



## In response

Matti Hakama, Geir Hoff, Ole Kronborg & Lars Pahlman

To cite this article: Matti Hakama, Geir Hoff, Ole Kronborg & Lars Pahlman (2006) In response, Acta Oncologica, 45:2, 214-215, DOI: [10.1080/02841860500513342](https://doi.org/10.1080/02841860500513342)

To link to this article: <https://doi.org/10.1080/02841860500513342>



Published online: 08 Jul 2009.



Submit your article to this journal [↗](#)



Article views: 292



View related articles [↗](#)

The tables (VI and VII) at the end of the paper by Hakama et al. [1] may be regarded as seductive. They are based on an assumption that the effectiveness is 20%—that is even higher than the efficacy in the European screening studies referred to. Hakama et al. state that data from the European studies can be extrapolated to the Nordic countries and then showing that approximately 1 500 deaths in colorectal cancer per year could be prevented by screening [1]. Such extrapolation can according to our knowledge not be done correctly without knowing the incidence of colorectal cancer in the various age groups in the referred studies!

So, in summary, in spite of the fact that the English and Danish studies [2–5] are very good—and the best we have—we must accept that there are some scientific shortcomings. This cannot be improved by feasibility studies. It is an enormous responsibility, for the medical profession to take, if existing evidence is presented in a way that leads health authorities to start mass screening without having further proof of the effect of screening for colorectal cancer.

## References

- [1] Hakama M, Hoff G, Kronborg O, Pahlman L. Screening for colorectal cancer. *Acta Oncol* 2005;44:425–39.

- [2] Hardcastle JD, Chamberlain JO, Robinson MH, Moss SM, Samar SS, Balfour TW, et al. Randomised controlled trial of faecal-occult-blood screening for colorectal cancer. *Lancet* 1996;348:1472–7.
- [3] Kronborg O, Fenger C, Olsen J, Jorgensen OD, Sondergaard O. Randomised study of screening for colorectal cancer with faecal-occult-blood test. *Lancet* 1996;348:1467–71.
- [4] Scholefield JH, Moss S, Sufi F, Mangham CM, Hardcastle JD. Effect of faecal occult blood screening on mortality from colorectal cancer: Results from a randomised controlled trial. *GUT* 2000;50:840–4.
- [5] Jørgensen OD, Kronborg O, Fenger C. A randomised study of screening for colorectal cancer using faecal occult blood testing: Results after 13 years and seven biennial screening rounds. *GUT* 2002;50:29–32.
- [6] Results of the first round of a demonstration pilot of screening for colorectal cancer in the United Kingdom. *BMJ* 2004;329:133.
- [7] Towler BP, Irwig L, Glasziou P, Weller D, Kewenter J. Screening for colorectal cancer using the faecal occult blood test, Hemoccult. *The Cochrane Database of Systematic Reviews*. 1998. Issue 2. Updated in *Cochrane Library* 2005; issue 4 (online).
- [8] Towler B, Irwig L, Glasziou P, Kewenter J, Weller D, Silagy C. A systematic review of the effects of screening for colorectal cancer using the faecal occult blood test, haemoccult. *BMJ* 1998;317:559–65.
- [9] Saul H. Interview with Michael Baum: Shooting sacred cows. *Cancer Futures* 2003;2:273–8.
- [10] Carlsson U, Ekelund G, Eriksson R, Fork T, Janzon L, Leandoer L, et al. Evaluation of possibilities for mass screening for colorectal cancer with Haemoccult faecal blood test. *Dis Colon Rectum* 1986;29:53–7.

## In response

MATTI HAKAMA, GEIR HOFF, OLE KRONBORG & LARS PÅHLMAN

Our points of view [1] mainly deviate from those in the letter by Ekelund and Janzon as to the degree of evidence and magnitude of effect in screening for colorectal cancer.

First the evidence. Ekelund and Janzon call for absolute effects (their percentages are still measures of relative effect). Take an example in absolute figures, if an expected number of 100 colorectal cancer deaths can be reduced to 80, there is a 20% and statistically significant reduction in mortality. At

the same time about a total of 2 500 deaths will take place in that population. However, because of statistical random variation, the range of deaths we observe is between 2 400 and 2 600. The effect of 20 deaths can not be distinguished from the random noise of 200 deaths. The observation of Ekelund and Janzon of no statistically significant reduction in total mortality is correct but their inference or conclusion is simply wrong. The disappearance of statistical significance is not necessarily because of disappear-

ance of the effect due to the misclassification of deaths but, even if the effect remained the same, the random error would increase making the observation not statistically significant.

Next the magnitude. It is true that the number needed to screen (NNS) is large. The above example of reduction of 20 deaths compared to the total of 2 500 deaths is just another way to explain this basic fact. Screening for colorectal cancer is effective but the effect is small. The prolongation of life due to screening is an alternative measure with public health importance for NNS. For mammography with proven effectiveness the prolongation due to single screening is about two days [2], and the order of magnitude is the same in screening for colorectal cancer. Again the observation of Ekelund and Janzon is perfectly correct but their inference is wrong. The small magnitude is relevant not only for colorectal cancer screening but it is a general fact for most medical interventions including clinical treatment.

Furthermore, health services activities are based only seldom on direct evidence of final outcome but they are based mainly on intermediate end points or beliefs. Medicine based on direct evidence of small effect will ultimately result in better human health than one based on those inconclusive alternatives. At present and with the evidence available we believe that screening for colorectal cancer is more effective and also offers better use of resources than many established health services activities.

We agree with the comment by Ekelund and Janzon on application of the scientific results on

routine screening. Their attitude, however, would prevent any public health activity. The implementation of a routine screening programme, sometimes called feasibility study, can meet even the preconditions by Ekelund and Janzon. It should be an organised one and it should follow rigorous scientific principles as randomisation during the time window of implementation. Routine screening with mammography [3] and with the FOB test [4] in Finland shows that experimental design can be applied in a routine service and it is the best, and often the only, means to evaluate for its effectiveness.

Because any activity in the Nordic countries has only a small effect on length of life, research is urgently needed on other final end points related to quality of biological, mental and social life, to provide evidence on routine health services activities.

## References

- [1] Hakama M, Hoff G, Kronborg O, Pahlman L. Screening for colorectal cancer. *Acta Oncol* 2005;44:425–39.
- [2] Hakama M, Pukkala E, Söderman B, Day N. Implementation of screening as a public health policy: Issues in design and evaluation. *J Med Screen* 1999;6:209–16.
- [3] Hakama M, Pukkala E, Heikkilä M, Kallio M. Effectiveness of the public health policy for breast cancer screening in Finland: Population based cohort study. *BMJ* 1997;314:864–7.
- [4] Malila N, Anttila A, Hakama M. Colorectal cancer screening in Finland: Details of the national screening programme implemented in Autumn 2004. *J Med Screen* 2005;12:28–32.