

CAS MEDICAL SYSTEMS INC

Form S-3

August 06, 2010

As filed with the Securities and Exchange Commission on August 6, 2010

Registration No. 333-_____

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM S-3

REGISTRATION STATEMENT UNDER
THE SECURITIES ACT OF 1933

CAS MEDICAL SYSTEMS, INC.
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

06-1123096
(I.R.S. Employer Identification Number)

44 East Industrial Road
Branford, Connecticut 06405
(203) 488-6056
(Address, including zip code, and telephone number,
including area code, of registrant's principal executive offices)

Andrew E. Kersey
President and Chief Executive Officer
CAS Medical Systems, Inc.
44 East Industrial Road
Branford, Connecticut 06405
(203) 488-6056
(Name, address, including zip code, and telephone number,
including area code, of agent for service)

Copy to:

Michael Grundei, Esq.
Wiggin and Dana LLP
400 Atlantic Street
Stamford, Connecticut 06901
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Approximate date of commencement of proposed sale to public: From time to time after this registration statement has been declared effective.

If the only securities being registered on this form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. _____

If this form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. _____

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company
 (Do not check if a smaller reporting company)

CALCULATION OF REGISTRATION FEE

Title of Shares to be Registered	Amount to be Registered(1)	Proposed Maximum Offering Price Per Share	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, \$0.004 par value per share	1,708,333	\$2.105(2)	\$3,596,040.97(2)	\$256.40

(1) This registration statement also relates to an indeterminate number of shares of common stock issued to prevent dilution resulting from stock splits, stock dividends or similar transactions in accordance with Rule 416 under the Securities Act.

(2) Estimated solely for purposes of calculating the registration fee pursuant to Rule 457(c) under the Securities Act and based upon the average of the high and low prices on the Nasdaq Global Market on August 3, 2010.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. The selling stockholders named in this prospectus may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and the selling stockholders named in this prospectus are not soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject to completion, dated August 6, 2010

PROSPECTUS

1,708,333 Shares

CAS MEDICAL SYSTEMS, INC.

Common Stock

This prospectus relates to the offer and sale of up to 1,708,333 shares of our common stock by the selling stockholders listed on pages 10-12, including their transferees, pledgees or donees or their respective successors.

The prices at which these shares may be sold will be determined by the prevailing market price for shares of our common stock, in negotiated transactions or otherwise. We will not receive any of the proceeds from the sale of these shares.

Our common stock is listed on the Nasdaq Global Market under the symbol "CASM". On August 5, 2010, the last reported sale price for our common stock was \$2.132 per share.

Investing in our common stock involves significant risks. See "Risk Factors," beginning on page 3 of this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

This prospectus is dated _____, 2010

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This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission using a “shelf” registration or continuous offering process. Under this shelf process, selling stockholders may from time to time sell the securities described in this prospectus in one or more offerings.

This prospectus provides you with a general description of the securities that the selling stockholders may offer. Each time a selling stockholder sells securities, that selling stockholder is required to provide you with a prospectus and/or a prospectus supplement containing specific information about the selling stockholder and the terms of the securities being offered. A prospectus supplement may include other special considerations applicable to those securities. The prospectus supplement may also add, update or change information in this prospectus. If there is any inconsistency between the information in this prospectus and any prospectus supplement, you should rely on the information in the prospectus supplement. You should read both this prospectus and any prospectus supplement together with the additional information described under the heading “Where You Can Find More Information.”

The registration statement, of which this prospectus is a part, including the exhibits to the registration statement, provides additional information about us and the securities offered by the selling stockholders under this prospectus. The registration statement, including the exhibits, can be read on the website maintained by the Securities and Exchange Commission or at the offices of the Securities and Exchange Commission as set forth under the heading “Where You Can Find More Information.”

You should rely only on the information contained or incorporated by reference in this prospectus. We have not, and the selling stockholders have not, authorized anyone to provide you with information different from that contained or incorporated by reference in this prospectus. This prospectus is not an offer to sell, nor is it seeking an offer to buy, shares of our common stock in any jurisdiction in which the offer or sale is not permitted. The information contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or of any sale of common stock.

SUMMARY

This summary may not contain all the information that may be important to you. You should read the entire prospectus, including the financial data and related notes and other information incorporated by reference herein, before making an investment decision. The terms “CAS,” “we,” “us,” and “our” refer to CAS Medical Systems, Inc. and its subsidiary.

The Company

We are a medical technology company that develops, manufactures and markets non-invasive patient monitoring products that are vital to patient care. Our products include the FORE-SIGHT cerebral oximeter and sensors, MAXNIBP blood pressure measurement technology, bedside monitoring products, blood pressure cuffs and neonatal supplies. These products are designed to improve the quality of patient care by providing accurate non-invasive measurements that can improve patient outcomes and decrease hospital costs.

Our products have well established brand recognition in the markets we serve. We are the inventors of LASER-SIGHT NIRS technology, which is the foundation for our newest product, the FORE-SIGHT Absolute Cerebral Oximeter. This product is the only cerebral oximeter on the market today approved to provide a non-trend, absolute measure of cerebral tissue oxygen saturation for all patient populations, from neonate through adult, regardless of age or weight. The brain is the organ least tolerant of oxygen deprivation. Without sufficient oxygen, brain damage may occur within minutes, which can result in stroke, paralysis, other disabilities or death. Reliable measurement of absolute levels of brain oxygen is therefore important to clinicians, especially in critical care situations where there may be a high risk of the brain receiving less oxygen than it needs. FORE-SIGHT measures absolute levels of brain oxygenation in the most critically ill patients, including pediatric and neonatal intensive care patients and adults undergoing cardiac bypass and other high risk surgeries. Use of the FORE-SIGHT system enables the clinician to reduce potentially serious negative outcomes in these settings by providing real-time non-invasive measurement of oxygen levels in the brain, allowing the clinician to intervene before brain damage occurs.

