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The case for structuring the discussion of scientific papers

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The case for structuring the discussion of scientific papers

Much the same as that for structuring abstracts

Structure is the most difficult part of writing, no matter whether you are writing a novel, a play, a poem, a government report, or a scientific paper. If the structure is right then the rest can follow fairly easily, but no amount of clever language can compensate for a weak structure. Structure is important so that readers don't become lost. They should know where they've come from, where they are, and where they are headed. A strong structure also allows readers to know where to look for particular information and makes it more likely that all important information will be included.

Readers of scientific papers in medical journals are used to the IMRaD structure (Introduction, Methods, Results, and Discussion)[1] and either consciously or unconsciously know the function of each section. Readers have also become used to structured abstracts, which have been shown to include more important information than unstructured summaries.[2 3] Journals are now introducing specific structures for particular types of papers—such as the CONSORT structure for reporting randomised trials.[4] Now we are proposing that the discussion of scientific reports should be structured—because it is often the weakest part of the paper where careful explanation gives way to polemic.[5]

Old fashioned papers often comprised small amounts of new data—perhaps a case report—with extensive discussion. The function of the discussion seemed to be to convince readers of the rightness of the authors' interpretation of data and speculation. It was not a dispassionate examination of the evidence. Times have changed, and greater emphasis has been placed on methods and results, particularly as methods have become more complicated and scientifically valid. But still we see many papers where the job of the discussion seems to be to "sell" the paper.

Richard Horton, editor of the *Lancet*, and others have described how authors use rhetoric in the discussion of papers.[6 7] Authors may use extensive text without subheadings; expand reports with comment relating more to the generalities than to the specifics of the study; and introduce bias by emphasising the strengths of the study more than its weaknesses, reiterating selected results, and inflating the importance and generalisability of the findings. Commonly authors go beyond the evidence they have gathered and draw unjustified conclusions.

Suggested structure for discussion of scientific papers

- Statement of principal findings
- Strengths and weaknesses of the study
- Strengths and weaknesses in relation to other studies, discussing particularly any differences in results
- Meaning of the study: possible mechanisms and implications for clinicians or policymakers
- Unanswered questions and future research

Our proposal for a structured discussion is shown in the box. The discussion should begin with a restatement of the principal finding. Ideally, this should be no more than one sentence. Next should come a comprehensive examination of the strengths and weaknesses of the study, with equal emphasis given to both. Indeed, editors and readers are likely to be most interested in the weaknesses of the study: all medical studies have them. If editors and readers identify weaknesses that are not discussed then their trust in the paper may be shaken: what other weaknesses might there be that neither they nor the authors have identified?

The next job is to relate the study to what has gone before. The task here is not to show how your study is better than previous studies but rather to compare strengths and weaknesses. Do not hide the weaknesses of your study relative to other studies. Importantly, you should discuss why you might have reached different conclusions from others. But go easy on the speculation. If you don't know why your results are different from those of others then don't pretend you do, and you should certainly not assume that your results are right and the others wrong.

Now you should begin the difficult study of discussing what your study might "mean." What might be the explanation of your findings and what might they mean for clinicians or policymakers? Here you are on dangerous ground, and most editors and readers will appreciate you being cautious, not moving beyond what is often limited evidence. Leave readers to make up their own minds on meaning: they will anyway. You might even emphasise what your evidence does not mean, holding readers back from reaching over-dramatic, unjustified conclusions. Finally, you should discuss what questions remain unanswered and what

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further work is needed. Again editors and readers will enjoy restraint. Indeed, this is the part of the paper where authors often run amok. There is nothing to stop you writing another piece that is all speculation, but don't corrupt your evidence with speculation.

Other subheadings might sometimes be needed, but we think that our suggested structure should fit most studies. Although some may find uniform structuring difficult and even restrictive,[8] we believe that our proposed structure should reduce overall length; prevent unjustified extrapolation and selective repetition; reduce reporting bias; and improve the overall quality of reporting. Such a supposition could readily be tested. We invite comment from authors and readers of the *BMJ*, and if reaction is positive then we will introduce structured discussions.

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Suicide and homicide by people with mental illness

We still don't know how to prevent most of these deaths

Papers pp 1235, 1240

The national confidential inquiry into suicide and homicide by people with mental illness began in 1992 in response to concern about mental health services in the United Kingdom. The usefulness of the initial reports was limited by the disappointing case ascertainment rate.[1–3] Two papers in this issue (pp 1235, 1240)[4 5] report the methods and results of *Safer Services,* the 1999 inquiry report.[6] Case finding has now been much improved and the new report provides a valuable descriptive cross section of the characteristics of suicides and homicides in relation to the mental health services.

About 1000 people who commit suicide each year (a quarter of all UK suicides) and about 40 of those who commit homicide (about 8% of all UK homicides) have had some contact with the mental health services in the year before death. In patients committing suicide comorbidity, including substance misuse, and previous self harm are common. In people convicted of homicide, personality disorder and substance misuse are common; fewer than 10 homicides each year are committed by people with a primary diagnosis of schizophrenia.

In the *BMJ* papers[4 5] the authors correctly emphasise that systematic reviews have found that no interventions have reliably been shown to prevent suicide or, indeed, deliberate self harm.[7 8] However, the report itself makes 31 recommendations for changes in clinical practice.[6] These include recommendations about training in risk assessment, documentation (including the introduction of "patient passports"), the use of specific drug and psychological treatments, reducing access to means of suicide, and changes in the Mental Health Act to allow compulsory community treatment. Policymakers should, however, be cautious about implementing these wide-ranging recommendations because there are substantial uncertainties, largely unacknowledged in the report, in our current knowledge about suicide prevention.

Although we have some information about risk factors for suicide, we have very little reliable knowledge about the accurate clinical quantification of risk, a prerequisite for effective risk assessment.[9–11] One of the main problems is that even in high risk groups suicide is rare. The report identifies the period after discharge from hospital as being a high risk period. Cohort studies show that the rate of suicide in the first 28 days after discharge is between about 1 in 500 and 1 in 1000 patients discharged.[12 13] This low incidence rate, coupled with the limited sensitivity and specificity of current risk assessments, means that the positive predictive value is low and the number of false positives high.[10 11] For example, even if a risk assessment had a sensitivity and specificity of 80% (which probably exceeds those currently available), for every 20 000 patients discharged, 40 would commit suicide—32 of whom would be identified as high risk. However, in total 4024 patients would be considered to be high risk, 3992 of whom would be false positives. Thus recommendations for the clinical management of high risk groups will apply to large numbers of patients.

The report suggests that improving compliance by a community treatment order might prevent 30 suicides and two homicides. But even if there were evidence that such a strategy was effective, the number needed to treat to achieve this would be enormous. The humanitarian implications and opportunity costs of the recommendations will be substantial. Mental health services can be improved in many ways, and it would be wrong to focus all our training and service development resources on these important, but rare, events.

Furthermore, we should not miss this valuable opportunity to recognise the substantial uncertainty about this subject and to make recommendations about research priorities. Studies into risk factors for suicide and homicide, as in the rest of psychiatry, typically need to be at least an order of magnitude larger than at present. The sample on which the report is based should be used as the basis for case-control studies to develop possible risk assessment tools. Recognising that the low base rate of suicide means that many patients will need to be treated to prevent one suicide,

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