



MRI Interventions, Inc.

168,827 Shares of Common Stock

This prospectus supplement relates to the prospectus dated June 20, 2016, as supplemented by prospectus supplement no. 1 dated July 1, 2016, prospectus supplement no. 2 dated July 26, 2016, prospectus supplement no. 3 dated August 15, 2016 and prospectus supplement no. 4 dated August 31, 2016, which permits the resale of up to 99,310 outstanding shares of our common stock, and 69,517 shares of our common stock issuable upon the exercise of outstanding warrants, by the selling securityholder identified in the prospectus, as amended and supplemented from time to time. The number of shares set forth above reflects the 1-for-40 reverse stock split effectuated by us on July 26, 2016. 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 selling securityholder.

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 on September 7, 2016 (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 September 6, 2016, the last reported sale price of our common stock was \$5.76 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 to read about factors you should consider before buying shares of our common stock.

Neither the Securities and Exchange Commission 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 September 7, 2016.

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: September 7, 2016 (September 2, 2016)
(Date of earliest event reported)

MRI INTERVENTIONS, INC.
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction
of incorporation or organization)

000-54575
(Commission File
Number)

58-2394628
(I.R.S. Employer
Identification No.)

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))
-

Item 3.02. Unregistered Sales of Equity Securities.

Financing Transaction

On September 2, 2016, MRI Interventions, Inc. (the “Company”) completed its previously announced private placement of common stock and warrants (the “Financing Transaction”), pursuant to the terms of a Securities Purchase Agreement dated August 31, 2016 (the “Purchase Agreement”), by and among the Company and certain investors (collectively, the “Investors”). At the closing, in accordance with the terms and conditions of the Purchase Agreement, the Company sold to the Investors an aggregate of 851,000 units (the “Units”), with each unit consisting of: (i) one share of the Company’s common stock; and (ii) a warrant to purchase 0.90 shares of the Company’s common stock (each, a “Warrant” and collectively, the “Warrants”).

In connection with the sale of the Units, the Company received aggregate gross proceeds of approximately \$4.25 million, before deducting placement agents’ fees of \$196,494 and offering expenses. In addition, the placement agents for the Financing Transaction received, in the aggregate, warrants (“Placement Agent Warrants”) to purchase up to approximately 29,680 shares of common stock.

In the Financing Transaction, the Units were issued and sold to “accredited investors” (as defined by Rule 501 under the Securities Act of 1933, as amended (the “Securities Act”)) in reliance upon exemptions from registration under the Securities Act afforded by Section 4(a)(2) of the Securities Act and Rule 506 of Regulation D promulgated thereunder and corresponding provisions of state securities laws as well as Regulation S of the Securities Act. The Purchase Agreement contains representations to support the Company’s reasonable belief that the Investors had access to information concerning the Company’s operations and financial condition, that the Investors did not acquire the securities with a view to the distribution thereof in the absence of an effective registration statement or an applicable exemption from registration, and that the Investors are accredited investors. The Company relied upon the representations made by the Investors pursuant to the Purchase Agreement in determining that such exemptions were available. The Company intends to file a Form D in accordance with the requirements of Regulation D under the Securities Act in connection with the sale of the Units.

The following is a brief summary of the Purchase Agreement, the Registration Rights Agreement and the Warrants, which are qualified in their entirety by reference to the full text of such documents.

Purchase Agreement

The Purchase Agreement contains representations and warranties by the Company and the Investors and covenants of the Company and the Investors (including indemnification from the Company in the event of breaches of its representations and warranties), which the Company believes are customary for transactions of this type.

Registration Rights Agreement

In connection with the Financing Transaction, the Company also entered into a Registration Rights Agreement dated as of September 2, 2016 with each of the Investors, pursuant to which the Company is required to prepare and file a registration statement (the “Registration Statement”) with the Securities and Exchange Commission (the “SEC”) under the Securities Act covering the resale of the shares of common stock to be issued to the Investors under the Purchase Agreement, as well as the shares of common stock underlying the Warrants and the Placement Agent Warrants. The Company will be required to file such Registration Statement on or before October 2, 2016 (the “Filing Deadline”). The Company will be required to use its best efforts to have the Registration Statement declared effective as soon as practicable. Pursuant to the Registration Rights Agreement, if: (i) the Registration Statement is not filed with the SEC on or prior to the Filing Deadline; (ii) the Registration Statement is not declared effective by the SEC on or prior to November 16, 2016 (or December 31, 2016 if the SEC determines to review the Registration Statement); or (iii) the Company fails to continuously maintain the effectiveness of the Registration Statement (with certain permitted exceptions), the Company will incur certain liquidated damages to the Investors. The Registration Rights Agreement also contains mutual indemnifications by the Company and each Investor, which the Company believes are customary for transactions of this type.

