

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM S-3

REGISTRATION STATEMENT
UNDER THE SECURITIES ACT OF 1933

MRI INTERVENTIONS, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware

(State or Other Jurisdiction of Incorporation or Organization)

58-2394628

(I.R.S. Employer Identification Number)

5 Musick
Irvine, California 92618
(949) 900-6833

(Address, Including Zip Code, and Telephone Number, Including Area Code, of Registrant's Principal Executive Offices)

Harold A. Hurwitz
Chief Financial Officer and Secretary
5 Musick
Irvine, California 92618
(949) 900-6833

Address, Including Zip Code, and Telephone Number, Including Area Code, of Agent of Service)

With copies to:

Richard F. Mattern, Esq.
Baker, Donelson, Bearman, Caldwell & Berkowitz, PC
165 Madison Avenue, Suite 2000
Memphis, Tennessee 38103
(901) 577-2343

Approximate date of commencement of proposed sale to the public: From time to time after this registration statement becomes 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

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

Accelerated filer

Smaller reporting company

CALCULATION OF REGISTRATION FEE

Title of each class of securities to be registered ⁽¹⁾	Amount to be registered	Proposed maximum offering price per share	Proposed maximum aggregate offering price	Amount of registration fee
Common Stock, par value \$0.01 per share	(2)	(2)	(2)	—
Preferred Stock, par value \$0.01 per share	(2)	(2)	(2)	—
Warrants	(2)	(2)	(2)	—
Units	(2)	(2)	(2)	—
Total Offering	(2)	(2)	\$50,000,000	\$5,810.00 ⁽³⁾

- (1) There are being registered hereunder such indeterminate number of securities as may be sold by the registrant from time to time, which together shall have an aggregate initial offering price not to exceed \$50 million. Any securities registered hereunder may be sold separately or as units with the other securities registered hereunder. The proposed maximum offering price per class of security will be determined, from time to time, by the registrant in connection with the issuance by the registrant of the securities registered hereunder. The securities registered hereunder also include such indeterminate number of shares of common stock as may be issued upon conversion, redemption, repurchase, exchange or exercise of any securities registered hereunder, including any applicable anti-dilution provisions. In addition, pursuant to Rule 416 under the Securities Act of 1933, as amended, or the Securities Act, the shares of common stock being registered hereunder include such indeterminate number of shares of common stock as may be issuable with respect to the shares being registered hereunder as a result of stock splits, stock dividends or similar transactions.
- (2) This information is not required to be included in accordance with General Instruction II.D. of Form S-3 under the Securities Act of 1933.
- (3) The proposed maximum aggregate price of the securities has been estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(o) under the Securities Act.

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 or until the registration statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. We 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 is not soliciting an offer to buy the securities in any state where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED AUGUST 17, 2015

PROSPECTUS



MRI INTERVENTIONS, INC.

\$50,000,000

**Common Stock
Preferred Stock
Warrants
Units**

This prospectus relates to common stock, par value \$0.01 per share, preferred stock, par value \$0.01 per share, warrants to purchase shares of common stock or preferred stock, and units comprised of common stock, preferred stock, warrants or any combination thereof that MRI Interventions, Inc. may sell separately or together in one or more combinations from time to time in one or more offerings up to a total public offering price of \$50 million (or its equivalent in foreign or composite currencies or currency units) on terms to be determined at the time of sale. This prospectus describes some of the general terms that may apply to these securities and the general manner in which they may be offered. Each time we offer and sell securities, the specific terms of any securities to be offered and the specific manner in which they may be offered will be described in one or more prospectus supplements. You should read this prospectus and the applicable prospectus supplement, as well as the documents incorporated by reference or deemed incorporated by reference into this prospectus and any prospectus supplement.

Our common stock is traded in the over-the-counter market and quoted on the OTCQB Venture Marketplace (the "OTCQB") organized by the OTC Markets Group Inc. and the OTC Bulletin Board under the ticker symbol "MRIC." As of June 26, 2015, the aggregate market value of our outstanding common stock held by non-affiliates, or public float, was based on 67,568,843 shares of outstanding common stock held by non-affiliates (compared to 74,880,011 shares of our common stock outstanding including shares held by affiliates), at a price of \$1.1170 per share. The last reported sale price of our common stock on the OTCQB on August 13, 2015 was \$0.74. **This prospectus may not be used to offer or sell securities unless accompanied by a prospectus supplement.**

The securities covered by this prospectus may be offered and sold directly to purchasers, to or through underwriters, through dealers or agents, or through a combination of such methods. The names of any underwriters, dealers, or agents involved in the sale of our securities, their compensation and any over-allotment options held by them will be described in the applicable prospectus supplement. We may also describe the plan of distribution for any particular offering of these securities in any applicable prospectus supplement.

Our principal offices are located at 5 Musick, Irvine, California 92618, and our phone number is (949) 900-6833.

We are an “emerging growth company” under the federal securities laws and will be subject to reduced public company reporting requirements. Investing in our securities involves a high degree of risk. See “Risk Factors” beginning on page 4 of this prospectus. We may include specific risk factors in an applicable prospectus supplement under the heading “Risk Factors.” You should review that section of the prospectus supplement for a discussion of matters that investors in our securities should consider.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2015.

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No person has been authorized to give any information or make any representations in connection with this offering other than those contained or incorporated by reference in this prospectus and any accompanying prospectus supplement in connection with the offering described in this prospectus and any accompanying prospectus supplement, and, if given or made, such information or representations must not be relied upon as having been authorized by us. Neither this prospectus nor any prospectus supplement shall constitute an offer to sell or a solicitation of an offer to buy offered securities in any jurisdiction in which it is unlawful for such person to make such an offering or solicitation. Neither the delivery of this prospectus or any prospectus supplement nor any sale made hereunder shall under any circumstances imply that the information contained or incorporated by reference in this prospectus or in any prospectus supplement is correct as of any date subsequent to the date of this prospectus or of any prospectus supplement.

Trademarks, Trade Names and Service Marks

ClearConnect[™], *ClearPoint*[®], *ClearTrace*[®], *MRI Interventions*[®], *SmartFlow*[®], *SmartFrame*[®] and *SmartGrid*[®] are trademarks of MRI Interventions, Inc. Any other trademarks, trade names or service marks referred to in this registration statement are the property of their respective owners. As used in this registration statement, Siemens refers to Siemens AG, Healthcare Sector, and its affiliates, Boston Scientific refers to Boston Scientific Corporation and its affiliates, and Brainlab refers to Brainlab AG.

Industry and Market Data

Market data and other statistical information contained in this registration statement are based on independent industry publications, government publications, reports by market research firms and other published independent sources. Some data is also based on our good faith estimates, which are derived from other relevant statistical information, as well as the independent sources listed above. Although we believe these sources are reliable, we have not independently verified the information.

