GE Healthcare

Marquette 12SL ECG analysis program

Offering exceptional value throughout the continuum of care

Setting the mark for clinical validity and excellence in ECG analysis

Since the introduction of the Marquette® 12SL™ ECG analysis program in 1980, GE Healthcare has consistently expanded its electrocardiograph-based suite of ECG analysis programs and capabilities. Today, we continue to lead developments in computerized ECG analysis, setting even higher levels of clinical accuracy, validity, and performance. Through extensive clinical evaluation and the use of classic and newly developed ECG interpretation criteria and measurement technologies, we steadily refine and improve our state-of-the-art suite of ECG analysis programs.

Our commitment to improving the science of ECG interpretation has led to the use of our analysis programs across GE diagnostic ECG and monitoring systems, as well as implementation into other industry-leading products. This implementation makes our programs a preferred choice in a variety of care settings and industries including emergency medicine, inpatient, outpatient, and clinical research organizations (CRO's).

Clinically validated improvements

Any change to an analysis program requires a great deal of research and validation. The Marquette 12SL ECG analysis program is continually refined through the following processes:

- **Regular clinical input –** Annual input is gathered from the world's top consulting cardiologist and physicians. This input focuses research and development efforts.

- **Clinically correlated "Gold-Standard" databases –** GE utilizes many different "gold standard" databases during the development and validation process to enhance program accuracy. This precludes us from developing an analysis program that works well on a training set of ECGs, but cannot be applied with the same success to other populations.

- **Beyond Gold-Standard databases –** Gold-Standard databases help to improve program accuracy, but they also have limitations. Analysis programs must work with a wider spectrum of ECG data. To accomplish this task GE measures its analysis program performance on a large database of ECGs (>150,000). This process confronts the program with multiple diseases and varying degrees of abnormality. ECGs that change their analysis results due to program modification can be further investigated with expert confirmation.

The result of all this work is improved program accuracy to help clinicians improve patient care.

A complete suite of state-of-the-art ECG analysis

With the Marquette 12SL's arrhythmia and chest pain assessment capabilities, gender-specific criteria and risk stratification tools, a wider range of disease management needs can be addressed. This means physicians are assisted in making more efficient and informed clinical decisions. Ongoing development by one of the industry's leading advanced development staff provides the latest in capabilities. Validation against global, clinically verified databases offers verified accuracy with multiple patient populations.

- **Serial ECG comparison –** The Marquette 12SL ECG Analysis Program and the Marquette Serial Comparison Program provide a consistent analysis and comparison of waveforms across each and every ECG, ensuring reproducibility and objectivity through all phases of patient care.

  - Provides department supervisors with a means to run efficient operations.
  - Utilizes interpretive statements, ECG measurements and waveform comparison techniques to maximize performance and accuracy in the detection of clinically significant changes.
  - Emulates the techniques used by trained electrocardiographers when comparing serial ECGs.

- **Gender-Specific criteria –** Marquette 12SL with Gender-Specific interpretation applies new criteria for evaluating the ST segment and T-wave of the ECG waveform, improving sensitivity to acute MI's in women and enhancing diagnostic confidence.

  - 14% improved detection of acute anterior MI in women under 60 years of age.[1]
  - 28% improved detection of acute inferior MI in women under 60 years of age without sacrificing the high specificity already maintained by the program.[2]
  - Assists physicians in the detection of acute MI in women.

- **Acute Cardiac Ischemia Time-Insensitive Predictive Instrument (ACI-TIPI) –** Marquette 12SL with ACI-TIPI is a mathematical algorithm that predicts the probability of cardiac ischemia. Working in conjunction with Marquette® 12SL™ ECG Analysis Program measurements, this algorithm presents a numerical "score" that represents the probability that a particular patient has acute cardiac ischemia.

  - Helps to increase the accuracy and speed of emergency department triage.
  - Helps to reduce the likelihood that acute cardiac ischemia patients are sent home.
  - Helps clinicians to determine patient eligibility for chest pain observation.

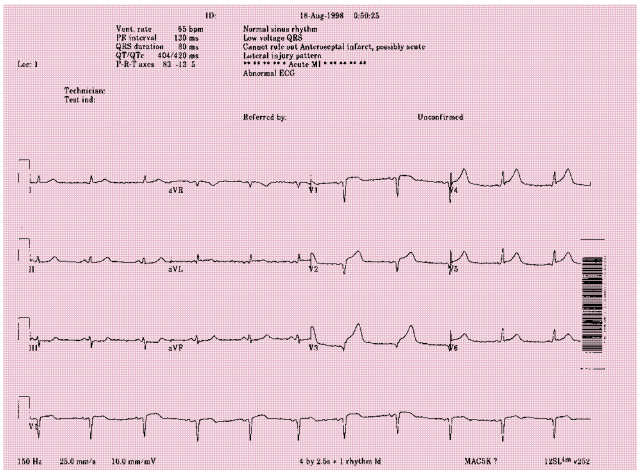
Why use GE's Marquette 12SL ECG analysis program?

