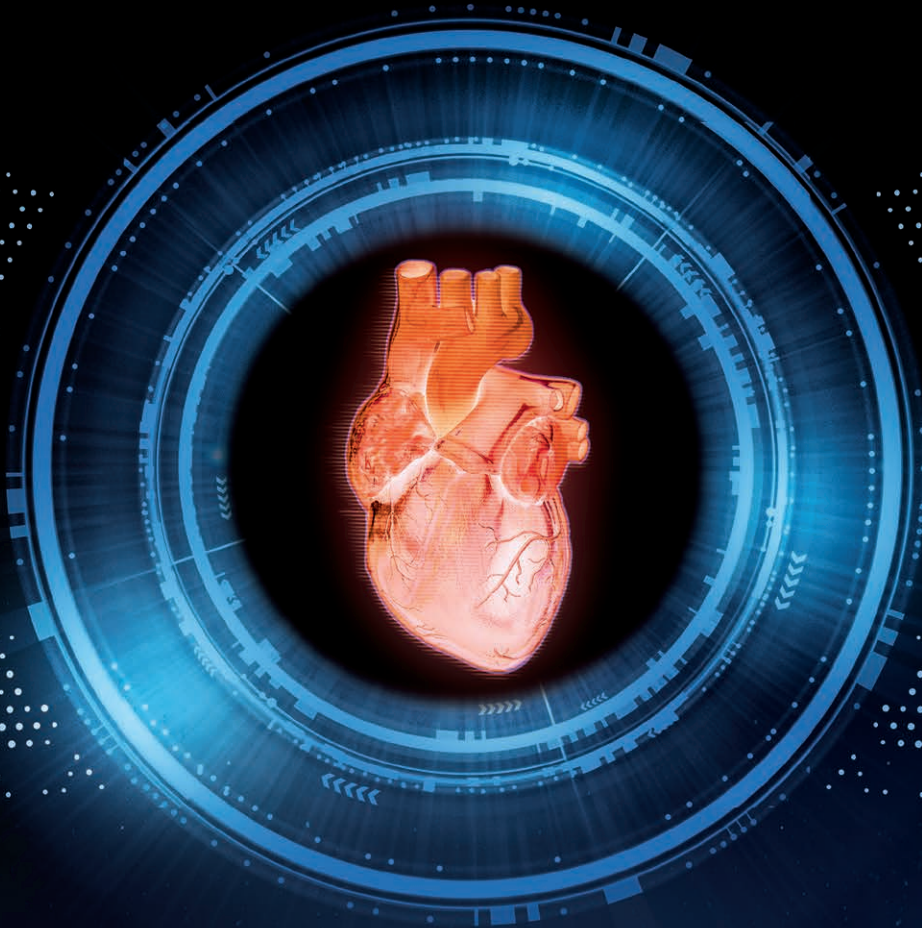


Cardiovascular disease management

Start with Reti-CVD

A new, innovative and novel perspective on
assessing cardiovascular risk



Reti-CVD is an artificial intelligence(AI)-empowered software for the cardiovascular risk assessment, which verifies the structure and vessels of the retina through a simple eye examination to predict the risk of developing cardiovascular disease.



Relatively low cost and high accuracy lead to an increased participation rate in testing.

Efficiency Optimization

Multiple studies have demonstrated the association between retinal vascular damage and subtle changes and the risk of cardiovascular disease.¹⁻⁶

The American Heart Association/American College of Cardiology (AHA/ACC) recommends the coronary artery calcium (CAC) score for evaluating cardiovascular disease risk and making treatment decisions in the intermediate-risk group.⁷