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the U.S. Securities and Exchange Commission, or the SEC, using a “shelf” registration process. Under this shelf registration process, we may offer and sell separately or together in one or more combinations from time to time in one or more offerings, common stock, preferred stock, warrants or units, collectively referred to herein as the securities, up to a total public offering price of \$50 million (or its equivalent in foreign or composite currencies or currency units) on terms to be determined at the time of sale.

Each time we offer securities, we will provide the specific terms of the offering in a supplement to this prospectus. You should read this prospectus and the applicable prospectus supplement, as well as the documents incorporated by reference or deemed incorporated by reference into this prospectus and any prospectus supplement. **This prospectus may not be used to offer or sell securities unless accompanied by a prospectus supplement.** The prospectus supplement also may add, update or change information in this prospectus. If there is any inconsistency between the information in the prospectus and the prospectus supplement, you should rely on the information in the prospectus supplement. You should read both this prospectus and any prospectus supplement together with additional information described under the heading “Where You Can Find More Information” and “Incorporation of Documents by Reference” beginning on page 1 of this prospectus.

You should rely only on the information contained or incorporated by reference in this prospectus or a prospectus supplement. We have not authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. This prospectus is not an offer to sell these securities, and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted. You should not assume that the information in this prospectus and the accompanying prospectus supplement is accurate on any date subsequent to the date set forth on the front of the document or that any information that we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference. Our business, financial condition, results of operations and prospects may have changed since those dates.

Unless otherwise indicated or unless the context otherwise requires, all references in this prospectus to “MRIC,” “the Company,” “we,” “us,” or similar references mean MRI Interventions, Inc. and our subsidiaries.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and we file annual, quarterly and current reports, proxy statements and other information with the SEC. You may read and copy the reports, proxy statements and other information that we file at the SEC’s Public Reference Room at 100 F Street N.E., Washington, D.C. 20549 at prescribed rates. Information on the operation of the Public Reference Room may be obtained by calling the SEC at 1-800-SEC-0330. The SEC also maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. Our filings are also available free of charge at the SEC’s website at <http://www.sec.gov>.

INCORPORATION OF DOCUMENTS BY REFERENCE

The SEC allows us to “incorporate by reference” the information we file with the SEC, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus, and information that we file with the SEC after the date of this prospectus will automatically update and may supersede this information. We are incorporating by reference into this prospectus the documents listed below, which shall not include, in each case, documents, or information deemed to have been furnished and not filed in accordance with SEC rules:

- our Annual Report on Form 10-K for the year ended December 31, 2014 (including information specifically incorporated by reference into our Form 10-K from our definitive proxy statement for our 2015 annual meeting of stockholders, filed with the SEC on April 17, 2015);
- our Quarterly Report on Form 10-Q for the quarters ended March 31, 2015 and June 30, 2015, respectively;
- our Current Reports on Form 8-K filed with the SEC on January 5, 2015, March 17, 2015, March 31, 2015, May 8, 2015 and June 8, 2015; and
- the description of our Common Stock contained in our Registration Statement on Form 10 (File No. 000-54575) filed on December 28, 2011, including any subsequent amendment or any report filed for the purpose of updating such description.

We are also incorporating by reference any future filings we make with the SEC under Section 13(a), 13(c), 14, or 15(d) of the Exchange Act until this offering is completed, including those made between the date of filing of the initial registration statement and prior to effectiveness of the registration statement, except for information furnished under Item 2.02 or Item 7.01 and certain exhibits furnished pursuant to Item 9.01 of our Current Reports on Form 8-K, which are not deemed to be filed and not incorporated by reference herein, unless specifically stated otherwise in such filings. Any statement contained in a document incorporated by reference in this prospectus shall be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus, any prospectus supplement or in any other subsequently filed document which is incorporated by reference modifies or supersedes such statement.

You can obtain copies of any of the documents incorporated by reference in this prospectus from us or, as described above, through the SEC or the SEC’s website at <http://www.sec.gov>. Documents incorporated by reference are available from us, without charge, excluding all exhibits unless specifically incorporated by reference in the documents. You may obtain documents incorporated by reference in this prospectus by writing to us at the following address or by calling us at MRI Interventions, Inc., 5 Musick, Irvine, California 92618, Attention: Harold A. Hurwitz, Chief Financial Officer and Secretary or (949) 900-6833.

We also maintain a web site at <http://www.mriinterventions.com> through which you can obtain copies of documents that we have filed with the SEC. The contents of that site are not incorporated by reference into or otherwise made a part of this prospectus.

ABOUT MRI INTERVENTIONS, INC.

Our Business

We are a medical device company that develops and commercializes innovative platforms for performing minimally invasive procedures in the brain and heart under direct, intra-procedural magnetic resonance imaging, or MRI, guidance. Since our inception in 1998, we have focused on research and product development in the field of interventional MRI. From 1998 to 2002, we deployed significant resources to fund our efforts to develop the foundational capabilities for enabling MRI-guided interventions and to build an intellectual property position. In 2003, our focus shifted to identifying and building out commercial applications for the technologies we developed in prior years.

We have two product platforms. Our ClearPoint system, which is in commercial use in the United States, is used to perform minimally invasive surgical procedures in the brain. We anticipate that our ClearTrace system, which is still in development, will be used to perform minimally invasive surgical procedures in the heart. Both systems utilize intra-procedural MRI to guide the procedures. Both systems are designed to work in a hospital's existing MRI suite.

Our products are designed to provide a new, minimally invasive surgical approach to address large patient populations for whom we believe traditional surgical techniques are deficient. Our ClearPoint system is a neuro-navigation system designed for placing catheters and electrodes across a variety of neurological diseases and conditions and for performing biopsies. Our ClearTrace system is designed to deliver catheter-based therapies to treat certain cardiac diseases. We believe that our two product platforms, subject to appropriate regulatory clearance and approval, will provide better patient outcomes, enhance revenue potential for both physicians and hospitals, and reduce costs to the healthcare system.

Our ClearPoint system is in commercial use. In June 2010, we received 510(k) clearance from the Food and Drug Administration, or FDA, to market our ClearPoint system in the United States for general neurological interventional procedures. In February 2011, we also obtained CE marking approval, which enables us to sell the ClearPoint system in the European Union. In April 2011, we entered into a co-development and distribution agreement with Brainlab, a leader in the image-guided surgery field, under which Brainlab serves as a distribution partner for our ClearPoint system. The ClearPoint system is intended to provide stereotactic guidance for the placement and operation of instruments or devices during planning and operation of neurological procedures within the MRI environment and in conjunction with MRI guidance. It is intended as an integral part of procedures that have traditionally used stereotactic methodologies. Those procedures include placement of electrodes, such as deep brain stimulation leads and depth electrodes, the placement of catheters, such as laser ablation catheters and drug delivery catheters, and biopsies. ClearPoint systems are in clinical use with MRI scanners from the three major MRI scanner manufacturers, Siemens, GE Healthcare and Philips Healthcare, as well as the two major interventional MR/OR platforms that are manufactured by IMRIS, Inc. and Brainlab.