Description of Products and Services

We have several categories of products and services. The combined categories represent one reportable business unit. Categories of products and services are as follows:

- Critical Care Monitoring – includes sales of the FORE-SIGHT cerebral oximeter monitors, sensors and accessories.

- Blood Pressure Measurement Technology - includes sales to Original Equipment Manufacturers (“OEM”) of our proprietary non-invasive blood pressure technology (MAXNIBP) sold as a discrete module to be included in the OEM customers own multi-parameter monitors, and associated blood pressure cuffs and accessories for the OEM market, and related license fees.

- Bedside Monitoring – includes sales of our vital signs and bedside monitors and accessories incorporating various combinations of measurement parameters for both human and

·veterinary use. Parameters found in these monitors include our proprietary MAXNIBP non-invasive blood pressure, pulse oximetry, electro-cardiography, temperature, and capnography.

·Supplies and Service – includes sales of blood pressure cuffs and rapid infusor cuffs, neonatal intensive care supplies including electrodes and skin temperature probes, and service repair.

The Offering

Common Stock offered by Selling Stockholders	1,708,333
Use of Proceeds	We will not receive any proceeds from the sale of shares in this offering.
Nasdaq Global Market Symbol	CASM

Our principal executive offices are located at 44 East Industrial Road, Branford, Connecticut 06405, and our telephone number is (203) 488-6056. We maintain a website at www.casmed.com where general information about us is available. We are not incorporating the contents of the website into this prospectus.

RISK FACTORS

Our business faces many risks. If any of the events or circumstances described in the following risk factors actually occurs, our business, financial condition or results of operations could suffer, and the trading price of our common stock could decline. The risks described below may not be the only risks we face. Additional risks that we do not yet know of or that we currently believe are immaterial may also impair our business operations. You should consider the following risks, as well as the other information included or incorporated by reference in this prospectus before deciding to invest in our common stock.

Risks Related to Our Business and Industry

We Have A Recent History of Net Losses and are Subject to Risks Regarding Future Liquidity

We have experienced operating losses during our two most recent fiscal years. There can be no assurance that we will be able to improve our results of operations in the near term or at all.

Our ordinary short-term capital needs are expected to be met from a combination of cash flows from operations and borrowings under our line-of-credit agreement. Future cash flows, however, may be impacted by a number of factors, including changing market conditions, market acceptance of the FORE-SIGHT system, changes in payment terms to one or more major suppliers and the loss of one or more key customers. Our borrowings may be impacted by our failure to meet financial covenants under our current or any future loan agreement or the discretionary actions of our lender.

We believe that our current levels of working capital and available debt financing are insufficient to fund major growth initiatives, such as significant increases in our sales and marketing personnel, or material acquisitions. Any major growth initiatives would require us to seek other sources or forms of debt or equity capital. There can be no assurance that we will be successful in securing such funding for major initiatives. Any issuance of equity or equity-linked securities would dilute the ownership interest of existing shareholders.

We Are a Small Company In A Highly Competitive Industry

Competition from other medical device companies, diversified healthcare companies and research and academic institutions is intense and expected to increase. Many companies engaged in the medical device sector have substantially greater financial and other resources and development capabilities than we do, and have substantially greater experience in testing of products, obtaining regulatory approvals and manufacturing and marketing medical devices. Therefore, our competitors may succeed in obtaining approval for products more rapidly than we can. Other companies may succeed in developing and commercializing products earlier than we do. In addition to competing with universities and other research institutions in the development of products, technologies and processes, the Company may compete with other companies in acquiring rights to products or technologies from universities. Also, the medical device market is experiencing increasing customer concentration, due to the emergence of large purchasing groups. We cannot assure you that we will develop products that are more effective or achieve greater market acceptance than competitive products, or that our competitors will not succeed in developing products and technologies that are more effective than those being developed by us or that would render our products and technologies less competitive or obsolete. Moreover, there can be no assurance that we will be able to successfully sell to large purchasing groups, which are increasingly looking to suppliers that can provide a broader range of products than we currently offer.

Our Business Is Impacted By Customer Concentration

Our five largest customers accounted for approximately 27%, 31%, and 26% of revenues in 2009, 2008, and 2007, respectively. Among these customers, Medtronic, Inc., customarily our largest single customer, accounted for 11% and 12% of revenues during 2009 and 2008, respectively. In addition, we have a blanket agreement with the U.S. Department of Veterans Affairs (“VA”) for purchase of our vital signs monitors through December 2010. Over the past five years, we have sold close to 12,000 vital signs monitors to VA hospitals and clinics throughout the U.S. Collective sales to VA hospitals accounted for over 11% of overall sales for 2009. The failure to renew the blanket agreement with the VA or the loss of any other significant customer could have a material adverse effect on our financial position and results of operations.

We Are Party to Material Patent Litigation

On August 7, 2009, Somanetics Corporation (“Somanetics”) filed an action against us in the United States District Court for the Eastern District of Michigan alleging patent infringement, false advertising, and common law unfair competition and libel relating to our FORE-SIGHT product line. The complaint requests injunctive relief and unspecified monetary damages, including treble damages and reasonable attorneys’ fees. On October 19, 2009, we answered the complaint, denying all allegations against us. In addition, we have asserted counterclaims against Somanetics for violation of the antitrust laws and for a declaration that the patents sued upon are invalid, unenforceable, and/or have not been infringed by us. The defense and prosecution of this matter is likely to be both costly and time-consuming, even if the outcome is favorable to us. An adverse outcome in the defense of this matter could cause us to lose proprietary rights with respect to our FORE-SIGHT product, subject us to significant liabilities or require us to license rights at significant cost or to cease selling our FORE-SIGHT products. Any of these events could have a material adverse effect on our business, operating results and financial condition.

