Reviewer’s report

Title: In-Office Diagnostic Arthroscopy for Knee and Shoulder Intra-articular Injuries - Its Potential Impact on Cost Savings in the United States

Version: 1 Date: 8 January 2014

Reviewer: Yanping Huang

Reviewer’s report:

Major compulsory revisions:

General comments:

In this paper, the authors compare the use of MRI and VSI in reducing the cost for diagnosis and treatment of knee and shoulder pathologies. The conclusion is the use of VSI technique in replacing MRI could potentially save cost (about 5%) for the US health system. While this may be true from the analysis, the authors seemed to have neglected the discussion of another two important points when making the decision. The first one was that the analysis was based on 100% sensitivity and 100% specificity for the diagnosis using small bore arthroscopy (VSI). Although arthroscopy can be treated as the de facto golden standard in the diagnosis of joint pathology, they are certainly not perfect when used for joint disease diagnosis, such as internal tissue rather than surface damage or damage originating from the bone. Furthermore, the small view obtained from such small bore arthroscopy may limit its accuracy in diagnosis in a large joint. The second point is about the non-invasiveness of MRI compared to the minimally invasive VSI technique. For those patients with true pathology, the use of arthroscopy and surgery would be inevitable. However, for those negative patients (still a large proportion in the total number), I think most of them would prefer to use a non-invasive technique for screening purpose first. Cost is not the only factor that they need to consider. Patient would hesitate to do even a small surgery on their knee because of no true pathology. Therefore, these limitations should be discussed in the revision.


2) Methods: the full names of “CPT”, “APC” and “DRG” should be given for first appearance;

3) Methods: No XRay diagnosis cost was seen in Appendix 3, please add and revise the table correspondingly with some mistakes in it;

4) Methods, “direct cost calculation”: “they represent a large portion of all arthroscopic knee (30%) and shoulder (35%) procedures”, give references/resources for these two percentage numbers;

5) Sup 2, Appendix 3: the difference of cost for diagnosis and treatment of MRI FP and NP patients was not analyzed, i.e., no chondroplasty procedure was included (CPT 29877), please revise properly. I think the authors need to double check the exact accuracy of Appendix 3 and Appendix 4 because currently there
are quite a lot of mistakes seen;

6) Sup 3, Appendix 4: at the end of the first part, add an additional line “Cost per patient diagnosis & treatment” as in Appendix 3;

7) With total cost of 2801 million for 0.972 million patients with knee pathology, the average cost per patient with MRI diagnosis was calculated as 5060? See direct cost was 2839. Also for other overall cost per patient. Seems much larger than the direct cost. Why? This reviewer was not quite understanding on how it was calculated for the overall cost per patient in addition to the direct cost. Please explain;

8) Results: please give the original numbers of patients found in NSAS for ICD9CM code 836.0 and 840.4. How the patient number was obtained from the original data?

9) Results: a percentage value in addition to absolute value better be given for the saving;

10) Discussion, 3rd paragraph: “not knowing exactly the patient’s condition based on MRI findings”, what do you mean by not knowing? Actually MRI diagnosis can be used for surgical preparation. Please rephrase this sentence;

11) No need to use three tables (Table 5-7) for showing the data of total cost and saving. Compress space by combining these three tables into one;

12) For the References, consistently use full or abbreviated format for journals names (Journal of Bone and Joint Surgery or J Bone Joint Surg) and page numbers (115-7 or 115-117), but not mixed;

Minor essential revisions:
1) Abstract, Results: delete “)” after “836.0”;

2) Abstract, Results: full name should be given for “VSI” when it appeared for the first time;

3) Abstract, Conclusions: “better prepare”;

4) Introduction, last third paragraph: it should be “arthrocentesis”;

5) Methods, “Direct cost calculation”, next: add a “)” after “rotator cuff”;

6) Methods, “for the shoulder”, next two paragraphs: moving “existing patient” to “CPT 99213 - E&M”;

7) Results: subtitles, use either “arthroscopy” or “arthroscopies” consistently;

8) Table 2, title: “cost applied to knee arthroscopy”;

9) Sup 1, Appendix 2: title, delete “with,” in “followed up with”;

10) Sup 1, Appendix 2: “arthroscopy procedure”;

11) Sup 1, Appendix 2: is it “2012” or 2006 for the knee data?

12) Sup 2, “Number of people who are medically managed (e.g. PT) due to FN MRI findings=”: “43,518” rather than “42,518” based on Sup 1;

13) Sup 2, CPT 20610: “10% of time”;
14) Sup 2, Cost per patient for medical management [PT](10.3 sessions over 6 wks);
15) Sup 2, Costs for patients under physical therapy post surgery for TP, FP, and FN CO results;
16) Sup 2: thromboembolism;
17) Sup 3: Number of surgical procedures performed based on positive findings =, 166,191;
18) Sup 3: Number of patients who crossed over CO) to surgery in FN group =, not copyright “c”;
19) Please make sure all the codes are consistent.

**Level of interest:** An article of limited interest

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests