Reviewer's report

Title: A before and after study of the impact of academic detailing on the use of diagnostic imaging for shoulder complaints in general practice.

Version: 1 Date: 25 August 2006

Reviewer: Ansgar Espeland

Reviewer's report:

General
1. The question posed by the authors is new but could have been better defined.
2. The methods seem appropriate but a few more details are required to replicate the work.
3. The data seem sound and well controlled.
4. The manuscript adheres to the relevant standards for reporting and data deposition.
5. The discussion and conclusions are mostly adequately supported by the data, but the discussion is insufficient and should be revised and extended.
6. The title and abstract convey what has been found with reasonable accuracy but can be improved.

In summary, this seems to be an important and well-conducted study. The authors should be commended for their efforts to improve clinical practice. However, the presentation of the study should be improved, especially the Discussion.

The paper needs to be seen by an expert statistician because this reviewer has insufficient knowledge of statistical methods used.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

These are marked MA in the review below.

There are so many minor essential revisions (see below) that they in sum constitute a major compulsory revision, i.e., the overall changes made in response to the suggested minor essential revisions must also be taken into account before a decision about whether or not to recommend publication can be reached.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

These are marked MI in the review below

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Discretionary Revisions (which the author can choose to ignore)

These are marked DI in the review below.

Specific comments

Title / abstract

1. Title: Consider shortening it, for example: Academic detailing can reduce the use of diagnostic imaging for shoulder complaints in general practice (DI).

2. Abstract, Background: The aim should reflect that the authors assessed (and give Methods and Results for) the impact of academic detailing on GPs' knowledge and confidence in addition to their use of imaging (MA).
3. Abstract, Method: Consider to change “Detailed group” to “intervention group” or “group receiving AD” (DI). Rewrite or omit “…the same two Divisions”, which is difficult to understand because no Divisions have been mentioned so far in the abstract (MI).
The last sentence (“A p value…”) seems unnecessary – there are p-values in Results (DI).

4. Abstract, Results, sentence 1: spell out MSK (MI).

5. Abstract, Results, sentence 2: “Mean GP knowledge” could be changed to “Mean GP knowledge score” (MI).

6. Abstract, Results, sentence 3: “After AD…” should be “Three months after AD…”? (DI)

7. Abstract, Results, sentence 4: “Analysis of imaging request data revealed a decrease in the use of ultrasound imaging (p<0.001)” seems unnecessary as the corresponding result is detailed in sentence 5 and the p value might be included there (MI).

8. Abstract, Results, sentence 5: “Requests for… was lower” could be changed to “Requests for… were fewer”, and “approximately” could be deleted as the number is 43.8% (MI).

9. Abstract, Results: Imaging use in the comparison group should be given for comparison (MI).

10. Abstract, Conclusion: Consider writing “improve GP knowledge and confidence and reduce the use of…. ” (DI)

Introduction

11. Page 4-5, Introduction: Information on imaging costs and on Stage 1 and 2 of the project could be shortened and brief information on the effect of academic detailing in earlier studies could be added here or in Discussion (MI). It might be valuable for the reader to know why this intervention was used and not other alternatives such as audit and feedback or reminders. The authors should mention pros and cons of their intervention compared to other interventions in Introduction or Discussion (MI).

12. Page 4, paragraph 2, line 5-7: More relevant references / reviews exist for these two sentences (history and physical exam key to most diagnoses, often no imaging required) (MI). References used as basis for the locally developed guidelines that were part of the intervention should be included and might also be given here (MI).

13. Page 4, paragraph 3: The description of increased use and costs of ultrasound imaging of the shoulder might be shortened somewhat (DI). “The number of services…” (last sentence): specify which kind of services (MI). Give references / sources for the figures regarding costs and investigation volume (MI).

14. Page 4, paragraph 4: The sentence “Stage I was to determine…and then to compare…” might be omitted as the results of the comparison are given in the next sentences (DI).