The Recent Global Economic Crisis Has Had And May Continue To Have A Negative Effect On Our Business And Operations

The recent global economic crisis has caused, among other things, reductions in hospital capital equipment expenditures, which has had and is expected to continue to have a negative effect on our business and results of operations. Many of our customers and suppliers have been affected by the current economic turmoil. Current or potential customers and suppliers may no longer be in business, may be unable to fund purchases or determine to reduce purchases, all of which has led and is expected to continue to lead to reduced demand for our products and increased customer payment delays. Further, suppliers may not be able to supply us with needed components on a timely basis, may increase prices, or may go out of business, which could result in our inability to meet customer demand or affect our gross margins. The timing and nature of any recovery in the economy remains uncertain, and there can be no assurance that market conditions will improve in the near future or that our results will not be materially and adversely affected. Such conditions make it very difficult to forecast operating results, make business decisions and identify and address material business risks.

We Are Devoting Substantial Resources To The Development And Marketing Of Our Cerebral Oximetry Products

We expect to devote a significant amount of resources to continue the development and marketing of our FORE-SIGHT cerebral oximetry products. We believe that substantial resources are required to further penetrate the markets for these products. Such investments include further research and development, including significant expenditures for clinical studies, equipment for placements at customer sites, further expansion of a direct sales force, marketing expenditures and general working capital requirements. There can be no assurance that we will be successful in these endeavors. In addition,

since we have limited financial resources, our emphasis on the FORE-SIGHT cerebral oximetry products may result in a lack of sufficient resources available for our other existing product lines, which may negatively impact our overall financial results.

The Sale Of Our Products May Result In Significant Product Liability Exposure

As a manufacturer of medical diagnostic equipment, we face product liability claims. We maintain product liability insurance in an aggregate amount of \$5 million. We cannot assure you that this insurance coverage will be adequate to cover any product liability claims that occur in the future or that product liability insurance will continue to be available at reasonable prices. We are currently a defendant in a product liability action. A trial date has not yet been scheduled for this matter. We believe that our product liability insurance is sufficient to cover any damages and costs that are likely with respect to this matter. Any product liability judgments or settlements in excess of insurance coverage could have a material adverse effect on our business and results of operations.

Our Business Could Be Adversely Affected If We Cannot Protect Our Proprietary Technology Or If We Infringe On The Proprietary Technology Of Others.

Our proprietary technology aids our ability to compete effectively with other companies in certain markets in which we compete. Although we have been awarded, have filed applications for, or have been licensed under numerous patents, these patents may not fully protect our technology or competitive position. Further, our competitors may apply for and obtain patents that will restrict our ability to make and sell our products.

Our competitors may intentionally infringe our patents. Third parties may also assert infringement claims against us. Litigation may be necessary to enforce patents issued to us, to protect our trade secrets or know-how, to defend ourselves against claimed infringement of the rights of others or to determine the scope and validity of the proprietary rights of others. The defense and prosecution of patent suits are both costly and time-consuming, even if the outcome is favorable to us. Such proceedings can be extremely expensive and their outcome very unpredictable. An adverse outcome in the defense of a patent suit could cause us to lose proprietary rights, subject us to significant liabilities to third parties or require us to license rights from third parties or to cease selling our products. Any of these events could have a material adverse effect on our business, operating results and financial condition. We also rely on unpatented proprietary technology that others may independently develop or otherwise obtain access to. Our inability to maintain the proprietary nature of our technologies could negatively affect our revenues and earnings.

We Are Subject To Significant Government Regulation

Our business is subject to varying degrees of governmental regulation in the countries in which we operate. In the United States, our products are subject to regulation as medical devices by the Food and Drug Administration (“FDA”), and by other federal and state agencies. These regulations pertain to the manufacturing, labeling, development and testing of our devices as well as to the maintenance of required records. An FDA regulation also requires prompt reporting by all medical device manufacturers of an event or malfunction involving a medical device where the device caused or contributed to death or serious injury or is likely to do so.

Federal law provides for several routes by which the FDA reviews medical devices before their entry into the marketplace. Medical products of the type currently being marketed and under development by us are subject to regulation under the Food, Drug and Cosmetic Act (the “FD&C Act”) and numerous acts and amendments such as the Quality System Regulations which replaced the

regulations formerly called Good Manufacturing Practices. In addition, depending upon product type, we must also comply with those regulations governing the Conduct of Human Investigations, Pre-Market Regulations and other requirements, as promulgated by the FDA. The FDA is authorized to inspect a device, its labeling and advertising, and the facilities in which it is manufactured in order to ensure that the device is not manufactured or labeled in a manner which could cause it to be injurious to health.

The FDA has adopted regulations which classify medical devices based upon the degree of regulation believed necessary to assure safety and efficacy. A device is classified as a Class I, II, or III device. Class I devices are subject only to general controls. Class II devices, in addition to general controls, are or will be subject to "performance standards." Most devices are also subject to the 510(k) pre-market notification provision. In addition, some Class III devices require FDA pre-market approval before they may be marketed commercially because their safety and effectiveness cannot be assured by the general controls and performance standards of Class I or II devices. Our products are primarily Class I and II devices and several of them have required FDA notification under Section 510(k) of the FD&C Act.

Satisfaction of clearance or approval requirements may take up to several years or more and may vary substantially based upon the type, complexity and novelty of the product. The effect of government regulation may be to delay marketing of new products for a considerable or indefinite period of time, to impose costly procedures upon our activities and to furnish a competitive advantage to larger companies that compete with us. We cannot assure you that FDA or other regulatory clearance or approval for any products we develop will be granted on a timely basis, if at all, or, once granted, that clearances or approvals will not be withdrawn or other regulatory action taken which might limit our ability to market our proposed products. Any delay in obtaining or failure to obtain these clearances or approvals would adversely affect the manufacturing and marketing of our products and the ability to generate additional product revenue.