2019 ACC/AHA guideline on the primary prevention of cardiovascular disease⁷

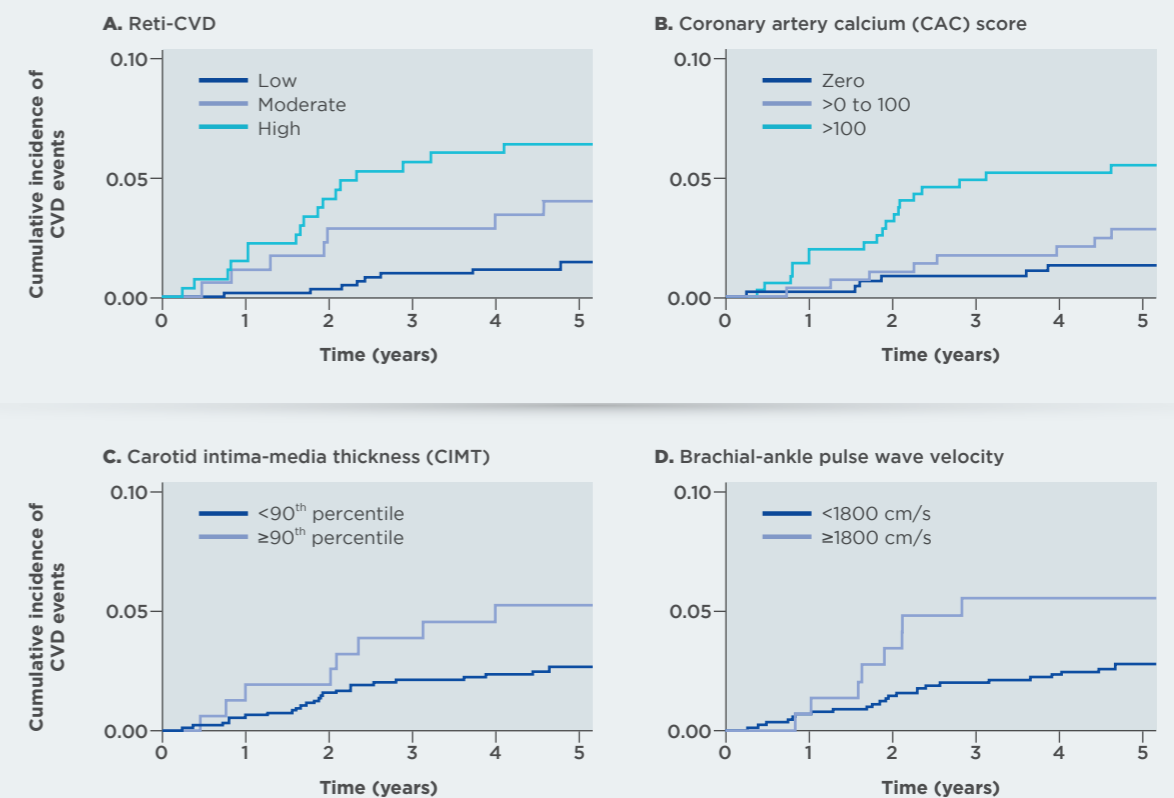
CAC (Agatston unit)	Treatment decision	Note
0	Consider no statin	Unless diabetes, family history of premature CHD, or cigarette smoking are present
1-99	Favor statin	Especially after age 55
>100	Initiate statin therapy	

ACC, American College of Cardiology; AHA, American Heart Association; CAC, coronary artery calcium; CHD, coronary heart disease.

References 1. Wong et al, N Engl J Med. 2004;351(22):2310-7. 2. Kawasaki et al, Stroke. 2012;43(12):3245-51. 3. McGeechan et al, Am J Cardiol. 2008;102(1):58-63. 4. Wong et al, Lancet. 2001;358(9288):1134-40. 5. Witt et al, Hypertension. 2006;47(5):975-81. 6. Wong et al, Surv Ophthalmol. 2001;46(1):59-80. 7. Arnett DK, et al, Circulation. 2019;140(11):e596-646.

