Reviewer's report

Title: Conceptualization of Category-Oriented Likelihood Ratio: A Useful Tool for Clinical Diagnostic Reasoning

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Reviewer: Chris Del Mar

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This is a third presentation of this interesting and potentially important paper.

Now that its clarity is so much improved, the paper is easier to understand. What is being proposed is essentially that probabilistic reasoning works fine for thinking about the presence or absence of specific clinical characteristics of single disease entities. However the Authors contend that some other system is required for more vague clinical entities (abdominal pain is the entity discussed).

Major problems

A It is not clear how much of an incremental increase in knowledge this represents. This is because the notion that ‘urinary tract infection’ is a specific diagnosis while ‘abdominal pain’ is not is actually subjective. Some will be able to argue that specificity can be increased or decreased for either diagnoses equally convincingly. For example, ‘urinary tract infection’ can be made more specific (‘in an otherwise healthy female of reproductive years’ for example), while ‘abdominal pain’ is actually a diagnostic category in some disease codes for general practice.1-2

Therefore there is a flaw in the basis for this paper: that probabilistic reasoning should work for *any* diagnostic category, so long as it is definable (and even such vague terms as ‘abdominal pain’ is, as ref 27 shows). That is to say, category-oriented is not really an entity discrete from disease-oriented. We can calculate the LR + or –ve for any clinical feature for any of these clinical entities, and act accordingly. It can be agreed that we need the data on all of this, and that it is often missing.

B The paper still makes it difficult for the medical students (at whom the paper is directed) to know what to make of the LRs. The is a missing step between articulating the LRs (the Tables are helpful) and then making the clinical choice. It would be good of the paper actually expressed it.

C Nevertheless the paper does make the excellent point that we need more epidemiological (diagnostic) data about the characteristics of broad disease groups.

Minor points:

1 “Using probabilistic reasoning, we cannot (and need not to) completely rule
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2 “However, most patients referring to primary care physicians are the ones who complain of nonspecific problems such as abdominal pain” should be “However, most patients referring to primary care physicians are those complaining of nonspecific problems such as abdominal pain”

3 “Evidence-based diagnostic approach has some theoretical and practical limitations” should be “An evidence-based diagnostic approach has some theoretical and practical limitations.”

4 In Table 1 presumably “Self-diagnosis 4 0-0.1” should be “Self-diagnosis 4 0.1”.

5 Fig 2 has this incomprehensible statement "diseases of iescategorthe robability of The of p" and has variously spelt ‘category’ as ‘ategoryc’ for some reason.