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An assessment of the effects of pressure wire drift and measurement variability on stenosis misclassification

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EAPCI EUROPEAN SOCIETY OF CARDIOLOGY® PCR

Potential conflicts of interest

Speaker's name: **Christopher Cook**

- ❑ I do have the following potential conflict of interest to report:

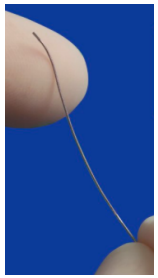
- Speaker's bureau for Volcano Philips

Why this study?

Real world environment

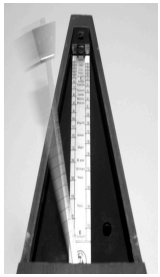
Problem of drift

1. Occurs frequently
2. Drift checks are not always performed



Problem of variability

1. Occurs less frequently
2. Is unavoidable
3. Worse in beat-to-beat



Can theoretically cause stenosis misclassification

No data on this effect….

What did we study?

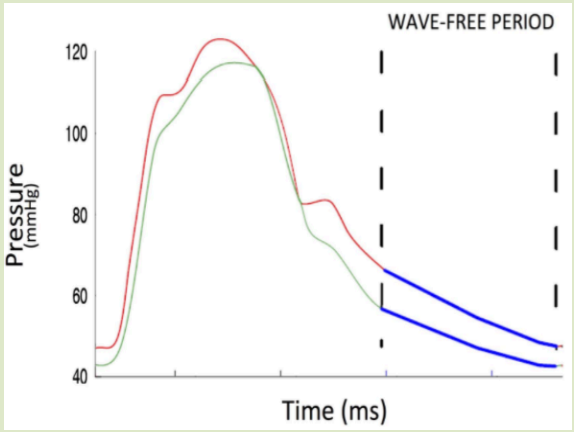
Pressure only

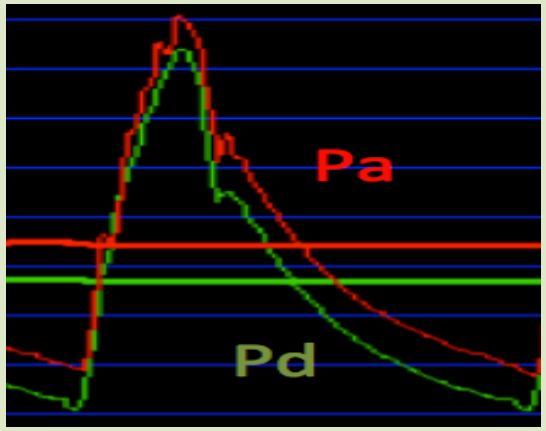
FFR

iFR

Vs

Whole cycle Pd/Pa



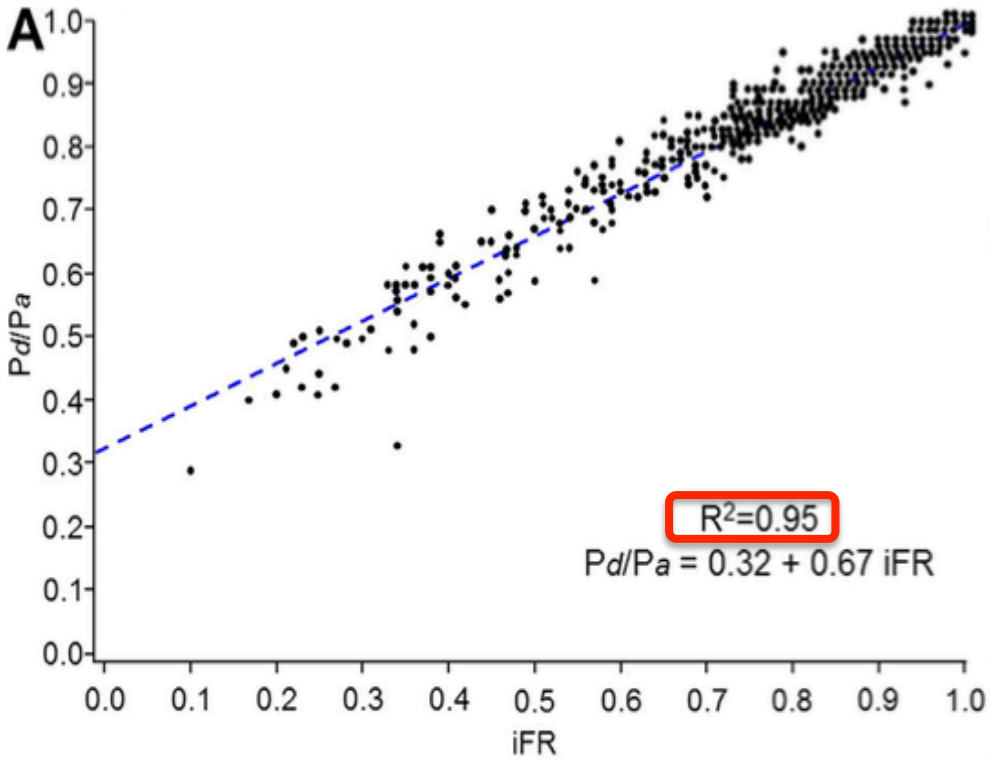


Hyperaemic

Resting

What did we study?

