

PRESS RELEASE

Posterior and Right Ventricular Myocardial Infarction Detection – CardioSecur® Shines a Light on the Dark Side of the Moon

Up to 57 % STEMI cases are not visible on a 12-lead-ECG. This is why the European Society of Cardiology and the American Heart Association (AHA) recommend recording additional leads to detect posterior and inferior infarcts. CardioSecur with 22-leads and 4 electrodes is currently the only ECG that implements these guidelines without reattaching electrodes.

Frankfurt, February 2019. When a myocardial infarction is suspected, but the 12-lead ECG is inconclusive, the **guidelines of the European Society of Cardiology** recommend the **recording of additional leads (V7-V9, VR3-VR4).**ⁱ ⁱⁱ This recommendation is shared by the American Heart Association (AHA), which already advocated for expanded lead systems in 2009. The American Heart Association also called for ECG machines that are “programmed to suggest the recording of right-sided chest leads V3R and V4R when ST elevation is greater than 0.1 mV occurs in leads II, III, and aVF.”ⁱⁱⁱ Moreover, they also called for “ECG manufacturers [...] to develop software capable of displaying the spatial orientation of the ST-segment in both the frontal and transverse planes” and to provide “algorithms [that] should refer to the occluded vessel and to the site of the occlusions within that vessel.”^{iv}

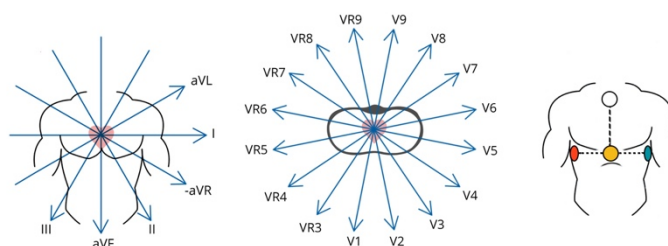
The reasons for this are due to the fact that **the diagnosis of posterior myocardial infarctions** is still considered to be the “**dark side of the moon**” of ECG interpretation.^v Almost half of all posterior myocardial infarction cases are not detected by conventional 12-lead ECGs. If lateral leads (12 +V7-V9) are applied, then the accuracy of the diagnosis increases significantly.^{vi} Studies have found that **up to 57 % of STEMI cases** could be detected with **the use of additional leads.**^{vii}

CardioSecur is the only ECG that implements the guidelines of the European Society of Cardiology and the recommendations of the AHA into practice, without the need to reattach electrodes. CardioSecur offers physicians a **360° view of the heart** with a **22-lead clinical-quality ECG (12-leads + V7-V9, VR3-VR9)** that uses only four electrodes. It gives medical professionals the opportunity to explore new diagnostic dimensions and detect anterior, lateral, inferior and posterior wall infarctions in one measurement. Which in turn allows for immediate reperfusion therapy and reduces morbidity and mortality.^{viii} The significant advantage of CardioSecur in detecting posterior myocardial infarctions compared to conventional 12-lead ECG systems has been proven again in a **recent clinical trial** in which it was used in **ambulances.**^{ix} With CardioSecur physicians are finally able to explore the dark side of the moon.

Additional information at www.mobile-ecg.com



CardioSecur Pro in use by medical professionals.
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360° view of the heart through the CardioSecur 22-lead ECG. ©CardioSecur

Personal MedSystems GmbH develops and sells ECG systems and services for private users and healthcare professionals under the name CardioSecur. **CardioSecur Active** is an innovative, 15-lead, clinical-grade ECG for personal use. In a few seconds, it generates personalized feedback regarding changes in the heart's health and provides a simple recommendation to act regarding whether to see a doctor or not. The entire system consists of a 50g light cable with four electrodes, the complimentary CardioSecur Active App and the user's smartphone or tablet. **CardioSecur Pro** is the mobile, clinical ECG solution for physicians and medical professionals. CardioSecur Pro operates based upon guidelines from the European Society of Cardiology by providing 22 leads, making a 360° view of the heart possible. It is the only system that thereby recognizes infarctions of the anterior, lateral and posterior walls of the heart.

