

STATUS UPDATE | TG-CARDIO SUBTOPIC #1 | NOV 2019

APPLICABILITY OF  
CARDIOVASCULAR DISEASE (CVD) RISK PREDICTION USING  
MACHINE LEARNING  
ON ROUTINE PATIENT DATA  
ACROSS DIVERSE POPULATIONS:  
A STANDARDS-SETTING APPROACH

AN AI-FOR-HEALTH USE-CASE

**DR. BENJAMIN MUTHAMBI**

[WWW.LINKEDIN.COM/IN/BMUTHAMBI](http://WWW.LINKEDIN.COM/IN/BMUTHAMBI)

SNR SCHOLAR-IN-RESIDENCE/MANAGING DIRECTOR

IEPH/INSTITUTES OF EPIDEMIOLOGY & PUBLIC HEALTH

IN PARTNERSHIP WITH WATIF HEALTH

*Diabetes Care Africa*<sup>TM</sup>

**wat if ?**  
HEALTH PORTAL



# OBJECTIVES/PROBLEM TO BE ADDRESSED IN SUBTOPICS #1 & #2

## Evaluating Accuracy of AI in CVD risk Prediction

- Risk Scoring Calculators (Gold standard) **vs.**
- AI Risk Estimation

Subtopic  
#1a

risk of death, <1% at 10 years.

**Low risk**, <10%

**Intermediate risk**, 10-20%

**Moderately high risk**, 15-20%

**High risk**, >20%

## Evaluating Accuracy of AI in Coronary CT Scan Image Interpretation

- Radiologist's Image Interpretation (Gold standard) **vs.**
- AI Image Interpretation

Subtopic  
#2a

## Interpretation of CAC

CAC = 0.

CAC = 1-100.

CAC = 101-400.

CAC = 101-400 & >75th centile.

CAC > 400.

Subtopic  
#1b/#2b

# TENTATIVE PROJECT MILESTONES

- **Subtopic #1:** Revised Use Case Proposal Presented & Accepted – January 2019 (Lausanne)
- 1st Draft – General Call for Participation Presented – March 2019 (Shanghai)
- Current Version – General Call for Participants Submitted/Issued – May/June 2019 (Geneva)
- **Subtopic #2:** Use Case Proposal Presented & Accepted; ~10 technical participants recruited – Sept. 2019 (Zanzibar)
- Draft – Subtopic #1 Topic Description Document (TDD) Submitted; ~1 training & 8 replication study datasets id'd – November 2019 (New Delhi)
- Draft - Subtopic #2 Topic Description Document (TDD) Sections Due – December 2019
- **Reconciliation of Subtopics #1 & #2 – ?viability of 1 TDD?** & Call for Technical Participants–January 2020 (Brasilia)
- Topic/Subtopics TDD Finalization - Implementation Version – February 2020
- Study Approvals, Data Acquisition & Preparation: IRB Application & Approvals; Acquisition of Data & Documentation; Optimization & Selection of Predictors & End-Point Data; Data Management including Recoding and Labeling (Implementation Time Frame TBD - ?Months #1 – 4?)
- Analyses: R programming for exploratory/Preliminary Analyses using data in hand (Months 3 - 5); Algorithm Training Final Analyses (Implementation Time Frame TBD - ?Months #5 – 8?);
- Reporting: Summarizing of Result/Findings; Literature Review for Discussion of Findings; Report/Manuscript Writing; Internal & External Peer Review, & Publication of Findings (Implementation Time Frame TBD - ?Months #8 – 10 => December 2020?).