Prospective Longitudinal Trial of FFR\textsubscript{CT} Outcome and Resource Impacts
Clinical outcomes of FFR\textsubscript{CT}-guided diagnostic strategies versus usual care in patients with suspected coronary artery disease

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On behalf of the PLATFORM Investigators

Supported by HeartFlow Inc, Redwood, CA, USA
DECLARATION OF INTEREST

- Research contracts
The optimal evaluation of new onset stable chest pain is uncertain. Ideally, testing will clarify the diagnosis and direct subsequent care while maximizing efficiency and safety.

The recent PROMISE and SCOT-HEART trials compared anatomic and functional strategies, finding that CTA improved processes of care. However, CTA also increased rates of invasive catheterization and revascularization with no significant reduction in events.

Fractional Flow Reserve derived from CTA (FFR$_{\text{CT}}$) may address these limitations by providing both functional and anatomic data.

**STUDY AIM:** To determine whether use of a CTA/FFR$_{\text{CT}}$ guided strategy, as compared to standard practice, will reduce the rate of invasive angiograms that show no obstructive CAD, without increasing the occurrence of major cardiac events.
PLATEFORM Trial Design

Stable CAD symptoms; Planned non-emergent NI test or catheterization
Age ≥ 18y; No prior CAD hx; Intermediate pretest probability of CAD

**Planned NI test**

Sequential cohorts

- **Standard NI test**
  - Exercise ECG
  - Stress nuclear
  - Stress echo
  - Stress MRI
  - CTA

- **CTA + FFR_{CT}**
  - CTA
  - FFR_{CT}
  - No FFR_{CT}

**Planned ICA**

Sequential cohorts

- **Standard ICA**
  - CTA
  - FFR_{CT}
  - No FFR_{CT}

- **CTA + FFR_{CT}**
  - CTA
  - FFR_{CT}
  - No FFR_{CT}

Testing/cath performed and interpreted locally; FFR_{CT} results w/in 24–48 hrs
All F/U testing and management decision by care team following best practices

1° — Cath w/o obstructive CAD (QCA or FFR ≤ 0.80) at 90 days
2° — MACE: death, MI, UA; Radiation (Costs; QOL)
Primary Endpoint
Invasive Catheterization w/o Obstructive CAD

Similar results in all pre-specified subgroups and cohorts

- Site-read ICA w/o obstructive CAD
  57% usual care; 9% FFR<sub>CT</sub>
- Age, sex, race, diabetes, pretest probability of CAD, country
- Propensity matched cohort
- Best practices cohort
- Adequate image cohort

![Graph showing Planned ICA results](chart)

- Usual Care: N (%) = 137 (73.3)
- FFRCT: N (%) = 24 (12.4)

\( P < 0.0001 \)
## Safety Endpoints and Data at Revascularization

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<tr>
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<th>Planned NI Test</th>
<th>Planned ICA</th>
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<tr>
<td></td>
<td>Usual care</td>
<td>FFR&lt;sub&gt;CT&lt;/sub&gt;</td>
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<td>strategy N=100</td>
<td>strategy N=104</td>
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### SAFETY: MACE — no. (%)
- Usual care strategy: 0 (0%)
- FFR<sub>CT</sub> strategy: 0 (0%)
- Planned NI Test: 0 (0%)
- Planned ICA: 2 (1.0%)

### SAFETY: RADIATION EXPOSURE (enrolment to 90 days)
- Mean ± SD, mSv:
  - Usual care strategy: 5.8 ± 7.1
  - FFR<sub>CT</sub> strategy: 8.8 ± 9.9
  - Planned NI Test: 9.4 ± 4.9
  - Planned ICA: 9.9 ± 8.7

### FUNCTIONAL DATA AT REVASCULARIZATION
- PCI or CABG – no.:
  - Usual care strategy: 5
  - FFR<sub>CT</sub> strategy: 10
  - Planned NI Test: 59
  - Planned ICA: 55

- Functional data available:
  - Usual care strategy: 100%
  - FFR<sub>CT</sub> strategy: 90%
  - Planned NI Test: 51%
  - Planned ICA: 96%

P values:
- Safety: MACE: NA
- Radiation exposure: 0.20
- Functional data available: <0.0001
Summary and Conclusion

- PLATFORM enrolled a symptomatic, intermediate risk population for whom testing is currently recommended.
- Use of CT/FFR\textsubscript{CT} in patients with planned invasive catheterization was associated with a reduction in the rate of finding no obstructive CAD at ICA, from 73\% to 12\%.
  - Similar results in all subgroups.
  - No differences in MACE, radiation or revascularization rates.
  - Use of FFR\textsubscript{CT} resulted in cancellation of 61\% of ICAs and doubled the availability of functional data at PCI/CABG.
- In conclusion, use of a combined anatomic AND functional strategy employing CTA/FFR\textsubscript{CT} was safe and improved patient selection for invasive catheterization.