The 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. 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 CV 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 Cardio 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 15 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 15 leads)
- Provides 12-lead measured ECG interpretation software (including Cautions and Warnings)
- Derives a total of 15 ECG leads (12-lead ECG, XYZ vectorcardiogram leads and vector loops) from the placement of only 5 electrodes
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- Provides 12-lead measured ECG interpretation software (including Cautions and Warnings)

Incorporates a patient database
- Report editor feature allows inclusion of additional physician-diagnosis
- 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

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 15 electrodes. The VectraplexAMI index has been tested in comparison to conventional 12-lead ECGs and their measurements are approximations to conventional 12-lead ECGs and should not be used for final diagnostic interpretations. The computerized interpretations provided by the VectraplexAMI software are only for the 12-lead tracing (using 10 electrodes) and valid when used in conjunction with clinical findings. All computer-generated tracings and interpretations must be confirmed by a qualified physician.
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. According to the American Heart Association, in 2009 cardiovascular disease (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. According to the American Heart Association, in 2009 an estimated 7,453,000 inpatient cardiovascular operations 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 of an AMI.

Because Every Second Counts

Current Practice Workup (ER) vs. New VectraplexECG Standard

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

Real-time, continuous, non-invasive detection of ECG changes that may be indicative of an AMI, along with heart rate and rhythm monitoring, and 15-lead dECG with vector loops—all in 1 device

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

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

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

1. The Vectraplex System requires only 5 electrodes to derive 15-lead dECG, compared to the standard practice of acquiring a 15-lead mECG with the placement of approximately 14 electrodes.
2. 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.
3. The VectraplexAMI System provides the simplicity of acquiring a 15-lead mECG with the placement of approximately 14 electrodes.
4. A 2008 study showed that lead V1 was incorrectly placed by 51% of nurses—and by 90% of physicians! (including cardiologists†—84% of cardiologists (p< 0.001 for inter-group differences)

Patients may be developing an acute myocardial infarction and require clinical assessment—attach additional 5 electrodes for a 15-lead mECG (using all 10 electrodes).

What the VectraplexAMI Number Means:

<table>
<thead>
<tr>
<th>Number</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 66</td>
<td>Orange</td>
</tr>
<tr>
<td>66-94</td>
<td>Yellow</td>
</tr>
<tr>
<td>&gt; 94</td>
<td>Green</td>
</tr>
</tbody>
</table>

*Patient may be developing an acute myocardial infarction and require clinical assessment—attach additional 5 electrodes for a 15-lead mECG (using all 10 electrodes).

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.

Please see back cover for Important Safety Information.
While ECC 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 ECC is the cornerstone diagnostic test for every CVD patient. The gold standard for detecting AMI includes the 12-lead ECC 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 ECC changes suggestive of an AMI. It is the only ECC device that provides all of the following benefits:

- Derives a total of 15 ECC leads (12-lead ECC, 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 ECC machine.
- VectraplexECCG is a stand-alone ECC machine and cardiac monitor all in one.
- Provides constant ECC monitoring (selectable between 1 to 15 leads).
- Provides 12-lead measured ECC interpretation software (10 electrodes attached to patient).
- Incorporates a patient database.
- Report editor feature allows inclusion of additional physician-diagnoses.
- Multilingual data entry software.
- A 3-page printout with the appropriate labeling of all leads, thus reducing the risk of mislabeling.
- Is non-invasive.

Because Every Second Counts

The only system with a Cardiac Electrical Biomarker for the real-time detection of ECC changes suggestive of an acute myocardial infarction (AMI) plus the capability to derive a 15-lead ECC provides continuous, non-invasive detection of ECC changes suggestive of an AMI.

References

1. 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/

Please contact VectraCor for additional information, including Cautions and Warnings.
Cardiovascular disease (CVD) is a problem of staggering proportions. CVD is the #1 killer in the United States and worldwide, with approximately 60.2 million Americans having one or more forms of CVD, and over 40 million in this group aged 60 or older. "A growing "baby boom" population threatens to add increasing time and cost pressure on healthcare systems already challenged." To assist the physician in diagnosing disease faster, and to help make timely intervention possible, VectraCor has developed a technology that, in real-time, detects ECG changes suggestive 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 VectraLexECG System:

**Current Practice Workup (ER)**

1. Attach 10 electrodes to acquire the measured 12-lead ECG (mECG).
2. Send blood to lab for detection of serum cardiac markers.
3. Wait approximately 1 hour or longer for results.
4. Draw blood to measure serum cardiac markers.
5. Attach 3 to 5 additional electrodes to patient to improve lead placement.
6. Attach 10 electrodes to acquire the measured 12-lead mECG.
7. Wait approximately 1 hour or longer for results sent to the lab.
8. Repeat every 3 to 6 hours for 24 hours to check the potential for faster patient treatment.