15. Page 5, paragraph 1: Did one third of the requests contain no tangible information to assist the examination in the meaning to guide how it should be done, to justify it, and / or to show that it was indicated? (MI)

16. Page 5, paragraph 1: The sentence “…at no time during the investigation did the radiologist report that the pathology found reproduced the patients pain” is not clear to me. It should be omitted or clarified. Does i mean that the radiologist attempted pain provocation during the ultrasound examination (how?) in all patients but did not get a positive pain response from any of them? (MA)

17. Page 5, paragraph 2 about Stage II: Sentence 1: One cannot compare pain presentations with patients. This sentence should be rewritten or may be omitted, as the results of Stage II follow. These results concerr “imaging” but which kind(s) of imaging? US? Other? (MI)

18. Page 5, paragraph 2, last sentence: Exactly which evidence was sought for a correlation between pathology (detected by US?) and symptoms and to document that there was a comparison made (by the clinician or the radiologist? which kind of comparison?) with the non-symptomatic shoulder? (MI)

19. Page 5, paragraph 3: The authors state that their preliminary work provided evidence that guidelines for
imaging of shoulder complaints need to be established. They should clarify whether the present study aimed to develop such guidelines (and, if so, describe in Methods how it was done) or whether their study only aimed to implement existing guidelines (references needed). MA

20. Page 5, paragraph 3: In the last sentence I suggest changing “musculoskeletal (MSK) problems of the shoulder” to “shoulder complaints”, cf. manuscript title (DI). The aim stated here (improve assessment and management) is different from / broader than stated in the Abstract (assess impact on use of diagnostic imaging). The aim should be similar and better specified. (MA)

Methods

21. Page 6-7, Methods, Details of academic detailing. Some more details are needed. The imaging outline (guideline?) should be documented with reference(s) or the methods for developing it should be described, i.e., clarify whether the outline was developed for the study or existed in advance. If this outline was the same as the guidelines for management of acute shoulder pain (imaging included) in Appendix I, reorganise the text to make this clear. If not, describe the content of the outline in the text or provide the outline in an appendix. MA

22. Page 7, paragraph 2: Describe the duration of the academic detailing sessions. MI

23. Page 7, Questionnaires: How was demographic information collected? Did the GPs fill in a questionnaire or were the data obtained from the two Divisions? MI

24. Page 7, Questionnaires: What is the meaning of “The project in general”? MI

25. Page 7, Questionnaires: GPs were asked about use of treatment modalities as a consequence of the Detailing. Were they also asked about use of imaging? (MI) If so, it could be interesting to know whether their perceived use and their actual use correlated (DI).

26. Page 8, Imaging request data: Define / explain MBS and the associated numbers (a coding system for imaging?). MI

27. Page 8, paragraph 4, line 1. The sentence regarding “…data collected as part of the consumer questionnaire…” could be rewritten to clarify exactly which data it concerns, since a specific “consumer questionnaire” has not been mentioned under Questionnaires. MI

28. Page 8, paragraph 5, line 3-6: The authors could change “time” 1, 2, 3, 4 to “period” 1, 2, 3, 4 – both here and in Table 2. MI

29. Page 9, paragraph 1, line 1-3: I do not understand the sentence “Within each division the control group GPs were randomly assigned an ‘Academic Detailing’ month in proportions that reflect the proportions in the AD group”. Is there a better way to explain this? MI

Results

30. Page 9, paragraph 3: The control group should be described, at least by age and sex (MI).

31. Page 9, paragraph 4, line 4-5: In the sentence “There was no evidence to suggest a change in the rate of requests over the different time periods” the authors should clarify type of requests (plain X-ray?) and GP group (intervention group?) and indicate p-value (p=>?). MI

32. Page 9, paragraph 4, line 8: This p-value (p<0.001) differs from those in Figure 1 (p<0.01) and Table 2 (p<0.0001). The same p-value (p<0.0001?) could be stated here, in Figure 1 and in Table 2. MI

33. Page 9, paragraph 4, line 8-10: Rather than using the word multiplication, the rate ratio may be better explained as a ratio of the rate of an event in one group to that in another group. MI

34. Page 10, paragraph 2, line 2: “…requests were approximately 19.6% higher” can be changed to “requests were 19.6% more frequent”. Similar changes can be made on page 9, last line. DI

35. Page 10, paragraph 2, line 5-6: Table 2 with p value 0.1341 does not indicate that ultrasound requests ir
period 4 were "significantly less than prior to the academic detailing". This should be corrected or clarified. MA

36. Page 10, paragraph 4. The results of the knowledge test should include some information about any missing data or the number of patients analysed. MI

37. Page 10, paragraph 4, line 5: I suggest changing "post hoc tests" to "post hoc analyses" since "testing times" is mentioned in the same sentence but with a different meaning of "testing". DI

38. Page 10, paragraph 5: The use of linear effects models can be mentioned in Methods only and might not be repeated in Results. It might be clearer with "knowledge test score" than "test score". DI