Reti-CVD predicts the incidence of cardiovascular disease similarly to the coronary artery calcium (CAC) score measured by cardiac CT.^{1,2} Furthermore, it has shown superior performance in predicting the incidence of cardiovascular disease compared to the carotid intima-media thickness or the brachial-ankle pulse wave velocity (baPWV).^{1,2}

Cumulative incidence of cardiovascular events in the CMERC-HI cohort²



- The performance of Reti-CVD risk assessment was evaluated in the "Cardiovascular and Metabolic Disease Etiology Research Center-High Risk (CMERC-HI) Study: A Prospective Cohort Study" which was funded by national research funds.
- A total of 1,106 patients were followed prospectively for 5 years. During the study, retinal imaging (A), cardiac computed tomography (CT)-based coronary artery calcium (CAC) score (B), carotid ultrasound (C), and brachial-ankle pulse wave velocity (baPWV) were measured to evaluate cardiovascular risk at the time of recruitment.
- The 5-year follow-up revealed that the risk stratification performance of Reti-CVD based on retinal imaging was similar to the CAC score based on cardiac CT, and superior to carotid ultrasound-based carotid intima-media thickness or baPWV.
- Cardiovascular disease occurred in 17 out of 277 high-risk patients on Reti-CVD, and cardiovascular disease occurred in 19 out of 352 high-risk patients with a CAC score exceeding 100. The 10-year incidence rate was 13.3% for the high-risk group identified by Reti-CVD and 11.6% for the high-risk group with a CAC score above 100. These findings suggest that Reti-CVD appears to be a promising tool for accurately assessing CVD risk.

References 1. Rim et al, The Lancet Digit Health. 2021;3(5):e306-16. 2. Pivotal trial of a deep-learning-based retinal biomarker (Reti-CVD) in the prediction of cardiovascular disease: data from CMERC-HI. 2022.



A fast and convenient testing method reduces the burden on clinics and patients.

Stable operation

Reti-CVD enables **quick and easy** prediction of the risk of cardiocerebrovascular disease.



“ With Reti-CVD, the entire process of predicting cardiocerebrovascular risk can be completed **in just 3 minutes.** ”

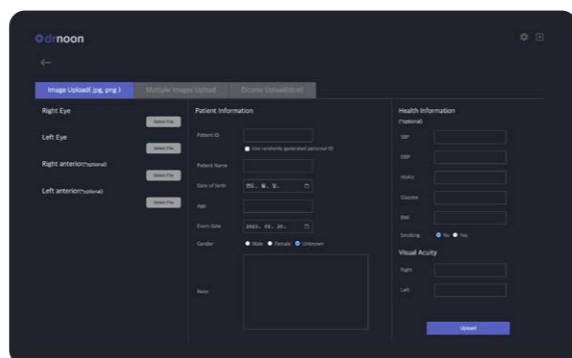
STEP 01
Take retinal photographs

- Capture retinal photographs using a retinal camera



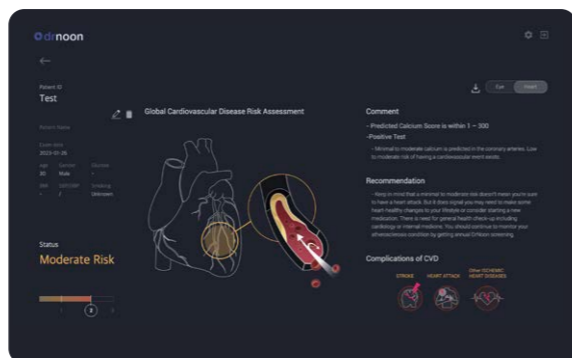
STEP 02
Upload image and use AI analysis

- Input patient information
- Upload retinal images
- AI analysis

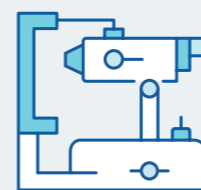


STEP 03
Generate test results and provide the reports

- Risk assessment for cardiovascular events
- Provide test result and report to the patients



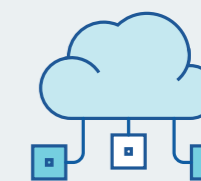
Reti-CVD is **user-friendly** for installation and operation, **reducing the burden on clinics and patients.**



Easy installation on the available retinal camera



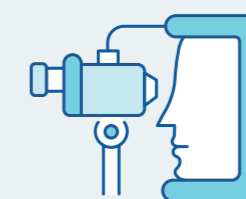
Easy integration with the current workflow (API call / PACS)



A cloud-based system that does not require any additional program installation



Rapid results within 3 minutes



A non-invasive test reducing the burden of the examination (procedure, cost, and risk of radiation exposure, etc)



Easy to capture images by nurses or optometrists without requiring a specialist

API, application programming interface; PACS, picture archiving communication system.

