# Presentation title

Assessing cardiovascular risk by integrating retinal photography and artificial intelligence

**Explain why your paper is relevant, important and of interest to GP22 participants** Cardiovascular disease (CVD) risk assessment is critical in the prevention of major adverse CVD events. We recently developed an artificial intelligence (AI) system that can predict CVD risk using a retinal photo as the only input. Compared with currently available techniques requiring information on multiple health-related factors, this AI system holds the potential to become a routine point-of-care service in primary healthcare settings given its ease and simplicity.

# Take home message

* We developed an AI system that enables CVD risk prediction with a single retinal photo.
* The AI algorithm demonstrated high accuracy.
* The pragmatic trial will assess accuracy, feasibility and acceptability of this AI system as a point- of-care testing

# Background

Accurately predicting CVD risk is fundamental in targeting preventative strategies for high-risk persons. The retina enables non-invasive visualization of systemic microvasculature. We developed an AI- algorithm to predict CVD risk with a retinal photo as the only input.

# Aim / Hypothesis

To evaluate the impact, accuracy and acceptability of the AI system in primary healthcare settings.

# Method

A total of 300+ participants ≥45 years without a CVD history will be recruited at 3 GP sites. A retina- predicted CVD risk score (rpCVD) will be provided automatedly by the AI system by taking a retinal photo. A WHO CVD risk score will be calculated based on relevant health information. Participants will complete a survey on their satisfaction of the AI system.

# Results

In our previous study, the AI algorithm achieved a mean absolute error of 2.47 in prediction of WHO CVD risk score. The predictive accuracy in prediction of 10-year CVD events achieved a C-index (standard deviation) of 0.727 (0.010).

# Discussion

The pragmatic trial will be conducted to provide novel evidence for adopting this AI system in real-world settings.

# Conclusion

We developed an AI algorithm to predict CVD risk with a retinal photo as the only input and will assess its performance as a point-of-care testing in the pragmatic trial.