- Meets current standards for 15-lead acquisition and analysis for pediatric patients.[3]
- Automated second opinion that has clinical "gold standard" verified accuracy and is tested against a large database of ECGs with multiple diseases and varying degrees of abnormality.
- Arrhythmia analysis including atrial arrhythmias, pace detection, QT measurement.
- Suggests additional findings not initially detected and encourages careful, targeted review of the ECG tracing.
- Minimizes the time spent over-reading ECGs.[4]
- Accurate, validated measurements of heart rate, axis, intervals and durations.
- Pediatric age-driven interpretation criteria.
- Adult gender and age driven interpretation criteria for acute MI. Utilized in pre-hospital defibrillators to identify clinically significant changes and expedite patient care in time-critical environments.
- Assists with ECG interpretation training assistance.

A pioneer in technology innovation

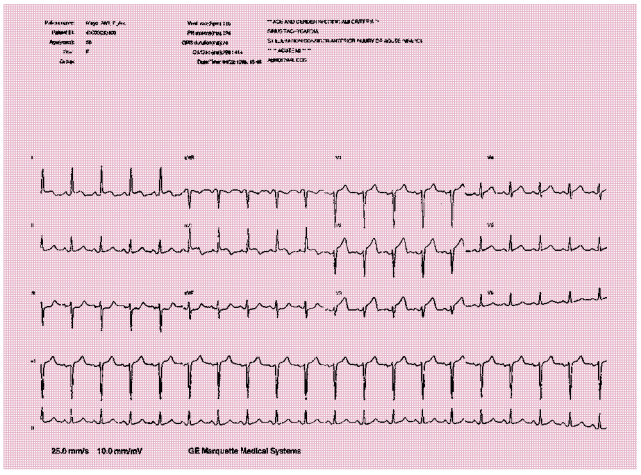
GE has pioneered the technology and expertise by making the Marquette 12SL program available throughout a patient's entire cardiac experience, from pre-hospital through follow-up. The Marquette 12SL program operates on a variety of platforms and currently exists in these areas:

- Pre-hospital environment
- Emergency department
- General Hospital departments
- CCU/ICU
- Exercise testing labs
- Clinics
- Physician Offices



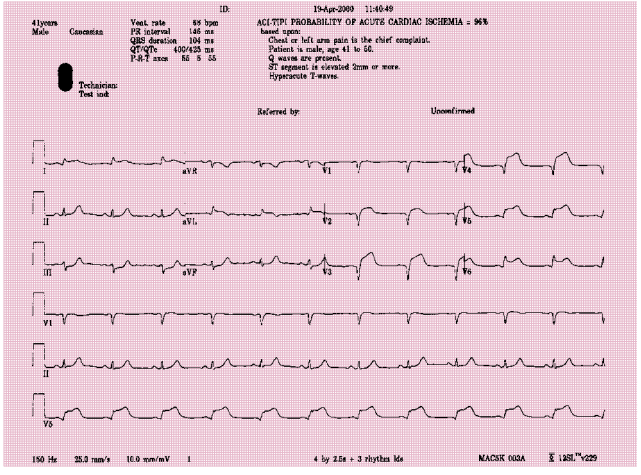
Marquette 12SL ECG Analysis Program

The industry's most thoroughly documented, computer-interpreted 12-lead ECG analysis program, 12SL is your most clinically valuable second opinion and the standard of care in many clinical environments.



Gender-Specific Criteria Enhancement

Utilizing unique clinically correlated criteria for evaluating the ST segment and T-wave for the ECG waveform, GE 12SL Gender-Specific interpretive software assists clinicians in detecting acute MIs in female patients and enhances diagnostic confidence among even occasional ECG readers.



ACI-TIPI Enhancement (Acute Cardiac Ischemia Time-Insensitive Predictive Instrument)

Designed to build on the outstanding sensitivity of the 12SL program, ACI-TIPI provides important additional triage information by considering the patient's age, gender and chief complaint along with ECG measurements to establish a probability score.

GE Medical Systems Information Technologies GmbH, a General Electric company, going to market as GE Healthcare.

Computerized analysis is not a substitute for physician interpretation. The ECG, therefore, must always be reviewed in light of the surrounding clinical circumstances.

[1]Wright, R.S., et.al. "Women with Acute Anterior Myocardial Infarction Have Less Precordial ST Elevation Than Men Independent of Age of Presentation."
J Am Coll Cardiol. 37(2001): 361A.

[2]Xue, J., et.al. "A New Method to Incorporate Age and Gender Into the Criteria for the Detection of Acute Inferior Myocardial Infarction."
J Electrocardiol. 34(4)(Part 2)(Oct 2001): 229-234.

[3]Schwartz PJ, Garson A Jr, Paul T, Stramba-Badiale M, Vetter VL, Wren C. "Guidelines for the interpretation of the neonatal electrocardiogram. A task force of the European Society of Cardiology."
Eur Heart J 2002 Sep;23(17):1329-44.

[4]Brailer DJ, Kroch E, Pauly MV. "The Impact of Computer-assisted Test Interpretation on Physician Decision Making: The Case of Electrocardiograms"
Med Decis Making. 1997 Jan-Mar;17(1):80-6

For more than 100 years, healthcare providers worldwide have relied on GE Healthcare for medical technology, services, and productivity solutions. So no matter what challenges your healthcare system faces, you can always count on GE to help you deliver the highest quality healthcare. For details, please contact your GE representative today.

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GE imagination at work

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