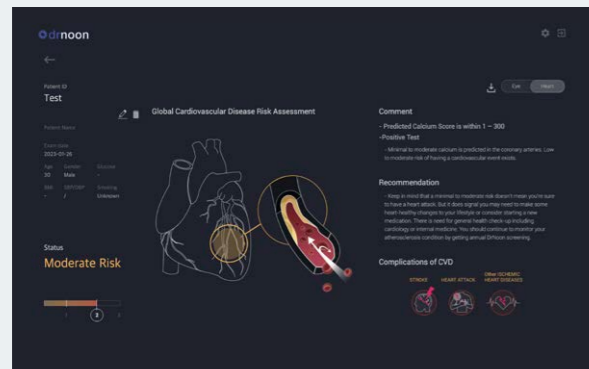


Reti-CVD provides objective AI analysis reports and additional guidance tailored to individual patient conditions.

Strengthen professional

Reti-CVD provides professional and objective data for effective and efficient patient consultation.

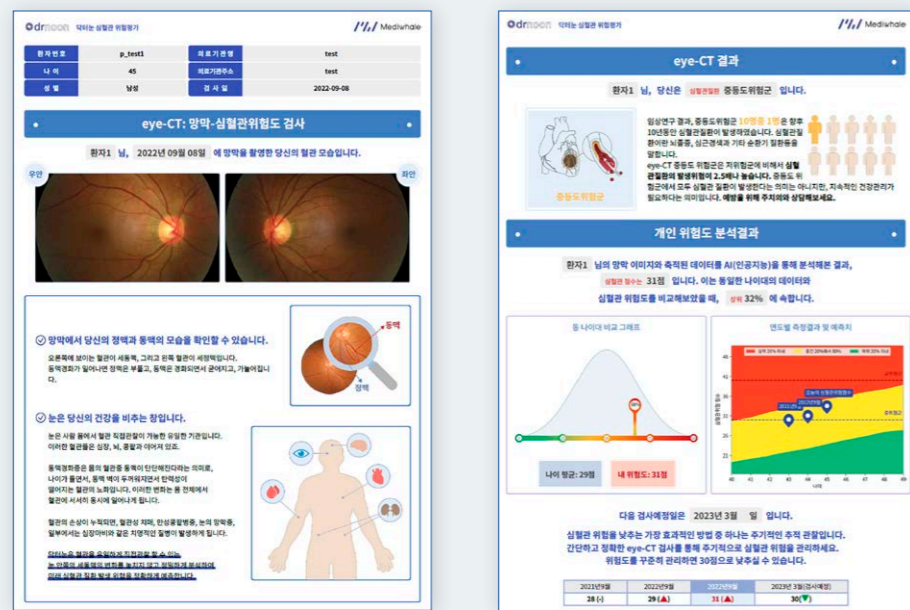
Reti-CVD test result page for medical professionals



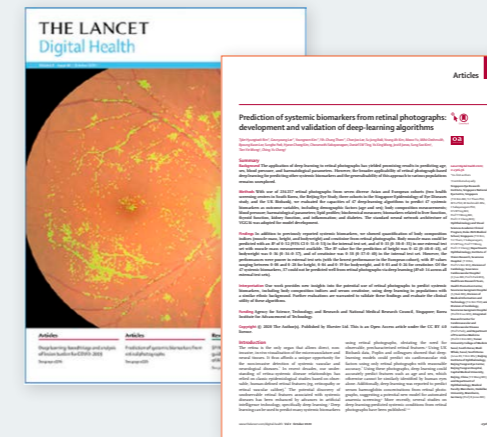
The AI analysis results classify patients into 3 risk groups (low, moderate, and high risk) and provide corresponding recommendations for the risk of cardiovascular events and CAC score.

