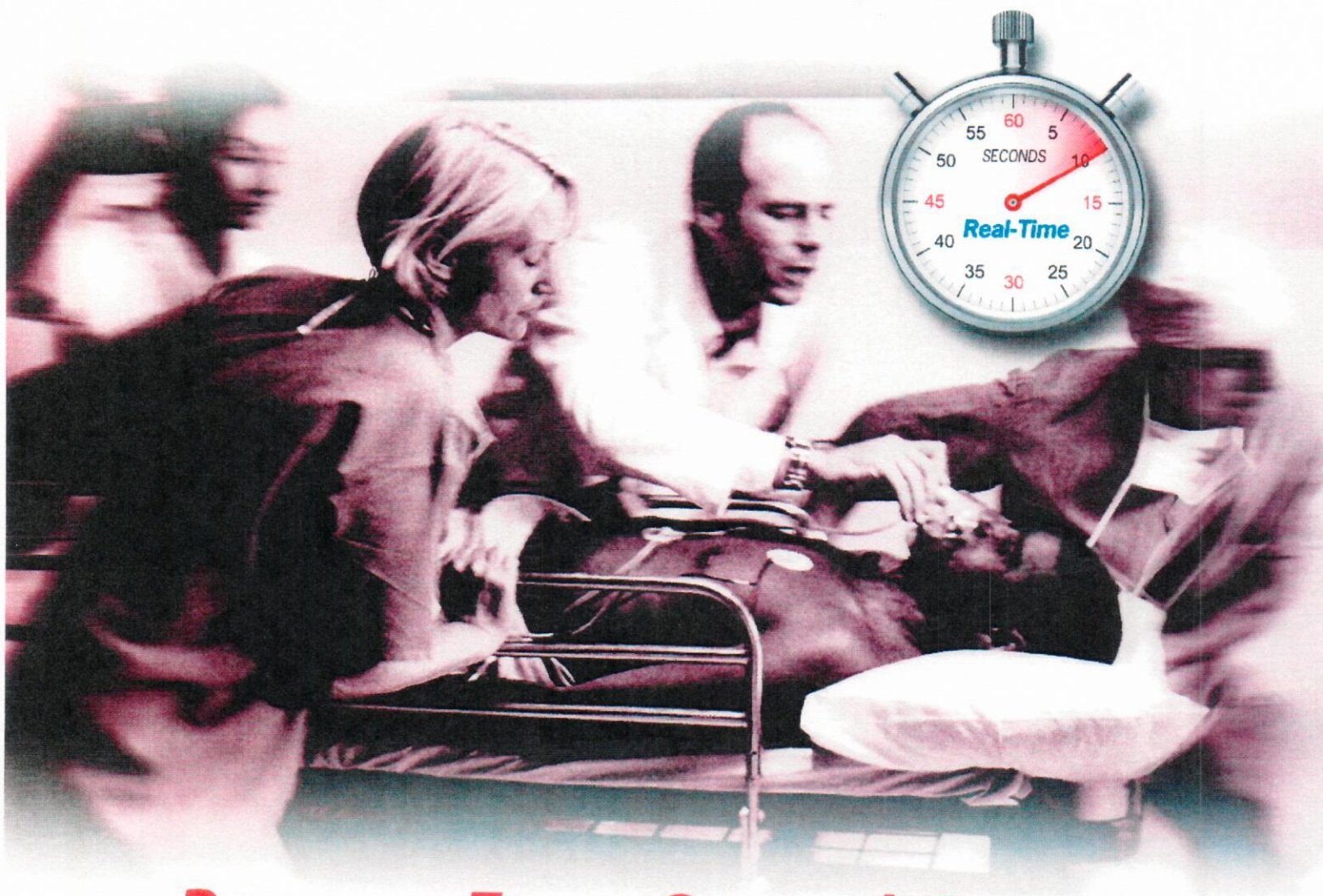


Introducing a New Generation
in Cardiac Monitoring

The **VectraplexECG System**
with VectraplexAMI



Because Every Second Counts

The *only* system with a Cardiac *Electrical* Biomarker for the *real-time* detection of ECG changes suggestive of an acute myocardial infarction (AMI) *plus* the capability to derive a 22-lead ECG

Provides continuous, non-invasive detection of ECG changes suggestive of an AMI

Recipient of the Society of Critical Care Medicine
2011 Annual Scientific Award

VECTRACOR 
Diagnosing Better Care

VectraplexECG System with VectraplexAMI

Cardiovascular disease (CVD) is a problem of staggering proportions. CVD is the #1 killer in the United States and the rest of the world—killing over 17 million people worldwide, and over 811,000 Americans annually.¹⁻³

According to the American Heart Association, in 2009 an estimated 7,453,000 inpatient cardiovascular operations and procedures were performed in the United States, while approximately 82.6 million Americans have one or more forms of CVD, with over 40 million in this group

aged 60 or older.³ A growing “baby boom” population threatens to add increasing time and cost pressure to a healthcare system already challenged.