Our ClearTrace system, a product candidate still in development, is designed to allow catheter-based minimally invasive procedures in the heart to be performed using continuous, intra-procedural MRI guidance. In May 2009, we entered into an exclusive development agreement with Siemens under which initial work was performed related to the development of hardware and software needed for MRI-guided, catheter-based ablation procedures to treat cardiac arrhythmias. Working closely with us, Siemens created a research version of the software platform specifically for use in MRI-guided cardiac ablation procedures with our catheters. In February 2014, we entered into a new exclusive development agreement with Siemens, which replaced our May 2009 agreement. Under the new development agreement, with cooperation, assistance and technical support from Siemens, we plan to develop the commercial version of the research software platform created by Siemens under our original agreement, which software will serve as the software component of our ClearTrace system. Our development activities on the ClearTrace system are ongoing, and we have not made any filings seeking regulatory clearance or approval for our ClearTrace system. We expect the initial market for our ClearTrace system will be the European Union.

Our Business Model and Strategy

Our key objective is to commercialize medical systems to enable minimally invasive surgical procedures to be performed under direct, intra-procedural MRI guidance. Key elements to achieve this objective are:

- growing the installed base for our ClearPoint system;
- increasing utilization of our ClearPoint system; and
- building upon our core technologies to continue to develop MRI-based products.

Our business model for the ClearPoint system is focused on producing high margin revenue from sales of the disposable components. Given that focus on disposable product sales, we sell our reusable components at lower margins in order to secure installations of our system within hospitals. In addition, we may make the reusable ClearPoint components available to a hospital by loaning the equipment under our ClearPoint Placement Program. Our disposable and reusable ClearPoint products are tightly integrated, which allows us to leverage each new installation of a system to generate recurring sales of our disposable products.

Our principal executive offices are maintained at 5 Musick, Irvine, California 92618, and our telephone number is (949) 900-6833. Our common stock is traded in the over-the-counter market and quoted on the OTCQB and the OTC Bulletin Board under the ticker symbol "MRIC."

For further discussion of the material elements of our business, please refer to our Annual Report on Form 10-K for the fiscal year ended December 31, 2014 on file with the SEC, and any subsequent reports we file with the SEC, including those incorporated by reference into this prospectus.

RISK FACTORS

Before making an investment decision, you should carefully consider the risks described under "Risk Factors" in the applicable prospectus supplement and in our most recent Annual Report on Form 10-K, or any updates in our Quarterly Reports on Form 10-Q, together with all of the other information appearing in this prospectus or incorporated by reference into this prospectus and any applicable prospectus supplement, in light of your particular investment objectives and financial circumstances. The risks so described are not the only risks facing our company. Additional risks not presently known to us or that we currently deem immaterial may also impair our business operations. Our business, financial condition, results of operations or prospects could be materially adversely affected by any of these risks. The trading price of our securities could decline due to any of these risks, and you may lose all or part of your investment.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements, expressed or implied by the forward-looking statements. Forward-looking statements may include, but are not limited to, statements about:

- our ability to market, commercialize and achieve broader market acceptance for our ClearPoint system products;
- future revenues from sales of ClearPoint system products;

- our ability to successfully complete the development of, and obtain regulatory clearance or approval for, our ClearTrace system;
- the anticipated progress of our research and development activities;
- the expected capabilities of our ClearTrace system; and
- our estimates regarding the sufficiency of our cash resources, expenses, capital requirements and needs for additional financing, and our ability to obtain additional financing.

In some cases, you can identify forward-looking statements by terms such as “anticipates,” “believes,” “could,” “estimates,” “expects,” “intends,” “may,” “plans,” “potential,” “predicts,” “projects,” “should,” “will,” “would,” and similar expressions intended to identify forward-looking statements, although not all forward-looking statements contain these words. Although we believe that we have a reasonable basis for each forward-looking statement contained in this prospectus, we caution you that these statements are based on a combination of facts and factors currently known by us and our projections of the future, about which we cannot be certain.

You should refer to the section of this prospectus entitled “Risk Factors” for a discussion of important factors that may cause our actual results to differ materially from those expressed or implied by our forward-looking statements. As a result of these factors, we cannot assure you that the forward-looking statements in this prospectus will prove to be accurate. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all. We do not undertake to update any of the forward-looking statements after the date of this prospectus, except to the extent required by applicable securities laws.

USE OF PROCEEDS

Unless indicated otherwise in the applicable prospectus supplement, we expect to use the net proceeds from this offering of our securities for our operations and for other general corporate purposes, including, but not limited to, capital expenditures, repayment or refinancing of borrowings, working capital, investments and acquisitions. We have not allocated any portion of the net proceeds for any particular use at this time. Pending such uses, we may invest the net proceeds in demand deposits, money market accounts or short-term, investment-grade, interest-bearing securities or guaranteed obligations of the United States government or other securities. Additional information on the use of net proceeds may be set forth in the applicable prospectus supplement or other offering material relating to such offering. If net proceeds from a specific offering will be used to repay indebtedness, the applicable prospectus supplement or other offering material will describe the relevant terms of the debt to be repaid.

PLAN OF DISTRIBUTION

The securities covered by this prospectus may be offered and sold directly to purchasers, to or through underwriters, through dealers or agents, or through a combination of such methods. The prospectus supplement with respect to the securities being offered will set forth the terms of the offering of those securities, including the names of the underwriters, dealers or agents, if any, the purchase price, the net proceeds to us, any underwriting discounts and other items constituting underwriters’ compensation, the initial public offering price, any discounts or concessions allowed or reallocated or paid to dealers and any securities exchanges on which such securities may be listed. We may also describe the plan of distribution for any particular offering of these securities in any applicable prospectus supplement.

If underwriters are used in an offering, we will execute an underwriting agreement with such underwriters and will specify the name of each underwriter and the terms of the transaction (including any underwriting discounts and other terms constituting compensation of the underwriters and any dealers) in a prospectus supplement. The securities may be offered to the public either through underwriting syndicates represented by managing underwriters or directly by one or more investment banking firms or others, as designated. If an underwriting syndicate is used, the managing underwriter(s) will be specified on the cover of the prospectus supplement. If underwriters are used in the sale, the offered securities will be acquired by the underwriters for their own accounts and may be resold from time to time in one or more transactions, including negotiated transactions, at a fixed public offering price or at varying prices determined at the time of sale. Any public offering price and any discounts or concessions allowed or reallocated or paid to dealers may be changed from time to time. Unless otherwise set forth in the prospectus supplement, the obligations of the underwriters to purchase the offered securities will be subject to conditions precedent, and the underwriters will be obligated to purchase all of the offered securities if any are purchased.