Aren't PdPa and iFR the same?



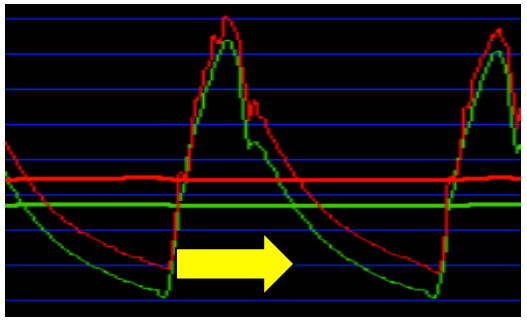
'A regression coefficient tells me nothing about real world clinical practice!'

How was the study executed?

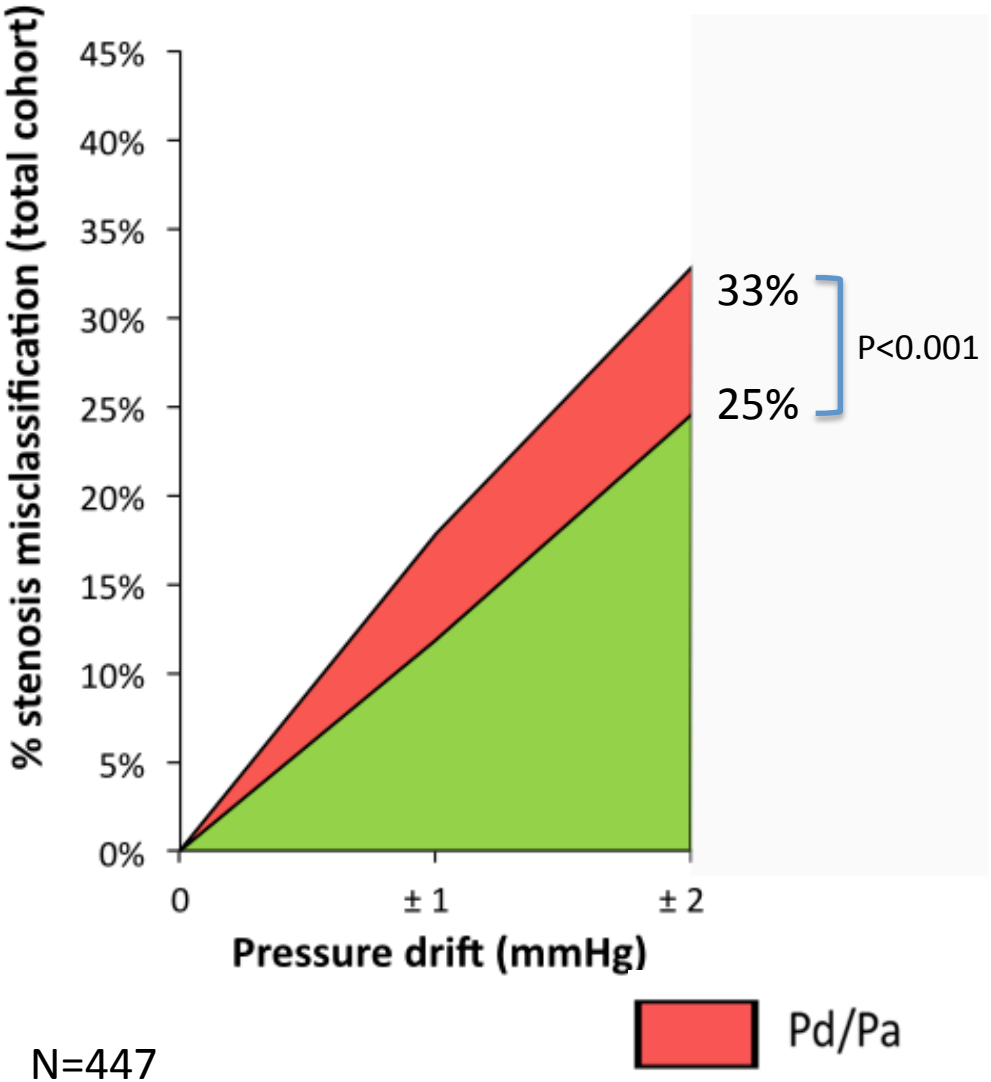
- 447 stenoses (447 patients) were categorised with iFR and whole cycle Pd/Pa
- Thresholds for significance were <0.90 and <0.93 respectively