Federal Regulatory Reforms May Adversely Affect Our Ability To Successfully Market Our Products And Impact Our Financial Condition

Recent efforts to reform the U.S. health care industry led by President Obama and certain members of Congress have resulted in legislation and other measures which will effect changes in healthcare delivery and coverage, and public and private reimbursements for services performed. Federal initiatives may also affect state programs. Legislative changes may affect hospital market expenditures for medical devices, the type and volume of procedures performed, and the demand for new and innovative products. These changes could be significant and may adversely affect the demand for our products, our results of operations, cash flows and our overall financial condition.

Outside of the U.S., healthcare delivery and reimbursement systems vary by country. Efforts to control rising healthcare costs, changes in government sponsored programs and participation and various other economic factors may impact our ability to successfully market our products outside of the U.S.

We Rely To A Significant Degree On Our Proprietary Rights

We rely on a combination of patents, trade secrets, trademarks and non-disclosure agreements to protect our proprietary rights. We cannot assure you that our patent applications will result in the issuance of patents or that any patents owned by us now or in the future will afford protection against competitors that develop similar technology. We also cannot assure you that our non-disclosure agreements will provide meaningful protection for our trade secrets or other proprietary information. Moreover, in the absence of patent protection, our business may be adversely affected by competitors who independently develop substantially equivalent or superior technology.

Our Products May Become Rapidly Obsolete

The areas in which we are developing, distributing, and/or licensing products involve rapidly developing technology. Others may develop products that might cause products being developed, distributed or licensed by us to become obsolete or uneconomical or result in products superior to our products.

We Are Subject to Currency and Related Risks

Our international sales subject us to currency and related risks. Our international sales accounted for 31% of our total net sales for the 2009 fiscal year. We expect that international sales will continue to constitute a significant portion of our business. Although we sell our products in United States dollars and are not subject to significant currency risks, an increase in the value of the United States dollar relative to foreign currencies in our international markets could make our products less price competitive in these markets.

We Depend Highly On Certain Key Management Personnel

We believe that our future success will depend to a significant extent on the efforts and abilities of our senior management, in particular, Andrew Kersey, our President and Chief Executive Officer, and Jeffery Baird, our Chief Financial Officer. The loss of the services of Messrs. Kersey or Baird could have a material adverse effect on our business and results of operations.

Risks Related to Investment in Our Common Stock

Sales Of A Substantial Number Of Shares Of Our Common Stock In The Public Market Originally Issued Through The Exercise Of Options Or Warrants Could Adversely Affect The Market Price Of Our Common Stock And May Also Adversely Affect Our Ability To Raise Additional Capital

As of June 30, 2010, options and warrants for the purchase of 1,482,576 shares of our common stock were outstanding. Historically, our common stock has been thinly traded. This low trading volume may have had a significant effect on the market price of our common stock, which may not be indicative of the market price in a more liquid market.

We Do Not Expect To Pay Cash Dividends

We have not paid cash dividends on our common stock since inception, and at this time we do not anticipate that we will pay cash dividends in the foreseeable future.

An Acquisition Of The Company May Be Hindered

Our Board of Directors is authorized to issue from time to time, without stockholder authorization, shares of preferred stock, in one or more designated series or classes. We are also subject to a Delaware statute regulating business combinations. These provisions could discourage, hinder or preclude an unsolicited acquisition of CAS and could make it less likely that stockholders receive a premium for their shares as a result of any takeover attempt.

Our Failure To Meet Continued Listing Compliance Criteria In Accordance With NASDAQ Marketplace Rules Could Result In Nasdaq Delisting Our Common Stock.

Nasdaq Global Market listing rules require us to maintain minimum stockholders' equity of \$10,000,000 and to meet certain other closing bid price, marketplace value, and other financial metric criteria. On April 1, 2010, we received a written notice from the Nasdaq Stock Market ("Nasdaq") advising that we were not in compliance with the Nasdaq Global Market listing rules because our stockholders' equity at December 31, 2009 of \$9,348,670 was less than the minimum requirement. On June 16, 2010, we completed a private placement of 1,375,000 shares of our common stock, resulting in gross cash proceeds of \$1,925,000. By letter dated June 22, 2010, Nasdaq accepted our plan and provided us with an extension through August 23, 2010 to establish evidence of compliance. Even with our private placement and the extension granted by Nasdaq with respect to our stockholders' equity, there is a risk we could again fail to meet Nasdaq listing criteria, which ultimately could lead to the delisting of our stock. In the event that we were delisted from the Nasdaq Global Market, our common stock would become significantly less liquid, which would likely adversely affect its value. Although our common stock would likely be traded over-the-counter or on the pink sheets, these types of listings involve more risk and trade less frequently and in smaller volumes than securities traded on the Nasdaq Global Market.

The Market Price Of Our Common Stock Has Been And May Continue To Be Volatile.

The market price of our common stock has in the past and may in the future experience significant volatility as a result of a number of factors, many of which are outside of our control. Each of the risk factors listed in these Risk Factors, and the following factors, may affect the market price for our common stock:

- our quarterly results and ability to meet market expectations;
- our ability to continue to attract and retain customers;
- the amount and timing of operating costs and capital expenditures related to the maintenance and expansion of our businesses and operations;
- patents issued or not issued to us or our competitors;
- announcements of technological innovations, new products or product enhancements, strategic alliances, mergers, acquisitions, dispositions, or significant agreements by us or by our competitors;
- commencement or threat of litigation or new legislation or regulation that adversely affects our business;
- general economic conditions and those economic conditions specific to our industry;
- geopolitical events such as war, threat of war, or terrorist actions;
- sales of substantial amounts of our common stock, including shares issued upon the exercise of outstanding options or warrants; and
- potential for industry consolidation in our sector.

