Pre-submission review

Assignment Number: **MIKHAW-2**
Paper Title: An epidemiology-based and a likelihood ratio-based method of differential diagnosis

Total Word Count: 4062
Number of Figures: 0
Number of Tables: 5 (embedded within text)

Target: Wikiversity
URL: www.https://en.wikiversity.org/wiki/Differential_diagnosis_methods

This is a peer review of the article "An epidemiology-based and a likelihood ratio-based method of differential diagnosis"
which as of January 7th 2014 is displayed online at the following URL:
https://en.wikiversity.org/w/index.php?title=Special:Book&bookcmd=render_article&arttitle=An+epidemiology-based+and+a+likelihood+ratio-based+method+of+differential+diagnosis&oldid=1135155&writer=rl

Manuscript Development

Section	Comments
Title	The title suggests that this article is a description of these two methods, implying that they are independent.
Introduction	The introduction seems to begin rather abruptly, rather as though it is a chapter in a longer work on an area such as diagnosis, and the reader will already be familiar with the problem. If this is not the case, then the introduction should be expanded and should begin with a more basic premise, such as what is a differential diagnosis and why is this important? Further, mention should be made of the current methods of differential diagnosis and their risks and benefits. Some of the language is a little strange and difficult to understand, for example 'switchingly' – does this mean something like 'alternately'? Prepositions in particular need correcting. There is no explanation of the ABC protocol.
By epidemiology	In line with the article title, this section should be headed 'Epidemiology-based method'. The theory part of this section is rather cumbersome and repetitive (for example the continual repetition of the definition of WHOIFPI, which is not necessary) but it is rather difficult to understand exactly how the risk/probability of each component would be calculated. The table showing the list of relations for a series of candidate conditions simply repeats the list of probabilities several times without really shedding any light on how these probabilities would be obtained/calculated. By contrast the example shows the use of the method very clearly and is easy to follow.
Further work-up by likelihood ratios	Once the reader reaches this section, it becomes apparent that this article describes the use of the two methods sequentially, rather than a straightforward description of each separately or a comparison between them. Perhaps this should be made explicit at the start. As a result it is not clear whether the likelihood ratio-based method is a method which can be used alone; the theory implies that it is necessary to always calculate initial likelihoods by some other method first, but this is not explicitly stated. If this is the case then the title should reflect the combined use of the two methods, for example 'An epidemiology- and likelihood ratio-based method of differential diagnosis' As in the previous section, the theory is a little hard to follow but the example is clear and easy to understand.

Finding candidate conditions	This is the critical step for these and any other methods of differential diagnosis; determining what conditions need to be included. Obviously if an important candidate condition is missed, no method of differential diagnosis will supply the correct conclusion. Perhaps this should be stated more clearly. Further, the content of this paragraph does not reflect the section title, as there is no information on how a diagnosing physician might find candidate conditions. Is this considered so obvious that there is no need to state it? Does the method rely on the physician simply remembering what conditions may present certain symptoms, or if not, what resources are available to identify possible causes? These should be mentioned.
Combinations	This section explains quite clearly how possible combined conditions should be approached and included in the method.
Overall text	There are spelling and grammatical errors throughout the text, as well as some instances of correct but peculiar wording. It is notable that there is no overall conclusion, perhaps comparing these methods (or this combined method) to other techniques currently in use, and suggesting how and where this methodology could be used. For example could this method be used to create a software tool which could be used by all physicians? Is such a tool already available, or is there something similar which this method would improve upon? Is it possible to illustrate the practicality of this method and its usefulness in reaching a correct diagnosis, perhaps by using the medical records of specific cases of varying levels of difficulty and using this and other methods to compare the frequency of reaching the correct diagnosis?
Contribution to the field	To my knowledge (which is limited in this area) there is not a great deal of published information in this field. One source of information is the Merck manual which describes clinical decision-making strategies here: http://www.merckmanuals.com/professional/special_subjects/clinical_decision_making/clinical_decision-making_strategies.html Published reports of case histories never explain how a differential diagnosis was reached, consequently if different methods are used it is unclear which is best. Is the method described here novel, or is this simply an explanation of an established method made more widely available? What other methods are used, and how does this method compare to them in reaching a correct diagnosis? These points should be discussed.
Authorship	No conflicts of interest have been declared, and a statement to this effect is included.

Quality of Article

Rating	Excellent	Good	Fair	Poor	Comments
Clarity of presentation		X			
Organization and Structure	X				
Evidence supports conclusion					No real conclusion
Adequacy of literature review				X	There is no mention of any other work in this area
Overall Rating		X			

Next Steps

List the <u>three</u> most important improvements that the author needs to make. Make sure that you have suggested constructive solutions to these problems.

1. Language improvements; overall the language is quite good but there are some instances of incorrect wording, especially in the use of prepositions and articles.
2. Inclusion of more background information on the significance of this subject and current state of knowledge in this field.
3. Discussion of this method in comparison to others currently available.

List the <u>three</u> most important strengths of this paper which the author should not lose in the process of revision.

1. To my knowledge, there appears to be little similar work in the literature. Consequently this represents a useful contribution to the field.
2. This article introduces these methods in a way that can be understood by the non-specialist.
3. The examples clearly show the use of the method.

Conflicts of interest: None declared.