



# MyoVista<sup>®</sup>

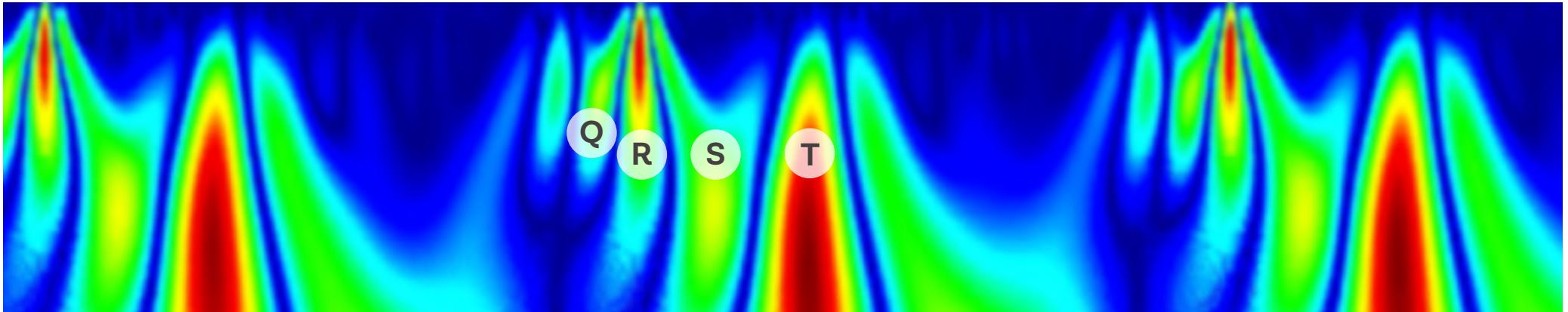


The Power of Wavelet Signal Processing

## Wavelet ECG (wavECG<sup>™</sup>)

Breakthrough Technology for Low-Cost  
Early Detection of Cardiac Dysfunction  
in the Diastolic Phase

# The Power of Wavelet Signal Processing...



MyoVista Energy Waveform

HeartSciences' MyoVista® Wavelet ECG (*wav*ECG™) Cardiac Testing Device is a new resting 12-lead electrocardiograph. It uses continuous wavelet transform (CWT) signal processing to provide new frequency and energy information to detect cardiac relaxation abnormalities associated with Left Ventricular Diastolic Dysfunction (LVDD). Extensive research confirms that almost all forms and co-morbidities of heart disease are associated with LVDD including hypertension, diabetes, valvular disease, ischemia, and reduced systolic function.

In addition to *wav*ECG Information, the MyoVista Device also provides all the information and capabilities of a full-featured conventional resting 12-lead ECG within the same test, at comparable cost, and following the same clinical AHA/IEC lead placement protocol.

The MyoVista *wav*ECG Device is a significant advancement in low-cost ECG testing to provide physicians with new information to assist in risk-assessment for heart disease and in determining whether a patient should receive further testing, evaluation and or treatment.

The MyoVista *wav*ECG Device benefits from more than ten years of research and development by HeartSciences to improve the ability of an ECG to detect structural and ischemic heart disease. The MyoVista *wav*ECG Device has a sensitivity of 74.3% and a specificity of 72.9%\* for the detection of myocardial relaxation abnormalities associated with LVDD.

\*Data on file at HeartSciences

# ...is the Future of Electrocardiography

*“LVDD appears early during any cardiovascular disease and is recognized in approximately 20% to 30% of the general adult population.”<sup>1</sup>*

*“It is remarkable that the serial evaluation of LVDD could be such a powerful predictor of all-cause mortality, not just cardiovascular death...For example, hypertension, diabetes, ischemia, and reduced systolic function are all associated with diastolic dysfunction.”<sup>2</sup>*

## Clinical Value

- Non-invasive
- Assists in early detection of electrical, structural, and ischemic heart disease
- 74.3% sensitivity and 72.9% specificity\* for the detection of relaxation abnormalities associated with LVDD
- MyoVista Ventricular Indices represent repolarization energy information and may assist physicians in the assessment and ongoing management of their patients
- Includes conventional resting 12-lead ECG information and Glasgow Interpretive Analysis Report

## Functional Value

- Intuitive touch screen
- Easy to perform
- Follows conventional AHA/IEC lead placement ECG protocol
- No change to clinical workflow
- Data storage capacity = 50,000+ records
- EMR-EHR capable
- Wi-Fi printer enabled
- PDF file exportable
- High definition 1920 x 1080 display

