Reviewer’s report

Title: Suicide and unintentional poisoning mortality trends in the United States, 1987-2006: Two unrelated phenomena?

Version: 2 Date: 11 August 2010

Reviewer: David J Gunnell

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General Comments

This paper investigates whether the recent reduction in suicide in the USA could in part be explained by misclassification of self-poisoning suicide deaths as accidental poisoning deaths. The authors demonstrate that there has been a marked rise in unintentional poisoning deaths in the USA since 1990, with the incidence of such deaths approaching that for overall suicide mortality. The paper addresses an important public health issue – the reliability of national suicide data – and as such would be suitable for publication in BMC Public Health. However, I feel there are a number of limitations to the way the data are presented that require a quite radical re-write of the paper.

Major essential revisions

1. The paper should be shortened considerably – in my view a maximum of 3-4 figures is required, and much text is redundant.

2. The main thrust of this paper is to suggest that reductions in US suicides are (at least in part) artefact due to misclassification of self-poisoning suicides as accidents. It is surprising to see, however, that the rise in accidental poisonings was not paralleled by a marked fall in overdose suicides. More detailed information is required on the poisons accounting for the rise in poisoning deaths – for example, could this rise be due to an increase in the prevalence of illicit drug addiction and subsequent mortality from accidental overdose? There is some suggestion that it is 15-24 year olds in whom the rising trends are most apparent (figs 6a and d). A figure clearly showing age specific rises in accidental poisoning mortality would be easier to interpret that the figures of ratios.

3. The analysis of the time trend data in the later figures (labelled 9-16) appears somewhat naïve. ANOVA is not a conventional approach to model such data (due to serial autocorrelation). Advice from a statistical reviewer should be sought, but I do not feel any of these figures adds important information over and above that presented in earlier figures and perhaps a simple graphical approach would be best suited to this paper.

4. Some of the wording in the paper is unclear and needs careful editing (see abstract, results section, final sentence; background, paragraph 2, final 2 sentences and several other examples).

5. The figures need re-labelling as the figures numbers (1-16) do not correspond
with the text or the list of figure numbers for the legend (1-6h) making review and cross-referencing challenging.

Minor essential revisions:
Background, para 4 – it is surprising that accidental poisoning mortality should be under-estimated by 61% - into which death category were these deaths misclassified?

Minor discretionary revisions:
1. Background, para 1, line 5 replace “reverse” with “increasing”
2. Background, para 2, line 2 – I think “more” should be “less”

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

**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