SPECIAL NOTE ON FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein, contain “forward-looking statements.” These statements may be made directly in this prospectus or in documents incorporated by reference herein. Words such as “anticipate,” “estimate,” “expect,” “project,” “intend,” “plan,” “believe” and words and terms of similar substance used in connection with any discussion of future operating or financial performance, identify forward-looking statements. All forward-looking statements constitute our present estimates of future events and are subject to a number of factors and uncertainties, including, without limitation, the risks discussed in “Risk Factors”, that could cause actual results to differ materially from those described in the forward-looking statements. In addition, the risks related to our business, among others, could cause actual results to differ materially from those described in the forward-looking statements. You are cautioned not to place undue reliance on the forward-looking statements, which speak only as of the date of this prospectus or as of the date of any document incorporated by reference in this prospectus, as applicable. We are not under any obligation, and expressly disclaim any obligation, to update or alter any forward-looking statements, whether as a result of new information, future events or otherwise.

USE OF PROCEEDS

We will not receive any of the proceeds from the sale of the common stock by the selling stockholders. All proceeds will be for the account of the selling stockholders, as described below. See “Selling Stockholders” and “Plan of Distribution.”

SELLING STOCKHOLDERS

This prospectus relates to the offer and sale from time to time by the selling stockholders, including their transferees, pledgees or donees or their respective successors of up to 1,708,333 shares of common stock.

The selling stockholders listed in the table below may have sold or transferred, in transactions exempt from the registration requirements of the Securities Act of 1933, as amended (the “Act”), some or all of their common stock since the date as of which the information in the table is presented. Information about the selling stockholders may change over time. Any changed information will be set forth in an amendment to the registration statement or supplement to this prospectus, as required by law.

None of the selling stockholders nor any of their affiliates, officers, directors or principal equity holders has held any position or office or has had any material relationship with us within the past three years, except as set forth in the footnotes to the table below. None of the selling stockholders are broker-dealers or affiliated with a broker-dealer, except as set forth in the footnotes to the table below.

The shares of common stock offered herein by jVen Capital, LLC were issued pursuant to a Subscription Agreement dated May 9, 2008 and all other shares offered herein were issued pursuant to a Subscription Agreement dated June 16, 2010.

On May 9, 2008, we entered into a Subscription Agreement (the “2008 Subscription Agreement”) with jVen Capital, LLC (the “2008 Subscriber”), pursuant to which we issued in a private placement 333,333 shares (the “2008 Shares”) of our common stock, for an aggregate cash purchase price of \$1,000,000 representing a per-share purchase price of \$3.00.

The securities offered and sold to the 2008 Subscriber in the private placement had not been registered under the Securities Act and were sold in reliance upon the exemption from securities registration afforded by Regulation D under the Securities Act. The 2008 Subscriber represented to us that it is an “accredited investor”, as defined in Rule 501 of Regulation D. There were no placement agent fees paid in connection with the issuance of the 2008 Shares.

On June 16, 2010, we entered into a Subscription Agreement (the “2010 Subscription Agreement”) with certain accredited investors listed therein (the “2010 Subscribers”), pursuant to which we issued in a private placement 1,375,000 shares (the “2010 Shares”) of our common stock, for an aggregate cash purchase price of \$1,925,000 representing a per-share purchase price of \$1.40.

The securities offered and sold to the 2010 Subscribers in the private placement had not been registered under the Securities Act and were sold in reliance upon the exemption from securities registration afforded by Regulation D under the Securities Act. Each 2010 Subscriber represented to us that it is an “accredited investor”, as defined in Rule 501 of Regulation D. There were no placement agent fees paid in connection with the issuance of the 2010 Shares.

We are filing the registration statement of which this prospectus is a part pursuant to the provisions of the 2008 Subscription Agreement and the 2010 Subscription Agreement.

The following table contains information furnished to us by the selling stockholders with respect to the selling stockholders and the common stock beneficially owned by each selling stockholder that may be offered under this prospectus. We prepared this table based on information supplied to us by the selling stockholders named in the table and have not sought to verify such information.

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Name of Selling Stockholder	Shares of Common Stock Beneficially Owned Prior to Offering	Shares of Common Stock Being Sold	Shares of Common Stock Beneficially Owned After Offering (1)	Percentage of Common Stock Beneficially Owned After the Offering (2)
Saxony Real Estate LLC (3)	65,000	65,000	0	-
Barry N. Wish	140,000	100,000	40,000	*
St. Alban's Global Management, LLLP (4)	200,000	200,000	0	-
Edwin Levy (5)	87,172	50,000	37,172	*
Richard H. Molke	99,907	50,000	49,907	*
Vadim Mostovoy (6)	211,898	100,000	111,898	*
AJ Investors (7)	400,000	100,000	300,000	2.3%
AJ Investors #2 (8)	379,100	100,000	279,100	2.2%
Berenholz Capital Growth LLC (9)	58,000	50,000	8,000	*
BlueLine Capital Partners II, L.P. (10)	50,000	50,000	0	-
Sandra F. Pessin	684,050(11)	400,000	284,050	2.2%
Gregory C. Lake	10,000	10,000	0	-
Fred Ehrman	313,904	100,000	213,904	1.7%
jVen Capital, LLC (12)	375,556(13)	333,333	42,223	*

* Less than 1%

(1) Assumes that all shares of the selling stockholders covered by this prospectus are sold, and that the selling stockholders do not acquire any additional shares of common stock before completion of this offering. However, as each such selling stockholder can offer all, some or none of its common stock, no definitive estimate can be given as to the number of shares that any selling stockholder will ultimately offer or sell under the prospectus.