## Economic Value

- Comparable cost to conventional resting 12-lead ECG
- Includes conventional 12-lead ECG information and Glasgow Interpretive Analysis Report in the same test
- Reimbursable- use of conventional resting 12-lead ECG coding
- Quick: 20/30/60 second test with immediate results
- Eliminates the need for conventional thermal recording chart paper

<sup>1</sup> Partho P. Sengupta, Hemant Kulkarni and Jagat Narula. Prediction of Abnormal Myocardial Relaxation From Signal Processed Surface ECG. Journal of the American College of Cardiology. Apr 2018, 71 (15) 1650-1660; DOI: 10.1016/j.jacc.2018.02.024

<sup>2</sup> Kitzman DW, Little WC. Left ventricle diastolic dysfunction and prognosis. Circulation. 2012;125(6):743-5.

\* Data on file at HeartSciences

# Design | Features | Functions

## Intuitive Touch Screen Interface

The MyoVista *wav*ECG Device has a high definition (1920 x 1080) touch screen that incorporates many easy and intuitive features commonly associated with a tablet device. The MyoVista *wav*ECG Device follows conventional AHA/IEC resting 12-lead placement protocols, thereby minimizing training requirements.

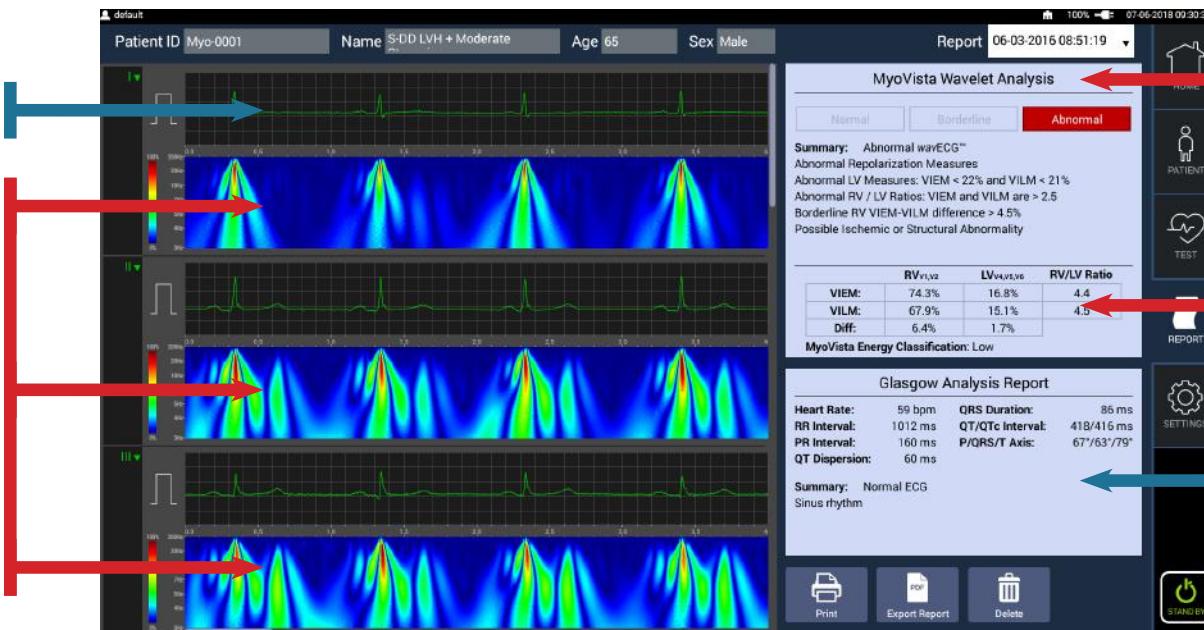
## MyoVista *wav*ECG Information

New Information provides the physician with additional insights into a patient's cardiac health. The analysis and reports are focused on identifying abnormalities related to increased risk for structural and ischemic heart disease to assist in improving clinical pathway decisions.

## Myocardial Frequency and Energy

The MyoVista *wav*ECG Device utilizes continuous wavelet transform (CWT) based signal processing to provide frequency and energy information. Results of the *wav*ECG Analysis provide information related to risk for cardiac relaxation abnormalities associated with LVDD.