If dealers are used in an offering, we will sell the securities to the dealers as principals. The dealers then may resell the securities to the public at varying prices which they determine at the time of resale. The names of the dealers and the terms of the transaction will be specified in a prospectus supplement.

The securities may be sold directly by us or through agents we designate from time to time at a fixed price or prices, which may be changed, or at varying prices determined at the time of sale. If agents are used in an offering, the names of the agents and the terms of the agency will be specified in a prospectus supplement. Unless otherwise indicated in a prospectus supplement, the agents will act on a best-efforts basis for the period of their appointment.

Dealers and agents named in a prospectus supplement may be deemed to be underwriters (within the meaning of the Securities Act and the Exchange Act) of the securities described therein. In addition, we may sell the securities directly to institutional investors or others who may be deemed to be underwriters within the meaning of the Securities Act and the Exchange Act with respect to any resales thereof.

Underwriters, dealers and agents may be entitled to indemnification by us against specific civil liabilities, including liabilities under the Securities Act, or to contribution with respect to payments which the underwriters or agents may be required to make in respect thereof, under underwriting or other agreements. The terms of any indemnification provisions will be set forth in a prospectus supplement. Certain underwriters, dealers or agents and their associates may engage in transactions with and perform services for us in the ordinary course of business.

If so indicated in a prospectus supplement, we will authorize underwriters or other persons acting as our agents to solicit offers by institutional investors to purchase securities pursuant to contracts providing for payment and delivery on a future date. We may enter into contracts with commercial and savings banks, insurance companies, pension funds, investment companies, educational and charitable institutions and other institutional investors. The obligations of any institutional investor will be subject to the condition that its purchase of the offered securities will not be illegal at the time of delivery. The underwriters and other agents will not be responsible for the validity or performance of such contracts.

Unless otherwise specified in the applicable prospectus supplement, each series of securities will be a new issue with no established trading market, other than our common stock, which is traded in the over-the-counter market and is quoted on the OTCQB and the OTC Bulletin Board. Any shares of common stock sold hereunder will be traded in the over-the-counter market and quoted on the OTCQB and the OTC Bulletin Board. We may elect to list any other series of securities on any additional exchange or market, but we are not obligated to do so unless stated otherwise in a prospectus supplement. It is possible that one or more underwriters may make a market in a class or series of securities, but the underwriters will not be obligated to do so and may discontinue any market making at any time without notice. We cannot give any assurance as to the liquidity of the trading market for any of the securities.

In order to facilitate the offering of any of the securities offered under this prospectus, we may grant underwriters who participate in the distribution of securities an option to purchase additional securities to cover overallocments, if any, in connection with the distribution. Any underwriter may engage in overallocation, stabilizing transactions, syndicate short covering transactions and penalty bids in accordance with SEC orders, rules and regulations, including Regulation M, and applicable law. To the extent permitted by applicable law and SEC orders, rules and regulations, an overallocation involves sales in excess of the offering size, which creates a short position. Stabilizing transactions permit bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum. To the extent permitted by applicable law and SEC orders, rules and regulations, syndicate short covering transactions involve purchases of the securities in the open market after the distribution is completed to cover short positions. Penalty bids permit the underwriters to reclaim a selling concession from a dealer when the securities originally sold by the dealer are purchased in a covering transaction to cover short positions. Any of these activities may stabilize or maintain the market price of these securities above independent market levels. The underwriters are not required to engage in these activities, and may end any of these activities at any time, all as will be described in the applicable prospectus supplement.

Under the securities law of various states, the securities offered under this prospectus may be sold in those states only through registered or licensed brokers or dealers. In addition, in various states the securities offered under this prospectus may not be offered and sold unless such securities have been registered or qualified for sale in the state or an exemption from such registration or qualification is available and is complied with. We are not making an offer of securities in any state that does not permit such an offer.

DESCRIPTION OF CAPITAL STOCK

We may issue shares of our common stock and preferred stock in one or more transactions, together with other securities or separately, as described in each applicable prospectus supplement. We may also offer common stock issuable upon the exercise of warrants, individually or in units with preferred stock, and upon the conversion of convertible preferred stock, individually, or in units with common stock. In addition, we may offer preferred stock issuable upon the exercise of warrants, individually or in units with common stock.

The following description of our capital, certificate of incorporation, and bylaws are only summaries, and we encourage you to review complete copies of these documents. You can obtain copies of these documents by following the directions outlined in “Where You Can Find More Information” and “Incorporation of Documents by Reference” elsewhere in this prospectus.

Common Stock

Under our Amended and Restated Certificate of Incorporation, as amended, or our certificate of incorporation, we have 200,000,000 authorized shares of common stock, \$0.01 par value per share.

Voting Rights

Each holder of our common stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders, including the election of directors. Under our certificate of incorporation and bylaws, our stockholders do not have cumulative voting rights. Because of this, the holders of a majority of the shares of common stock entitled to vote in any election of directors can elect all of the directors standing for election, if they should so choose.

Dividends

Subject to preferences that may be applicable to any then outstanding preferred stock, holders of common stock are entitled to receive ratably those dividends, if any, as may be declared from time to time by our Board of Directors out of legally available funds.

Liquidation

In the event of our liquidation, dissolution or winding up, holders of common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any outstanding shares of preferred stock.

Rights and Preferences

Holders of common stock have no preemptive, conversion or subscription rights, and there are no redemption or sinking fund provisions applicable to the common stock. The rights, preferences and privileges of the holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate in the future.

Fully Paid and Nonassessable

All of our outstanding shares of common stock are fully paid and nonassessable.

Preferred Stock

Under our certificate of incorporation, we have 25,000,000 authorized shares of preferred stock, \$0.01 par value per share. Our Board of Directors has the authority, without further action by the stockholders, to issue up to that number of shares of preferred stock in one or more series, to establish from time to time the number of shares to be included in each such series, to fix the rights, preferences and privileges of the shares of each wholly unissued series and any qualifications, limitations or restrictions thereon, and to increase or decrease the number of shares of any such series, but not below the number of shares of such series then outstanding. The Board of Directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of the common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring or preventing a change in control of the company and may adversely affect the market price of our common stock and the voting and other rights of the holders of our common stock.

Delaware Anti-Takeover Law and Certain Provisions of our Certificate of Incorporation and Bylaws

Delaware Law

We are governed by Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a public Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. A “business combination” includes mergers, asset sales or other transactions resulting in a financial benefit to the stockholder. An “interested stockholder” is a person who, together with affiliates and associates, owns, or within three years, did own, 15% or more of the corporation’s outstanding voting stock. These provisions may have the effect of delaying, deferring or preventing a change in our control.

