

Absolute

Free from imperfection; perfect; positive, unquestionable;
fundamental, ultimate; being self-sufficient and free of
external references or relationships.

Monitoring what's vital

CAS Medical Systems, Inc. (CASMED) is dedicated to the development and manufacture of innovative, non-invasive monitoring solutions vital to patient care.

Financial Highlights *Amounts in thousands except per share data*

For Year Ended	2009⁽¹⁾	2008	2007	2006	2005⁽²⁾
Revenues	\$34,235	\$40,649	\$38,232	\$35,202	\$26,884
Net (Loss) Income	(5,790)	(388)	306	1,747	1,815
Net (Loss) Income per Diluted Common Share	(\$0.51)	\$0.04	\$0.03	\$0.14	\$0.15
Diluted Shares Outstanding	11,261	11,032	12,212	12,147	11,729

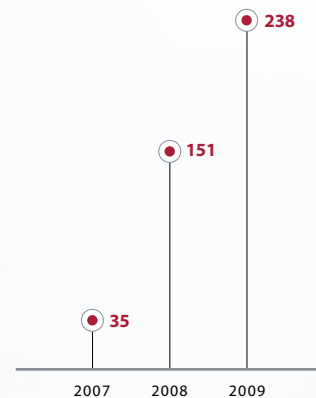
At Year End

Working Capital	\$7,907	\$10,819	\$10,388	\$9,096	\$7,482
Bank Debt Obligations	4,378	4,317	5,149	4,416	4,990
Total Assets	18,250	23,687	23,888	21,443	17,918
Stockholders' Equity	\$9,349	\$14,900	\$13,751	\$12,625	\$9,117

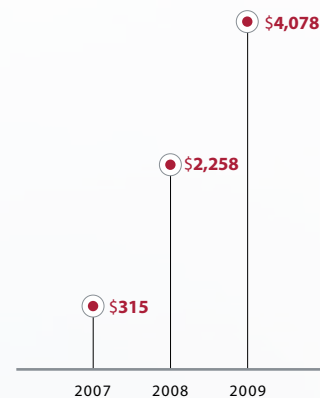
(1) During 2009, the Company recognized a goodwill impairment charge of \$2,156 and recorded a deferred income tax asset valuation allowance of \$1,449.

(2) 2005 pre-tax income includes \$401 credit from curtailment gain of post-retirement benefit plan. 2005 reflects the acquisition of Statcorp, Inc. on May 15, 2005.

FORE-SIGHT Installed Base



FORE-SIGHT Sales Revenues (\$thousands)





Dear Shareholder,

The Absolute Advantage. That is our competitive distinction and the focus of this annual report. As to our FORE-SIGHT® Absolute Cerebral Oximeter, absolute advantage means providing clinicians with accurate, absolute measurements of blood oxygenation that increase the likelihood of positive patient outcomes during surgery and intensive care. As to our MAXNIBP® non-invasive blood pressure technology, absolute advantage means providing accurate, reliable blood pressure readings under the most challenging conditions. And for the Company as a whole, absolute advantage is demonstrated by our aggressive, and successful, response to a difficult economic time.

Worldwide economic declines affected the medical device market in 2009, particularly limiting hospitals' spending on capital equipment. While our overall sales revenue declined during 2009, we are confident our Company is now stronger and more focused as a result of actions taken during the year. We reduced overhead costs and improved asset management, particularly with regard to inventory, and we are phasing out less profitable product lines. Intent on improving key metrics—namely gross profit, cash flow, and debt levels—we are pleased that, despite our 2009 losses, we maintained our 2009 cash flow and overall bank debt at near 2008 levels. Furthermore, we accomplished all that while continuing to make substantial investments in our FORE-SIGHT product line.

