

Critical Appraisal of the Enstrom/Kabat paper on secondhand smoke and British Medical Journal's role in publishing the paper

James E Enstrom, Geoffrey C Kabat. Environmental tobacco smoke and tobacco related mortality in a prospective study of Californians, 1960-98. *BMJ* 2003;326:1057 (17 May) <http://bmj.com/cgi/content/full/326/7398/1057>

Note: The rapid responses cited below can be accessed from the electronic version of the article. Select 'Read responses to this article'.

Findings and Conclusion of the study

'No significant associations for current or former exposure to environmental tobacco smoke (ETS) before or after adjusting for seven confounders and before or after excluding participants with pre-existing disease. No significant associations were found during the shorter follow up periods of 1960-5, 1966-72, 1973-85 and 1973-98.

The results did not support a causal relation between ETS and tobacco related mortality, although they did not rule out a small effect. They considered the association between exposure to ETS and coronary heart disease (CHD) and lung cancer may be somewhat weaker than generally believed.

Funding

The authors were partially funded by the Center for Indoor Air Research (funded primarily from US tobacco companies). Both authors have received funding in the past from the tobacco industry.'

1. PROBLEMS WITH THE QUALITY AND VALIDITY OF THE DATA

(i) Misclassification of exposure

- Marital status in 1959 as a measure of exposure to secondhand smoke over a 40 year period is invalid because virtually everyone during the follow up period was exposed to secondhand smoke whether married to a smoker or not.¹
- Inability to distinguish people who were exposed to secondhand smoke from those who were not at various points in the follow-up. The resurvey of subjects who survived and provided information on smoking in 1999 comprised only 7% of the original 9,619 life-long smokers at enrolment and 15% of those followed after 1972.²
- Study participants on average were 52 years old at enrolment. Many spouses who reported smoking in 1959 would have died, quit smoking or ended the marriage during the 38 year follow-up, yet surviving partners are still classified as 'exposed'.³

(ii) Body of evidence

- There is already a significant body of evidence supporting the fact that secondhand smoke is a major health hazard.
- The authors accept that most epidemiological studies have found that exposure to secondhand smoke has a positive relationship with CHD and lung cancer. However they reject the use of meta-analysis, the established method used to combine the results of individual studies

where those studies are insufficiently large to determine whether the effect observed is statistically significant.⁴

- The addition of this study to the accumulated body of evidence from the many studies that have been previously published does not challenge the established view that exposure to secondhand smoke causes death and disease.⁵

(iii) Design of study

- The Cancer Prevention Study (CPS-I) was not designed to study exposure to secondhand smoke⁶ and is not a good one for this purpose because secondhand smoke was extremely common in the '60s.⁷
- It claims to be a prospective study but it is not because of a failure to apply the same measures and definitions of exposure to secondhand smoke over the duration of the study and other deviations.⁸
- The comparative rarity of outcome measures such as lung cancer in a non-smoking population suggest that a nested case control study may have been more appropriate.⁹

(iv) Age-Adjustment

- Among never smokers there was an inverse gradient of female age associated with spousal number of cigarettes consumed per day. Also there was an apparent trend in reduced risk of female CHD deaths with increasing spousal cigarette consumption. The trend was not abolished by age adjustment or 'full adjustment' in calculating Relative Risk (RR).¹⁰

(v) Confounding

- There was socioeconomic confounding of individuals exposed to secondhand smoke. In the second study, participants recruited in 1982 who were exposed to secondhand smoke had less education than those unexposed, as opposed to the lack of any such gradient in the first study.¹¹

(vi) Results

- The authors minimised the far-reaching effects of tobacco smoke.¹² The findings in this study do not actually differ significantly from the IARC estimates.¹³
- The authors attribute an exaggerated importance to their findings.¹⁴
- Misclassification is likely to explain the lack of statistically significant association.¹⁵ RR reported for active smoking and CHD are lower than those reported from other cohort studies such as British Doctors.^{16, 17}
- Rarity of outcomes may have left the study statistically underpowered, which could have made it difficult to detect a significant difference between the groups.¹⁸
- The study results are difficult to interpret. The data tables are unhelpful raising more questions than answers.¹⁹

(vii) Conclusion

- There is an overemphasis of the negative nature of the findings in the conclusion.^{20, 21}

