Reviewer's report

Title: Statistics teaching in medical school: Opinions of practising doctors

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Reviewer: Leonhard Held

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Comments on
Statistics teaching in medical school: Opinions of practising doctors
submitted to BMC Medical Education

This paper describes some comments by clinicians about their undergraduate training in statistics, which have been collected through a questionnaire which was emailed to all clinicians with a link to the University of East Anglia Medical School. Among the 473 clinicians originally contacted, responses from 130 doctors have been used in this paper. Other parts of this study have been already published elsewhere (Swift et al, Stat Med 2009).

As the authors discuss on page 11, this selection of comments is by no way representative and may not reflect the "average" doctor. Nevertheless, I found this paper interesting and thought-provoking, but this may be caused more by some references on medical education I was not aware of then by the clinician's comments.

My experience as a teacher of medical students supports not only the anecdotal evidence that "statistics is not the most well-liked subject", I also heard quite often that clinicians realize in their later work the importance of statistics but do not appreciate statistics teaching in their study. I was therefore not surprised about the participants' experience of undergraduate teaching (p. 6).

The "specific methods" that students should learn, as suggested by the participants (p. 8), seem to be rather unspecific to me: probability, epidemiology, statistical significance, statistical tests etc.

I think the paper would benefit from being more specific how to design undergraduate teaching in statistics, plus examples of suitable case
studies. I do welcome the recommendations listed on page 12 and 13, but again they are somewhat general.

If possible, this can also be indicated through references to good textbooks, for example. For example, some specific illustration how "teaching could be related to real research" or how to read typical pharmaceutical company material would be really useful.

What I like about the paper is the general discussion on teaching statistics to medical students, as a literature review I found the paper quite useful.

Teaching statistics to medical students is really hard, the clash of complicated concepts and students who do not see the relevance of the discipline seems difficult to solve. For example, from my experience, the concept of an odds ratio is already difficult to communicate, not to mention hazard ratios! Similarly, P values are mostly misinterpreted, probably because the correct interpretation is far too complicated for non-specialists (Goodman (2005, Clinical Trials, page 284) notes that "the P-value is almost nothing sensible you can think of. I tell students to give up trying"). A recently published guide by the Swiss Academy of Medical Sciences ("Forschung mit Menschen"; Ein Leitfaden für die Praxis, available at www.samw.ch/de/Publikationen/Leitfaden.html) states repeatedly that the P value is the probability of the null hypothesis! If specialists in medical research do not understand P values, how can I as a teacher insist that the medical student needs to understand P values? I would welcome some comments by the authors on this discrepancy.

Personally I do not see an immediate solution "in a crowded curriculum" (p. 13) and I think the authors should be far more explicit in their recommendations so that this paper will be really beneficial for teachers of medical statistics. Some of the comments by the clinicians (For example those in Box 1) seem to point the way.

**Level of interest:** An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable

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