



DIVISION OF
CORPORATION FINANCE

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

January 24, 2012

Via E-mail

Kimble L. Jenkins
Chief Executive Officer
MRI Interventions, Inc.
One Commerce Square, Suite 2550
Memphis, TN 38103

**Re: MRI Interventions, Inc.
Registration Statement on Form 10
Filed December 28, 2011
File No. 000-54575**

Dear Mr. Jenkins:

We have reviewed your registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter within ten business days by amending your registration statement, by providing the requested information or by advising us when you will provide the requested response. If you do not believe our comments apply to your facts and circumstances or do not believe the amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

General

1. Please note that this filing will become effective automatically 60 days after the date you initially filed it. If this filing was made voluntarily, you should consider withdrawing it prior to the effective date if comments remain outstanding. You could then refile when you are prepared to resolve the comments. Please tell us whether you intend to file a request for withdrawal before the automatic effectiveness date of this registration statement if comments remain outstanding.
2. Consideration should be given on an ongoing basis to the updating requirements of Rule 8-08 of Regulation S-X.

Explanatory Note, page 2

3. We note your disclosure in the last paragraph of market data and other statistical information provided in the registration statement. Please provide us with copies of the sources of this data, clearly marking the relevant sections of the reports that support the data you have included in your disclosure.

Item 1. Business, page 3

4. Since your ClearTrace System has not been approved for commercialization, please revise throughout to qualify statements about its use, capabilities and results as anticipatory in nature.
5. Please revise to remove disclosure related to Siemens' market position, or provide us information about the measure of leadership and why the disclosure enhances an investor's understanding of your business.
6. We note your disclosure on page 9 and elsewhere that your ClearPoint System is not FDA approved for use in specific neurological procedures. If you are not presently seeking to have such indications included in your 510(k) clearance, please revise your disclosure to more clearly explain why a discussion of these procedures and the health conditions addressed thereby enhances an investor's understanding of your business.

Regulatory Status, page 12

7. Please provide an anticipated timeline for submission of your ClearTrace product for regulatory approval, or indicate that you are not able to estimate the time.

Boston Scientific, page 14

8. We note your disclosure in the first paragraph on page F-47 regarding potential payments to Boston Scientific Corporation in the event that specified milestones are not achieved by December 31, 2012 and your disclosure in the last paragraph on page F-53 regarding the one-time option to terminate the BSC Cardiac Agreement. Please revise this section as appropriate to discuss the material terms of your license and development agreements. Please also consider risk factor disclosure, to the extent these represent material risks.

Sales and Marketing, page 16

9. We note that your revenue model is focused on high margin disposable components. Please address here or elsewhere as appropriate whether you believe your disposable components are sufficiently protected by existing intellectual property rights.

Item 1A. Risk Factors, page 31

We will need additional funding . . . , page 40

10. Please revise this risk factor to quantify the “substantial future capital” you anticipate that you will require for your business.

Management’s Discussion and Analysis . . . , page 55

11. We note your disclosure in the first paragraph on page F-36 regarding your prior intellectual property litigation and legal settlement. Consider disclosure in this section to the extent the proceeding or settlement represents one of the primary drivers of material changes to your selling, general, and administrative expenses or cash flows for the periods disclosed and to the extent that the legal settlement represents a known, material demand or commitment that will result in or that is reasonably likely to result in your liquidity decreasing in any material way.

Liquidity and Capital Resources, page 62

12. We note your disclosure in the second paragraph of this section that the maturity dates of your Boston Scientific loans have been extended through January 16, 2012 and that you are in the process of negotiating a longer term extension. Please revise to update your disclosure regarding the status of these loans and the present outstanding amount.
13. We note your disclosure in the third paragraph of this section of 10% senior unsecured convertible notes in the aggregate principal amount of \$4.1 million. We also note your disclosure that holders of \$3.4 million in principal amount of the notes have amended their notes. Please revise to clarify the status of the remaining \$0.7 million in principal amount of these notes.
14. For each convertible instrument, please indicate the number of shares the holder would receive if conversion occurred today.

Item 5. Directors and Executive Officers, page 68

15. Please tell us whether any of your directors were elected or appointed based on an arrangement or understanding between you and the director or any other person. We note, in this regard, your disclosure in the first paragraph on page F-52 that an affiliate of Boston Scientific Corporation is a stockholder and has a representative on your board of directors. We also note your disclosure of a Stockholders’ Agreement in Amendment No. 14 to your Form S-1 filed on August 17, 2010, such as on pages 91-92 and in Exhibit 3.6.

Base Salary, page 74

16. Please revise your disclosure in the first paragraph on page 75 to provide additional discussion of the voluntary reductions in salary for your named executive officers. For example, please discuss the amount and duration of the temporary reductions for each named executive officer.

Long-Term Equity Compensation, page 75

17. Please revise the first paragraph on page 76 to describe the factors of individual performance considered by your compensation committee in determining stock option award amounts for your named executive officers for fiscal 2010.

Equity Compensation Plan Information, page 88

18. Please revise as appropriate to describe briefly the material features of each equity compensation plan that was adopted without the approval of security holders or to clarify which of your equity compensation plans discussed elsewhere, such as on pages 81 to 84, were adopted without the approval of security holders.

Item 10. Recent Sales of Unregistered Securities, page 88

19. Please identify the purchasers or types of purchasers in the sale discussed in paragraph number 8.

Audited Financial Statements as of December 31, 2010 and 2009 and for the years ended December 31, 2010, 2009, and 2008, page F-1

Notes to Financial Statements, page F-8

2. Summary of Significant Accounting Policies, page F-8

Revenue Recognition, page F-12

20. We noted from disclosures herein that your ClearPoint system consists of reusable equipment and software. Please tell us and revise this note to disclose how your revenue recognition accounting policy reflects the fact your products sold include software. Your response should include specific references to the authoritative U.S. GAAP that you followed when accounting for sales of products that include software. Also, tell us whether you have any post-shipment obligations due to the fact certain of your product include software and discuss the accounting implications of any such obligations. For example, tell us if your customers have software upgrade rights.

Kimble L. Jenkins
MRI Interventions, Inc.
January 24, 2012
Page 5

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Exchange Act of 1934 and all applicable Exchange Act rules require. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In responding to our comments, please provide a written statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

You may contact Dennis Hult at (202) 551-3618 or Jay Webb, Accounting Reviewer, at (202) 551-3603 if you have questions regarding comments on the financial statements and related matters. You may contact Aslynn Hogue at (202) 551-3841 or me at (202) 551-3528 with any other questions.

Sincerely,

/s/ Amanda Ravitz

Amanda Ravitz
Assistant Director

cc (via e-mail): Robert J. DelPriore, Esq.
Baker, Donelson, Bearman, Caldwell & Berkowitz, PC