



MRI Interventions, Inc.

1,589,580 Shares of Common Stock

This prospectus supplement relates to the prospectus dated October 11, 2016, as supplemented by prospectus supplement no. 1 dated November 9, 2016 and prospectus supplement no. 2 dated March 9, 2017, which permits the resale of up to 821,000 outstanding shares of our common stock, and 768,580 shares of our common stock issuable upon the exercise of outstanding warrants, by the selling securityholders identified in the prospectus, as amended and supplemented from time to time. We will pay the expenses of registering the shares of our common stock, but we are not selling any shares of common stock in this offering and therefore will not receive any proceeds from this offering. We will, however, receive the exercise price of the warrants, if and when the warrants are exercised for cash by the securityholders.

This prospectus supplement is being filed to update, amend and supplement the information previously included in the prospectus with the information contained in our Current Report on Form 8-K filed with the Securities and Exchange Commission (the "SEC") on April 27, 2017 (the "8-K"). Accordingly, we have attached the 8-K to this prospectus supplement. You should read this prospectus supplement together with the prospectus, which is to be delivered with this prospectus supplement.

Our common stock is traded in the over-the-counter market and is quoted on the OTCQB Marketplace and the OTC Bulletin Board under the symbol MRIC. On April 25, 2017, the last reported sale price of our common stock was \$6.04 per share.

We are an "emerging growth company" under the federal securities laws and are subject to reduced public company reporting requirements. Investing in our common stock involves risk. See "Risk Factors" beginning on page 6 of the prospectus, as amended and supplemented by the "Risk Factors" beginning on page 22 of our Annual Report on 10-K, filed with the SEC on March 9, 2017, to read about factors you should consider before buying shares of our common stock.

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

The date of this prospectus supplement is April 27, 2017.

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

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 OR 15(d) of the
Securities Exchange Act of 1934

Date of Report (Date of earliest event reported):
April 25, 2017

MRI INTERVENTIONS, INC.

(Exact name of registrant as specified in its charter)

DELAWARE
(State or other jurisdiction
of incorporation)

001-34822
(Commission
File Number)

58-2394628
(I.R.S. Employer
Identification Number)

5 Musick
Irvine, Ca. 92618
(Address of principal executive offices, zip code)

(949) 900-6833
(Registrant's telephone number, including area code)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 12b-2 under the Exchange Act (17 CFR 240.12b-2).

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Item 1.01. Entry into a Material Definitive Agreement.

On April 25, 2017, MRI Interventions, Inc. (the “Company”) and Acoustic Medsystems, Inc. (“AMS”) entered into a License and Collaboration Agreement (the “Agreement”). Under the Agreement, the Company and AMS have agreed to collaborate and share certain information and technology with one another to develop, evaluate, and commercialize new products and technology integrating or incorporating AMS’s TheraVision[®] system and components (the “AMS System”) or AMS’s related intellectual property in the field of medical procedures, processes and therapies related to the pancreas via vessels, pancreatic ducts or percutaneous access (the “Field”). Under the terms of the Agreement, the Company shall exclusively own any new intellectual property developed as a result of the research, development, analysis, testing, and other collaboration activities conducted by the Company and AMS pursuant to the Agreement. AMS has also agreed to grant the Company an exclusive right to sell, offer for sale, market, license and distribute the AMS System in the Field.

As part of the consideration provided to AMS pursuant to the Agreement, the Company has agreed to issue AMS up to 115,000 shares of unregistered common stock (the “Shares”) issuable upon the execution and delivery of the Agreement and thereafter for the achievement of certain milestones. The Agreement also provides for the Company to register the resale of any Shares, as requested by AMS, under the Securities Act of 1933, as amended (the “Securities Act”), in the event that the Company proposes to register any shares of its common stock under the Securities Act in connection with the secondary offering of such securities by stockholders of the Company at any point during the twelve months following the date of issuance of such Shares to AMS.

The foregoing description of the terms and conditions of the Agreement is only a summary and is qualified in its entirety by the full text of the Agreement, a copy of which will be filed with the Company’s Quarterly Report on 10-Q for the quarter ended March 31, 2017 and which is incorporated into this Item 1.01 by reference.

Item 7.01. Regulation FD Disclosure.

On April 27, 2017, the Company issued a press release announcing the entry into the Agreement. A copy of the press release is furnished herewith as Exhibit 99.1.

Item 9.01. Financial Statements and Exhibits.

