

## PEER REVIEW HISTORY

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### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	A cost-benefit analysis of twice daily consultant ward rounds and clinical input on investigation and pharmacy costs in a major teaching hospital in the United Kingdom
<b>AUTHORS</b>	Ahmad, Aftab (proxy) (contact); Weston, Philip; Ahmad, Mahin; Sharma, Dushyant; Purewal, Tejal

### VERSION 1 - REVIEW

<b>REVIEWER</b>	Anders Larsson Department of Medical sciences, Uppsala University, Sweden
<b>REVIEW RETURNED</b>	19-Jan-2015

<b>GENERAL COMMENTS</b>	<p>I only have a couple of very minor remarks. Oveuse is used twice in the first sentence in the abstract. I would suggest changing the first overuse to Misuse as this would also cover the use of inferior test alternatives (and also underuse even if this is the topic of the article).</p> <p>I believe that the figures are an effect of the changes described in the manuscript as the authors claim, but in theory the results could reflect a general change in the hospital/health care region. I would recommend that the authors in the discussion state that the changes were not due to a general trend in the hospital and add some example e.g. saying that the total biochemistry/FBC/CT/MRI volume in the hospital has increased from 2007 to 2011 (which to me is the most likely scenario).</p>
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<b>REVIEWER</b>	Dr. Prabath Nanayakkara, MD, PhD, FRCP Head, Section acute medicine VU university medical centre Amsterdam the Netherlands
<b>REVIEW RETURNED</b>	04-Feb-2015

<b>GENERAL COMMENTS</b>	<p>This study is an elegant study on an important topic. Very few studies have been performed on the topic of (unnecessary) diagnostic cost reduction in the hospital setting recently. However a recent study by Vegting et al (Eur J Intern Med. 2012 Jan;23(1):70-5) also demonstrated that intensive supervision of the junior doctors can lead to a reduction in unnecessary diagnostics.</p> <p>The paper is well written. However there is no section on the limitations of this study which in our opinion is necessary.</p> <p>A few points need to be clarified in this limitations section and may</p>
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	<p>be in the discussion.</p> <p>1. Does authors have any idea what the net cost reduction is? Reduction in the number of tests will of course lead to a reduction in costs. However, the lab and radiology facilities should have a minimum of staff to offer 24 x 7 service and the expected quality. The reflex therefore is to increase the price per test. In other words, the net cost reduction must be the result of reduction in the staff of the laboratory and radiology. Were the radiologists and clinical chemists involved in this project? How are they going to react to this reduction in number of tests in the future?</p> <p>2. Have they looked at the trend in the other departments during the intervention. In other words was there a reduction in LOS and the diagnostics costs in the other departments during the study period? Although authors state that the only intervention was "twice a day consultant ward rounds" its possible that there were some confounders that may have at least partially influenced the results.</p> <p>Readmission rate of 18 to 19% is in our opinion fairly high. Was this known and were there specific reasons for this high readmission rate?</p>
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### VERSION 1 – AUTHOR RESPONSE

Dear Mr Sands,

We are grateful to you and both the reviewers for your valuable time and very useful comments. We have taken on board your suggestions and made appropriate changes within the manuscript and tracked them in the revised manuscript as a word document.

We have responded to each of the comments below:

Editorial comments:

Please include the country of the study in the title

Response to editorial comments

As suggested we have added the country of the study in the title that now reads as follows:

“A cost-benefit analysis of twice daily consultant ward rounds and clinical input on investigation and pharmacy costs in a major teaching hospital in the United Kingdom”.

Reviewer Name Anders Larsson

Comment 1

Oveuse is used twice in the first sentence in the abstract. I would suggest changing the first overuse to Misuse as this would also cover the use of inferior test alternatives (and also underuse even if this is the topic of the article).

Response to comment 1

We have changed the first word ‘Overuse’ in the abstract to ‘Misuse’.

Comment 2

I believe that the figures are an effect of the changes described in the manuscript as the authors claim, but in theory the results could reflect a general change in the hospital/health care region. I would recommend that the authors in the discussion state that the changes were not due to a general trend in the hospital and add some example e.g. saying that the total biochemistry/FBC/CT/MRI volume in the hospital has increased from 2007 to 2011 (which to me is the most likely scenario).

#### Response to comment 2

The reviewer has made a valid point about the general improvements in cost effectiveness in various healthcare regions that may be contributing to the benefits observed in our study. However, most hospitals (Vegting IL, van Beneden M, Kramer MH, Thijs A, Kostense PJ, Nanayakkara PW. How to save costs by reducing unnecessary testing: lean thinking in clinical practice. *European Journal of Internal Medicine* 2012;23(1):70-75) including ours have been reporting increased investigation requests and misuse over the last few years suggesting that the reduction we observed was not due to a general trend.

