**Introduction**

250M+ people suffer from Chronic Obstructive Pulmonary Disease (COPD) and are at highest risk of contracting severe COVID-19 complications. Effective home management is more important than ever before.

The COPD Telehealth Challenge:

- **No accurate and scalable** remote data-driven monitoring solution for COPD.
- **At-home clinical tests are difficult to perform** (e.g. spirometry), inaccurate (e.g. symptoms-diary), or too-late-to-be-useful (e.g. PulseOx, Peak flow measurements).
- Need relevant bio and behavioral information that **seamlessly collects small airway lung function, medication**

**CareCOPD Objectives – Remote monitoring**

CareCOPD Objectives:

- **Data Innovation**: Bringing three most relevant COPD health parameters never captured before remotely
  1. Lung function (from PulmoScan): Respiratory impedance is very sensitive to small airway changes
  2. Medication adherence and competence (from CapMedic): Inhaler use is directly linked with exacerbations
  3. Symptoms assessment: CAT and mMRC questionnaires are standard practice for COPD assessment
- **Innovation in approach**: CAT, mMRC, symptoms assessment questions

**Hypothesis**: Home monitoring of COPD patients using CareCOPD mature and validated devices results in early detection of AECOPD (acute exacerbation events).

The primary outcomes variables are:

1. Detection of AECOPD in the multivariate temporal data consisting of lung function, medication, and symptoms corresponding to AECOPD events.
2. Detection of AECOPD one day prior to the standard of care.

**Goal**: Risk stratification of COPD patients based on temporal CareCOPD data for early intervention