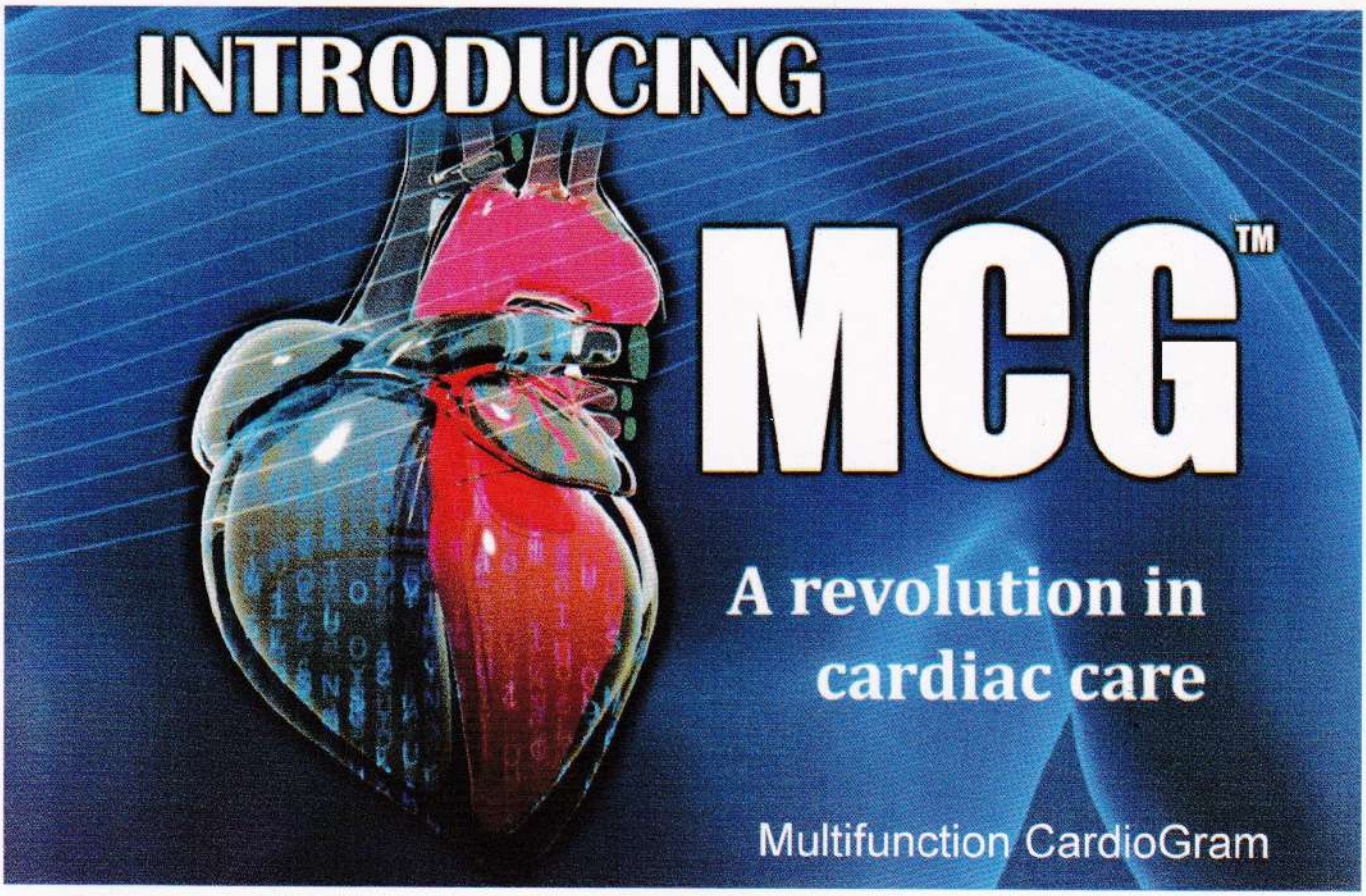


The MCG system is a non-invasive testing tool designed to assist physicians to detect heart diseases, including Coronary Artery Disease (CAD) Ischemia.