In 2009, we built on our prior experience with FORE-SIGHT and put in place the people and processes that will further increase market penetration and sales growth. For example, we reorganized our sales and distribution channels to stimulate our sales pipeline. This step has already proven its worth as our worldwide installation of monitors is ramping up, thereby increasing sales of the FORE-SIGHT disposable sensors. In addition, we received clearance from the FDA in 2009 to expand the use of the FORE-SIGHT monitor to patients under 2.5kg in weight. This squarely positions FORE-SIGHT as the only cerebral oximeter that offers the accuracy of an absolute measurement for all patient populations, including the smallest of neonates. Also in 2009, we introduced two new sensors: a non-adhesive sensor for neonates, and a medium sized sensor for pediatric use, and both are important to our future.

In addition to these operating and product advances, we built on the clinically-driven evidence of the value of FORE-SIGHT. During the year, numerous papers and over thirty abstracts were published and presented demonstrating the utility, accuracy and advantage of FORE-SIGHT technology during surgery, in a range of additional clinical applications. This clinical evidence supports our faith in FORE-SIGHT as a uniquely valuable aspect of patient care. In addition, this clinical evidence reflects the mounting awareness and acceptance of the benefit of cerebral oximetry, and of FORE-SIGHT in particular.

We are committed to making FORE-SIGHT cerebral oximetry a standard of care. CASMED intends to establish a leadership position in the adult cardiac surgery market while developing meaningful opportunities in the pediatric/neonatal market. In parallel, we are introducing FORE-SIGHT into other patient care settings.

Additional growth will come from advances in our original core competency: CASMED's MAXNIBP non-invasive blood pressure measurement technology, which provides reliable, repeatable measurements even under the most extreme and challenging conditions. Our current technology, a leader in its field, will be enhanced by even more sophisticated algorithms and features that can be used by both our own stand-alone monitoring platforms, and by our OEM partners who manufacture vital signs monitoring equipment, and who have chosen MAXNIBP as a critical component in their systems. Our outstanding quality, reliability, and dedication to customer service ensure our position as a valuable partner to our customers who require accurate, dependable measurement of vital signs when it matters most.

2010 brings optimism and opportunity. Our products are proven and effective, and we continue to add features that increase our products' ranges and capabilities. And although the prospects for near-term hospital spending may be uncertain, we believe our strategic investments in our FORE-SIGHT and MAXNIBP products will result in healthy, sustainable long-term growth. I would like to thank you - our stockholders, customers, suppliers and employees - for your support, and for your unwavering confidence in the future of CASMED. You are an integral part of our Absolute Advantage.

Andrew E. Kersey, President & CEO

Absolute Advantage

The accurate early warning system

At CASMED, we focus on accuracy.

During 2009, we continued to introduce measurable, industry-advancing gains in the way cerebral tissue oxygenation (SctO₂) is monitored and managed in patients undergoing high-risk surgical procedures or recovering from critical injuries or illnesses.

Today, for the first time in the industry, based on our advances:

- Clinician-driven evidence proves a direct relationship between absolute SctO₂ values and reduced incidence of serious patient complications.¹
- Empirical data is available to clinicians to inform and guide patient management techniques that can preempt complications.
- A full range of sensors and matching software algorithms exists to provide any patient, regardless of weight or age, the benefit of absolute cerebral oximetry.
- Tailored patient intervention is enabled by reliable, absolute feedback delivered in real time.
- Measurement is not affected by a patient's age, body temperature, skin color, weight, blood pressure or hematocrit level.

*A number should be
a prime indicator.
Unquestionable. Pure.
Absolute.*

All of this is the result of our unwavering focus on accuracy. It permeates everything we do. It's in our choice of the four precise laser diodes at the heart of our system that measure patient data, providing the most accurate reading possible. It's in the way we develop software optimized for different ages and weights, so clinicians can be confident that the information they use is relevant for each patient. And it's in our commitment to continual testing, validation and refinement of our algorithm for many disease states across the full spectrum of size and age patients.

We believe clinicians should never be forced to assume or extrapolate. In a critical situation, when a patient's life is measured in seconds, accuracy is the imperative. A number should be a prime indicator, viscerally understood. Unquestionable. Pure. Absolute.

