THE DIAGNOSTIC GAP IN HEART DISEASE

Substantial need for modern low-cost, effective front-line cardiac testing tools

THE GLOBAL BURDEN OF CARDIOVASCULAR DISEASE (CVD):

- An estimated 17.7 million people died from CVD in 2015, representing 31% of all global deaths\(^1\) with heart disease accounting for the majority of CVD deaths.
- CVD represents the largest expenditure for most health authorities around the world. Each year, CVD accounts for more than $300 billion in direct costs and $235 billion in lost productivity in the United States\(^2\), as well as nearly €111 billion in direct costs and €99 billion in lost productivity in the European Union.\(^3\)
  - As populations age, the economic and human costs of CVD will only continue to rise.
  - By 2035, total costs in the United States will top $1.1 trillion.\(^4\)

FINDING THE PATIENTS THAT NEED TREATMENT THE MOST IS A SIGNIFICANT PROBLEM:

- Lack of low cost, effective front-line tools drive up costs in both symptomatic and asymptomatic patients.
- More than half of patients find out they have heart disease through an adverse event such as a heart attack – having not demonstrated traditional cardiac symptoms in advance of the event.\(^5\)
  - 50% of men and 64% of women who die suddenly of a heart attack had no symptoms.\(^6\)
  - Approximately 47% of sudden cardiac deaths occur outside of a hospital.\(^7\)
  - For patients who do survive, the average total hospital cost of treating a heart attack will set them back more than $21,500 in the United States.\(^8\)
- Electrocardiograph (ECG) is a key frontline tool used by physicians to detect heart disease, yet limited innovations have occurred since it was invented in 1903.
  - Current ECGs have a limited sensitivity in detecting coronary or structural heart disease. Healthcare guidance around the world does not recommend use of ECG testing on asymptomatic patients.\(^9\)
  - The next steps in the cardiac diagnostic process typically involve much more expensive testing procedures that may involve patient risks and are not feasible as front-line tests.
- The lack of low cost, effective front-line tools for cardiac testing has led to substantial testing with low yields. Duke University conducted a review of 400,000 patients in the United States undergoing invasive catheterization. It found that only 38% of patients without previously known heart disease who underwent invasive angiography had obstructive coronary artery disease.\(^10\)
- An invasive angiogram, costs $8,500 on average in the United States and £2,000 on average\(^11\) in the United Kingdom.

INNOVATION IS NEEDED: EXISTING ECG TECHNOLOGY WAS INVENTED 1903, THE SAME YEAR THAT:

- Marie Curie became the first woman to win a Nobel Price for her pioneering research on radioactivity.
- The Wright brothers completed the first successful flight.
- The treaty to begin construction on the Panama Canal was signed.
- The first Tour de France took place.

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