Dear Sir,

Oral cancer and precancer screening studies have high discriminatory ability. Evidence based Dentistry 2000; 3:79–80

In their letter to *Evidence-Based Dentistry* (2003; 4:45), the authors of the above article felt that there were, ''unanswered and unjustified criticisms'' which they decided to address further. We thank the authors and the Editor of EBD for allowing us to continue this professional dialogue and further clarify the issues involved.

The authors make two points regarding their most significant issues of contention with our original Commentary. The first point surrounds the issue of the gold standard. The authors argue that the, ''appropriate gold standard — albeit a 'soft' one — is independent diagnosis by an expert''. They make the argument that if sensitivity and specificity are the outcome-measures for precancerous and cancer lesions, then a biopsy (the gold standard of choice) is not an option. This is because, according to Wilson and Jungner[1] (see Editor's footnote) both positively- and negatively screened individuals (or at least a random selection of both groups) would have to be biopsied, whereas in the studies included in the meta-analysis this information was neither available nor considered to be feasible — normal tissue (ie, negatively screened) would need to have been biopsied as well. Although we appreciate this reference to the 35-year-old classic monologue on screening, the reality of clinical practice and the relevance of this paper to clinical care cannot be overlooked.

The misconception by Moles *et al*. regarding our point appears to be based on the assumption that we agree with their assessment and description of screening tests. The notion of screening is based on fundamental principles of public health. Although it is true that screening tests are used to detect relevant lesions in apparently healthy people, we would like to stress that screening tests, by definition, should be performed on those who are considered to be at risk of the condition for which they are being screened. This means that defining a screening test involves both the technique and the cut-off point used, two issues that we suggested were lacking in the original article. For a given test and a given prevalence of abnormality in those tested, if the cut-off point is defined as more extreme, the sensitivity will fall but the specificity will rise. The optimum balance between sensitivity and specificity depends on the consequences of each. Therefore, in routine screening and diagnostic applications, only subjects with a positive result from the first screening test will be investigated further. Thus, the positive predictive value (PPV) becomes the most easily measured parameter.[2] The PPV for two of the studies included in this meta-analysis were considerably lower than the rest of the studies, at 0.503 and 0.314.

If this basic premise is agreed upon, then the purpose of the screening test would not be achieved if the certainty of the positive tests were not histologically verified based on biopsy findings. Clearly, then, the gold standard becomes a relevant step only after an independent expert has identified a cancer or precancerous lesion. Without this type of information, the readers can draw very little clinical relevance from the screening tests.

Another point relevant to this issue is that, by incorporating a 'soft' standard, it becomes quite possible that one could begin screening 'abnormal' lesions as well, not necessarily cancer or precancer lesions, which was supposed to be the purpose of the study. The simple point is that the reader is still unable to ascertain the definition of a positive outcome in the article.

The second point made by the authors on our Commentary concerned the lack of information that was presented for evaluation of their conclusion, that the results of this meta-analysis suggested that oral cancer screenings have a high discriminatory ability regardless of the examiners' qualifications or the screening methods employed. Not only does our explanation of the preceding point address this issue but the descriptions of the limitations in the original Commentary are also still pertinent and valid for our critical appraisal.

The appraisal is intended to highlight objectively certain issues that can cause readers and clinicians alike to think critically about research findings. Having said that, as mentioned in our original Commentary, given the presentation of the data in the article and our explanation of the influences and variances on the values and purposes of screening tests, it is true that we did in fact agree with the authors' conclusions — that the heterogeneity only moderately influenced the sensitivity and specificity. In our opinion, however, this article contained inadequate presentation of data and lacked information that would allow readers and clinicians to fully evaluate its conclusions.

Editor's note The library section of the UK National Screening Committee website (www.nsc.nhs.uk/) provides an update of the classic screening criteria first promulgated by Wilson and Junger.[1] These criteria take into account the more rigorous standards of evidence required to improve effectiveness and greater concern about the adverse effects of healthcare. The library also contains a useful handbook for population screening programmes which attempts to specify the most important issues for defining and managing any screening programme.

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