2. PROBLEMS WITH THE PEER REVIEWS

(i) Panel expertise

- No one with special expertise in research on the health effects of exposure to secondhand smoke was involved in the review of the paper.²²
- (ii) Review process**
- The British Medical Journal (BMJ) peer review process includes a less intensive external review than other leading general medical journals.
 - A more rigorous peer review is required,²³ when there is conflict of interest and public policy implications.²⁴
- (iii) Source of funding**
- The BMJ has not revealed whether the reviewers were aware that the paper was partially funded by the tobacco industry and that the authors have a history of receiving tobacco industry funding.
- 3. EDITORIAL**
- (i) Editorial position**
- The direction of the BMJ editorial position on secondhand smoke was reversed without explanation.^{25, 26}
- (ii) Competing interests**
- The Editor was misled by an ‘independent’ scientist who was later found out to be a consultant for the tobacco industry.²⁷
- 4. CONFLICT OF INTEREST**
- (i) Funding**
- The study was partially funded by the tobacco industry. This is not necessarily a reason not to publish²⁸ but given the well documented efforts by the tobacco industry to create confusion it is essential that researchers are seen to be entirely impartial.²⁹
 - The declaration of interest was unusual and incomplete. The Center for Indoor Air Research funds two types of research, peer-reviewed and ‘special reviewed’ with the latter awarded to tobacco industry executives. Special reviewed projects are more likely to support the tobacco industry position and to be used by the industry to argue against smoking bans in public places.³⁰ Evidence obtained subsequently shows that this was a ‘special reviewed’ project and comparisons of the original protocol and the final paper, as well as documented meetings with tobacco company executives and consultants, suggest that the industry played a greater role in the production of the paper than was implied by the declaration of competing interests.
- 5. PUBLICATION OF THE PAPER**
- (i) BMJ position**
- 1996: No blanket policy of refusing to publish research funded by the tobacco industry.³¹
- 2000: BMJ position was explained further in a debate published after the 1996 article.^{32, 33, 34}
- 2003: A ban on the publication of tobacco industry funded papers would be antiscience and would systematically distort the scientific record.³⁵
- (ii) Impact of publishing**

- More consideration should have been given to the impact of publishing this paper.³⁶
 - Publication of this paper will serve the tobacco industry very well for many years.^{37, 38} British American Tobacco refer to the paper, editorial and media release on their website.³⁹
 - The BMJ has assisted the tobacco industry in misleading the public about the harmful effects of secondhand smoke exposure.⁴⁰
- (iii) BMJ Standards**
- The BMJ publication standards have been lowered.⁴¹
 - The integrity of the journal is being questioned.⁴²
 - There is disbelief that the BMJ would publish such a flawed study. The only explanation could be to increase readership and create controversy.⁴³
 - It was irresponsible of the BMJ to publish this study.^{44, 45}
- (iv) Tobacco industry influence**
- The BMJ was lax in safeguarding against the industry.⁴⁶
- (v) Apology/Retraction**
- There has been a call for an apology and/or a retraction in a forthcoming BMJ^{47, 48}

6. BMJ PROMOTION OF PAPER

(i) Media Release

- The BMJ framed the story but it looked like it had been written by the tobacco industry.⁴⁹
- The BMJ failed to mention tobacco industry funding in the media release.
- The media release is the source of authority because it has come from the BMJ.⁵⁰

(ii) Cover of the Journal

- The problems with the media release were compounded by the headline 'Passive smoking may not kill'. The same sentence was also the caption on the BMJ website for the photo-link to the 'current issue'.⁵¹
- The cover of the journal encouraged editors around the world to use headlines denying that exposure to secondhand smoke causes death and disease.⁵²

¹ Lisa A Bero, Professor *University of California*, Michael Cummings, Stanton Glantz. Misleading the public about secondhand smoke...again. *BMJ Rapid Response* 24/5/03

² Michael J Thun, Vice-President, Epidemiology and Surveillance Research *American Cancer Society* Response to Simon Chapman. *BMJ Rapid Response* 19/5/03

³ *ibid*

⁴ Julia A Critchley, Lecturer in Epidemiology/Research Synthesis *Liverpool School of Tropical Medicine*. ETS – Interpretation of the wider evidence. *BMJ Rapid Response*, 17/5/03

⁵ *ibid*

⁶ Michael J. Thun, as above

⁷ Michael J Martin, Assistant Clinical Professor, Department of Epidemiology and Biostatistics *University of California*. Flawed study on passive smoking. *BMJ Rapid Response* 22/5/03