Certificate of Incorporation and Bylaw Provisions

Our certificate of incorporation:

- permits our Board of Directors to issue shares of preferred stock, with any rights, preferences and privileges as they may designate, including the right to approve an acquisition or other change in our control;
- provides that the authorized number of directors may be changed only by resolution of the Board of Directors;
- provides that all vacancies, including newly created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- requires that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and not be taken by written consent;
- provides that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner, and also specify requirements as to the form and content of a stockholder's notice;
- does not provide for cumulative voting rights (therefore allowing the holders of a majority of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election, if they should so choose);
- provides that special meetings of our stockholders may be called only by the chairman of the Board of Directors, our Chief Executive Officer or by the Board of Directors pursuant to a resolution adopted by a majority of the total number of authorized directors; and
- provides that stockholders will be permitted to amend our amended and restated bylaws only upon receiving at least 66 2/3% of the votes entitled to be cast by holders of all outstanding shares then entitled to vote generally in the election of directors, voting together as a single class.

These and other provisions contained in our certificate of incorporation and bylaws could delay or discourage some types of transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares over then current prices, and may limit the ability of stockholders to remove current management or approve transactions that stockholders may deem to be in their best interests and, therefore, could adversely affect the price of our common stock.

Transfer Agent and Registrar

Our transfer agent is currently Continental Stock Transfer & Trust Company. The transfer agent's address is 17 Battery Place, 8th Floor, New York, NY 10004.

DESCRIPTION OF WARRANTS

We may issue warrants to purchase shares of common stock and warrants to purchase shares of preferred stock. Warrants may be issued in one or more series, independently or together with common stock, preferred stock or units, and the warrants may be attached to or separate from such securities. We may issue warrants directly or under a warrant agreement to be entered into between us and a warrant agent. We will name any warrant agent in the applicable prospectus supplement. Any warrant agent will act solely as our agent in connection with the warrants of a particular series and will not assume any obligation or relationship of agency or trust for or with any holders or beneficial owners of warrants. Below is a description of certain general terms and provisions of the warrants that we may offer. Particular terms of the warrants will be described in the applicable warrant agreements and the applicable prospectus supplement for the warrants. We urge you to read the applicable prospectus supplements related to the warrants that we sell under this prospectus, as well as the complete warrant agreements that contain the terms of the warrants.

The applicable prospectus supplement and the applicable warrant agreement will describe, where applicable, the following terms of and other information relating to the warrants:

- the specific designation and aggregate number of, and the price at which we will issue, the warrants;
- the currency or composite currencies or currency units in which the offering price, if any, and the exercise price are payable;
- the terms of the common stock or preferred stock purchasable upon exercise of the warrants;
- the exercise price for shares of our common stock or preferred stock, as applicable, and the number of shares of common stock or preferred stock, as applicable, to be received upon exercise of the warrants;
- the date on which the right to exercise the warrants will begin and the date on which that right will expire or, if the warrants may not be continuously exercised throughout that period, the specific date or dates on which the warrants may be exercised;
- whether the warrants will be issued in fully registered form or bearer form, in definitive or global form or in any combination of these forms, although, in any case, the form of a warrant included in a unit will correspond to the form of the unit and of any security included in that unit;
- any applicable material U.S. federal income tax consequences;
- if applicable, the identity of the warrant agent for the warrants and of any other depositories, execution or paying agents, transfer agents, registrars or other agents;
- the proposed listing, if any, of the warrants or any securities purchasable upon exercise of the warrants on any securities exchange;
- if applicable, the date from and after which the warrants and the common stock or preferred stock, as applicable, will be separately transferable;
- if applicable, the minimum or maximum amount of the warrants that may be exercised at any one time;

- information with respect to book-entry procedures, if any;
- the anti-dilution provisions of the warrants, if any;
- any redemption or call provisions;
- whether the warrants are to be sold separately or with other securities as parts of units; and
- any additional terms of the warrants, including terms, procedures and limitations relating to the exchange and exercise of the warrants.

DESCRIPTION OF UNITS

We may issue units comprised of common stock, preferred stock, warrants or any combination thereof. Units may be issued in one or more series, independently or together with common stock, preferred stock or warrants, and the units may be attached to or separate from such securities. We may issue units directly or under a unit agreement to be entered into between us and a unit agent. We will name any unit agent in the applicable prospectus supplement. Any unit agent will act solely as our agent in connection with the units of a particular series and will not assume any obligation or relationship of agency or trust for or with any holders or beneficial owners of units. Below is a description of certain general terms and provisions of the units that we may offer. Particular terms of the units will be described in the applicable unit agreements and the applicable prospectus supplement for the units. We urge you to read the applicable prospectus supplements related to the units that we sell under this prospectus, as well as the complete unit agreements that contain the terms of the units.

Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time, or at any time before a specified date. We may issue units in such amounts and in such numerous distinct series as we determine.

We will incorporate by reference into the registration statement of which this prospectus is a part the form of unit agreement, including a form of unit certificate, if any, that describes the terms of the series of units we are offering before the issuance of the related series of units. The following summaries of material provisions of the units and the unit agreements are subject to, and qualified in their entirety by reference to, all the provisions of the unit agreement applicable to a particular series of units.

The provisions described in this section, as well as those described under “Description of Capital Stock” and “Description of Warrants” will apply to each unit and to any common stock, preferred stock or warrant included in each unit, respectively. We will describe in the applicable prospectus supplement the terms of the series of units, including the following:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions of the governing unit agreement that differ from those described in this section; and
- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units.

LEGAL MATTERS

Unless otherwise indicated in the applicable prospectus supplement, legal matters related to the securities offered under this prospectus and any offerings made pursuant to this prospectus will be passed upon by Baker, Donelson, Bearman, Caldwell & Berkowitz PC. If legal matters in connection with any offerings made pursuant to this prospectus are passed upon by counsel other than Baker, Donelson, Bearman, Caldwell & Berkowitz PC, such counsel will be named in the prospectus supplement relating to such offering.

EXPERTS

The consolidated financial statements appearing in our Annual Report on Form 10-K for the year ended December 31, 2014 (including schedules appearing therein) incorporated by reference in this prospectus have been so incorporated in reliance on the report of Cherry Bekaert LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

MRI INTERVENTIONS, INC.

\$50,000,000

**Common Stock
Preferred Stock
Warrants
Units**

PROSPECTUS

, 2015

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution

The following table sets forth an itemization of the various expenses, all of which we will pay, in connection with the issuance and distribution of the securities being registered. All of the amounts shown are estimated except the SEC Registration Fee.

