

# Meta-Analysis of Diagnostic Performance of Instantaneous Wave-Free Ratio versus Quantitative Flow Ratio for Detecting the Functional Significance of Coronary Stenosis

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## Background

While previous studies have shown high diagnostic accuracy of iFR and QFR separately, this meta-analysis aimed to systematically compare the diagnostic performance of iFR and QFR.

## What this study adds

This is the first meta-analysis comparing the diagnostic performance of iFR and QFR with FFR as the reference standard.

## Methods

- Meta-analysis was performed on 8213 lesions from 28 total studies assessing diagnostic performance of iFR (n=19) and QFR (n=9).
  - Analysis included one single center trial (n=100) directly comparing iFR and QFR<sup>1</sup>
- All included studies contained sufficient data to allow calculation of the true number of true positives, false negatives, false positives, and true negative in the analysis.

## Results

- Analysis results show that QFR has a better sensitivity and specificity in detecting functional ischemia in coronary arteries than iFR ( $p < 0.001$ , confirmed by covariate model).
  - Pooled sensitivity and specificity across all studies for iFR were 0.79 and 0.85, respectively (95% CI)
  - Pooled sensitivity and specificity across all studies for QFR were 0.90 and 0.88, respectively (95% CI).
  - AUC was 0.89 and 0.92 for iFR and QFR, respectively (95% CI). This further confirms the results of the superior sensitivity and specificity of QFR compared with iFR.

### What's Next?

While these initial diagnostic results are promising, wider applicability of QFR in guiding coronary revascularization requires more solid evidence with regards to outcomes in randomized trials.

- The FAVOR III Studies<sup>2,3</sup> are currently ongoing to assess the non-inferiority of a QFR strategy to FFR strategy with respect to 1 year outcomes, similar to the iFR non-inferiority trials, with 3860 patients randomized.

### Limitations

Analysis included fewer QFR studies (as iFR was introduced earlier), nonrandomized trials, and only one head-to-head comparison. Meta-regression analysis was performed in this study to address the heterogeneity of included data to confirm the results. For a complete description of limitations, refer to the full publication.

### Conclusions

- Compared with iFR, QFR had better sensitivity and specificity in detecting the functional ischemia of coronary arteries.
- QFR was shown to be superior to iFR with higher diagnostic odds ratio\* and AUC.
- QFR may be considered a reliable alternative to iFR for its simplicity with better diagnostic accuracy in functional assessment without the need for a pressure wire.

\*diagnostic odds ratio = the ratio of the odds of positivity in disease relative to the odds of positivity in the non-diseased.

References:

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2. FAVOR III China Study, ClinicalTrials.gov: NCT03656848
3. FAVOR III Europe Japan Study, ClinicalTrials.gov: NCT03729739