



MRI Interventions, Inc.

13,807,533 Shares of Common Stock

This prospectus supplement relates to the prospectus dated July 7, 2017, as supplemented by prospectus supplement no. 1 dated August 11, 2017, which permits the resale of up to 6,693,333 outstanding shares of our common stock and 7,114,200 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 August 18, 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 August 17, 2017, the last reported sale price of our common stock was \$1.93 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 12 of the prospectus 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 August 18, 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): August 18, 2017 (August 16, 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 5.02. Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.

(a) Resignation of Director for Any Reason Other than Disagreement with the Company.

On August 16, 2017, Charles E. Koob notified MRI Interventions, Inc. (the “Company”) of his decision not to stand for reelection to the Company’s Board of Directors (the “Board”) at the Company’s 2017 Annual Meeting of stockholders to be held on October 3, 2017 (the “2017 Annual Meeting”). Mr. Koob currently serves on the Audit Committee and the Corporate Governance and Nominating Committee of the Board, and the Board intends to replace him on those committees with R. John Fletcher and Maria Sainz, respectively, assuming the election of each to the Board at the 2017 Annual Meeting. Having served as a director of the Company since August 2008, Mr. Koob elected to step down from the Board voluntarily for personal reasons. Accordingly, Mr. Koob’s resignation was not the result of any disagreement with management, the Company or its operations, policies or practices.

In recognition of the contributions made by Mr. Koob as a director of the Company, the Board’s Compensation Committee extended the option exercise period through October 3, 2019 of the option to purchase 500 shares awarded to Mr. Koob on June 8, 2016 under the Company’s Non-Employee Director Compensation Plan (the “Director Compensation Plan”). The Compensation Committee also extended the option exercise period for the following stock options previously awarded to Mr. Koob under the Director Compensation Plan: (i) the purchase of 500 shares awarded on June 5, 2015; (ii) the purchase of 500 shares awarded on June 4, 2014; (iii) the purchase of 500 shares awarded on June 14, 2013; and (iv) the purchase of 1,125 shares awarded on April 13, 2012.

On August 16, 2017, Philip A. Pizzo notified the Company of his decision not to stand for reelection to the Board at the Company’s 2017 Annual Meeting to be held on October 3, 2017. Dr. Pizzo currently serves on the Compensation Committee and the Corporate Governance and Nominating Committee of the Board, and the Board intends to replace him on those committees with Maria Sainz and Timothy T. Richards, respectively, assuming the election of each to the Board at the 2017 Annual Meeting. Having served as a director of the Company since April 2013, Dr. Pizzo elected to step down from the Board voluntarily for personal reasons. Accordingly, Dr. Pizzo’s resignation was not the result of any disagreement with management, the Company or its operations, policies or practices.

In recognition of the contributions made by Dr. Pizzo as a director of the Company, the Board’s Compensation Committee extended the option exercise period through October 3, 2019 of the option to purchase 500 shares awarded to Dr. Pizzo on June 8, 2016 under the Director Compensation Plan. The Compensation Committee also extended the option exercise period through August 16, 2019 for the following stock options previously awarded to Dr. Pizzo under the Director Compensation Plan: (i) the purchase of 500 shares awarded on June 5, 2015; (ii) the purchase of 500 shares awarded on June 4, 2014; (iii) the purchase of 500 shares awarded on June 14, 2013; and (iv) the purchase of 1,125 shares awarded on April 12, 2013.

As a result of the decisions by Mr. Koob and Dr. Pizzo not to stand for reelection to the Board at the 2017 Annual Meeting, the Board has determined to reduce the size of the Board from nine members to seven members, effective as of the conclusion of the 2017 Annual Meeting. The Board believes that the qualifications of the remaining Board members are relevant and appropriate, individually and in the aggregate, in continuing to provide oversight of the Company’s strategic direction and operations, and that the reduced size of the Board will increase independent Board member engagement with the Company’s management and decrease costs associated with Board fees and expenses.

Item 5.08. Shareholder Director Nominations

As noted above, the Company will hold its 2017 Annual Meeting on October 3, 2017. The exact time and location of the 2017 Annual Meeting will be specified in the Company’s proxy statement for the 2017 Annual Meeting.

Because the Company's 2017 Annual Meeting has been changed by more than 30 calendar days from the date of the previous year's meeting, the Company is affirming the deadline for receipt of qualified stockholder proposals submitted pursuant to Rule 14a-8 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), for inclusion in the Company's proxy materials for the 2017 Annual Meeting.

The deadline for the receipt of any qualified stockholder proposals submitted pursuant to Rule 14a-8 under the Exchange Act shall be not later than the close of business on September 1, 2017. Qualified stockholder proposals must be received by the Company at its principal executive offices located at 5 Musick, Irvine, California 92618, addressed to the Corporate Secretary of the Company. All proposals must comply with applicable Delaware law, the rules and regulations promulgated by the SEC and the procedures set forth in the Company's Amended and Restated Bylaws.

FORWARD LOOKING STATEMENTS

This Current Report on Form 8-K contains certain forward looking statements, within the meaning of the Private Securities Litigation Reform Act of 1995, relating to future events and the financial performance of the Company. Such statements are only predictions and involve risks and uncertainties, resulting in the possibility that the actual events or performance will differ materially from such predictions. 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 the Company believes that it has a reasonable basis for each forward-looking statement contained in this Current Report on Form 8-K, the Company cautions you that these statements are based on a combination of facts and factors currently known by the Company and its projections of the future, about which the Company cannot be certain. You should refer to the section titled "Risk Factors" of the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2016, which was filed with the SEC on March 9, 2017, for a discussion of important factors that may cause the Company's actual results to differ materially from those expressed or implied by the forward-looking statements contained in this Current Report on Form 8-K.

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: August 18, 2017

MRI INTERVENTIONS, INC.

By: /s/ Harold A. Hurwitz

Harold A. Hurwitz
Chief Financial Officer