Reviewer’s report

Title: An observational study to assess changes in social inequality in smoking-attributable upper aero digestive tract cancer mortality among Canadian males between 1986 and 2001

Version: 1 Date: 26 November 2012

Reviewer: Zubair Kabir

Reviewer’s report:

Singhal and colleagues report an interesting piece of original research utilizing secondary data sources in a specific geographic location in Canada. The investigators have defined their research objective at the outset, followed a sound methodological approach employing a previously validated method of estimating smoking impact (Peto's method), and have discussed the strengths and limitations of the methods employed and also in their study findings. The results are well presented and are in a logical fashion.

Discretionary Revisions:

1. Clarifying the correct interpretation of risk difference findings (as a change in percentage points rather than interpreting as a relative risk reduction)
2. Possible explanations for not employing standard measures of inequality such as slope index of inequality (SII) or the relative index of inequality (RII).
3. A table showing the smoking rates among males over the periods studied should be useful for the readers
4. Also, no explanations provided whether any existing tobacco control policies in that region might have had impacted the study findings
5. In Table II, rate ratios show no change from 1991 onwards, with no potential explanations in the text
6. Risk estimates from CPS II study are not free from limitations and especially when we do not have risk estimates by social class or groups- so the study findings should be interpreted with caution
7. A trend analysis indicating whether a significant decline was observed or not across the measures of association may be useful, although the authors wanted to justify for not conducting such an analysis
8. Why females were not examined should be clarified at the outset
9. The population impact measure is confusing
10. Because of the ecological nature of study analyses, a causal inference cannot be drawn- and this questions the estimation of a population health impact where we have to make a cause-effect assumption
11. In the discussion, may be other potential contributing factors to the causation/modifying UADT cancers, mainly alcohol intake, need to be discussed
in the light of the study findings.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

'I declare that I have no competing interests’