Appendix: Abstracts

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Key elements of abstracts

Researchers are quite often in a "box" of technical details – the "important" things they focus on day in and day out. As a result, they frequently lose sight of 4 items essential for any readable, credible, and relevant IMRaD[1] article: the point of the research, the research question, its answer, and the consequences of the study.

To help researchers to get out of the box, I ask them to include 5 key elements in their article and in their abstract. I describe briefly the elements below and illustrate them with a fictitious abstract.

Key element 1 (BACKGROUND): the point of the research – why should we care about the study? This is usually a statement of the BIG problem that the research helps to solve and the strategy for helping to solve it. It prepares the reader to understand the specific research question.

Key element 2 (OBJECTIVES): the specific research question – the basis of credible science. To be clear, complete and concise, research questions are stated in terms of relationships between the variables that were investigated. Such specific research questions tie the story together – they focus on credible science.

Key element 3 (METHODS): a precise description of the methods used to collect data and determine the relationships between the variables.

Key element 4 (RESULTS): the major findings – not only data, but the RELATIONSHIPS found that lead to the answer. Results should generally be reported in the past tense but the authors' interpretation of the factual findings is in the present tense – it reports the authors' belief of how the world IS. Of course, in a pilot study such as the following example, the authors cannot yet present definitive answers, which they indicate by using the words "suggest" and "may".

Key element 5 (CONCLUSIONS): the consequences of the answers – the value of the work. This element relates directly back to the big problem: how the study helps to solve the problem, and it also points to the next step in research.

Here is a fictitious example.

Predicting malaria epidemics in Ethiopia

Abstract

BACKGROUND Most deaths from malaria could be prevented if malaria epidemics could be predicted in local areas, allowing medical facilities to be mobilized early. OBJECTIVES As a first step toward constructing a predictive model, we determined correlations between meteorological factors and malaria epidemics in Ethiopia. METHODS In a retrospective study, we collected meteorological and epidemic data for 10 local areas, covering the years 1963-2006. Poisson regression was used to compare the data. RESULTS Factors AAA, BBB, and CCC correlated significantly ($P<0.05$) with subsequent epidemics in all 10 areas. A model based on these correlations would have a predictive power of about 30%. CONCLUSIONS Meteorological factors can be used to predict malaria epidemics. However, the predictive power of our model needs to be improved and validated in other areas.

This understandable and concise abstract forms the "skeleton" for the entire article. A final comment: This example is based on an actual research project and, at first, the author was in a "box" full of the mathematics, statistics, and computer algorithms of his predicting model. This was reflected in his first version of the abstract, where the word "malaria" never appeared.

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[1] IMRaD stands for Introduction, Methods, Results and Discussion.