Warrants

The Warrants are exercisable, in full or in part, at any time prior to September 2, 2021, at an exercise price of \$5.50 per share. The Warrants provide for certain adjustments that may be made to the exercise price and the number of shares issuable upon exercise due to future corporate events. In the case of certain fundamental transactions affecting the Company, the holders of the Warrants, upon exercise of such warrants after such fundamental transaction, have the right to receive, in lieu of shares of the Company's common stock, the same amount and kind of securities, cash or property that such holder would have been entitled to receive upon the occurrence of the fundamental transaction, had the Warrants been exercised immediately prior to such fundamental transaction. The Warrants contain a "cashless exercise" feature that allows the holders to exercise the warrants without a cash payment to the Company upon the terms set forth in the Warrants.

The Placement Agent Warrants have the same terms and conditions as the Warrants.

The foregoing description of the terms and conditions of the Purchase Agreement, the Registration Rights Agreement and the Warrants is only a summary and is qualified in its entirety by the full text of the Purchase Agreement, the Registration Rights Agreement and the Warrants, the forms of which were previously filed as Exhibits 10.1, 10.2 and 4.1, respectively, to the Company's Current Report on Form 8-K filed with the SEC on September 1, 2016.

Related Debt Conversion

In addition to and simultaneously with the sale of the Units, on September 2, 2016, the Company sold an aggregate of 350,000 Units to two holders ("Holders") of (i) the Company's 12% Second-Priority Secured Non-Convertible Promissory Notes Due 2019 ("2019 Notes"), and (ii) two common stock warrants issued by the Company in connection with the 2019 Notes ("2019 Warrants"), in accordance with the terms and conditions of those certain Second Omnibus Amendments dated August 31, 2016, by and between the Company and each of the Holders, which were previously disclosed on the Company's Current Report on Form 8-K filed with the SEC on September 1, 2016 (collectively, the "Second Omnibus Amendments").

Pursuant to the Second Omnibus Amendments, as a result of the closing of the Financing Transaction: (i) \$1.75 million of the aggregate principal balance of the Holders' 2019 Notes automatically converted into 350,000 Units on the same terms and conditions as in the Financing Transaction; and (ii) the exercise price for 13,125 shares of common stock that may be purchased upon exercise of the Holders' 2019 Warrants was reduced to \$5.50, which is equal to the exercise price of the Warrant in the Financing Transaction.

The Company issued Units to the Holders pursuant to the Second Omnibus Amendments and automatic conversion of the Company's debt provided for therein in reliance upon exemption from registration under Section 3(a)(9) of the Securities Act. The Company intends to include the sale of shares of the Company's common stock to the Holders in the Form D it intends to file in connection with the sale of the Units in the Financing Transaction.

The foregoing descriptions of the Second Omnibus Amendments are only summaries and are qualified in their entirety by the full text of the Second Omnibus Amendments, the form of which is filed as Exhibit 10.3 to the Company's Current Report on Form 8-K filed with the SEC on September 1, 2016.

Item 3.03. Material Modification to Rights of Security Holders.

The information set forth under the "Related Debt Conversion" heading in Item 3.02 of this Current Report on Form 8-K above is incorporated herein by reference.

Item 9.01. Financial Statements and Exhibits.

- (d) Exhibits.

See Exhibit Index immediately following signature page.

SIGNATURE

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.

MRI INTERVENTIONS, INC.

By: /s/ Harold A. Hurwitz

Harold A. Hurwitz
Chief Financial Officer

Date: September 7, 2016

EXHIBIT INDEX

Exhibit No.	Description
4.1 ⁽¹⁾	Form of Warrant
10.1 ⁽²⁾	Form of Securities Purchase Agreement by and between the Company and the Investors
10.2 ⁽³⁾	Form of Registration Rights Agreement by and between the Company and the Investors
10.3 ⁽⁴⁾	Form of Second Omnibus Amendment dated August 31, 2016 by and among MRI Interventions, Inc., and certain holders of the Company's 12% Second-Priority Secured Non-Convertible Promissory Notes Due 2019

- ⁽¹⁾ Filed as Exhibit 4.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on September 1, 2016 and incorporated herein by reference.
- ⁽²⁾ Filed as Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on September 1, 2016 and incorporated herein by reference.
- ⁽³⁾ Filed as Exhibit 10.2 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on September 1, 2016 and incorporated herein by reference.
- ⁽⁴⁾ Filed as Exhibit 10.3 to the Company's Current Report on Form 8-K filed with the Securities and Exchange Commission on September 1, 2016 and incorporated herein by reference.
-