To assist the physician in diagnosing disease faster, and help make timely intervention possible, VectraCor has developed a technology that, in real-time, detects ECG changes that may be indicative of an AMI, thus potentially saving heart muscle—and lives.

Because Every Second Counts

Compare the typical chest pain/acute coronary syndrome workup with the potential time-saving utilization of the VectraplexECG System:

Current Practice Workup (ER)

1. Attach 10 electrodes to acquire the measured 12-lead ECG (mECG).
2. Attach 3 to 5 additional electrodes to patient to monitor heart rhythm, utilizing an additional device.
3. Draw blood to measure serum cardiac markers.
4. Send blood to lab for detection of serum cardiac markers indicative of an AMI.
5. Wait approximately 1 hour or longer for results when sent to the lab.
6. Repeat every 3 to 6 hours for 24 hours to check for increase in serum cardiac markers indicative of an AMI.



No continuous monitoring of serum markers for AMI detection

versus

New VectraplexECG Standard

1. Attach only 5 electrodes* to patient.
 - Displays VectraplexAMI index and heart rate, and monitors up to **22** derived ECG (dECG) leads within seconds

* The 5 electrodes (V2 and limb electrodes) are a subset of the standard 10-electrode placement.



VectraplexECG

VectraplexECG provides the simplicity of continuous monitoring

Please see back cover for Important Safety Information.

VectraplexECG System

with VectraplexAMI

The Science of AMI, Redefined

Advanced mathematics allow real-time detection of ECG changes that may be indicative of an AMI

While ECG technology has improved considerably since Willem Einthoven recorded the first electrocardiogram in 1903, the voltage-time PQRST graph remains the same. The measured 12-lead ECG is the cornerstone diagnostic test for every CVD patient. The gold standard for detecting AMI includes the 12-lead ECG and drawing blood to measure serum cardiac markers. Along with being invasive, the problem with testing for serum cardiac markers is that blood is typically drawn every 3 to 6 hours and it is not practical to draw blood more often or continuously.

But now, using proprietary mathematical algorithms, the VectraplexECG System with VectraplexAMI revolutionizes the detection of ECG changes suggestive of an AMI. It is the **only** ECG device that provides all of the following benefits:

- Displays a Cardiac Electrical Biomarker (CEB), VectraplexAMI index, for the real-time detection of ECG changes suggestive of an AMI (using only 5 electrodes)
- Derives a total of **22** ECG leads (12-lead ECG, XYZ vectorcardiogram leads and vector loops) from the placement of only 5 electrodes
- Displays **results within seconds** and provides **continuous real-time** status updates automatically
- Does NOT require an additional ECG machine
 - VectraplexECG is a stand-alone ECG machine and cardiac monitor all in one
 - Provides constant ECG monitoring (selectable between 1 to **22** leads)
- Provides 12-lead measured ECG interpretation software (10 electrodes attached to patient)
- Incorporates a patient database
- Report editor feature allows inclusion of additional physician diagnoses
- Capability of e-mailing patient data
- 3-page printout with the appropriate labeling of all leads, thus reducing the risk of mislabeling
- Is non-invasive