Discussion

39. Page 11, paragraph 3: This paragraph should summarise the main findings of the study but not present new results, e.g., on cost reduction measured post AD. If the present study aimed to examine costs the authors should state this as an aim, describe how they did it in Methods, and give the results in Results. If examination of costs was not an aim, reduced imaging costs (and extra costs related to the intervention) can be discussed in a later paragraph. MA

40. Page 11, paragraph 3, line 6-8: The question "Once enlightenment has been achieved, why is it that such beneficial practice cannot be maintained?" could be omitted. It overlaps with the sentence 1 in the next paragraph and the study did not actually examine whether the (change in) practice was beneficial to patients. MI

41. Page 11, paragraph 4, line 1-2: Correct or omit sentence 1 ("An assessment… needs assessing"). MI

42. Page 11, paragraph 4, line 3: Limited exposure to patients with shoulder pain is suggested to be a possible reason for failure to maintain "the improvement" (or perhaps better "reduced use of US"). This could be supported by a sentence in Results describing how often the GPs saw patients with shoulder (or musculoskeletal?) problems, cf. result given in Abstract. MI It could also be interesting to know whether GPs who saw fewer such patients increased their use of US after AD to a larger degree. DI

43. Page 11, paragraph 4, line 5-6: The statement "unnecessary imaging is ordered in the absence of a confident assessment" conflicts with the finding that GPs felt more confident after AD. The authors might omit this statement or discuss whether GPs’ confidence might decline with time after AD, or whether those GPs in their study who had lower confidence increased their use of US after AD (relapsed to baseline) to a larger degree. MI

44. Page 12, paragraph 1, line 2-3: The Discussion could be easier to read if cost savings and educational implications were discussed in separate paragraphs. MI

45. Page 12, paragraph 1, line 3-6: The high confidence reported by GPs in this study after AD does not indicate that "a more detailed and concentrated educational program is necessary to give confidence to the GP…". However, such an educational program might help to maintain a reduced use of US. The authors could discuss what has worked in other studies to sustain the effect of academic detailing or other interventions to change physicians’ practice. They could also compare the effect of AD in their study with the effect achieved in other studies, and consider explanations for any important differences. MA

46. Page 12, paragraph 2: Why is it reasonable to develop guidelines in addition to those used in the present study? What were the limitations of the guidelines used in this study? MA

47. Page 11-13, Discussion: There are no considerations in Discussion or Introduction regarding magnetic resonance imaging (MRI) of the shoulder, which is a frequent examination in many countries. Why was MRI not monitored in this study and how could this have affected the results? Might the GPs have referred patients for MRI instead of ultrasound, especially if they knew their use of ultrasound was measured? Or did not the GPs have access to MRI? MA

48. Page 13, paragraph 1: I do not think a randomised controlled trial (RCT) is important "to resolve this issue", i.e., to clarify whether or not asking the same questions at each testing time causes a learning effect. Rather a RCT is needed to confirm that AD can reduce the use of imaging for shoulder complaints. Or
preferably make the use more appropriate, which is not exactly the same thing. The authors did not evaluate (changes in) the appropriateness of the imaging requests (e.g., compared to their guideline), or the appropriateness of no imaging for those who were not imaged. That the appropriateness of the observed practice and practice change was not evaluated is also a limitation of the study that should be explicated. MA

Conclusion

49. Page 13, Conclusion, line 3-4: I suggest changing the last sentence to “…translates into better clinical management and reduced costs in the long term.” The last part of the sentence “while not compromising health outcomes and quality of life” seems unnecessary since better clinical management is unlikely to compromise health outcomes or quality of life. DI

References / figure/ tables / appendix

50. Reference list: It could include some earlier studies / (systematic) reviews on academic detailing / outreach visits and also some more evidence for shoulder imaging guidelines. MI

51. Figure 1: To make the figure more readable, MBS item number could be removed from the title and exchanged with x-ray and ultrasound in the text explaining the figure. MI The second footnote could state that the rate of ultrasound requests in the Academic Detailing group differed significantly between periods 3 and 1 (p<0.0001) and between periods 4 and 3 (p=0.036). This might be stated without a link to the figure, the symbol in the figure and in the footnote might be omitted. DI

52. Table 2: The number attached to footnote 1 should also be attached to “Estimate” in the column heading. The number attached to footnote 2 (NS=not significant) can be removed. MI

53. Table 3: Might be easier to read if “(0%)” is omitted whenever N=0, as in Table 1. Data are missing (numbers do not add to 87 for any item) and this could be stated in a footnote. MI

54. Appendix II: Consider to inform the reader about the best answer for each question. DI

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

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

Statistical review: Yes

Declaration of competing interests:

I declare that I have no competing interests.