Reviewer's report

Title: Protocol for a feasibility clinical trial examining the effect on lung cancer diagnosis of offering a chest x-ray to higher risk patients with chest symptoms

Version: 2 Date: 31 October 2013

Reviewer: Everardo Saad

Reviewer's report:

The authors are conducting a pilot trial which will ascertain the feasibility of running a full-scale UK trial of imaging in patients with a number of chest symptoms of any duration, with the ultimate goal of comparing such strategy with NICE guidelines, which currently require a higher threshold for referral of patients with chest symptoms. In their proposed methodology, workshops and health-economic, quality-of-life, qualitative and quantitative methods will be used to fully assess the feasibility of the larger trial. In addition to the worth of this study, a notable point about the manuscript is that authors have discussed the merits and disadvantages of conducting a cluster-randomized trial, something many would favor in this situation.

Major Compulsory Revisions:
1. Based on disappointing findings about stage distribution and outcomes for patients with lung cancer in the UK, and based on the limitations of implementing effective, large-scale screening for this disease, authors postulate that the best hope for improving outcomes in lung cancer remains the earlier recognition of symptomatic disease using a low threshold for requesting chest X-ray in primary care. Although this hypothesis is tenable, the same evidence that lends support to the study (well documented by authors in the Background section of the manuscript) may also be used to argue that diagnosing lung cancer some weeks or a few months earlier will not change its natural history. If proper screening of asymptomatic patients typically leads to earlier diagnosis without decrease in mortality from lung cancer, authors should question how likely it is that earlier diagnosis of symptomatic disease will improve long-term outcomes. Despite this caveat, one should keep an open mind and consider the proposed strategy for the full-scale trial a modality that may improve resection rates, morbidity, and hopefully mortality. Thus, the study design will adequately test the feasibility of the full-scale trial, which aims at testing the hypothesis put forth in the Background (with the caveat that using resection rate as the primary endpoint will likely make the trial underpowered to detect plausible reductions in mortality).

2. Although rich in details, the section in which sample size is discussed is not explicit about the final number of patients to be recruited for the pilot trial, perhaps because of the conditional tense used. Figure 2 clarified my doubts
about such number, but perhaps wording should be changed.

3. The discussion on sample size suggests that the prevalence of lung cancer was used to estimate the number of patients to be recruited, although the primary outcome measures described further down include the prevalence of 'extra-NICE' symptoms and the proportion of patients that accept to take part in the study. Authors should discuss why three primary outcome measures are considered and only one is selected for sample-size estimation.

4. A 6-month recruitment period is mentioned in this same section, whereas a mention is made elsewhere of 12 months to avoid symptom seasonality. This must be clarified.

Minor Essential Revisions:
1. When secondary outcome measures are discussed, it appears that the definitions for false-positive and false-negative results are reversed.

Discretionary Revisions:
1. I suggest consistency in placing superscript reference numbers (with regard to position in sentence and in relation to punctuation marks).
2. When reference 30 is first cited in the text, it should be replaced by 29; likewise for 31, that should be replaced by 30; it is possible that some of the subsequent references are also misplaced, but I have not checked.

Level of interest: An article of importance in its field

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.