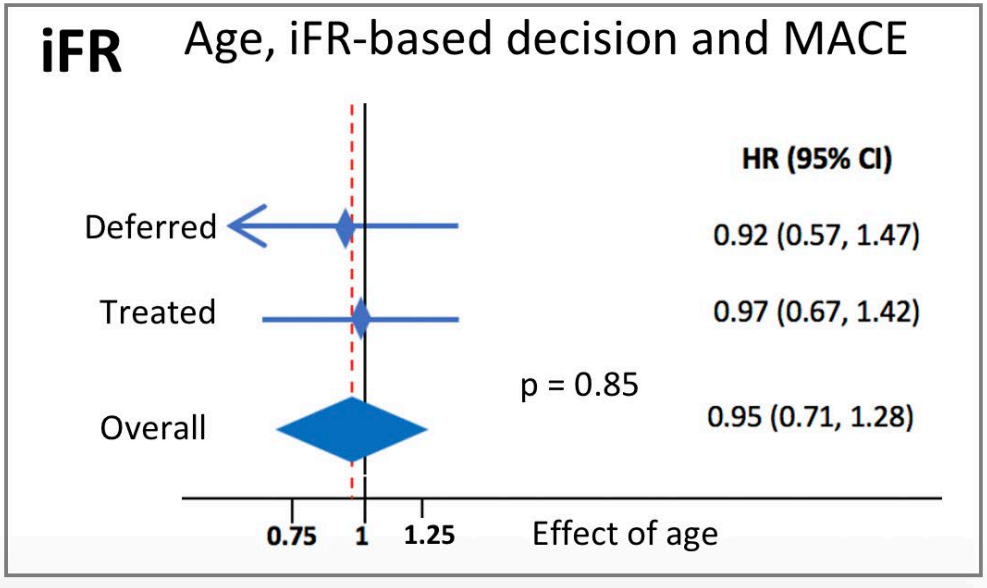
Age and FFR/iFR-based revascularisation

Deferral of revascularisation per age group



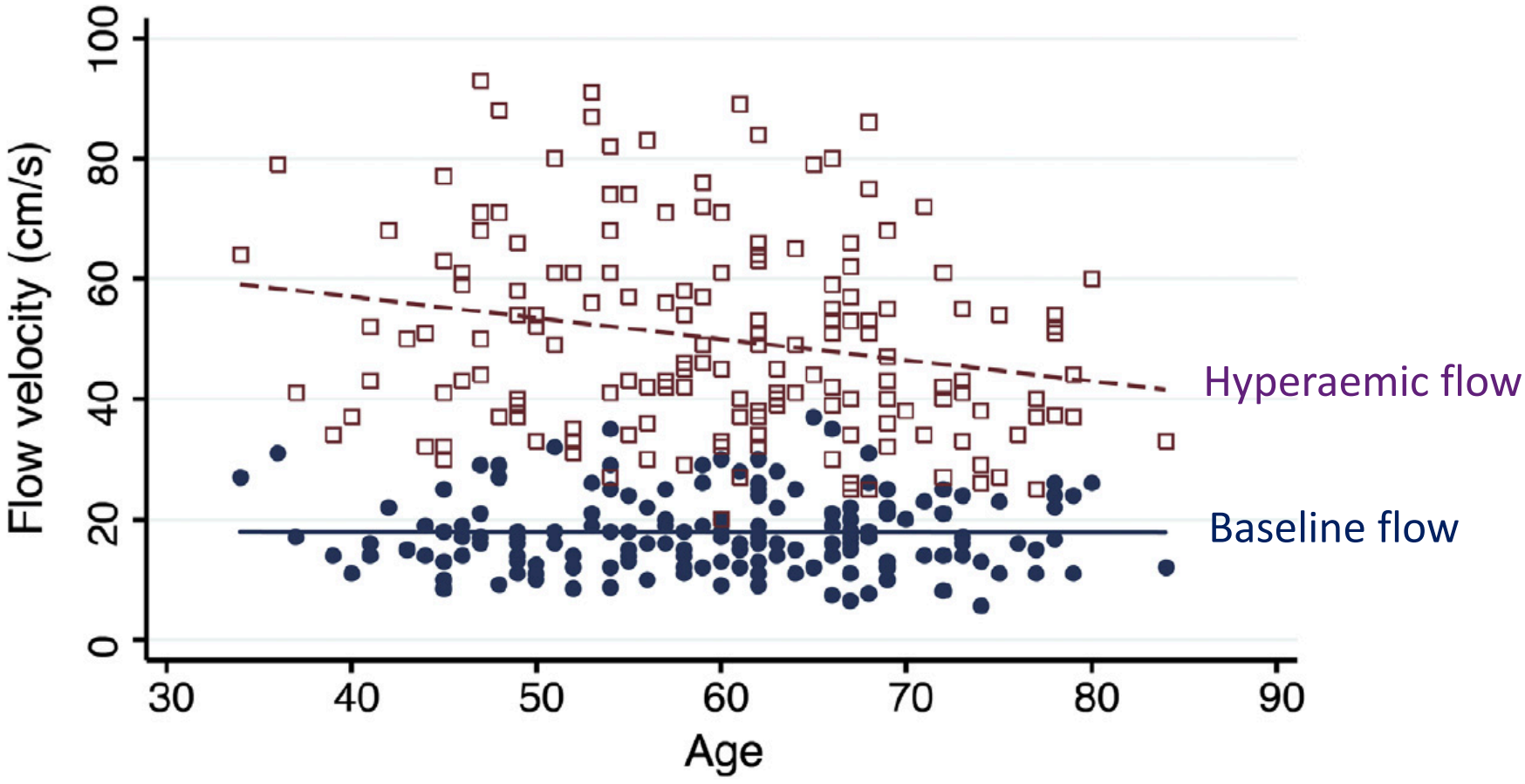
12% more revascularisation with FFR in younger patients





Effect of age on resting and hyperaemic flow

Intracoronary flow velocity in reference coronary vessels



Van de Hoef T, Escaned J et al. JACC Intv 2020; 13:20–9

The essentials to remember

- At 2 years follow-up deferral of coronary revascularisation based on FFR or iFR is equally safe.
- iFR leads to more revascularisation deferral than FFR, particularly in younger patients (<60 years).
  - With iFR, age shows no effect on 2-year patient outcomes according to performance or deferral or revascularisation.
- FFR leads to more revascularisation procedures than iFR, particularly in patients <60 years (+12%).
  - With FFR, age has a marked effect on 2-year outcomes only in those patients in whom revascularisation was deferred.

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