**VERSUS**

**New VectraLexECG Standard**

1. Attach only 5 electrodes* to patient.
2. Displays VectraLEXAM Index and heart rate, and monitors up to 15 derived ECG (dECG) leads within seconds.
3. 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.
4. VectraLexECG then continuously analyzes these data points resulting in the VectraLEXAM index which is continuously displayed in real-time.
5. A standard measured mECG, via 12-lead ECG derived dECG, leads within seconds.
6. There are virtually NO clinically significant differences between mECG vs. dECG.

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

**How VectraLEXAM works:** quantifying the cardiac electrical field to detect disease suggestive of an AMI

- Using advanced mathematical modeling, the VectraLEXAM 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.
- VectraLEXAM then continuously analyzes these data points resulting in the VectraLEXAM Index which is continuously displayed in real-time.

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**What the VectraLEXAM Number Means:**

- Less than 66: Normal
- Between 66 and 94: Caution
- Greater than 94: Abnormal

*Patient may be developing an acute myocardial infarction and require clinical assessment—attach additional 5 electrodes for 12-lead ECG (using all 10 electrodes).
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. According to the American Heart Association, in 2009 an estimated 74,130,000 adults in the United States, the rest of the world—killing over 17 million people worldwide, and over 811,000 Americans annually. Because Every Second Counts

Because Every Second Counts

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

New VectraECG Standard

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.
6. Send blood to lab when sent to the lab.
7. Repeat every 3 to 6 hours for 24 hours to check for increase in serum cardiac markers indicative of an AMI.

Current Practice Workup (ER)

1. Attach only 5 electrodes* to patient.
2. Displays VectraAMI index and heart rate, and monitors up to 15 derived ECG (dECG) leads within seconds.
3. In general, the more multipolar (less dipole) forces in the cardiac electrical field, the greater the potential for faster patient treatment.

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The VectraECG System requires only 5 electrodes to derive 15-DECG leads, compared to the standard practice of acquiring a 15-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.
- A 2008 study showed that lead V1 was incorrectly placed by 51% of nurses—and by: 84% of cardiologists (p<0.001 for inter-group differences) 69% of physicians (excluding cardiologists) 4

The VectraECG System quantifies the dipole 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.

- VectraECG then continuously analyzes these data points resulting in the VectraAMI index which is continuously displayed in real-time.

Real-time, continuous, non-invasive detection of ECG changes that may be indicative of an AMI, along with heart rate and rhythm monitoring, and 15-lead dECG with vector loops—all in 1 device

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

- Using advanced mathematical modeling, the VectraECG System quantifies the dipole 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.

- VectraECG then continuously analyzes these data points resulting in the VectraAMI index which is continuously displayed in real-time.

- The potential time-saving utilization of the VectraECG System:
- In general, the more multipolar (less dipole) forces in the cardiac electrical field, the greater the potential for faster patient treatment.

- This could free up space in the Emergency Department and potentially increase patient flowed turnover.
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.

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- VectraplexECG is a stand-alone ECG machine and cardiac monitor all in one
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- Provides 12-lead measured ECG interpretation software
- Vectorcardiogram leads and vector loops
- Does NOT require an additional ECG machine
- Provides 12-lead measured ECG interpretation software (10 electrodes attached to patient)
- Incorporates a patient database
- Report editor feature allows inclusion of additional interpretations
- Computes 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 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. The computer-generated tracings and interpretations must be confirmed by a qualified physician.

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

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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 15-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

The VectraplexECG System
with VectraplexAMI

Introducing a New Generation
in Cardiac Monitoring

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- The computer-generated tracings and interpretations are approximations to conventional 12-lead ECGs and should not be used for final diagnostic interpretations.
- The computer-generated interpretations provided by the VectraplexECG software are only for the 12-lead tracing (using 10 electrodes) and valid when used in conjunction with clinical findings. All computer-generated tracings and interpretations must be confirmed by a qualified physician.

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