Accuracy. It's where our greatest investment of money and human capital has been placed, and where our greatest differentiation and return on investment is occurring.

¹ Fischer et al. Risk of Post-Op Complications below Different Cerebral Oxygenation Thresholds during Aortic Surgery. 2009 ASA Abstract #A897

CASMED is the only device with FDA clearance for absolute measurement of cerebral oximetry on all patients regardless of age or weight.

Absolute best defense

Many surgical procedures, as well as certain injuries or illnesses, can set up conditions for the brain to become oxygen-starved. Studies demonstrate that, if undetected, a decline in SctO₂ may be associated with cognitive problems such as short or long-term brain damage, paralysis, disabilities or even death. Other significant problems with low SctO₂ values during surgery have been associated with a longer time on artificial ventilation and lengthened time in the ICU. It is the clinician's role to continuously maintain adequate patient brain oxygenation levels during various procedures in order to keep the patient safe from potential brain injury.

FORE-SIGHT® is the world's first and only FDA-cleared cerebral oximeter to deliver non-invasive, non-trend, absolute SctO₂ measurements for all patients regardless of age or weight. Because values are continuously updated every two seconds, clinicians are able to immediately detect changes in brain tissue oxygenation and take action to restore adequate SctO₂ levels before the potential onset of irreversible brain damage.

Ideal Applications for FORE-SIGHT

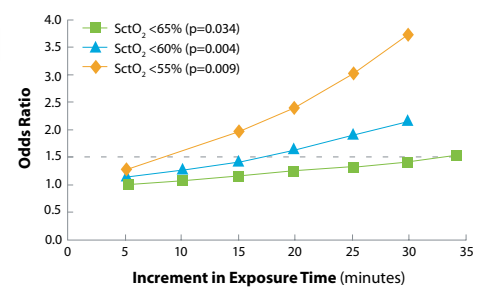
Patients with a high risk for periods of low cerebral oxygen, including:

- Cardiac surgery
- Carotid endarterectomy surgery
- Shoulder surgery
- Cardiac catheterization procedures
- Electrophysiology procedures
- Pediatric heart surgery
- Monitoring premature babies
- Extracorporeal membrane oxygenation (ECMO)
- Single-lung ventilation
- Cranial surgery

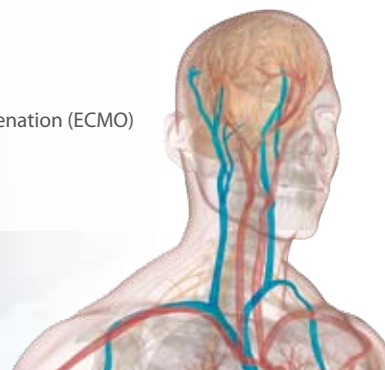
Absolute Performance

All medical procedures have inherent risks. Monitoring with FORE-SIGHT can help mitigate these risks. Studies have documented that keeping the SctO₂ value above an established threshold during surgery may reduce the chance of major complications. Thus, the accuracy of our absolute values helps to refine goal-directed patient management techniques that improve patient care.

Clinicians are increasingly adopting FORE-SIGHT in their studies and daily practices. A recent study¹ demonstrated how absolute cerebral oximetry measurements can be directly related to the avoidance of major patient complications.



Without adequate notification and appropriate intervention, if the SctO₂ values are below absolute thresholds too long, there is an increasing chance of major complications, such as death, stroke, depressed LV function, respiratory failure, sepsis, delirium, renal failure, GI complications, or severe volume overload. As an example, if SctO₂ values fall just below 55% for longer than 9 minutes, the odds of a major complication increase by 50%.



