Author's response to reviews

Title: Variation in plasma calcium analysis in primary care in Sweden - a multilevel analysis.

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Version: 2 Date: 28 March 2010

Author's response to reviews: see over
Answer to Reviewer Terry Aspray

1. Is the question posed by the authors well defined?

Analysis of plasma calcium is inappropriately linked to screening for primary hyperparathyroidism.

*We do not agree with the reviewer that analysis of plasma calcium is inappropriately linked to primary hyperparathyroidism (pHTP). It is our definite view that the main reason for analysing plasma calcium in primary care is to detect pHTP, as it is the most common endocrine disorder besides diabetes and thyroid diseases. This is well described in earlier studies for example [1] [2]. pHTP was the most common diagnosis in patients with hyperkalcemia [3]. Other indications for plasma calcium analysis include follow-up after medication for osteoporosis and hypocalcaemia after parathyroid surgery, however these conditions are much more rare in primary care. The main objective of this study was to investigate the variation in plasma calcium analysis in primary care not, to assess the outcome of the plasma calcium analyses.*

Analysis of plasma albumin together with plasma calcium.

*It is true that some cases of pHTP will be missed by analysis of plasma calcium alone, but to study pHTP was not our objective here.*

Correction for low or high plasma albumin can be done in a substantial part (16,368 out of 20,129) of the cases, but the focus in this study was not to assess the level of plasma calcium. In a subsequent study the levels of plasma calcium will be studied together with clinical data on mortality, morbidity, drug use and quality of life.

2. Are the methods appropriate and well described?

However, I feel that the underlying question of whether there is variation between practitioners is not as relevant as why there is variation. The authors already cited previous research showing low rates of measurement.

*We agree with the reviewer that a very relevant question is why there is a variation in analysis of plasma calcium. But first we wanted to find out how great the variation was and on which level (the physician or the health care centre level). In this multilevel model we could not explain the reason for the variation.*

The rates of measurements are not necessarily low as screening is primarily done in patients considered to be at risk, patients with psychiatric and musculoskeletal symptoms, please also see the factors included in the risk score.

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

The discussion is too long and deviates from the data onto too much conjecture. It should be cut considerably.

*We have revised the Discussion and shortened it (page 10, second paragraph).*
6. Are the limitations of the work clearly stated?

The section in the discussion referring to limitations should be expanded.

We have clarified the main reason for analysing plasma calcium, (page 10, and first paragraph) and also emphasised the limitations of the study.

Answer to Reviewer Claudio Marcocci

Major compulsory revisions

The strength of this study would be very much increased if the authors could provide data on the results of calcium measurements (how many were abnormal) and also the rate of diagnosis of primary hyperparathyroidism.

We agree that this would be very interesting and indeed could be done at least concerning the level of plasma calcium. While this was not the focus of this study and not included in the manuscript. Of the 20 129 P-Ca analysed during 2005, 222 were below and 3 586 above normocalcemia, defined as values between 2.15-2.50 mmol/L.

As the diagnosis of hyperparathyroidism could be assigned at the hospital the database might not be complete in this respect. We have already published a paper on this subject[3] and we are going to expand on that study in a coming paper. We will examine the medical records in one health care centre and re-examine the patients to determine the rate of hyperparathyroidism in patients with raised plasma calcium levels during 1995-2000.

Minor essential revisions

1. Page 3, line 7 from bottom. The authors should mention the study by Wermers patients with pHTP. Differences in the severity of the disease are likely accounting for these discrepancies.

We thank the reviewer for the suggestion and have added the reference in the text, page 3, paragraph 4.

Answer to Reviewer Per Hellman

Answer to Reviewer Hiroshi Kaji

We thank the reviewers for their positive comments on the manuscript.
References

