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Chronic Disease Prevention Re-imagined

# In a HeartBeat - Silicon Valley Pilot Study

## **1. Public Health Goals**

- Support prevention objectives
- Improve early detection of heart disease

## **2. Operational Proof of Concept, combining**

- Health Risk Assessment used by Corporate Wellness
- Biometrics and Biomarkers available via finger stick
- Mobile CT Scan to make CAC scoring more affordable and accessible
- Polygenic Risk Scoring for a first look at Pre-dispositional Lifetime Risk

## **3. Pilot for Multi-Variable Research comparing**

- BioMarkers and BioMetrics
- CAC Scores
- ASCVD 10 year risk
- MetaGRS for life-time pre-dispositional risk (research only)

# It takes a village...



Field Work



Day of Testing

Saliva based genomics for Heart Disease risk  
Recent research shows that this test is an independent risk factor for heart disease. People in the top 20% of scores are 4 times as likely to develop heart disease.  
Since this test is experimental, we will not give you your result

Biometrics  
Weight, Height, Body Mass Index (BMI), Waist Circumference, Hip Circumference, Wrist Circumference, Body Fat Content, Blood Pressure

Blood work (finger stick)  
Total Cholesterol, Triglycerides, VLDL, HDL, LDL, Glucose, hsCRP



Process



Analysis



# Study Metrics

- Screening Criteria - over 40 with at least 1 risk factor but no diagnosis of heart disease
- 104 participants in the field work;
  - mean age of 55.1
  - 53% male
- 39 (37%) had a positive CAC score ( $>0$ )
- 65 (63%) had CAC score = 0
- 2.7 needed to screen to find CAC  $>0$ 
  - Cardia study suggested target of 2.2 needed to screen
- 50 also took the HRA
- 46 supported calculation of a 10 year ASCVD Risk Score
- 9 (18%) had a 10 year risk score between 5% and 20%

# CAC Risk Study Results (N=104)

CAC Score	Study		%total	Cumulative CT Ops to date
CAC > 0	39		38%	115 (32 % of total of 361)
CAC >0 and <100	26	67%	25%	69 (19% of 361)
CAC greater than 100	13	33%	13%	46 (13% of 361)
CAC 100-199	4			
CAC 200-299	3			
CAC 300-399	3			
CAC 400-499	0	3	3%	15 (4% of 361 with positive CAC over 400)
CAC 500-599	2			
CAC 600-699	0			
CAC 700-799	1			

**Preliminary results**

# CAC Measure & Risk % Study Results by Age group

	Total	CAC > 0	CAC > 100	CAC >400	# > 75%
Age 30-50	25	4	0	0	3
Age 50-65	63	23	8	1	10
Age > 65	16	11	5	2	2
Totals	104	38	13	3	15

Preliminary results

# ASCVD Risk Level Results

ASCVD		10 year risk calculator	
50		Total HRA responses	
39	78%	39 below 7.5% 10 year risk	low
9	18%	9 between 5% and 20% 10 year risk	See Dr Budoff Preso
6	12%	6 between 7.5% and 20% 10 year risk	intermediate
1	2%	1 over 20% risk	high
4	8%	NA or unable to calculate	NA

**Preliminary**

**Lundquist Institute is currently summarizing the results**

# Ongoing community-based CAC Score screening operations

- Screen for over 40 without Heart Disease diagnosis
- 11 additional screening days to date
- Additional 257 participants (361 total)
- Locations
  - Community Centers
  - Fire Departments
  - Business locations
- Consistently finding 32 % of participants with CAC>0



# What's next on the research front ?

- Polygenic Risk Use Cases @Preventive Cardiology (under development)
  - 7 Academic Medical Center Preventive Cardiology clinics
  - Multiple use cases – primarily focused on motivation
- MultiOmic Triangulation Study of Heart Disease (under development)
  - DNA based Polygenic Risk Score (MetaGRS) - @GT
  - RNA Transcript panel (250) (validated @ GT/Emory)
  - Influx - Lipids plus Lp(a) (@UCSF)
  - Efflux – PreBeta 1 HDL (@UCSF)
  - Inflammatory Factor Panel plus hs-CRP (@UCSF)
  - N=150; 50@ Low Risk, 50@intermediate, 50@high