Absolute care



With its ability to provide continuous, absolute SctO₂ values, FORE-SIGHT collects and displays critical patient data in real time, without need for a baseline reference. This allows the clinician to assess brain oxygenation status immediately, and know when to take action to address potential serious problems before they occur. Using advanced software, sensors and analytic technologies, FORE-SIGHT provides absolute measurements, regardless of a patient's condition prior to the procedure. No baselines or comparisons are needed. What's more, sensors can be placed on a patient at any time during care—even during transport to and between departments such as surgery, pre- or post-surgery, emergency and ICU—and absolute SctO₂ readings will be consistently accurate. Every time. It's so elegantly simple.

Customizable Care: a breakthrough in patient management

Since cranial characteristics differ between babies, children and adults, the inclusion of age and weight information allows the absolute values to be fine-tuned to the anatomy of each patient. This breakthrough increases the precision and relevancy of the information and enables clinicians to respond with precise and customized management protocols for each patient.

Approved and appropriate for the full patient spectrum from adults to the smallest neonates, FORE-SIGHT is a precise and powerful assessment tool for high-risk surgical procedures, as well as broader perioperative and intensive care unit (ICU) applications.

Absolute Precision

FORE-SIGHT is the only device with FDA clearance for absolute measurement of cerebral oximetry on all patients, regardless of age or weight.

Absolute Measurement

Immediate, precise SctO₂ values at any time during a procedure without the need for a baseline. Ideal for evaluating and managing already compromised patients. Accurate in low blood flow situations.

Accurate and Actionable

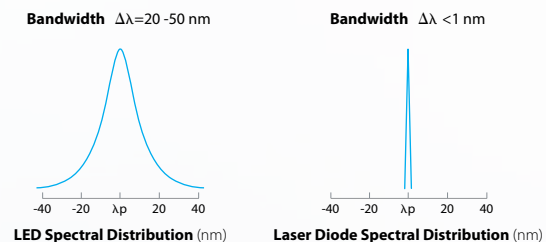
Data is updated every 2 seconds, allowing instant evaluation of patient SctO₂.

Non-invasive and Continuous

Optimal for use in surgical and perioperative settings. Ideal for spot checks, and for neonates during their delicate stabilization period.

Absolute Reliability

Using two sensors placed on the patient's forehead, LASER-SIGHT® Optical Technology projects four harmless wavelengths of near-infrared light through the scalp and skull and into the brain. Using data collected by the sensors' light detectors, a CASMED-patented algorithm calculates real-time absolute SctO₂ values.



FORE-SIGHT uses four precise laser diodes as its light source to accurately calculate oxygen saturation. Unlike light emitting diodes (LEDs) used in other devices, the laser diodes have a much narrower spectral bandwidth. This consistent, calibrated laser light, combined with carefully selected wavelengths and the use of more wavelengths (4) than other devices, are fundamental to FORE-SIGHT's measurement precision.



Absolute Demand

There are approximately 6,000,000 surgeries performed each year in the U.S. alone that we believe could be categorized as having a high likelihood of the occurrence of low cerebral oxygenation and an increased risk of post-operative complications. These surgeries include cardiac, and carotid surgeries as well as vascular, orthopedic and other major surgeries involving elderly or other high-risk populations. Other immediate applications for FORE-SIGHT include pediatric and neonatal patients undergoing major surgeries and other critically ill patients, such as those in ICU's.

Absolute proof

Shoulder surgery on an otherwise healthy 45-year old female after a fall from a bicycle.

“The brain oxygen value after starting anesthesia was 72%. Three minutes after being moved from the supine (flat) to sitting position, the brain oxygenation decreased to 41%. At this time, blood pressure had decreased by about 20% (a common occurrence after change in position). The anesthesiologist observed this significant decrease in brain oxygenation, and promptly intervened by administering drugs to raise the patient's blood pressure and decreasing the ventilation on the anesthesia machine. Within 5 minutes, the brain oxygenation had increased to 67%. With continued interventions, cerebral oxygenation was maintained above a safe threshold of 65% throughout the rest of the case. The patient emerged from anesthesia without complications.