SEC Registration Fee	\$	5,810
Printing and engraving expenses		*
Legal fees and expense		*
FINRA fees and expenses		*
Accounting fees and expenses		*
Transfer Agent and Registrar Fees		*
Miscellaneous		<u>*</u>
Total	\$	<u>*</u>

* These fees depend on the securities offered and the number of issuances and cannot be estimated at this time.

Item 15. Indemnification of Directors and Officers

Section 145 of the Delaware General Corporation Law (the “DGCL”) authorizes a corporation to indemnify its directors and officers against liabilities arising out of actions, suits and proceedings to which they are made or threatened to be made a party by reason of the fact that they have served or are currently serving as a director or officer to a corporation. The indemnity may cover expenses (including attorneys’ fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the director or officer in connection with any such action, suit or proceeding. Section 145 permits corporations to pay expenses (including attorneys’ fees) incurred by directors and officers in advance of the final disposition of such action, suit or proceeding. In addition, Section 145 provides that a corporation has the power to purchase and maintain insurance on behalf of its directors and officers against any liability asserted against them and incurred by them in their capacity as a director or officer, or arising out of their status as such, whether or not the corporation would have the power to indemnify the director or officer against such liability under Section 145.

As permitted by Delaware law, we have adopted provisions in our certificate of incorporation and bylaws that limit or eliminate the personal liability of directors for a breach of their fiduciary duty of care as a director. The duty of care generally requires that, when acting on behalf of the corporation, a director exercise an informed business judgment based on all material information reasonably available to him or

her. Consequently, a director will not be personally liable to us or our stockholders for monetary damages or breach of fiduciary duty as a director, except for liability for any:

- breach of the director's duty of loyalty to us or our stockholders;
- act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- act related to unlawful stock repurchases, redemptions or other distributions or payments of dividends; or
- transaction from which the director derived an improper personal benefit.

These limitations of liability do not limit or eliminate our rights or any stockholder's rights to seek non-monetary relief, such as injunctive relief or rescission. These provisions will not alter a director's liability under federal securities laws. Our certificate of incorporation also authorizes us to indemnify our officers, directors and other agents to the fullest extent permitted under Delaware law.

As permitted by Delaware law, our bylaws also provide that:

- we will indemnify our directors, officers, employees and other agents to the fullest extent permitted by law;
- we may advance expenses to our directors, officers, employees and other agents in connection with a legal proceeding to the fullest extent permitted by law; and
- the rights provided in our bylaws are not exclusive.

We believe that indemnification under our bylaws covers at least negligence and gross negligence on the part of indemnified parties. Our bylaws also permit us to secure insurance on behalf of any officer, director, employee or other agent for any liability arising out of his or her actions in connection with their services to us, regardless of whether our bylaws permit such indemnification. We have obtained such insurance.

In addition to the indemnification provided for in our certificate of incorporation and bylaws, we have entered into separate indemnification agreements with each of our directors and executive officers. These indemnification agreements may require us, among other things, to indemnify our directors and officers for some expenses, including attorneys' fees, judgments, fines and settlement amounts incurred by a director or officer in any action or proceeding arising out of his or her service as one of our directors or officers, or any of our subsidiaries or any other company or enterprise to which the person provides services at our request. We believe that these provisions and agreements are necessary to attract and retain qualified individuals to serve as directors and officers. There is no pending litigation or proceeding involving any of our directors or officers to which indemnification is required or permitted, and we are not aware of any threatened litigation or proceeding that may result in a claim for indemnification.

Insofar as indemnification for liabilities arising under the Securities 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 SEC this indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Item 16. Exhibits

The exhibits to this registration statement are listed in the Exhibit Index to this registration statement, which Exhibit Index is hereby incorporated by reference.

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;
- (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 SEC pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 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) do not apply if the registration statement is on Form S-3 or Form F-3 and the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the SEC by the registrant pursuant to section 13 or section 15(d) of the Exchange Act 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, 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 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; and
- (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 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; or

- (5) That, for the purpose of determining liability of the registrant under the Securities Act 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, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) 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 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 SEC such indemnification is against public policy as expressed in the Securities 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 Securities Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act, 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 Irvine, State of California, on August 17, 2015.

MRI INTERVENTIONS, INC.

By: /s/ Harold A. Hurwitz

Name: Harold A. Hurwitz

Title: Chief Financial Officer and Secretary

The undersigned directors and officers do hereby constitute and appoint Francis P. Grillo and Harold A. Hurwitz and each of them, with full power of substitution, our true and lawful attorneys-in-fact and agents to do any and all acts and things in our name and behalf in our capacities as directors and officers, and to execute any and all instruments for us and in our names in the capacities indicated below, that such person may deem necessary or advisable to enable the registrant to comply with the Securities Act and any rules, regulations and requirements of the SEC in connection with this registration statement, including specifically, but not limited to, power and authority to sign for us, or any of us, in the capacities indicated below, any and all amendments hereto (including pre-effective and post-effective amendments or any other registration statement filed pursuant to the provisions of Rule 462(b) under the Securities Act); and we do hereby ratify and confirm all that such person or persons shall do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act, this registration statement has been signed by the following persons in the capacities indicated and on the dates indicated below.

<u>Name</u>	<u>Capacity</u>	<u>Date</u>
<u>/s/ Francis P. Grillo</u> Francis P. Grillo	Chief Executive Officer (principal executive officer) and Director	August 17, 2015
<u>/s/ Harold A. Hurwitz</u> Harold A. Hurwitz	Chief Financial Officer (principal financial officer and principal accounting officer) and Secretary	August 17, 2015
<u>/s/ Kimble L. Jenkins</u> Kimble L. Jenkins	Chairman of the Board	August 17, 2015
<u>/s/ Maria Sainz</u> Maria Sainz	Director	August 17, 2015

<u>/s/ Philip A. Pizzo</u> Philip A. Pizzo, M.D.	Director	August 17, 2015
<u>/s/ Timothy T. Richards</u> Timothy T. Richards	Director	August 17, 2015
<u>/s/ Charles E. Koob</u> Charles E. Koob	Director	August 17, 2015
<u>/s/ John N. Spencer, Jr.</u> John N. Spencer, Jr.	Director	August 17, 2015
<u>/s/ Andrew K. Rooke</u> Andrew K. Rooke	Director	August 17, 2015
<u>/s/ Pascal E.R. Girin</u> Pascal E.R. Girin	Director	August 17, 2015

EXHIBIT INDEX

The following is a list of exhibits filed as part of this registration statement.

<u>Exhibit No.</u>	<u>Description</u>
1.1	Form of Underwriting Agreement, Placement Agency Agreement, Dealer-Manager Agreement, Distribution Agreement or similar agreement*
4.1	Amended and Restated Certificate of Incorporation of MRI Interventions, Inc. (the "Company"), as amended by Certificate of Amendment to Certificate of Incorporation dated June 4, 2015 ⁽¹⁾
4.2	Amended and Restated Bylaws of the Company, as amended ⁽²⁾
4.3	Specimen certificate for common stock, par value \$0.01 per share, of the Company ⁽³⁾
4.4	Form of certificate for preferred stock, par value \$0.01 per share, of the Company*
4.5	Form of Certificate of Designation establishing a series of preferred stock of the Company*
4.6	Form of Warrant Agreement, including form of Warrant Certificate*
4.7	Form of Unit Agreement, including form of Unit*
5.1	Opinion of Baker, Donelson, Bearman, Caldwell & Berkowitz, PC ⁽⁴⁾
23.1	Consent of Baker, Donelson, Bearman, Caldwell & Berkowitz, PC (included in Exhibit 5.1) ⁽⁴⁾
23.2	Consent of Cherry Bekaert LLP ⁽⁴⁾
24.1	Power of attorney (included in signature page of this Form S-3)

(1) Previously filed as Exhibit 3.1 of the Company's Quarterly Report on Form 10-Q filed with the SEC on August 10, 2015 and incorporated by reference herein.

(2) Previously filed as Exhibit 3.2 of the Company's Quarterly Report on Form 10-Q filed with the SEC on May 11, 2012 and incorporated by reference herein.

(3) Previously filed as Exhibit 4.2 to Amendment No. 1 to the Company's Registration Statement on Form 10, as filed with the SEC on February 9, 2012 and incorporated by reference herein.

(4) Filed herewith.

* To be filed if necessary subsequent to the effectiveness of this registration statement by an amendment to this registration statement or incorporated by reference pursuant to a Current Report on Form 8-K in connection with the offering of securities.



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August 17, 2015

Board of Directors
MRI Interventions, Inc.
5 Musick
Irvine, California 92618

Re: Registration Statement on Form S-3

Ladies and Gentlemen:

We have acted as counsel to MRI Interventions, Inc., a Delaware corporation (the "Company"), in connection with the preparation and filing with the Securities and Exchange Commission (the "Commission") of the Company's registration statement on Form S-3 (as amended from time to time, the "Registration Statement"), including the prospectus that is part of the Registration Statement (the "Prospectus"), under the Securities Act of 1933, as amended (the "Securities Act"). The Prospectus provides that it will be supplemented in the future by one or more prospectus supplements (each, a "Prospectus Supplement"). The Prospectus, as supplemented by the various Prospectus Supplements, will provide for the issuance and sale from time to time by the Company of up to an aggregate of \$50 million of its: (i) shares of the Company's common stock, \$0.01 par value per share (the "Common Stock"), (ii) shares of the Company's preferred stock, \$0.01 par value per share (the "Preferred Stock"), (iii) warrants to purchase shares of Common Stock and/or shares of Preferred Stock (the "Warrants"), (iv) units comprised of shares of Common Stock, shares of Preferred Stock, Warrants and other securities of the Company in any combination (the "Units"), and/or (v) any combination of the foregoing. The Common Stock, the Preferred Stock, the Warrants and the Units that may be offered and sold by the Company, collectively or separately, are herein referred to as the "Registered Securities".

The Registered Securities may be offered and sold by the Company from time to time pursuant to Rule 415 under the Securities Act as set forth in the Prospectus, as supplemented by the various Prospectus Supplements that may be filed under the Securities Act. This opinion letter is furnished to you at your request to enable you to fulfill the requirements of Item 16 of Form S-3 and Item 601(b)(5) of Regulation S-K, in connection with the filing of the Registration Statement.

The Common Stock and/or the Preferred Stock are to be sold pursuant to a purchase, underwriting, subscription, placement agency or similar agreement, which will be in substantially the form to be filed as an exhibit by amendment to the Registration Statement or under a Current Report on Form 8-K.

The Warrants may be issued pursuant to a warrant agreement (the terms and conditions of which will be set forth in a Prospectus Supplement(s) relating to an issuance of Warrants), between the Company and a financial institution to be identified therein as a warrant agent (the "Warrant Agent"), as such warrant agreement may be supplemented from time to time (collectively, the "Warrant Agreement").

The Units may be issued pursuant to a unit agreement (the terms and conditions of which will be set forth in a Prospectus Supplement(s) relating to an issuance of Units), between the Company and a bank or other financial institution as unit agent (the "Unit Agent"), as such unit agreement may be amended or supplemented from time to time (collectively, the "Unit Agreement").

In our capacity as counsel to the Company and for purposes of this opinion, we have examined originals, or copies certified or otherwise identified to our satisfaction, of the following documents:

- i. the Amended and Restated Certificate of Incorporation of the Company, as amended and in effect on the date hereof (the "Charter");
- ii. the Bylaws of the Company;
- iii. the Registration Statement and all exhibits thereto;
- iv. the corporate proceedings of the Company with respect to the authorization of the issuance of the Registered Securities; and
- v. such other corporate records, documents, certificates, memoranda and other instruments as we have deemed necessary or appropriate to express the opinions set forth in this letter, subject to the assumptions, limitations and qualifications stated herein.

We have assumed the genuineness and authenticity of all documents submitted to us as originals, and the conformity to originals of all documents where due execution and delivery are a prerequisite to the effectiveness thereof. As to certain factual matters, we have relied upon representations of officers of the Company and have not sought to independently verify such matters.

To the extent that the obligations of the Company under Warrants may be dependent upon such matters, we assume for purposes of this opinion letter that (i) the Warrant Agent is duly organized, validly existing and in good standing under the laws of its jurisdiction of organization; (ii) the Warrant Agent is duly qualified to engage in the activities contemplated by the Warrant Agreement; (iii) the Warrant Agreement has been duly authorized, executed and delivered by the Warrant Agent and constitutes the legally valid and binding obligation of the Warrant Agent, enforceable against the Warrant Agent in accordance with its terms; (iv) the Warrant Agent is in compliance, generally and with respect to acting as a trustee under the Warrant Agreement, with all applicable laws and regulations; and (v) the Warrant Agent has the requisite organizational and legal power and authority to execute and deliver and to perform its obligations under the Warrant Agreement.

To the extent that the obligations of the Company under Units may be dependent upon such matters, we assume for purposes of this opinion letter that (i) the Unit Agent is duly organized, validly existing and in good standing under the laws of its jurisdiction of organization; (ii) the Unit Agent is duly qualified to engage in the activities contemplated by the Unit Agreement; (iii) the Unit Agreement has been duly authorized, executed and delivered by the Unit Agent and constitutes the legally valid and binding obligation of the Unit Agent, enforceable against the Unit Agent in accordance with its terms; (iv) the Unit Agent is in compliance, generally and with respect to acting as a trustee under the Unit Agreement, with all applicable laws and regulations; and (v) the Unit Agent has the requisite organizational and legal power and authority to execute and deliver and to perform its obligations under the Unit Agreement.