(2) This percentage is calculated using as the numerator, the number of shares of common stock included in the prior column and as the denominator, 12,948,791 shares of common stock outstanding as of July 30, 2010.

(3) Michael Cahr has the power to vote and dispose of the securities held by Saxony Real Estate LLC.

(4) Paul A. Novelly has the power to vote and dispose of the securities held by St. Alban's Global Management, LLLP.

- (5) Mr. Levy is affiliated with Levy Harkins & Co., Inc., a broker-dealer. However, the shares listed herein were purchased personally and in the ordinary course of business, and Mr. Levy had no agreements or understandings, directly or indirectly, with any person to distribute such securities.
- (6) Mr. Mostovoy is affiliated with Bishop, Rosen & Co., Inc., a broker-dealer. However, the shares listed herein were purchased personally and in the ordinary course of business, and Mr. Mostovoy had no agreements or understandings, directly or indirectly, with any person to distribute such securities.
- (7) Adam Katz has the power to vote and dispose of the securities held by AJ Investors.
- (8) Jason Katz has the power to vote and dispose of the securities held by AJ Investors #2.
- (9) Harris Berenholz has the power to vote and dispose of the securities held by Berenholz Capital Growth LLC.
- (10) Scott A. Shuda has the power to vote and dispose of the securities held by BlueLine Capital Partners II, L.P.
- (11) As set forth in Schedule 13D filed with the Securities and Exchange Commission on June 29, 2010. Includes 284,050 shares held by SEP F/B/O Norman H. Pessin. Norman H. Pessin is the spouse of Sandra F. Pessin. Mrs. Pessin's address is 366 Madison Avenue, 14th Floor, New York, NY 10017.
- (12) Evan Jones is the Managing Member of jVen Capital, LLC and has the power to vote and dispose of the securities held by jVen Capital, LLC. Mr. Jones is also a member of the board of directors of CAS Medical Systems, Inc.
- (13) Includes 42,223 shares beneficially owned by Evan Jones. Such beneficially owned shares include options to purchase 13,333 shares, which are exercisable within 60 days, and 6,849 shares of restricted stock.

PLAN OF DISTRIBUTION

General

The selling stockholders may sell the shares of our common stock covered by this registration statement on the Nasdaq Global Market or otherwise using one or more of the following methods:

- underwriters in a public offering;
- “at the market” to or through market makers or into an existing market for the securities;
- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- block trades in which the broker-dealer will attempt to sell the securities as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- privately negotiated transactions;
- short sales (including short sales “against the box”);

- through the writing or settlement of standardized or over-the-counter options or other hedging or derivative transactions, whether through an options exchange or otherwise;
- by pledge to secure debts and other obligations;
- in other ways not involving market makers or established trading markets, including direct sales to purchasers or sales effected through agents;
- a combination of any such methods of sale; and
- any other method permitted pursuant to applicable law.

To the extent required by law, this prospectus may be amended or supplemented from time to time to describe a specific plan of distribution. Any prospectus supplement relating to a particular offering of our common stock by the selling stockholders may include the following information to the extent required by law:

- the terms of the offering;
- the names of any underwriters or agents;
- the purchase price of the securities;
- any delayed delivery arrangements;
- any underwriting discounts and other items constituting underwriters' compensation;
- any initial public offering price; and
- any discounts or concessions allowed or reallocated or paid to dealers.

The selling stockholders may offer our common stock to the public through underwriting syndicates represented by managing underwriters or through underwriters without an underwriting syndicate. If underwriters are used for the sale of our common stock, the securities will be acquired by the underwriters for their own account. The underwriters may resell the common stock in one or more transactions, including in negotiated transactions at a fixed public offering price or at varying prices determined at the time of sale. In connection with any such underwritten sale of common stock, underwriters may receive compensation from the selling stockholders, for whom they may act as agents, in the form of discounts, concessions or commissions. Underwriters may sell common stock to or through dealers, and the dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters and/or commissions from the purchasers for whom they may act as agents. Such compensation may be in excess of customary discounts, concessions or commissions.

If the selling stockholders use an underwriter or underwriters to effectuate the sale of common stock, we and/or they will execute an underwriting agreement with those underwriters at the time of sale

of those securities. To the extent required by law, the names of the underwriters will be set forth in the prospectus supplement used by the underwriters to sell those securities. Unless otherwise indicated in the prospectus supplement relating to a particular offering of common stock, the obligations of the underwriters to purchase the securities will be subject to customary conditions precedent and the underwriters will be obligated to purchase all of the securities offered if any of the securities are purchased.

In effecting sales, brokers or dealers engaged by the selling stockholders may arrange for other brokers or dealers to participate. Broker-dealers may receive discounts, concessions or commissions from the selling stockholders (or, if any broker-dealer acts as agent for the purchaser of shares, from the purchaser) in amounts to be negotiated. Such compensation may be in excess of customary discounts, concessions or commissions. If dealers are utilized in the sale of securities, the names of the dealers and the terms of the transaction will be set forth in a prospectus supplement, if required.

The selling stockholders may also sell shares of our common stock from time to time through agents. We will name any agent involved in the offer or sale of such shares and will list commissions payable to these agents in a prospectus supplement, if required. These agents will be acting on a best efforts basis to solicit purchases for the period of their appointment, unless we state otherwise in any required prospectus supplement.

The selling stockholders may sell shares of our common stock directly to purchasers. In this case, they may not engage underwriters or agents in the offer and sale of such shares.