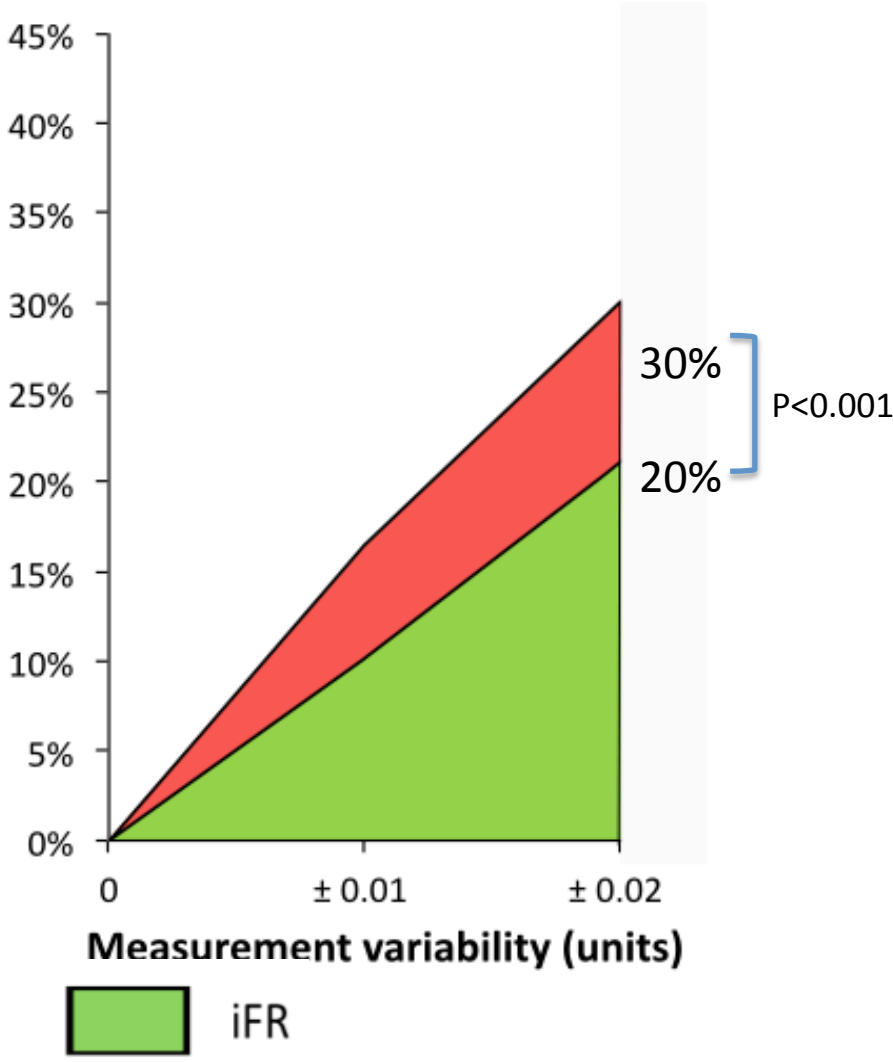
- PWD was modeled across the range of ±2mmHg
- MV was modeled across the range of ±0.02units

- iFR and Pd/Pa indices were recalculated and stenosis misclassification quantified



What are the essential results?

