Reviewer's report

Title: Do referrals by NHS Direct save the NHS money? A cost-minimisation study of 1,001 NHS Direct users

Version: 1 Date: 21 February 2013

Reviewer: Nigel Edwards

Reviewer's report:

1. Is the question posed by the authors well defined?
Yes and these are important questions

2. Are the methods appropriate and well described?
Yes

3. Are the data sound?
Within the limitations noted by the authors

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
n/a

5. Are the discussion and conclusions well balanced and adequately supported by the data?

6. Are limitations of the work clearly stated?
Yes

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
Yes

8. Do the title and abstract accurately convey what has been found?
Yes

9. Is the writing acceptable?
Yes

A useful study with helpful conclusions - I have a major problem with one assumption but this does not change the main conclusion. I have a problem with understanding one aspect of how the data are presented - this may be just me. I have made the odd drafting point as well.
Major revisions / questions

Page 4 - Can it be assumed that if the patient had called 999 that a full paramedic equipped ambulance would have been despatched and if it were it also may not follow that the patient would be conveyed to hospital. This means that the sensitivity is not really the cost difference of the crewing options but whether ‘hear and treat’ or ‘see and treat’ is used. Some ambulance and GP out of hours services have a high closure rate on the phone and the types of calls where people choose NHSD could have a very high rate of closure using phone only. They are also likely to have a low conveyance rate. This seems to me to be a problem and the modelling needs to take this into account.

This would also apply to similar analysis of GP OOH. This does not materially affect the conclusions

Secondly I am a little concerned about the use of the A&E tariff as a proxy for costs. This is a price not a cost and contains quite a lot of rather roughly apportioned overhead. Furthermore, can we assume that the cost of treating the type of patient that chooses NHSD first are the same as the average cost of a normal A&E attender? I do not know but it is at least plausible that they are cheaper. I think that these may not change the direction of the result and may be a sensitive testing issue but I think they need to be acknowledged.

I found the different perspectives section on page 6 very hard to follow. The key question to me seems to be where would the patients have gone if NHSD had not been there and would this have cost more/less and been better/worse. The commentary at the top of page 6 is on a subgroup, its not really a different perspective. The second approach is the one that I am interested in. Why is the first perspective interesting?

Minor revisions

Page 7 - I think there is something wrong with the para the starts Figure 4 shows the.... I think the author has got confused about which perspective they are looking at- I found the same problem, can they a terminology that reminds us that one perspective is NHS impact on patient routing and the other is a perspective on what would have happened without NHSD. Alternatively I wonder if they should think about whether this analysis is really adding anything other than confusion.

Does there need to sensitivity for patients following their first preference even after speaking to NHSD or presenting elsewhere subsequently as the NHSD option was found to be unsatisfactory

Page 15 I don’t want to be pedantic but these changes did not reduce expenditure in the way suggested in the last para on this page as so much of the cost quoted here is overhead - many of these are not cash releasing savings, they do allow . Care needs to be taken with this as ther is tendency to over claim about these sorts of savings
Proofing

Table 3 could do with a column that summarises the totals

Page 6- the sentence in line 5/6 ‘clearly this averages...’ is redundant

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

**Quality of written English:** Acceptable

**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'