Based upon the foregoing, we are of the opinion that:

1. The Company has the authority, pursuant to its Charter, to issue up to an aggregate of 200,000,000 shares of Common Stock. When (i) the Board of Directors of the Company has adopted a resolution in form and content as required by applicable law authorizing the issuance of shares of Common Stock (with such shares, together with all shares previously issued or reserved for issuance and not duly and lawfully retired, not exceeding an aggregate of 200,000,000 shares), (ii) the Registration Statement and any required post-effective amendments thereto and any and all Prospectus Supplement(s) required by applicable laws have all become effective under the Securities Act, and (iii) such shares are issued and delivered and payment of legal consideration in excess of the par value thereof is received in the manner contemplated by the Registration Statement, the Prospectus and the related Prospectus Supplement(s) and by such resolution, such shares of Common Stock will be validly issued, fully paid and nonassessable.

2. The Company has the authority, pursuant to its Charter, to issue up to an aggregate of 25,000,000 shares of Preferred Stock. When (i) a series of Preferred Stock has been duly established in accordance with the terms of the Charter and applicable law, (ii) when the Board of Directors of the Company has adopted a resolution in form and content as required by applicable law authorizing the issuance of shares of Preferred Stock (with such shares, together with all shares previously issued or reserved for issuance and not duly and lawfully retired, not exceeding an aggregate of 25,000,000 shares), (iii) the Registration Statement and any required post-effective amendments thereto and any and all Prospectus Supplement(s) required by applicable laws have all become effective under the Securities Act, and (iv) such shares are issued and delivered and payment of legal consideration in excess of the par value thereof is received in the manner contemplated by the Registration Statement, the Prospectus and the related Prospectus Supplement(s) and by such resolution, shares of such series of Preferred Stock will be validly issued, fully paid and nonassessable.
3. When (i) the Warrant Agreement has been duly executed and delivered by the Company and the Warrant Agent, (ii) the Warrants have been established in accordance with the Warrant Agreement (including, without limitation, the adoption by the Board of Directors of the Company, or a duly formed committee thereof, of a resolution duly authorizing the issuance and delivery of the Warrants), duly authenticated by the Warrant Agent and duly executed and delivered on behalf of the Company against payment therefor in accordance with the terms and provisions of the Warrant Agreement and as contemplated by the Registration Statement, the Prospectus and the related Prospectus Supplement(s), and (iii) the Registration Statement and any required post-effective amendments thereto and any and all Prospectus Supplement(s) required by applicable laws have all become effective under the Securities Act, and assuming that the (x) terms of the Warrants executed and delivered are as described in the Registration Statement, the Prospectus and the related Prospectus Supplement(s), (y) Warrants as executed and delivered do not violate any law applicable to the Company or result in a default under or breach of any agreement or instrument binding upon the Company, and (z) Warrants as executed and delivered comply with all requirements and restrictions, if any, applicable to the Company, whether imposed by any court or governmental or regulatory body having jurisdiction over the Company, the Warrants will constitute legally valid and binding obligations of the Company, enforceable against the Company in accordance with their terms.
4. When (i) the Unit Agreement has been duly executed and delivered by the Company and the Unit Agent, (ii) the Units have been established in accordance with the Unit Agreement (including, without limitation, the adoption by the Board of Directors of the Company, or a duly formed committee thereof, of a resolution duly authorizing the issuance and delivery of the Units including the other Registered Securities that are components of such Units), duly authenticated by the Unit Agent and duly executed and delivered on behalf of the Company against payment therefor in accordance with the terms and provisions of the Unit Agreement and as contemplated by the Registration Statement, the Prospectus and the related Prospectus Supplement(s), and (iii) the Registration Statement and any required post-effective amendments thereto and any and all Prospectus Supplement(s) required by applicable laws have all become effective under the Securities Act, and assuming that the (x) terms of the Units, including the terms of the Registered Securities which are components of such Units, executed and delivered are as described in the Registration Statement, the Prospectus and the related Prospectus Supplement(s), (y) Units, including the Registered Securities which are components of such Units, as executed and delivered do not violate any law applicable to the Company or result in a default under or breach of any agreement or instrument binding upon the Company, and (z) Units, including the Registered Securities which are components of such Units, as executed and delivered comply with all requirements and restrictions, if any, applicable to the Company, whether imposed by any court or governmental or regulatory body having jurisdiction over the Company, such Units will constitute legally valid and binding obligations of the Company, enforceable against the Company in accordance with their terms.

The opinions provided above are subject to the following exceptions, limitations and qualifications: (i) the effect of bankruptcy, insolvency, fraudulent transfer, reorganization, moratorium or other similar laws relating to or affecting the rights and remedies of creditors (including, without limitation, the effect of statutory or other laws regarding preferential transferees); (ii) the effect of general equitable principles (including, without limitation, concepts of materiality, reasonableness, good faith and fair dealing), regardless of whether considered in a proceeding at law or in equity, and the discretion of the court before which any proceeding therefor may be brought;

(iii) the unenforceability under certain circumstances under law or court decisions of provisions providing for the indemnification of or contribution to a party with respect to a liability where such indemnification or contribution is contrary to public policy; and (iv) the unenforceability of any provision requiring the payment of attorneys' fees, where such payment is contrary to law or public policy.

Our examination of matters of law in connection with the opinions expressed herein has been limited to, and accordingly our opinions expressed herein are limited to, the laws of the State of Delaware. We express no opinion with respect to the laws of any other jurisdiction.

This opinion is given as of the date hereof, and we assume no obligation to advise you after the date hereof of facts or circumstances that come to our attention or changes in law that occur which could affect the opinions contained herein.

We hereby consent to the reference to our name under the caption "Legal Matters" in the Prospectus constituting a part of the Registration Statement, and any amendments or supplements thereto, and further consent to the filing of this opinion as Exhibit 5.1 to the Registration Statement.

Very truly yours,

BAKER, DONELSON, BEARMAN, CALDWELL & BERKOWITZ,
PC

By: /s/ Richard F. Mattern
Richard F. Mattern
Authorized Representative

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Consent of Independent Registered Public Accounting Firm

MRI Interventions, Inc.
Irvine, California

We consent to the reference of our Firm under the caption “Experts” in this Registration Statement on Form S-3 of MRI Interventions, Inc., and to the incorporation by reference of our report dated March 17, 2015 with respect to the consolidated financial statements of MRI Interventions, Inc. and Subsidiary as of and for the years ended December 31, 2014 and 2013 included in its Form 10-K filed March 17, 2015 with the Securities and Exchange Commission.

/s/ Cherry Bekaert LLP

Charlotte, North Carolina
August 17, 2015