The selling stockholders and any underwriters, broker-dealers or agents that participate in the sale of the selling stockholders' shares of common stock or interests therein may be "underwriters" within the meaning of the Securities Act. Any discounts, commissions, concessions or profit they earn on any resale of the shares may be underwriting discounts and commissions under the Securities Act. Selling stockholders who are "underwriters" within the meaning of the Securities Act will be subject to the prospectus delivery requirements of the Securities Act. We will make copies of this prospectus available to the selling stockholders for the purpose of satisfying the prospectus delivery requirements of the Securities Act, if applicable. If any entity is deemed an underwriter or any amounts deemed underwriting discounts and commissions, the prospectus supplement will identify the underwriter or agent and describe the compensation received from the selling stockholders.

We are not aware of any plans, arrangements or understandings between any of the selling stockholders and any underwriter, broker-dealer or agent regarding the sale of the shares of our common stock by the selling stockholders. We cannot assure you that the selling stockholders will sell any or all of the shares of our common stock offered by them pursuant to this prospectus. In addition, we cannot assure you that the selling stockholders will not transfer, devise or gift the shares of our common stock by other means not described in this prospectus. Moreover, shares of common stock covered by this prospectus that qualify for sale pursuant to Rule 144 under the Securities Act may be sold under Rule 144 rather than pursuant to this prospectus.

From time to time, one or more of the selling stockholders may pledge, hypothecate or grant a security interest in some or all of the shares owned by them. The pledgees, secured parties or persons to whom the shares have been hypothecated will, upon foreclosure, be deemed to be selling stockholders. The number of a selling stockholder's shares offered under this prospectus will decrease as and when it takes such actions. The plan of distribution for that selling stockholder's shares will otherwise remain unchanged. In addition, a selling stockholder may, from time to time, sell the shares short, and, in those instances, this prospectus may be delivered in connection with the short sales and the shares offered under this prospectus may be used to cover short sales.

A selling stockholder may enter into hedging transactions with broker-dealers and the broker-dealers may engage in short sales of the shares in the course of hedging the positions they assume with that selling stockholder, including, without limitation, in connection with distributions of the shares by those broker-dealers. A selling stockholder may enter into option or other transactions with broker-dealers that involve the delivery of the shares offered hereby to the broker-dealers, who may then resell or otherwise transfer those securities.

A selling stockholder which is an entity may elect to make a pro rata in-kind distribution of the shares of common stock to its members, partners or shareholders. In such event we may file a prospectus supplement to the extent required by law in order to permit the distributees to use the prospectus to resell the common stock acquired in the distribution. A selling stockholder which is an individual may make gifts of shares of common stock covered hereby. Such donees may use the prospectus to resell the shares or, if required by law, we may file a prospectus supplement naming such donees.

Indemnification

We and the selling stockholders may enter agreements under which underwriters, dealers and agents who participate in the distribution of our common stock may be entitled to indemnification by us and/or the selling stockholders against various liabilities, including liabilities under the Securities Act, and to contribution with respect to payments which the underwriters, dealers or agents may be required to make.

Price Stabilization and Short Positions

If underwriters or dealers are used in the sale, until the distribution of the securities is completed, rules of the Securities and Exchange Commission may limit the ability of any underwriters to bid for and purchase the securities. As an exception to these rules, representatives of any underwriters are permitted to engage in transactions that stabilize the price of the securities. These transactions may consist of bids or purchases for the purpose of pegging, fixing or maintaining the price of the securities. If the underwriters create a short position in the securities in connection with the offering (that is, if they sell more securities than are set forth on the cover page of the prospectus supplement) the representatives of the underwriters may reduce that short position by purchasing securities in the open market.

We make no representation or prediction as to the direction or magnitude of any effect that the transactions described above may have on the price of our common stock. In addition, we make no representation that the representatives of any underwriters will engage in these transactions or that these transactions, once commenced, will not be discontinued without notice.

Fees and Expenses

We have agreed, among other things, to bear all fees and expenses in connection with the sale of the securities being registered hereby (except any underwriting discounts and commissions and expenses incurred by the selling stockholders for brokerage, accounting, tax or legal services or other expenses incurred by the selling stockholders in disposing of the securities being registered hereby).

LEGAL MATTERS

The validity of the securities in respect of which this prospectus is being delivered will be passed on for us by Wiggin and Dana LLP, Stamford, Connecticut.

EXPERTS

The consolidated financial statements of CAS Medical Systems, Inc. as of December 31, 2009 and 2008, and for the years then ended audited by UHY LLP, independent registered public accounting firm, have been incorporated by reference herein in reliance upon the report thereon dated March 29, 2010 of said firm, given upon its authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the Securities and Exchange Commission under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). You may read and copy any reports, statements or other information on file at the Securities and Exchange Commission public reference room located at 100 F Street N.E., Washington, D.C. 20549. Please call the Securities and Exchange Commission at 1-800-SEC-0330 for further information on the public reference room. Securities and Exchange Commission filings are also available to the public from commercial document retrieval services. These filings are also available at the Internet website maintained by the Securities and Exchange Commission at <http://www.sec.gov>.

We incorporate by reference into this prospectus the documents listed below and any future filings we make with the Securities and Exchange Commission pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act prior to the termination of the offering. Any statement in a document incorporated by reference into this prospectus will be deemed to be modified or superseded to the extent a statement contained in (1) this prospectus or (2) any other subsequently filed document that is incorporated by reference into this prospectus modifies or supersedes such statement.

- Current Reports on Form 8-K filed on March 17, 2010, April 1, 2010, April 6, 2010, April 22, 2010, June 10, 2010, June 17, 2010 and June 24, 2010;
- Quarterly Reports on Form 10-Q for the quarters ended March 31, 2010 and June 30, 2010;
- Annual Report on Form 10-K for the year ended December 31, 2009;
- Definitive Proxy Statement filed April 26, 2010; and
- the description of our common stock contained in the Registration Statement on Form S-18 filed on March 7, 1985.