## Conventional ECG Trace 12-lead resting ECG



## MyoVista Wavelet Analysis

Statements and indicators related to *wav*ECG Analysis

## MyoVista Ventricular Indices

Numerical display of energy of left and right ventricles

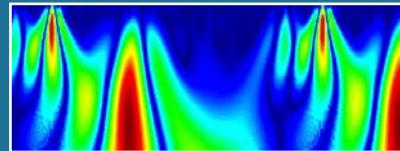
## Glasgow Analysis

Interpretive analysis report of conventional trace

## MyoVista Energy Waveform

Lead by lead display of myocardial energy and frequency information during each heart beat

# MyoVista *wav*ECG Device assists in detecting the presence or absence of Diastolic Dysfunction, an early indicator of heart disease\*.



## MyoVista Energy Waveform

The Energy Waveform graphically displays the energy distribution pattern of the heart's electrical activity during each phase of the cardiac cycle. It is visually aligned with the conventional ECG trace and provided on a lead by lead basis.

	RV <sub>V1,V2</sub>	LV <sub>V4,V5,V6</sub>	RV/LV Ratio
<b>VIEM:</b>	70.6%	22.3%	3.2
<b>VILM:</b>	63.0%	21.8%	2.9
<b>Diff:</b>	7.5%	0.6%	

## MyoVista Ventricular Indices

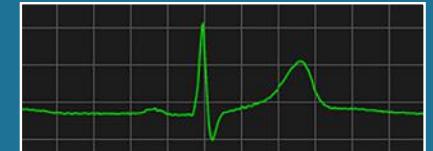
Represent the percentage of energy during repolarization (just prior to and after the T-wave peak) in the leads associated with each ventricle as compared to the peak cardiac energy detected during the test (usually the R peak).

Normal	Borderline	Abnormal

**Summary:** Borderline *wav*ECG™  
Borderline Repolarization Measures  
Abnormal RV / LV Ratios: VIEM and VILM are > 2.5  
Borderline RV VIEM-VILM difference > 4.5%  
Inconclusive Ischemic or Structural Risk Assessment

## MyoVista Wavelet Analysis, Algorithms and Statements

Provide the results of the *wav*ECG Analysis which can be used to assist physicians in the assessment of patients that may need further evaluation for LVDD.



## ECG Trace and Glasgow® Interpretive Analysis

Provides conventional resting 12-lead ECG information as well as software-based interpretation of the conventional ECG waveform using the Glasgow algorithm, regarded as one of the leading ECG analysis algorithms.

\*MyoVista detects relaxation abnormalities associated with LVDD.



HeartSciences is advancing the field of electrocardiography through the use of wavelet signal processing and artificial intelligence to develop next-generation ECG technology to provide valuable new insights and information that focus on the early detection of heart disease. Heart disease kills seventeen million people worldwide each year<sup>1</sup>, more than all cancers combined<sup>2</sup>, and is the costliest disease state in healthcare<sup>3,4</sup>. HeartSciences seeks to bridge today's "diagnostic gap" in cardiac care by providing front line, low-cost, effective solutions that assist in the early detection of heart disease in at-risk patients.

1 2017 WHO Cardiovascular diseases fact sheet

2 Sources: CDC.gov – Heart Disease Facts American Heart Association – 2015 Heart Disease and Stroke Update, compiled by AHA, CDC, NIH and other governmental sources

3 American Heart Association and American Stroke Association. (2017). Cardiovascular Disease: A Costly Burden for America – Projections through 2035. Retrieved from [https://www.heart.org/idc/groups/heart-public/@wcm/@adv/documents/downloadable/ucm\\_491543.pdf](https://www.heart.org/idc/groups/heart-public/@wcm/@adv/documents/downloadable/ucm_491543.pdf).

4 European Heart Network. (2017, Feb.). European Cardiovascular Disease Statistics: 2017 Edition. Retrieved from [http://www.ehnheart.org/cvd\\_statistics.html](http://www.ehnheart.org/cvd_statistics.html)



[www.heartsciences.com](http://www.heartsciences.com)  
[info@heartsciences.com](mailto:info@heartsciences.com)

550 Reserve Street, Suite 360  
Southlake, TX 76092 USA  
Tel: (+1) 682-237-7781  
Fax: (+1) 817-796-2075

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MV-BROCH-001(B)



**Not FDA cleared.**  
**Not available in the United States.**