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- ⁸ Stephen J Jay, Professor of Medicine and Public Health *Indiana University School of Medicine* Study Objective Flawed --Fatally. *BMJ Rapid Response* 17/5/03
- ⁹ Rosemary Fox, Specialist Registrar, Public Health Medicine *National Public Health Service Wales* Environmental tobacco smoke paper requires further benefits from critical appraisal. *BMJ Rapid Response* 19/5/03
- ¹⁰ Eugene Milne, Deputy Medical Director *Northumberland, Tyne & Wear Strategic Health Authority* Adequacy of age-adjustment? *BMJ Rapid Response* 19/5/03
- ¹¹ George Davey Smith. Effect of passive smoking on health. Editorial. *BMJ* 2003;326 1048-1049 (17 May)
- ¹² Ellen C G Grant, Physician and Medical Gynaecologist, Kingston-upon-Thames. Irresponsible journalism *BMJ Rapid Response*. 17/5/03
- ¹³ Involuntary tobacco smoke is carcinogenic to humans.
- ¹⁴ Michael J Thun, Response to Simon Chapman. *BMJ Rapid Response* 19/5/03
- ¹⁵ Julia A Critchley, as above
- ¹⁶ Doll R, Peto R, Wheatley K, Gray R, Sutherland I. Mortality in relation to smoking: 40 years' observations in relation to British doctors. *BMJ* 1994;309:901-11
- ¹⁷ Julia A Critchley, as above
- ¹⁸ Rosemary Fox, as above
- ¹⁹ George Davey Smith, as above
- ²⁰ Julia A Critchley, as above
- ²¹ George Davey Smith, as above
- ²² Ron M Davis, *Henry Ford Health System*. Six Key Issues. *BMJ Rapid Response* 19/5/03
- ²³ Michael J. Martin, as above
- ²⁴ Clive Bates. Agreeing the limits of conflict of interest. *BMJ Rapid Response*. 17/5/03
- ²⁵ Editorial, *BMJ* 1997;315:973-80
- ²⁶ West R. Banning smoking in the workplace. *BMJ* 2002; 325:174-5
- ²⁷ Martin McKee, Professor of European Public Health *London School of Hygiene and Tropical Medicine*. Reviewers' comments. *BMJ Rapid Response* 20/5/03
- ²⁸ Clive Bates as above.
- ²⁹ Martin McKee. Need for clarification on competing interest. *BMJ Rapid Response* 15/5/03
- ³⁰ Barnes DE, Bero LA. Industry-funded research and conflict of interest: an analysis of research sponsored by the tobacco industry through the Center for Indoor Air Research. *J Health Polit Policy Law* 1996; 21:515-42
- ³¹ Roberts J, Smith R. Publishing research supported by the tobacco industry. *BMJ* 1996; 312: 133-134
- ³² *ibid*
- ³³ King J, Yamey G, Smith R. for and against: Why journals should not publish articles funded by the tobacco industry. *BMJ* 2000; 321:1074-6
- ³⁴ Ronald M Davis, *Henry Ford Health System* One Ford Place. Six key issues. *BMJ Rapid Response* 19/5
- ³⁵ Richard Smith, Editor, *BMJ* From hero to pariah in one easy jump. *BMJ Rapid Response*
- ³⁶ Zubair Kabir, Research Fellow *CResT Directorate* Impact Factor and Irresponsible Journalism: A 'nasty' nexus? *BMJ Rapid Response* 19/5/03
- ³⁷ Clive Bates, as above
- ³⁸ Michael J. Martin, as above
- ³⁹ Andrew S Furber, Specialist Registrar in Public Health *Eastern Wakefield PCT*. What are the tobacco manufacturers saying? *BMJ Rapid Response* 19/5/03
- ⁴⁰ Lisa Bero, Michael Cummings, Stanton Glantz, as above
- ⁴¹ Pascal A Diethelm, Director, *Oxygeneve* The letter *BMJ* failed to write. *BMJ Rapid Response* 17/5/03
- ⁴² Gene Borio, Webmaster, *Tobacco.org* Science as PR. *BMJ Rapid Response*
- ⁴³ Marty Eckrem, Program Manager, *Coconino County Dept* Secondhand smoke study is seriously flawed. *BMJ Rapid Response*
- ⁴⁴ Raj Thakkar, GP Registrar. *BMJ*-comic or respectable journal. *BMJ Rapid Response* 18/5/03
- ⁴⁵ Zabair Kabir as above
- ⁴⁶ William T Godshall, Director, *Smokefree Pennsylvania* Apology requested. *BMJ Rapid Response*
- ⁴⁷ William T Godshall as above
- ⁴⁸ Jayant S Vaidya, Hon Lecturer and Specialist Registrar *University College of London*. Flawed study from the outset. *BMJ Rapid Response* 16/5/03
- ⁴⁹ Ron Davis as above

⁵⁰ Clive Bates as above
⁵¹ Ron Davis, as above
⁵² Gene Borio as above