Reviewer's report

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

Version: 1  Date: 10 February 2010

Reviewer: Terry J Aspray

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1. Is the question posed by the authors well defined?
The objective was to measure variation in the analysis of plasma calcium. However, this is inappropriately linked to screening for Primary HyperParathyroidism (PHP). The majority of calcium levels measured in clinical practice are directed at other questions: vitamin D status, underlying cause for thirst, hypercalcaemia as a complication of cancer, side effects of drug therapy... With such a small proportion of the population actually having their calcium levels measured, I am unsure whether the true cause for doing the test (or not doing the test) can be readily addressed.

Also, if truly screening for PHP, measuring calcium alone will miss some normocalcaemic patients with a raised PTH (and often a low vitamin D). As a technical point, was albumin included in the analysis, as unadjusted total calcium may be normal, if albumin is low?

2. Are the methods appropriate and well described?
I am not sure. I am not statistically competent to comment. 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.

3. Are the data sound?
They appear so

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
Yes

5. Are the discussion and conclusions well balanced and adequately supported by the data?
The discussion is long and deviates from the data onto too much conjecture. It should be cut considerably.

6. Are limitations of the work clearly stated?
The section in the discussion referring to limitations should be expanded. The clinical indications for measuring calcium have already been discussed above.
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 Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?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?
The writing is good, with a few errors in the English, which could be picked up by a technical editor.

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

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

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**
'I declare that I have no competing interests