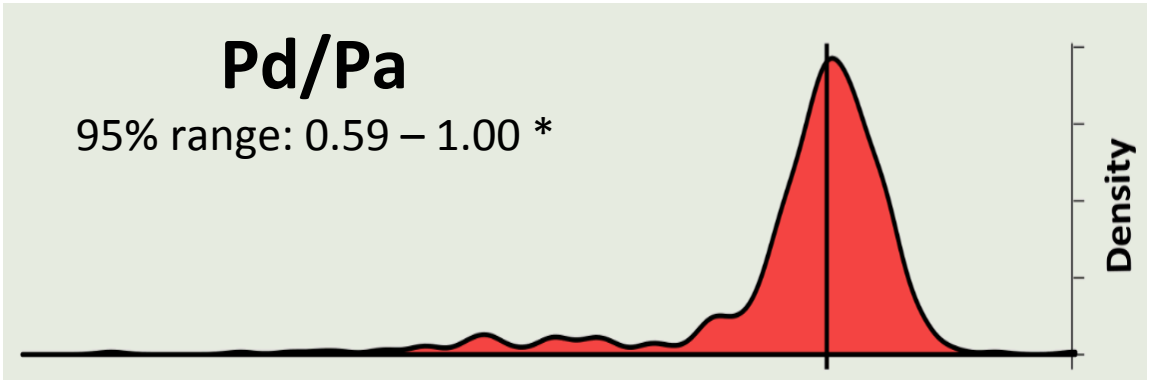




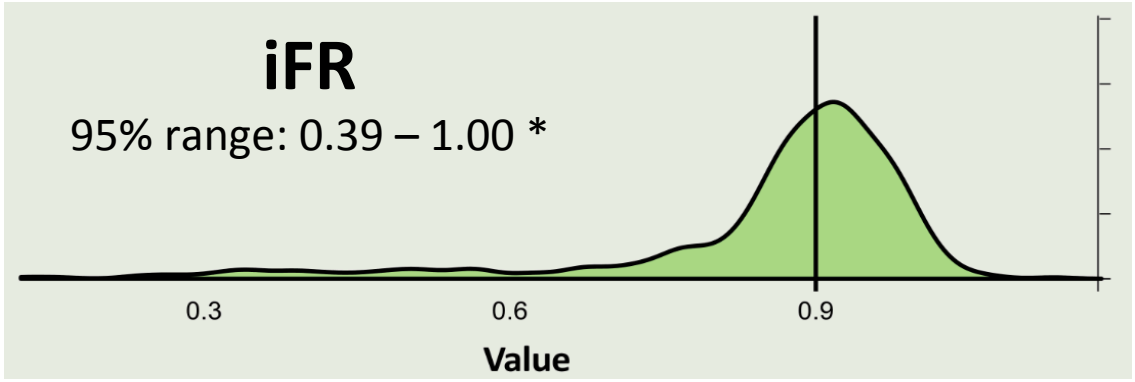
N=447

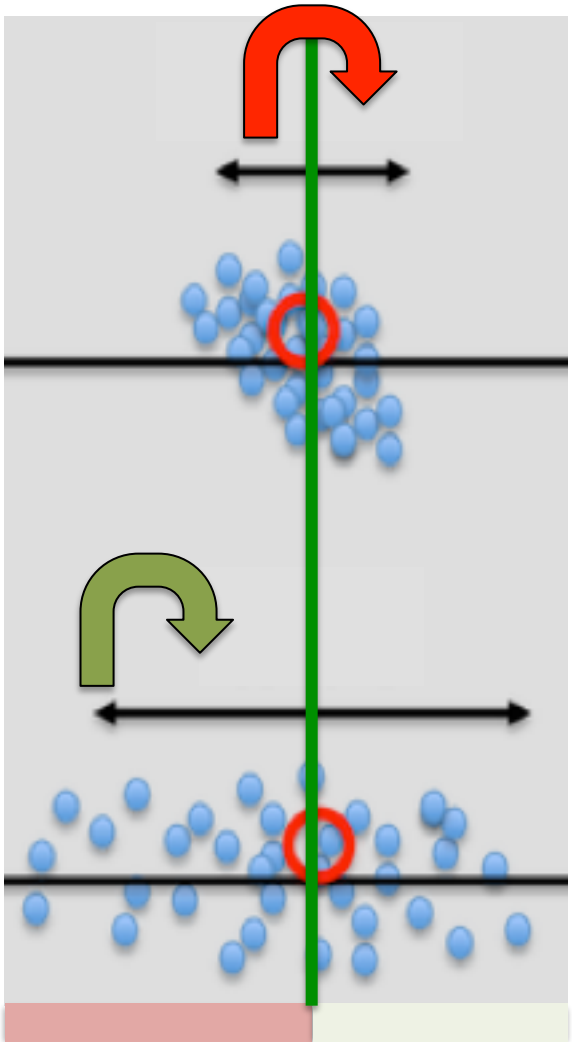
What are the essential results?

iFR has a superior signal-to-noise ratio



* $p < 0.001$





Why is this important?

- **Small** amounts of PWD/MV lead to **big** changes in diagnosis

Q: How will this change my practice?

A:

- **Always perform a drift check**
- **Take meticulous care in measurments**
- **Borderline value….with even small amounts of drift…repeat and correlate with the clinical picture**

The essentials to remember

- **Why?**
  - PWD and MV are commonly observed in clinical practice
- **What?**
  - 447 stenoses measured with both PdPa and iFR
- **How?**
  - Modeling of PWD and MV to quantify the impact on misclassification
- **What are the results?**
  - 33% and 25% stenosis misclassification with Pd/Pa and iFR, respectively
- **Why is this important?**
  - SMALL amounts of PWD/MV cause BIG changes in diagnosis

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