Documents incorporated by reference are available without charge by requesting them in writing or by telephone at:

CAS Medical Systems, Inc.
Investor Relations
44 East Industrial Road
Branford, Connecticut 06405
(203) 488-6056

INDEMNIFICATION FOR SECURITIES ACT LIABILITIES

Section 145 of the Delaware General Corporation Law provides that a corporation may indemnify directors and officers as well as other employees and individuals against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with any threatened, pending or completed actions, suits or proceedings in which such person is made a party by reason of such person being or having been a director, officer, employee or agent to the Registrant. The Delaware General Corporation Law provides that Section 145 is not exclusive of other rights to which those seeking indemnification may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise. Article 5.2(a) of our certificate of incorporation and Article XII of our bylaws provide for indemnification by us of our directors, officers, employees and agents to the fullest extent permitted by the Delaware General Corporation Law.

Section 102(b)(7) of the Delaware General Corporation Law permits a corporation to provide in its certificate of incorporation that a director of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) for unlawful payments of dividends or unlawful stock repurchases, redemptions or other distributions, or (iv) for any transaction from which the director derived an improper personal benefit. Our certificate of incorporation provides for such limitation of liability.

We maintain standard policies of insurance under which coverage is provided to our directors and officers against loss arising from claims made by reason of breach of duty or other wrongful act.

The foregoing indemnity provisions could require indemnification with respect to liabilities arising under the Securities Act of 1933 (the "Act"). Insofar as indemnification for liabilities arising under the Act may be permitted to our directors, officers and controlling persons pursuant to the foregoing provisions, or otherwise, we have been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable.

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution

The following table sets forth the costs and expenses, all of which will be borne by the Registrant, in connection with the sale of the securities being registered hereby (except any underwriting discounts and commissions and expenses incurred by the selling stockholders for brokerage, accounting, tax or legal services or other expenses incurred by the selling stockholders in disposing of the securities being registered hereby). All amounts are estimates except the registration fee.

SEC registration fee	\$256.40
Printing expenses	\$2,500.00
Legal fees and expenses of the Registrant	\$12,500.00
Accounting fees and expenses	\$7,500.00
Miscellaneous expenses	\$2,243.60
Total	\$25,000.00

Item 15. Indemnification of Directors and Officers

Section 145 of the Delaware General Corporation Law provides that a corporation may indemnify directors and officers as well as other employees and individuals against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with any threatened, pending or completed actions, suits or proceedings in which such person is made a party by reason of such person being or having been a director, officer, employee or agent to the Registrant. The Delaware General Corporation Law provides that Section 145 is not exclusive of other rights to which those seeking indemnification may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise. Article 5.2(a) of the Registrant's certificate of incorporation and Article XII of the Registrant's bylaws provide for indemnification by the Registrant of its directors, officers, employees and agents to the fullest extent permitted by the Delaware General Corporation Law.

Section 102(b)(7) of the Delaware General Corporation Law permits a corporation to provide in its certificate of incorporation that a director of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) for unlawful payments of dividends or unlawful stock repurchases, redemptions or other distributions, or (iv) for any transaction from which the director derived an improper personal benefit. The Registrant's certificate of incorporation provides for such limitation of liability.

The Registrant maintains standard policies of insurance under which coverage is provided to its directors and officers against loss arising from claims made by reason of breach of duty or other wrongful act.

Item 16. Exhibits

Exhibit Number Document

4.1	Certificate of Incorporation of Registrant (1)
4.2	Amended and Restated Bylaws of Registrant (2)
5.1	Opinion of Wiggin and Dana LLP
23.1	Consent of UHY LLP
23.2	Consent of Wiggin and Dana LLP (included in the opinion filed as Exhibit 5.1)
24.1	Power of Attorney (included on signature page)

(1) Incorporated by reference to the Registrant's Registration Statement on Form S-8 filed with the Securities and Exchange Commission on June 30, 2009.

(2) Incorporated by reference to the Registrant's Form 8-K filed November 30, 2007.

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Item 17. Undertakings.

(a) The undersigned Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933.

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement.

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement.

provided, however, that paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(i) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement.

(ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B

relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

- (5) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities: The undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:
- (i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;
 - (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
 - (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and
 - (iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.
- (b) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered

therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

(d) For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(e) For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Branford, State of Connecticut, on the 6th day of August, 2010.

CAS MEDICAL SYSTEMS INC.

By: /s/ Andrew E. Kersey
Name: Andrew E. Kersey
Title: President and Chief Executive Officer

SIGNATURES AND POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Andrew E. Kersey and Jeffery A. Baird, and each of them individually, as his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement and any and all additional registration statements pursuant to Rule 462(b) of the Securities Act of 1933, as amended, and to file the same, with all exhibits thereto, and all other documents in connection therewith, with the Securities and Exchange Commission, granting unto each said attorney-in-fact and agents full power and authority to do and perform each and every act in person, hereby ratifying and confirming all that said attorney-in-fact and agent or his or her substitute or substitutes may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities indicated on the 6th day of August, 2010.

Signature	Title
/s/ Andrew E. Kersey (Andrew E. Kersey)	President, Chief Executive Officer and Director (Principal Executive Officer)
/s/ Jeffery A. Baird (Jeffery A. Baird)	Chief Financial Officer (Principal Financial and Accounting Officer)
/s/ Jerome S. Baron (Jerome S. Baron)	Director
/s/ Lawrence S. Burstein (Lawrence S. Burstein)	Director
/s/ Evan Jones (Evan Jones)	Director
/s/ Louis P. Scheps (Louis P. Scheps)	Director

/s/ Kenneth R. Weisshaar
(Kenneth R. Weisshaar)

Director

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