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Scientific misconduct—is there a need for policing the profession

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Scientific misconduct—is there a need for policing the profession?

At the beginning of January this year, Dr Jon Sudbo, a cancer researcher and chief medical officer at The Norwegian Radium Hospital, was found to have published an article in *The Lancet* in October 2005 describing work that had not been done (1, 2). The paper claims to be the report of an analysis of several Norwegian health surveys and registries showing that the use of nonsteroidal antiinflammatory drugs can reduce the incidence of oral cancer. The material was fabricated. The article was accepted for publication in *The Lancet* through a fast-track editorial process because the results were particularly striking.

It was not until the end of the year, when the Director of the Division of Epidemiology at the Norwegian Institute of Public Health, Camilla Stoltenberg, questioned the stated use of data from CONOR, a Norwegian cohort managed by her institute. This query initiated an investigation, as a result of which Jon Sudbo has now admitted that he fabricated the data in the paper. A special committee is investigating whether other articles by Jon Sudbo, including a paper in *The New England Journal of Medicine*, were also based on fraudulent or fabricated data. One feature that should have alerted at least those involved in the analysis of the data is the fact that 250 of the sample of 908 people in the study were reported to have the same birthday!

Earlier last year, Dr Eric T Poelhman, in the state of Vermont in the United States (US), admitted to scientific misconduct in falsifying and fabricating research data published in numerous articles between 1992 and 2002 in the international scientific literature (3). During this period, Dr Poelhman had also submitted 17 research grant applications to federal agencies in the United States—for millions of dollars—again based on false and fabricated research data. The published results included those of a study showing beneficial effects of hormone replacement therapy (HRT) on various health parameters of postmenopausal women. How many physicians around the globe prescribed HRT to women on the basis of these fabricated results, not to mention the financial burden on the many women who used these drugs for up to decades in the belief that they were beneficial? Given what we know today about the association between the use of HRT and cardiovascular disease and cancer (4–6), publication of this fraudulent study is particularly disturbing.

The researcher Hwang Woo-suk of the Republic of Korea resigned from his university in December 2005 after it was found that he had fabricated the results from stem-cell research, which had raised hopes of new cures for hard-to-treat diseases. According to a panel of researchers at the Seoul National University, Hwang published faked results for at least 11 stem-cell lines that he claimed to have created in a paper published in *Science* (7).

In many societies, people have grown accustomed to believing that science is to be trusted, that, if something is published in a prestigious high-impact scientific journal like *Science*, *The New England Journal of Medicine*, or *The Lancet*, then it must be true, especially if the list of authors includes leading scientists in the field. The paper by Jon Sudbo et al was signed by 13 co-authors, some from stellar research institutions such as the MD Anderson Cancer Center in Houston, the Cornell University in New York, and Biomedicum Helsinki at the University of Helsinki. In the article in *The Lancet*, which requires that the contribution of each author be stated, four of the authors (including Jon Sudbo) were listed as having contributed equally to the paper. The International Committee of Medical Journal Editors, of which *The Lancet* is a member, has published the following criteria for authorship: "Authorship credit should be based on 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for the important intellectual content; and 3) final approval of the version to be published. Authors should meet conditions 1, 2, and 3." Thus each author should have participated sufficiently in the work to take public responsibility for the content.

With its 13 competent knowledgeable co-authors submitting a paper to a high-impact journal and its able editors, one might wonder how the fabricated study got through the peer review process, which is supposed to prevent the publication of bad science.

The articles by Jon Sudbo, Eric T Poehlman, and Hwang Woo-suk are not the first fraudulent papers to be published, and probably not the last. It is unrealistic to expect a journal to be able to detect fraud consistently, but at least in this case, *The Lancet* does not appear to have put up as many barriers as they might have. One epidemiologist, Dr Michael Thun at the American

Cancer Society, did raise a warning sign. He was asked to write an editorial on the Sudbo study for *The Lancet* but withdrew it when he was not given time to resolve questions over whether the analysis was correct and properly presented. Finally, however, the Editor in Chief decided that the paper, which appeared to have exceptional findings, should be published rapidly for quick publicity. Did the increasing competition among journals and a desire to raise the impact factor of the journal play a role in this decision?

Any journal can be the victim of fraud. In a bid to reduce the probability of such events, Drummond Rennie, Deputy Editor of *JAMA*, proposed several years ago that 1 in every 1000 papers submitted undergo a simple editorial audit in which checks would be made on whether the records exist, whether the laboratory tests were done, and what the role of each author was? This sounds like a good idea and could be a step forward. The objection that additional monitoring will discourage scientists from starting research is clearly overridden by the increasing need for policing the profession.

The other aspect that the Sudbo affair brings to light is gift authorship—the practice of conferring authorship as a reward or as a spurious stamp of credibility, rather than as a certificate of responsibility. Many people accept or confer gift authorship, detection is unlikely, and the rewards are obvious: tenure, promotion, research grants, and fame. In the Sudbo case, the contribution of each author was described in the paper, but how was co-authorship attributed if the work was never done? How many of the authors fulfilled the three criteria outlined by the International Committee of Medical Journal Editors? How many fulfilled only the last: approval of the final version for publication? Nevertheless, there were explanations in *The Lancet* paper as to why their names were included. Of all the abuses of scientific research, gift authorship is the most common and the most lightly regarded.

The Sudbo affair raises questions concerning research management. Finally, as also stated by the International Committee of Medical Journal Editors, "it is not ordinarily the task of editors to conduct a full investigation or to make a determination; that the responsibility lies with the institution where the work was done or with the funding agency". We must first accept that fraud exists, even in Nordic countries, although its prevalence is unknown. The universal lesson is that institutions are not good at policing themselves, and several countries have set up bodies specifically for this purpose, such as the Office of Research Integrity within the US Department of Health and Human Services. The recent case of scientific misconduct from Norway should be taken seriously by research organizations and institutions, which should implement the necessary precautions. The time has come also for the Nordic countries to abandon the lax approach to scientific fraud.

References

1. Sudbo J, Lee JJ, Lippman SM, Mork J, Flatner N, Ristimäki A, et al. Non-steroidal anti-inflammatory drugs and the risk of oral cancer: a nested case-control study. Lancet. 2005; 366:1359–66.
2. Reuters. Doctor made up cancer study: hospital. January 15, 2006.
3. Kintisch E. Scientific misconduct: researcher faces prison for fraud in NIH grant applications and papers. Science. 2005;307:1851.
4. Vainio H, Weiderpass E. Hormone replacement therapy for symptoms but not for chemoprevention of chronic diseases. Asian Pac J Cancer Prev. 2003;4(3):275–6.
5. Beral V, Million women study collaborators: breast cancer and hormone-replacement therapy in the Million Women Study. Lancet. 2003;362:419–27.
6. Anderson GL, Limacher M, Assaf AR, Bassford T, Beresford SA, Black H, et al. Effects of conjugated equine estrogen in postmenopausal women with hysterectomy: the Women's Health Initiative randomized controlled trial. JAMA. 2004; 291(14):1701–12.
7. Hwang WS, Roh SI, Lee BC, Kang SK, Kwon DK, Kim S, et al. Patient-specific embryonic stem cells derived from human SCNT blastocysts. Science. 2005;17;308(5729):1777–83. Epub 2005 May 19. Retraction in: Kennedy D. Science. 2006;20;311(5759):335.

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