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ⁱ Ibanez B, James S, Agewall S, et al. 2017 ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation: The Task Force for the management of acute myocardial infarction in patients presenting with ST-segment elevation of the European Society of Cardiology (ESC), *European Heart Journal*, Volume 39, Issue 2, 7 January 2018, Pages 119-177, <https://doi.org/10.1093/eurheartj/ehx393>

ⁱⁱ Roffi M, Patrono C, Collet J, et al. 2015 ESC Guidelines for the management of acute coronary syndromes in patients presenting without persistent ST-segment elevation: Task Force for the Management of Acute Coronary Syndromes in Patients Presenting without Persistent ST-Segment Elevation of the European Society of Cardiology (ESC), *European Heart Journal*, Volume 37, Issue 3, 14 January 2016, Pages 267-315, <https://doi.org/10.1093/eurheartj/ehv320>

ⁱⁱⁱ Wagner G, Macfarlane P, et al. 2009 AHA/ACCF/HRS Recommendations for the Standardization and Interpretation of the Electrocardiogram Part VI: Acute Ischemia/Infarction A Scientific Statement From the American Heart Association Electrocardiography and Arrhythmias Committee, Council on Clinical Cardiology; the American College of Cardiology Foundation; and the Heart Rhythm Society Endorsed by the International Society for Computerized Electrocardiology, *Journal of the American College of Cardiology*, Volume 53, Issue 11, March 2009, Pages 1003-1011, <http://www.onlinejacc.org/content/53/11/1003>

^{iv} ibid

^v van Gorselen, E O F, et al. "Posterior myocardial infarction: the dark side of the moon", *Netherlands Heart Journal*, Volume 15, Issue 1, 2007, Pages 16-21, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1847720>.

^{vi} Din I, Adil M, et al. Accuracy of 12 lead ECG for diagnosis of posterior myocardial infarction, *JPMI*, Volume 28, Issue 2, 2014, Pages 145-148. <http://www.jpmi.org.pk/index.php/jpmi/article/view/1561>.

^{vii} Nagam MR, Vinson DR, et al. ECG Diagnosis: Right Ventricular Myocardial Infarction. *Perm J*, Volume 21, 2016, Pages 16-105, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5267627>.

^{viii} Khan JN, Chauhan A, et al. Posterior myocardial infarction: are we failing to diagnose this?, *Emerg Med J*, Volume 29, 2012, Pages 15-18. <https://emj.bmj.com/content/29/1/15>.

^{ix} Kern H, Stiepak J, et al. First real-world experience with CardioSecur® in the preclinical setting – When times does matter, *Resuscitation*, Volume 118, Page 91, 2017, [https://www.resuscitationjournal.com/article/S0300-9572\(17\)30351-9](https://www.resuscitationjournal.com/article/S0300-9572(17)30351-9).

ECG Report

Recording	Recording date	2019-02-26, 16:34:42
	Duration	15 Seconds

Patient	Name	John Doe
	Date of birth	18.02.54
	Gender	male

Doctor	Name	Dr. Cardio Secur
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Summary	<input type="checkbox"/> No summary provided
	<input checked="" type="checkbox"/> No ECG changes
	<input type="checkbox"/> Minor ECG irregularities
	<input type="checkbox"/> Major ECG irregularities

Rhythm	<input type="checkbox"/> No diagnosis	<input checked="" type="checkbox"/> Sinus	<input type="checkbox"/> Other
QRS complex	<input type="checkbox"/> No diagnosis	<input checked="" type="checkbox"/> Normal	<input type="checkbox"/> Abnormal
Repolarisation	<input type="checkbox"/> No diagnosis	<input checked="" type="checkbox"/> Normal	<input type="checkbox"/> Abnormal

Comment	-
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Device	MFI / MM4117 / 2.0 / 1.0.61 / iPad / iOS / 12.1.4 / 2.6.1
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