Reti-CVD test report for patients

The report provides an explanation of the Reti-CVD test and its working principle, as well as a risk assessment and a quantified risk score for cardiovascular disease based on AI analysis.



Reti-CVD's performance has been validated through several studies and published in prestigious medical journals.¹⁻⁷



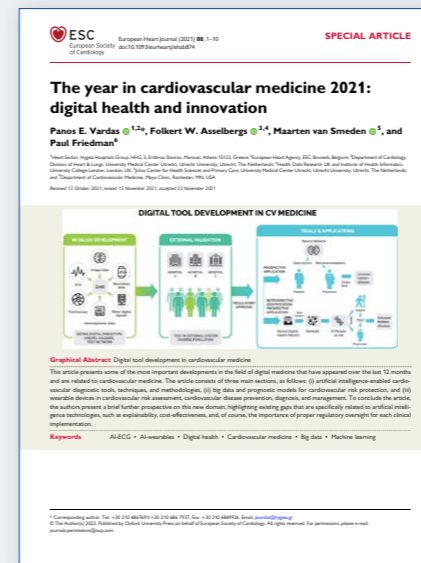
The Lancet Digital Health (IF 36.6)

Predicting systemic biomarkers through AI analysis of retinal photos.



The Lancet Digital Health (IF 36.6)

AI analysis of retinal photos yields similar results to cardiac CT in predicting incident cardiovascular diseases.



- In a review article published in the European Heart Journal, Prof. Vardas, former president of the European Society of Cardiology, suggests that emerging medical innovations have the potential to enable early detection of hidden cardiovascular risks.
- The review article emphasizes Reti-CVD as an innovative medical technology for detecting hidden cardiovascular diseases, alongside other cutting-edge cardiology examination methods like smartwatches and AI-driven ECG analysis.

European Heart Journal (IF 35.9)

Reti-CVD was introduced as one of the significant innovative technologies in cardiovascular medicine in 2021

References 1. Rim et al, Lancet Digit Health. 2020;2(10):e526-36. 2. Rim et al, Lancet Digit Health. 2021;3(5):e306-16. 3. Vardas et al, Eur Heart J. 2022;43(4):271-9. 4. Tseng et al, BMC Med. 2023;21:28. 5. Kang et al, Circulation. 2022;146:A11334. 6. Rim et al, Circulation. 2022;146:A11822. 7. Tseng et al, Circulation. 2022;146:A10113.

Summary

Reti-CVD



Reti-CVD have demonstrated **comparable performance to coronary artery calcium (CAC) scores measured by cardiac CT and a superior performance to carotid intima-media thickness measured by carotid ultrasound** in predicting the risk cardiovascular disease.¹⁻³



Reti-CVD enables **quick and easy prediction of the risk of cardiocerebrovascular disease.**



Reti-CVD is **easy to install and use with no risk of radiation exposure, and reduces the burden on both medical professionals and patients.**



Reti-CVD **provides professional and objective data for effective and efficient patient consultation.**



Reti-CVD's performance has been validated in multiple studies **published in prestigious medical journals.**³⁻⁹

References 1. Prescribing information of Reti-CVD. Ministry of Food and Drug Safety. 2. Pivotal trial of a deep-learning-based retinal biomarker (Reti-CVD) in the prediction of cardiovascular disease: data from CMERC-HI. 2022. 3. Rim et al., Lancet Digit Health. 2021;3(5):e306-16. 4. Rim et al., Lancet Digit Health. 2020;2(10):e526-36. 5. Vardas et al., Eur Heart J. 2022;43(4):271-9. 6. Tseng et al., BMC Med. 2023;21:28. 7. Kang et al., Circulation. 2022;146:A11334. 8. Rim et al., Circulation. 2022;146:A11822. 9. Tseng et al., Circulation. 2022;146:A10113.