“The use of FORE-SIGHT monitoring revealed low brain oxygenation events that would have otherwise been undetected, and the patient might have suffered a serious neurologic event. My personal studies of FORE-SIGHT in shoulder surgery patients have revealed that, even when brain oxygen levels are moderately low, post-operation nausea and vomiting occurs 7.5 times more frequently than when FORE-SIGHT values never experienced a critical desaturation event. I only use the FORE-SIGHT Absolute Cerebral Oximeter for my patients to best manage their brain oxygenation during shoulder surgery.”

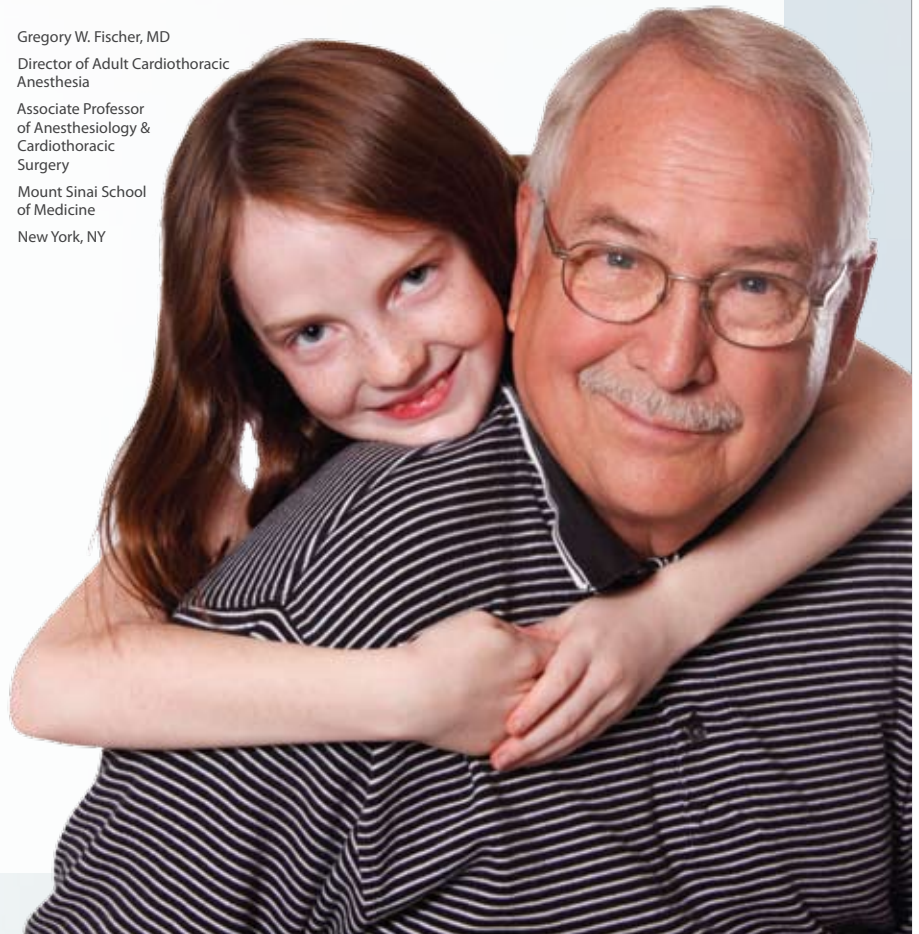
Glenn S. Murphy, MD
Associate Professor of Anesthesiology
NorthShore University HealthSystem
University of Chicago Pritzker School of Medicine
Chicago, IL

An aortic arch repair of a 64-year old man following congestive heart failure.

“The surgery is proceeding as expected. While the other standard monitoring parameters do not indicate anything out of the ordinary, the anesthesiologist notices that the FORE-SIGHT monitor indicates an SctO₂ consistently below 55% (a point of particular concern as proven in multiple risk outcomes studies using FORE-SIGHT). The perfusionist is asked to recheck the patient's blood gases, and a low concentration of carbon dioxide in the blood is discovered. After correction of the patient's respiratory status, the SctO₂ returns to values above 60%. The man wakes, experiences an uneventful recovery and returns to full activity in two weeks. Again, the other vital signs monitoring routinely used during surgery did not detect a problem with brain oxygenation.

