Asthma-Dx-PC: A platform for investigating novel diagnostic techniques to improve asthma diagnosis in primary care: study protocol

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What is the problem?

- Lack of definitive tests for asthma diagnosis in primary care leading to over and underdiagnosis
- Current tests rely on presence of airway obstruction or inflammation
  - difficult to perform or require specialist training
  - discordant with other clinical disease measures
  - may not detect subtle disease
  - inflammation may not be present (non-eosinophilic asthma)
  - cannot detect variable/episodic airway narrowing

Health

Asthma diagnosis 'may be wrong' in one million UK adults
⏱ 28 January 2015
BBC NEWS

Why asthma still kills
The National Review of Asthma Deaths (NRAD)
"failure to diagnose asthma in 10% of cases"

Yes, asthma is over-diagnosed, but it is still a matter of life or death
The Guardian
Specialists say handing inhalers out like sweets hides the fact the disease still kills three people a day in Britain

Streeting identifies three 'big shifts' to fix NHS
LIVE WESTMINSTER
BBC BREAKFAST
1. From hospital to community care
2. From analogue to digital
3. From treating sickness to preventing it

Could there be a solution?

Development of **novel technologies** is a key interest area for the health technology industry, patient organisations and the NHS, including:
- computer-based algorithms using AI-based consultation analysis
- novel physiological techniques and airway measurements
- home monitoring devices
- blood/breath biomarkers

*But these need to be evaluated in a **real-world primary care setting** – where asthma diagnosis actually takes place – before the vision of improved diagnosis can become a reality*

...introducing the ASTHMA-Dx-PC platform

We aim to evaluate **multiple** new technologies alongside existing combinations of tests, recruiting in a **real-world primary care** setting
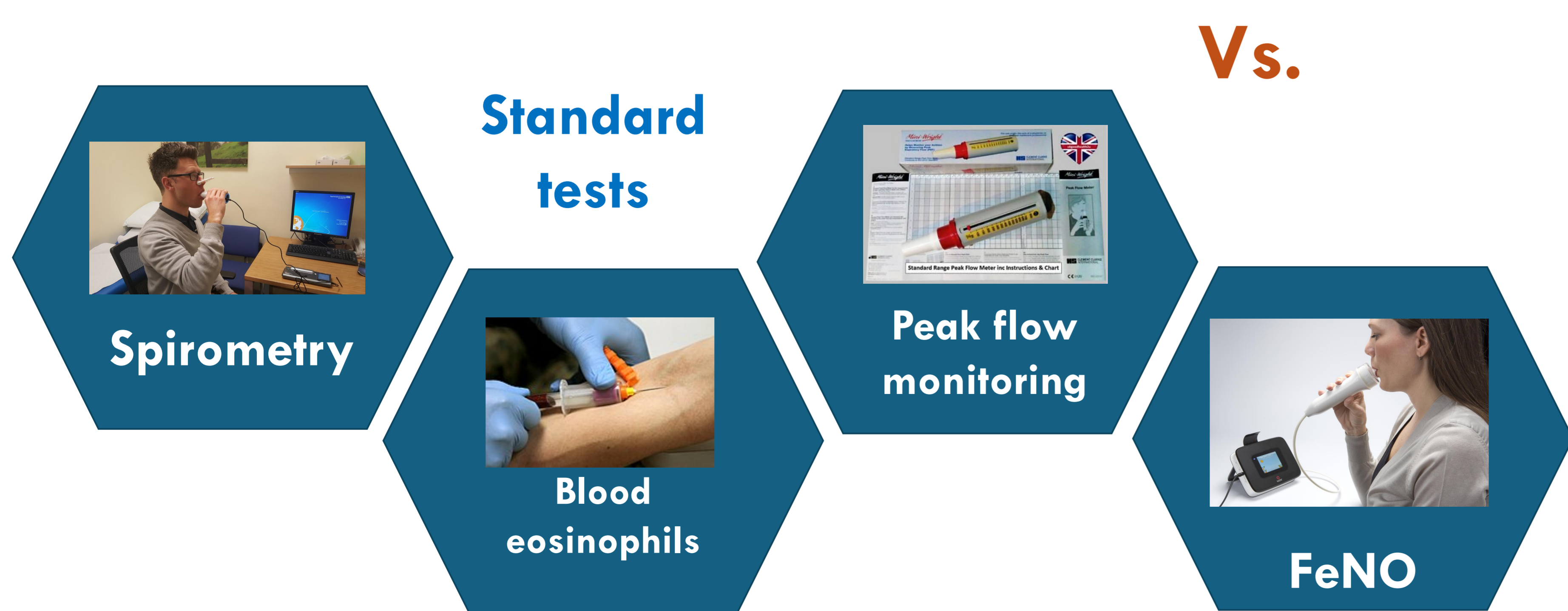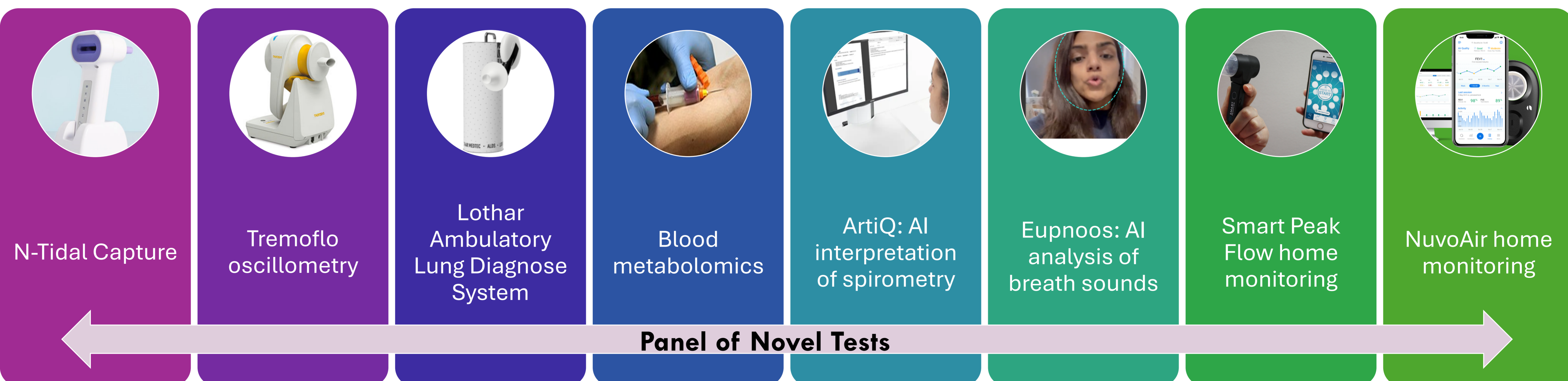
A primary care-based platform study which evaluates multiple new technologies in parallel

Add or remove tests as time goes on using existing research infrastructure

Efficient — Open-ended — Flexible

Coughing — Chest tightness — Wheezing — Shortness of breath

Patients presenting to primary care with symptoms suggestive of possible asthma are referred to the study

| N-Tidal Capture | Tremoflo oscillometry | Lothar Ambulatory Lung Diagnose System | Blood metabolomics | ArtiQ: AI interpretation of spirometry | Eupnoos: AI analysis of breath sounds | Smart Peak Flow home monitoring | NuvoAir home monitoring |

Panel of Novel Tests

Vs.

Standard tests

Spirometry — Blood eosinophils — Peak flow monitoring — FeNO

Consensus clinical diagnosis of asthma by independent adjudication panel
- Recorded GP consultation
- Symptom questionnaires
- Standard care tests