Reviewer's report

Title: Radiation Exposure and Cancer Risks from CT Examinations in Japan

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Reviewer: amy berrington de gonzalez

Reviewer's report:

Major compulsory revisions:
1. I think the survey data are the strongest aspect of the paper and that more detailed from the survey should be presented. Including the age and sex specific patterns of scanning and the variation in the CT scan protocols to examine which technical factors are responsible for the wide variation in doses.

2. The cancer risk estimates are not appropriate given that they were developed for the US population, which has very different underlying cancer incidence rates from Japan. The differences vary by cancer site eg much higher stomach cancer rates but much lower breast cancer rates and so the impact of incorrectly using the BEIR VII estimates will vary depending on the type of CT scan. The authors state that it would be too complex to develop Japanese specific risk estimate. I disagree – the parameters for the BEIR VII risk models are given in the report and they can be applied to current Japanese cancer incidence rates rather than the US. However, if the authors are not able to do these calculations themselves then I would suggest dropping this aspect of the paper and focusing instead on the survey data, which is a more unique contribution.

3. The description of the results of the lifetime risk calculations as the number of deaths caused annually is not appropriate. From one year of CT scans the radiation-induced deaths will occur over the rest of the lifetime of the population. So it should be described as the number of future deaths not the annual deaths.

Minor essential revisions:
1. Data on pediatric CT scans should also be presented if it was collected.
3. Table 1 is difficult to understand.

Level of interest: An article of importance in its field

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

Statistical review: Yes, and I have assessed the statistics in my report.

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