“I have found that maintaining SctO₂ values above a particular threshold decreases the chance of major complications. FORE-SIGHT is the only monitoring system that provides the absolute measurement value necessary to do this.”

Gregory W. Fischer, MD
Director of Adult Cardiothoracic Anesthesia
Associate Professor of Anesthesiology & Cardiothoracic Surgery
Mount Sinai School of Medicine
New York, NY



Leading solutions

Non-invasive blood pressure measurement

More accurate, reliable, and faster, MAXNIBP® is a leader in non-invasive blood pressure measurement technology. MAXNIBP motion artifact extraction technology sets the industry standard for what matters most for vital signs – patient safety, performance, reliability and measurement accuracy in the most challenging clinical environments, even in a moving ambulance or on a patient with post-anesthesia shivering.

Our superior technology, along with our dedication to providing the best service and support for our customers, has motivated some of the world's leading manufacturers of vital signs monitoring products to chose CASMED's MAXNIBP as a chief component in their systems. As an industry leader, CASMED is dedicated to the continued advancement of NIBP technology. Our improved features and algorithms will continue to make MAXNIBP a best-in-class technology for blood pressure measurement.

Comprehensive bedside vital signs monitoring

CASMED's full line of non-invasive vital signs monitors are ideal for general care settings such as outpatient medical surgical units, recovery, procedure labs and physician offices as well as emergency response settings. Built on our MAXNIBP non-invasive blood pressure measurement technology, our bedside monitors incorporate various combinations of other industry-leading measurement parameters such as pulse oximetry, capnography, ECG, respiration, and temperature.

CASMED also offers a range of disposable and reusable blood pressure cuffs that are compatible with our systems, or with other measurement systems typically found in hospitals today. The entire family of CASMED bedside monitoring products delivers dependable, accurate, reliable measurement of vital signs.



Corporate Information

Corporate Headquarters

CAS Medical Systems, Inc.

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Legal Counsel

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One Century Tower

265 Church Street

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Independent Public Accountants

J.H. Cohn LLP

180 Glastonbury Boulevard

Glastonbury, CT 06033

Form 10-K

A copy of our Form 10-K Report for the year ended December 31, 2009, filed with the Securities and Exchange Commission, is available to stockholders free of charge by writing to the Company to the attention of the Chief Financial Officer.

Annual Meeting

The Company's Annual Meeting of Stockholders will be held at 10:30 a.m. on June 9, 2010, at The WoodWinds, 29 Schoolground Road, Branford, CT.

Market for the Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

The Company's common stock trades on the NASDAQ Global Market under the symbol "CASM." The following table shows the high and low sales prices for the Company's common stock during each quarterly period for the last two years.

Quarter Ended	High	Low
March 31, 2008	\$ 5.54	\$ 4.05
June 30, 2008	\$ 4.30	\$ 2.81
September 30, 2008	\$ 4.21	\$ 2.72
December 31, 2008	\$ 4.00	\$ 1.66
March 31, 2009	\$ 2.18	\$ 0.90
June 30, 2009	\$ 2.23	\$ 1.15
September 30, 2009	\$ 3.90	\$ 1.16
December 31, 2009	\$ 2.12	\$ 1.50

Board of Directors

Louis P. Scheps

Chairman of the Board

Jerome Baron

Vice Chairman and Managing Director,

Brean Murray, Carret & Co., LLC

Lawrence S. Burstein

President, Unity Venture Capital Associates, Ltd.

Evan Jones

Managing Director, jVEN Capital, LLC

Andrew E. Kersey

President and Chief Executive Officer

Kenneth R. Weisshaar

Director, Orthofix International N.V.

Director, Precision Therapeutics

Executive Officers

Andrew E. Kersey

President and Chief Executive Officer

Jeffery A. Baird

Chief Financial Officer



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