In addition, in our previous paper (Ahmad A, Purewal TS, Sharma D, Weston PJ. The impact of twice-daily consultant ward rounds on the length of stay in two general medical wards. *Clinical Medicine* 2011;11(6):524-28), we compared our daily ward round practice on our 2 wards with the traditional twice weekly practice on 2 other general medical wards with similar case load to ours and reported a significant reduction in our length of stay and discharge rates compared to the other 2 wards suggesting our observed improvement was against the trend in our hospital.

As recommended by the reviewer we have included this point in our discussion on page 13, paragraph 2 and lines 14-15 and referenced it, as follows:

"Whilst most hospitals[36] including ours have been reporting a year on year increase in the use of investigations,"

Reviewer Name Dr. Prabath Nanayakkara

#### Comment 1

Does authors have any idea what the net cost reduction is? Reduction in the number of tests will of course lead to a reduction in costs. However, the lab and radiology facilities should have a minimum of staff to offer 24 x 7 service and the expected quality. The reflex therefore is to increase the price per test. In other words, the net cost reduction must be the result of reduction in the staff of the laboratory and radiology. Were the radiologists and clinical chemists involved in this project? How are they going to react to this reduction in number of tests in the future?

#### Response to comment 1

The reviewer has correctly identified that the net savings may also be dependent on staff reductions and we would go further and suggest, on reduction of bed base. We had already included this as a limitation in our discussion in the originally submitted manuscript in the "Discussion" section on the last 2 lines of page 14 as follows:

"It can be argued that in the absence of bed base or staff reduction no actual money was saved. However, the recent report from the Academy of Medical Royal Colleges, based on our previous study[23], has suggested a potential saving of £11.7 million and a reduction of 1,900 tonnes of carbon per year by reducing the LoS and bed days using our model[23 25]."

However, we had not highlighted this point in the "Strengths and limitations of the study" subsection under the "Article summary" section on page 3. We have now included this point as a limitation of the study under the "Strengths and limitations of the study" subsection of the revised manuscript on page 4, point 5, as follows:

"Although our study demonstrates a reduction in investigations, the net cost savings would also be dependent on bed base and staff reduction in the respective departments. It can be argued that in the absence of bed base or staff reduction no actual money was saved but wide spread implementation of daily consultant ward rounds in the future would allow these departments to incorporate changes in the way they work."

We have left the sentences in the discussion section the same as they were in the originally submitted manuscript to avoid increase in the number of words.

### Comment 2

Have they looked at the trend in the other departments during the intervention. In other words was there a reduction in LOS and the diagnostics costs in the other departments during the study period? Although authors state that the only intervention was "twice a day consultant ward rounds" its possible that there were some confounders that may have at least partially influenced the results.

### Response to comment 2

In our previous paper (Ahmad A, Purewal TS, Sharma D, Weston PJ. The impact of twice-daily consultant ward rounds on the length of stay in two general medical wards. *Clinical Medicine* 2011;11(6):524-28), which we have referenced in the originally submitted manuscript under the "Introduction" section on page 6, paragraph 1, under the "Methods" section on pages 6, 7 and 9 and under the "Discussion" section on page 15, we reported halving of length of stay (LoS) on our 2 wards following the change from twice weekly to twice daily ward rounds, which was statistically and clinically significant compared to 2 other wards in our hospital with similar case load where consultants continued to perform twice weekly ward rounds for the same period, thus, demonstrating that the only intervention was the change in our practice.

We did not emphasise this point in the originally submitted manuscript, which has rightly been highlighted by the reviewer. We have now included this in our revised manuscript in the "Discussion" section on page 13, paragraph 2 and lines 10-14, as follows:

"In our previous study[23] we compared the impact of daily consultant ward rounds on LoS between our and 2 other wards with similar case load and demonstrated halving of the LoS on our wards, whereas, the LoS essentially remained unchanged on those 2 wards practising the traditional twice weekly consultant ward rounds."

### Comment 3

Readmission rate of 18 to 19% is in our opinion fairly high. Was this known and were there specific reasons for this high readmission rate?

### Response to comment 3

The readmission rate that we have reported reflects our population profile and the socioeconomic state within the city and has been an issue across all medical departments in the region and is being addressed at a regional level.

However, the more important point that we were making is the fact that despite an increase in the patient discharge rate, reduced LoS and reduced investigations per patient there was no increase in the readmission rate or inpatient mortality rate suggesting that patient care was not being compromised by the change in practice.

This point has been made in the originally submitted manuscript in the "Discussion" section, paragraph 1 on lines 4-6 and presented in the "Results" section in paragraph 1.