- ✔US FDA 510K approved, Insurance code(CPT Code) obtained
- ✔Matching with the 40,000 people's clinical data in frequency level
- ✔Remote diagnosis, full automated objective analysis
- ✔Non-invasive 10 minutes
- ✔Show the severity result with 0 to 22 scores

PREMIER
HEART

www.premierheart.jp/en

Evaluated by many research and papers

In many counties, MCG is evaluated as "useful for screening with non-invasive and high accuracy." Research and papers are published not only in Asia, but also in the USA and Europe.

BMJ

British Medical Journal(*1)

American Heart Association. Learn and Live.

Circulation(*2)

ACC (*3)

ESC European Society of Cardiology

ESC (*4)

CCI (*5)

TCTAP(*6)

(*1) Amano T, Shinoda N, Kunimura A, et al. Open Heart 2014;1:e000144. doi:10.1136/openhrt-2014-000144
(*2) Grube E, Bootsveld A, et al. Circulation. 2007;116:II_367
(*3) Strobeck J, Mangieri A," Paired-comparison of the resting multifunction cardiogram (MCG) with stress sestamibi SPECT myocardial perfusion imaging in the detection of relevant coronary stenosis (>70%)' ACC,11 60th Annual Scientific Session, 2007
(*4) Canali G, et al. "Non Invasive assessment of relevant coronary occlusion through mathematical analysis of spectral ECG Components (MCG) with comparison with coronary angiography in Symptomatic Patients' ESC Congress 2012
(*5) Masahiro Takeshita, Norihiro Shinoda, et al. Catheterization and Cardiovascular Interventions DOI 10.1002/ccd.25924
(*6) Kadotani M, et al. "Comparison of a two-Lead, computerized, resting ECG signal analysis device, the Multifunction-CardioGram (MCG), to coronary angiography or MDCT, SPECT for the detection of relevant coronary artery stenosis" TCTAP 2015, South Korea

MCG comparison with other modalities

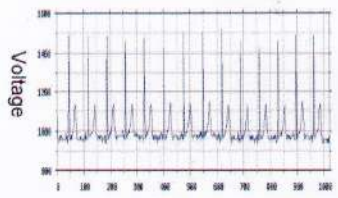
When compared to other non-invasive or invasive diagnostic modalities MCG is accurate and reliable, surpassing many established technics in both sensitivity and specificity.

Modality	Premier Heart MCG	Angiogram	EST[2] EKG	EST[2] Echo	EST[2] Nuclear	12-lead Resting EKG	Troponin	MRI Angiogram[3]	CT Angiogram[3]
Measures	Myocardial Systems Expression[5]	Coronary Anatomy	Physical Stress Induced EKG Changes	Physical Stress Induced Echo Changes	K+ Channel Effect from Physical Stress	2D Vectorized Time-Domain ECG Signal	Heart Muscle Enzymes	Coronary Anatomy	Coronary Anatomy
Sensitivity 40-50%[1] (Partial Occlusion)	80 to 90%	*Gold Standard*	-NA-	-NA-	-NA-	-NA-	-NA-	-NA-	-NA-
Sensitivity 50-70%[1] (Partial Occlusion)	90 to 95%	*Gold Standard*	-NA-	-NA-	-NA-	20% (CAD)	-NA-	74%	82 to 92%
Sensitivity >70%[1] (Stenosis)	95 to 100%	*Gold Standard*	45%	31 to 90%	44 to 91%	20% CAD 52% MI	-NA-	54%	82%
Specificity	80+ to 90%	*Gold Standard*	85%	46 to 100%	81 to 90%	97% CAD 9% MI	-NA-	75%	75%
Time Required	5 Minute Test 1-5 Minute Report[4]	Long prep and testing time	30-40 Minutes	30-40 Minutes Technically Demanding	~6 Hours	Minimal Lag Time	~6 Hours	A few minutes	A few minutes
Quantitative & Objective	Yes	No	No	No	No	No	Yes	Yes	Yes

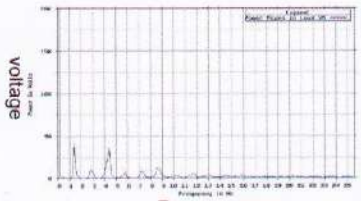
Information (except MCG data) from: Cleveland Clinic Intensive Cardiology Review Course, 2001.MCG Data from: Premier Heart Clinical Trials.
1 – Percentage of luminal encroachment by atherosclerotic plaque 2 – EST indicates Exercise Stress Testing 3 – Ann. Intern. Med. 2006; 145:407-415
4 – Dependent on internet connection speed 5 – Quantifies stress/strain between the myocardium and blood flow

The 166 differences in frequency level Not visible in ordinal ECG

<ECG graph>



<MCG graph>

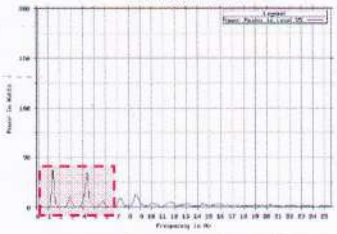


For ordinal ECG, Doctors need to read shape of ECG waveform manually.

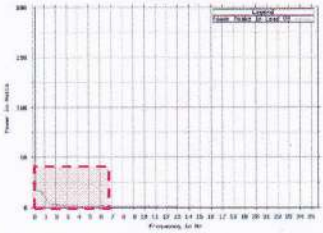
In contrast, MCG automatically analyzes the 166 differences in frequency level which can not be read in ordinal ECG.

In frequency level, differences can be recognized between the healthy person and the patient.

Healthy person



Patient of severe stenosis



MCG has such differences as 166 indices, which compose the algorism of analysis.

(An example of difference on index in Auto Power Spectrum)

Severity is shown by MCG score Monitor the progress of disease

Development of Arteriosclerosis

(image)

■ MCG Score

0 2 4 8～

A B C D

Normal caution Severe

ACS Zone

■ Risk Factor

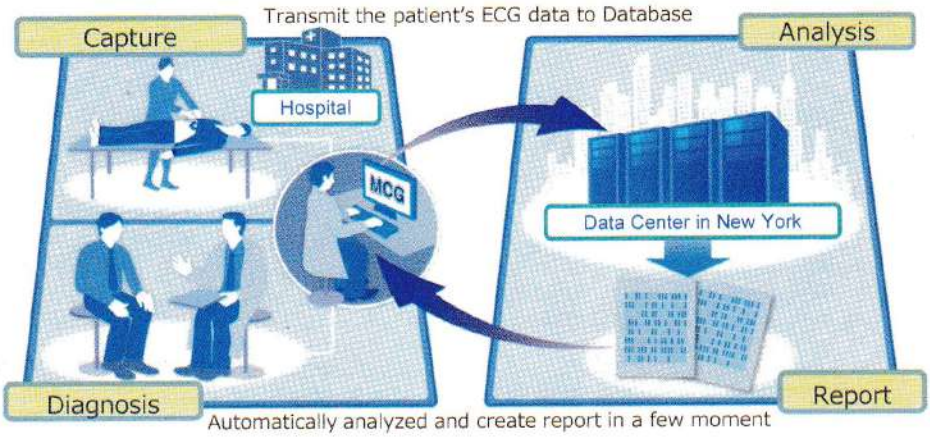
Diet/Obesity
Lack of exercise
Age/Smoking

■ How to improve

Cure with stent and bypass surgery

Change in lifestyle, diet, exercise, supplement drug etc.

Remote diagnosis referring to clinical database



MCG test is very simple.
(1)Capture ECG data like ordinal ECG for 5-10 minutes.
(2)Send the data to the data center via internet.
(3)Data is analyzed automatically, and receive a report.

Usefulness in various diagnostic scene

✓For Primary Care

To assist in the early detection of coronary ischemia due to CAD

✓For GP Doctors

In patients who have a history of CAD, to monitor the progress of the disease

✓For Cardiologist

In patients who have had cardiac intervention (medical or surgical) to determine the effectiveness of the intervention and monitor for returning disease.

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