The VectraplexECG System

Monitor

Wrist rest

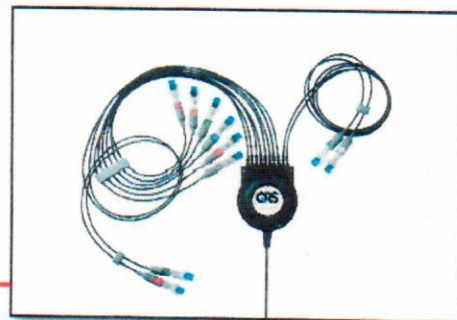
Adjustable stand

Storage basket

Battery pack and holder

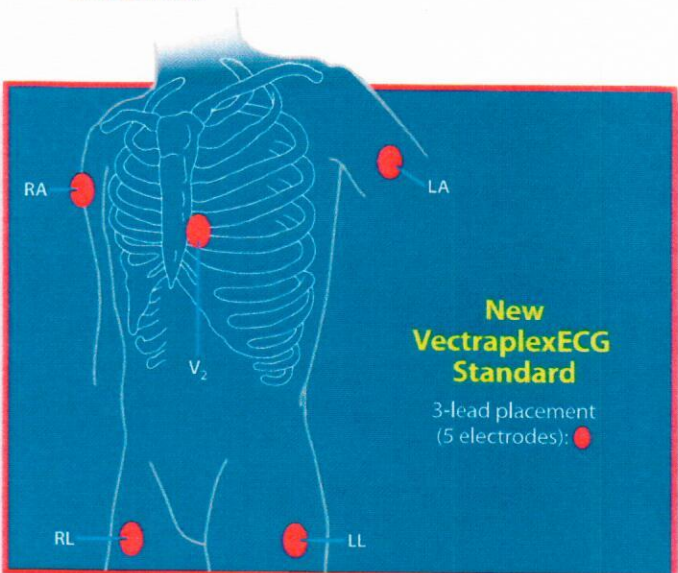
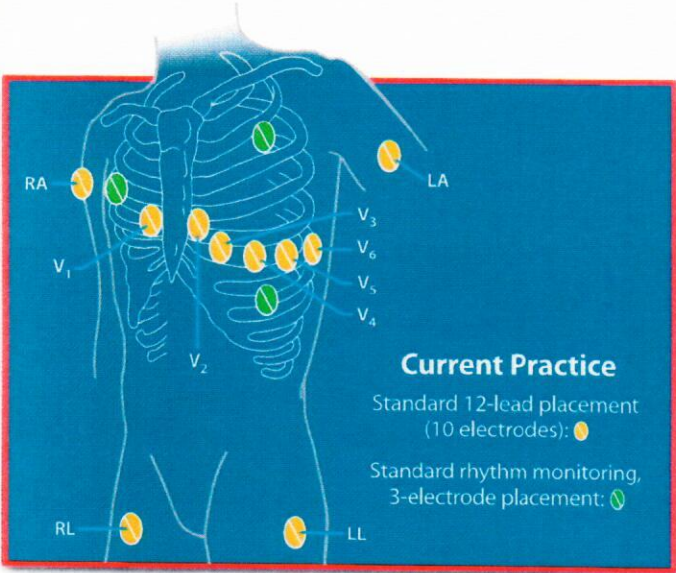
Multi-directional, lockable wheels

12-lead ECG patient cable



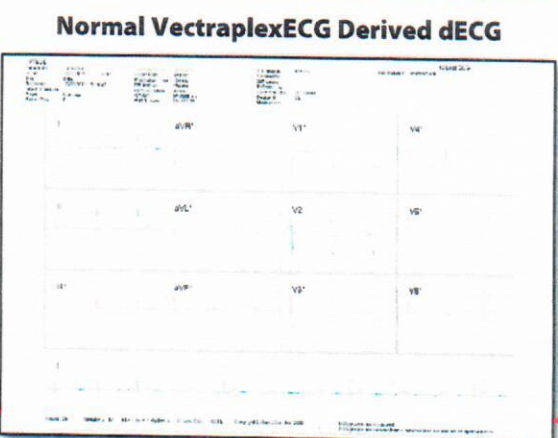
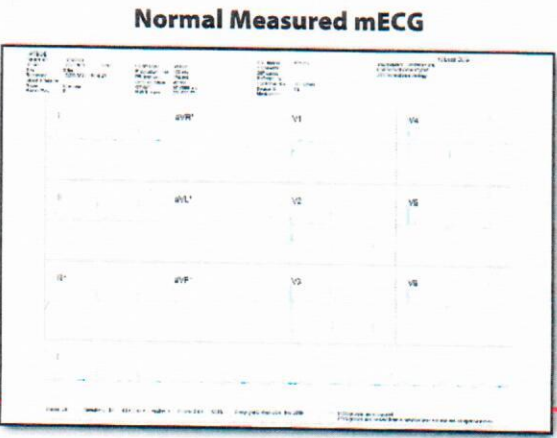
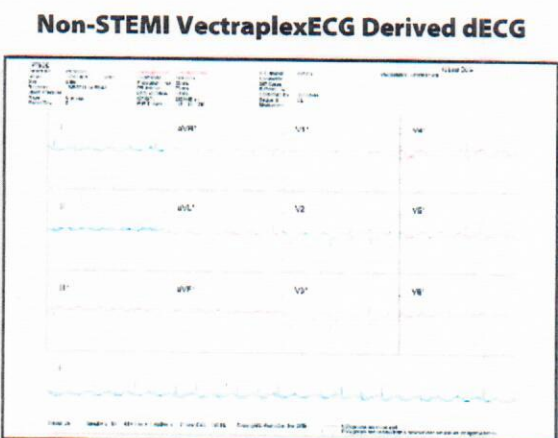
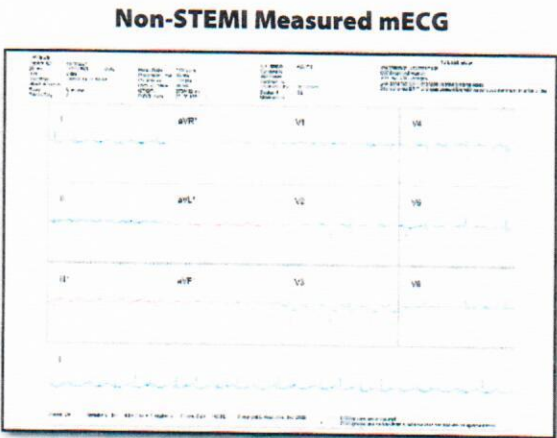
Now get the critical cardiac data you need...using only 5 standard electrodes

- The VectraplexECG System requires **only 5 electrodes** to derive **12 dECG leads**, compared to the standard practice of acquiring a **12-lead mECG** with the placement of approximately 14 electrodes
- **No extra training is required for electrode placement**—the 5 electrodes used are the easiest to place and are a subset of the standard measured 12-lead mECG
- The VectraCor electrode set has the least variability and fewer electrodes, which reduce the possibility of errors in lead placement
 - A 2008 study showed that lead V1 was **incorrectly placed** by 51% of nurses⁴—and by:
 - 69% of physicians (excluding cardiologists)⁴
 - 84% of cardiologists (p<0.001 for inter-group differences)⁴



A standard measured mECG vs. a VectraplexECG derived dECG...
can you tell the difference?

There are **virtually NO** clinically significant differences between mECG vs. dECG.⁵



Real-time, continuous, non-invasive detection of ECG changes that may be indicative of an AMI, along with heart rate and rhythm monitoring, and 22-lead dECG with vector loops—all in 1 device

How VectraplexAMI works: quantifying the cardiac electrical field to detect ECG changes suggestive of an AMI

- Using advanced mathematical modeling, the VectraplexECG System quantifies the dipolar forces in the cardiac electrical field suggestive of an AMI
 - In general, the more multipolar (less dipole) forces in the cardiac electrical field, the greater the potential for an AMI
- VectraplexECG then continuously analyzes these data points resulting in the VectraplexAMI index which is continuously displayed in real-time

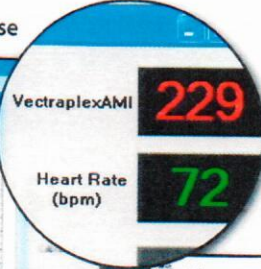
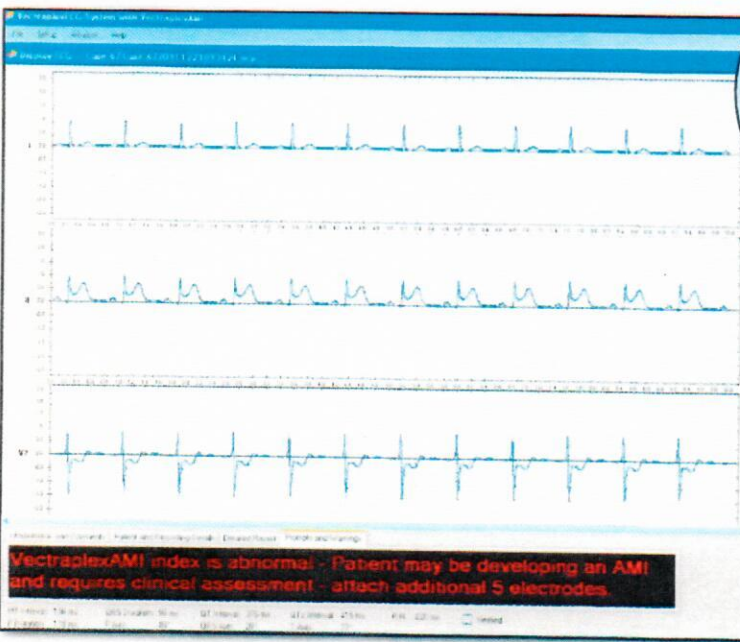
What the VectraplexAMI Number Means:

| | | |
|----------------|-------------------|------------|
| VectraplexAMI: | Less than 66 | Normal |
| Displayed in: | Green | Condition |
| VectraplexAMI: | Between 66 and 94 | Caution |
| Displayed in: | Orange | Zone |
| VectraplexAMI: | Greater than 94 | Abnormal |
| Displayed in: | Red and Blinking | Condition* |
| | Audible Alarm | |

*Patient may be developing an acute myocardial infarction and requires clinical assessment—attach additional 5 electrodes for a 12-lead ECG (using all 10 electrodes).

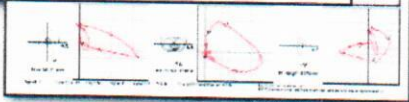
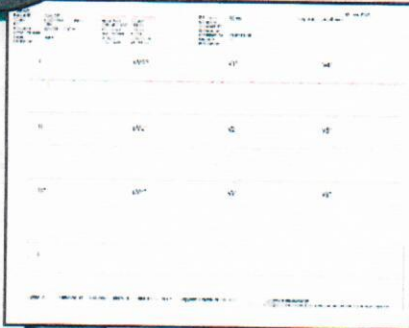
Monitoring Screen

STEMI Case



Three Page Report

- Page 1 – 12 leads
- Page 2 – XYZ leads
- Page 3 – VCG Loops and lead voltage data



If the VectraplexECG System does detect ECG changes that may be indicative of an AMI, the clinician can verify findings by acquiring a 12-lead mECG and by administering a blood draw (which could be sooner than current hospital protocols for measuring serum cardiac markers), resulting in the **potential for faster patient treatment**. This could free up space in the Emergency Department and potentially increase patient flow/bed turnover.

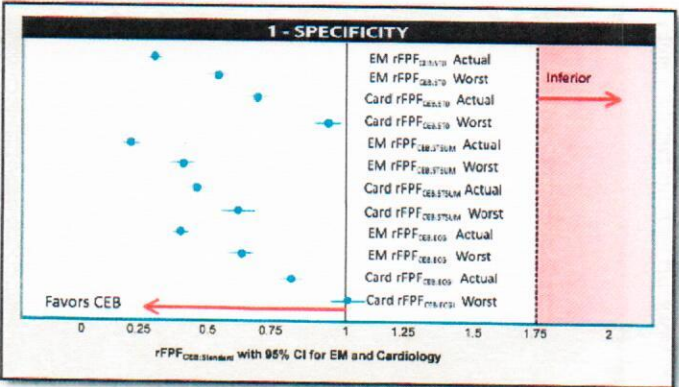
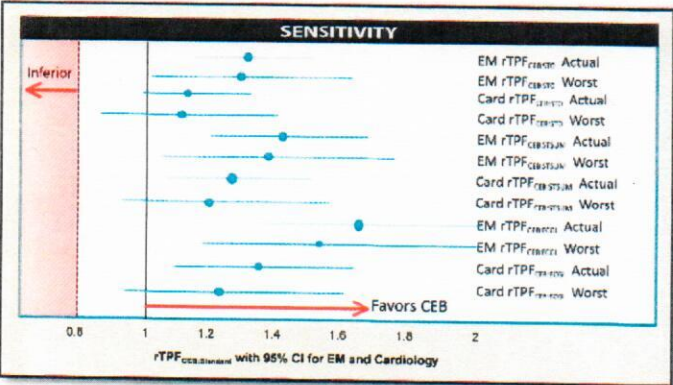
VectraplexECG System

with VectraplexAMI

The VectraplexAMI index (CEB) has been studied against ST segment analysis (ST0) and an ECG computer interpretation (ECGI) program. The results of a non-inferiority study are as follows*5:

| Diagnostic Performance Measures | Parameters | ST0 = J Point | | | | ECGI = Computer Interpretation | | | |
|-----------------------------------|-------------------------|---------------|------------|-------------|------------|--------------------------------|------------|-------------|------------|
| | | *Actual | | *Worst Case | | *Actual | | *Worst Case | |
| | | *EM | Cardiology | *EM | Cardiology | *EM | Cardiology | *EM | Cardiology |
| Sensitivity (TPF) | VectraplexAMI (CEB) | 93.75% | 87.27% | 89.55% | 82.76% | 93.4% | 84.6% | 85.1% | 77.2% |
| | ST0 or ECGI | 70.31% | 76.36% | 70.15% | 75.86% | 57.4% | 63.5% | 56.7% | 63.2% |
| Specificity (FPF = 1-Specificity) | VectraplexAMI (CEB) | 91.30% | 81.50% | 84.66% | 75.55% | 91.34% | 81.18% | 85.08% | 75.27% |
| | ST0 or ECGI | 73.48% | 74.02% | 73.39% | 73.72% | 77.92% | 76.47% | 76.61% | 75.64% |
| Negative Predictive Value | VectraplexAMI NPV (CEB) | 98.1% | 96.7% | 96.8% | 95.4% | 98.1% | 96.3% | 95.5% | 94.1% |
| | ST0 or ECGI NPV | 89.9% | 93.5% | 90.1% | 93.5% | 87.4% | 91.1% | 86.8% | 90.8% |
| Positive Predictive Value | VectraplexAMI PPV (CEB) | 75.0% | 50.5% | 61.2% | 41.7% | 74.0% | 47.8% | 60.6% | 39.3% |
| | ST0 or ECGI PPV | 42.5% | 38.9% | 41.6% | 37.9% | 40.7% | 35.5% | 39.6% | 35.0% |
| Caution Zone % | No Test % | 6.67% | 6.93% | 6.67% | 6.93% | 7.30% | 7.53% | 7.30% | 7.53% |
| Utility% | (1-No Test)% | 93.33% | 93.07% | 93.33% | 93.07% | 92.70% | 92.47% | 92.70% | 92.47% |
| Prevalence | Prev | 19.0% | 17.4% | 19.0% | 17.4% | 20.9% | 16.9% | 21.3% | 17.2% |

* Additional results of this non-inferiority study are posted on our website www.vectracor.com (or call VectraCor for results).



Catalog Numbers

- V100100 VectraplexECG System with VectraplexAMI
(Includes Monitor, 12-Lead ECG Patient Cable and Rolling Stand)
- V100300 Vectraplex Monitoring ECG Electrodes

References

- Centers for Disease Control and Prevention. February is American Heart Month. Heart Disease is the Number One Cause of Death. Available at: <http://www.cdc.gov/features/heartmonth/>. Accessed December 21, 2011.
- World Health Organization. Cardiovascular Diseases (CVDs). Fact Sheet Number 317, September 2011. Available at: <http://www.who.int/mediacentre/factsheets/fs317/en/index.html>. Accessed December 21, 2011.
- AHA Statistical Update. Heart Disease and Stroke Statistics — 2012 Update. A Report From the American Heart Association. Available at: <http://circ.ahajournals.org/content/early/2011/12/15/CIR.0b013e31823ac046.full.pdf>. Accessed December 21, 2011.
- Rajaganesan R, Ludlam CL, Francis DP, Parasramka SV, Sutton R. Accuracy in ECG lead placement among technicians, nurses, general physicians, and cardiologists. *Int J Clin Pract*. 2008;62(1):65-70.
- Data on file, VectraCor, Inc., Totowa, NJ.

IMPORTANT SAFETY INFORMATION

The significance of the ST segment changes and VectraplexAMI require physician interpretation. If the VectraplexAMI indicates a potential AMI, the user should acquire a 12-lead ECG using 10 electrodes.

The VectraplexAMI index has been tested in comparison to physician interpretation of standard 12-lead ECGs in patients presenting to an acute care setting, and not in comparison to additional clinical data documenting the presence of acute myocardial infarction.

Derived 12-lead ECGs and their measurements are approximations to conventional 12-lead ECGs and should not be used for final diagnostic interpretations.

The computerized interpretation provided by the VectraplexAMI system is only for use as a screening tool. It is not intended to replace the clinical judgment of a physician. The VectraplexAMI system is not intended to be used for the diagnosis of any condition.

Please contact VectraCor for additional information, including Cautions and Warnings.

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VECTRA COR
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