(d) Exhibits. See Exhibit Index immediately following signature page

Forward-Looking Statements

This Current Report on Form 8-K contains forward-looking statements based upon the Company’s current expectations. Forward-looking statements are subject to risks and uncertainties, and the Company’s actual results and the timing of events could differ materially from those anticipated in such forward-looking statements as a result of such risks and uncertainties, which include, without limitation, risks and uncertainties associated with market conditions. You should not place undue reliance on forward-looking statements, which apply only as of the date of this Current Report on Form 8-K. The Company’s Annual Report on Form 10-K filed with the SEC on March 9, 2017 contains, under the heading “Risk Factors,” a comprehensive description of risks to which the Company is subject. The Company expressly disclaims any obligation or undertaking to release publicly any updates or revisions to any forward-looking statements contained herein to reflect any change in its expectations with regard thereto or any change in events, conditions or circumstances on which any such statements are based.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Date: April 27, 2017

MRI INTERVENTIONS, INC.

By: /s/ Harold A. Hurwitz
Harold A. Hurwitz
Chief Financial Officer

EXHIBIT INDEX

Exhibit No.	Description
99.1	Press Release dated April 27, 2017.

For Immediate Release

MRI Interventions Announces License and Collaboration Agreement with Acoustic MedSystems, Adding Ultrasound Ablation Technology to MRIC's Platform

Companies to combine existing real-time MRI guidance and novel ultrasound ablation technologies for treatment of pancreatic cancer

IRVINE, CA, April 27, 2017 – MRI Interventions, Inc. (OTCQB: MRIC) today announced it has signed a license and collaboration agreement with Acoustic MedSystems, Inc. (AMS), a leading developer of novel ultrasound ablation technologies and systems. Under the agreement, MRI Interventions and AMS will co-develop real-time, MRI-guided ultrasonic ablation therapies with an initial focus on the treatment of pancreatic cancer. Development of these therapies will further expand the capabilities and addressable market for MRI Interventions' revolutionary MRI-guided surgical platform.

Pancreatic cancer is a debilitating form of cancer, with over 50,000 patients diagnosed each year in the United States. In approximately half of these patients, the cancer has metastasized to other locations in the body, and is not treatable surgically. In cases where the cancer has not metastasized, the tumor is often complex in shape, location, and structure. Due to these complexities, it is estimated that surgeons are unable to surgically resect these otherwise local pancreatic tumors in approximately 15,000 – 20,000 patients per year. MRI Interventions and AMS believe an MRI-guided ultrasound ablation therapy can provide a promising, new treatment approach for these patients.

“Part of our strategic plan is to expand the breadth of our technology to encompass other therapies that can benefit from real time MRI guidance, navigation and targeting,” said Frank Grillo, President and Chief Executive Officer of MRI Interventions. “By combining our know-how in MRI-guided procedures with AMS's ability to utilize ultrasonic energy to ablate complex tumors, we believe we can provide a therapy for these patients, which will enable surgeons to reduce the size and shape of the tumor with ablation, and then resect previously unresectable pancreatic cancer. We look forward to further developing this exciting technology with AMS.”

The initial product development effort will combine MRI Interventions' technology related to real-time MRI guidance and thermometry, with AMS's technology for controlled ultrasonic ablation. Both companies have achieved 510(k) clearance for their respective technologies in other fields, and will work together to develop new product candidates for the pancreatic cancer application. As part of the agreement, MRI Interventions receives an exclusive license to AMS's technology in the field of pancreatic cancer, and will work collaboratively with AMS to develop MRI guided ultrasound ablation products that can shape and conform thermal therapy treatment to pancreatic cancer.

About MRI Interventions, Inc.

Building on the imaging power of magnetic resonance imaging, (“MRI”), MRI Interventions is creating innovative platforms for performing the next generation of minimally invasive surgical procedures in the brain. The ClearPoint System, which has received 510(k) clearance and is CE marked, utilizes a hospital's existing diagnostic or intraoperative MRI suite to enable a range of minimally invasive procedures in the brain. For more information, please visit www.mriinterventions.com.

Forward-Looking Statements

Statements herein concerning MRI Interventions, Inc. (the “Company”) plans, growth and strategies may include forward-looking statements within the context of the federal securities laws. Statements regarding the Company's future events, developments and future performance, as well as management's expectations, beliefs, plans, estimates or projections relating to the future, are forward-looking statements within the meaning of these laws. Uncertainties and risks may cause the Company's actual results to differ materially from those expressed in or implied by forward-looking statements. Particular uncertainties and risks include those relating to: the Company’s ability to obtain additional financing; estimates regarding the sufficiency of the Company’s cash resources; future revenues from sales of the Company’s ClearPoint System products; and the Company’s ability to market, commercialize and achieve broader market acceptance for the Company’s ClearPoint System products. More detailed information on these and additional factors that could affect the Company’s actual results are described in the “Risk Factors” section of the Company’s Annual Report on Form 10-K for the year ended December 31, 2016, which has been filed with the Securities and Exchange Commission.

Contact:

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