Reviewer's report

**Title:** Trends in aortic aneurysm- and dissection-related mortality in the state of Sao Paulo, Brazil, 1985-2009: multiple-cause-of-death analysis

**Version:** 6  **Date:** 6 September 2012

**Reviewer:** Janet Powell

**Reviewer's report:**

My previous major criticism 2* remains. It is now late 2012 and the standards of 1994 are no longer applicable. Prior to the advent of thoracic endovascular aortic repair (TEVAR) in about 2006, there was no corrective treatment for dissection. Also dissection case ascertainment is based on clinical symptoms and presentation. In contrast, corrective repair for AAA has been available since 1952 and case ascertainment has increased with the more widespread use of imaging in clinical practice and in some cases even screening for AAA.

For these reasons, the current analysis is not helpful. For instance, aortic dissection is almost never an incidental finding whereas AAA is a common incidental finding and often is completely unrelated to the underlying cause of death. Based on your data set you have the opportunity to have much greater insight into disease trends and mortality but you do not appear to be interested in doing so. Separated analysis should not form the basis of a second paper (this would just be salami slicing).

Below is my major criticism, followed by the authors' response.

2* Although it is acceptable to present combined mortality from aneurysm and dissection, it is much better if the two are considered separately since these 2 disorders have rather different risk factors. Also aneurysm repair has been available for many years but endovascular intervention for dissection is a much more recent guidelines in Brazil. The authors should focus only on the primary underlying cause of death. There are sufficient interesting data to allow this.

At the introduction part of our manuscript we have made reference to four papers that consider the use of multiple-cause-of-death methodology necessary to provide additional useful information to the conventional underlying-cause-of-death presented in the so called primary mortality statistics. Identified by their first authors, the papers of Lilienfeld, and Gillum were population-based studies considering aortic aneurysm and dissection; the paper of Filipovic was population-based considering mainly abdominal aortic aneurysm but including
also aortic aneurysm and dissection deaths and the paper of Rushton studied notified deaths from a cohort of men employed at eight oil refineries in the United Kingdom and includes a topic about aortic aneurysm and dissection deaths. The paper of Rushton, published in 1994, includes many concepts about multiple-cause-of-death methodology. All these papers testify the importance of the use of multiple-cause-of-death in the study of aortic aneurysm and dissection.

Right now, we would like to present the arguments of the reviewers’ concern about “case ascertainment” and Lilienfed’s similar fact “disease of interest”. Lilienfeld affirm that “The use of the underlying cause of death data as a proxy for incidence data has potential for much error, insofar as the disease of interest may be more common as a contributory or coexisting disease rather than an underlying cause. Investigations are needed of the degree to which such aortic aneurysms are listed as “contributory” or “coexisting”. We are confident that the questions proposed by the reviewer and by Lilienfeld were discussed in our manuscript with the use of the multiple-cause-of-death methodology. Our data have shown and confirm former results from other studies that ruptured aortic aneurysm and dissection are selected as underlying cause-of-death over 90% and 60% in deaths without mention of rupture. The manuscript also included in the discussion the results of studies about the high trustworthy of mortality statistics related to aortic aneurysm and dissection, as follows: “It may be argued how much actual aortic aneurysm and dissection are assumed as a cause-of-death. i.e., in other words, how trustworthy are mortality statistics. Few studies took care of the question. An unpublished review of the Mayo data disclosed that over 85% of Rochester residents diagnosed with aortic aneurysms that died between 1951 and 1980 had on their death certificate an aortic aneurysm as the underlying cause-of-death, and almost all based on radiographic findings [8]. In England, Oxford region, during 1979 and 1987, a linkage study between hospital and death certificate records disclosed that 86.5% of the people who died within four weeks of hospital admission with an aortic aneurysm as the main diagnosis included it mentioned on death certificates and among these ones 92.5% were identified as an underlying cause-of-death [47] “

It was our privilege and honor to refer in the manuscript papers of Prof. Michael J. Goldacre as first author or as co-author. We would not find better words that
the ones he has included in the paper “Trends in mortality rates comparing underlying cause and multiple cause coding in English population 1979-1998. Journal of Public Health Medicine 2003; 25(3):249-253”, as follows: “The two measures of all-mentions and of underlying-cause mortality, in combination, are more useful than either alone. In people who die with multiple pathology, analysis of mentions identifies all deaths attributed to each disease. It also helps interpretation of underlying-cause mortality when the rules for assigning the latter have changed. However, certification practice in the number of causes certified per death may itself vary in time and place; and the contribution to mortality of an individual cause may be inflated or deflated in these respects. For this reason there are advantages in continuing to consider the underlying cause as well as mentions. To do so also unequivocally distinguishes the certifying doctor’s view that the decedent died from, as well as with, the disease; and it acknowledges the certifying doctor’s decision as to the single most important cause of death. Mortality statistics have a number of strengths, and weaknesses, in studying the occurrence of disease. Certification of death, and of the cause of death, is a legal requirement: unlike most epidemiological datasets, mortality data are complete in any population of interest in the developed world. A historical limitation of mortality statistics has been the restriction of coding and analysis to underlying cause. The introduction of routine multiple-cause coding and analysis of death certificate data is an important advance in medical statistics.”

Level of interest: An article of limited interest

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

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