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 Authorship

■ *Guest Editorial*

Academic authorship: who, why and in what order?

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We are frequently asked by our colleagues and students for advice on authorship for scientific articles. This short paper outlines some of the issues that we have experienced and the advice we usually provide. This editorial follows on from our work on submitting a paper¹ and also on writing an academic paper for publication.² We should like to start by noting that, in our view, there exist two separate, but related issues: (a) authorship and (b) order of authors. The issue of authorship centres on the notion of who can be an author, who should be an author and who definitely should not be an author, and this is partly discipline specific. The second issue, the order of authors, is usually dictated by the academic tradition from which the work comes. One can immediately envisage disagreements within a multi-disciplinary team of researchers where members of the team may have different approaches to authorship order.

1. Who should be an author?

In our field, health research, there are very clear guidelines about authorship. As health research is often conducted in multi-disciplinary teams, a paper can have several authors. In a recent editorial for *Health Renaissance* noted:³

“Sometimes, there is a long list of the authors for a relatively small scientific paper submitted for publication. Though this happens quite often due to ignorance, the potential authors should qualify for the authorship. Authorship should be earned rather than offered.”

Guidance about co-authorship is generally based on the contributions of each author. The key question

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one needs to ask is: Who has been involved in the study (the work), the analysis, the writing of the drafts, etc? You might find advice about who ‘qualifies’ for authorship in the author instructions of health journals, for example, *Wilderness & Environmental Medicine*⁴ suggests:

“Each author should have participated sufficiently in the work to take public responsibility for the content. Authorship credit should be based only on substantial contributions: (1) to conception and design or to analysis and interpretation of data; (2) to drafting the article or revising it critically for important intellectual content; and (3) to final approval of the version to be published. General supervision of the research group is not sufficient for authorship.”

In the field of medicine and health research many journals follow the International Committee of Medical Journal Editors’ guidance on authorship called the ‘Uniform Requirements for Manuscripts Submitted to Biomedical Journals’ (see:www.icmje.org/). The guidelines also encourage teams to consider all significant contributors as authors. Junior researchers are sometimes forgotten in the authorship discussion, some may be short-term researchers who have moved on to another university by the time the manuscript gets drafted. Furthermore, short-term contracts mean that such researchers may not get the chance to develop writing skills, and it is often perceived as quicker for more senior members of the team to write up the study.⁵ This highlights the importance of identifying who will be an author early in the writing process.²

As we noted above health papers often have a large number of authors. This might be due to the multidisciplinary nature of the work but Wren et al suggest that there is an overall increase in the number

of authors per paper in PubMed as a result of “so-called ‘author inflation’”.⁶ They attribute this to an increased pressure on academics to publish, but also the result of a greater number of so-called ‘gift authorships’.

The ICMJE guidelines mentioned above specify that authorship cannot be ‘gifted’ since an author must have made ‘substantive intellectual contributions to a published study’. This is important as gift authorship has in the past got some quite eminent authors into trouble when the data were subsequently found to be wrongly analysed or worse, fraudulent.^{7,8} That said, gift authorship has been a fairly prevalent practice in the past with one study suggesting that as many as one in three Cochrane reviews included guest authors.⁹

The question of ghost authors is less clear. Should someone who helps edit or shape a piece of work into a publishable paper be an author? It is becoming more common for organisations to employ professional editors to assist with medical writing (both papers and grant applications). These editors are often termed ‘ghost writers’ as their names do not appear on the paper. Some commentators argue that in such cases perhaps no one really qualifies for authorship. The scientists cannot claim authorship since they did not write the work and the ghost writers cannot claim it either as they can defend the writing but not the science.¹⁰ After you have considered issues such as gift authorship, and you have decided who fulfils the authorship requirement, the next question is: ‘What will be the order of authors?’ Journal conventions differ according to the academic traditions from which they come. In order to reduce gift authorship, journals are increasingly asking each author to list his or her individual contribution to the paper. For example, the British Medical Journal (<http://www.bmj.com/about-bmj/resources-authors/article-submission/authorship-contributorship>) states that authorship credit should be based only on substantial contribution to:

- conception and design, or analysis and interpretation of data
- drafting the article or revising it critically for important intellectual content
- and final approval of the version to be published.

The British Medical Journal adds that all these conditions must be met, and simply being a grant holder or data collector does not justify authorship.

2. What order should authors be listed in?

Before we outline a number of interesting differences in the approach to the order of authors in different disciplines, the overall guiding principle seems to be that the person doing most of the work (writing) should be the first or lead author.

In the discipline of geology it seems that authorship is “based on a simple principle of inclusion if you were in the field, contributed to the debate you were (sic) an author irrespective of whether you actually pulled your weight in the analysis or write-up. He or she who does the most work and drives a paper forward goes first and the order there after reflects the level of contribution.”¹¹ In the discipline of economics authors are typically arranged in alphabetical order; so if you are lucky enough to be the economist Anil Adhikari, your name would often appear earlier in the list of co-authors than a colleague called Zoë Zwyn. In medical papers in the twentieth century the final position in the authors’ list has typically been seen as a place for the professor or other senior academic on the team. The eminence of the last author is not restricted to medicine¹² but is also something seen in science. For example in biology the last author is often the one leading the research area and who obtained the funding for the work. However, interpreting this is anything but straight forward. A recent study of authorship position found significant differences in how readers interpreted the role of the final author, with some seeing it as eminent but others more likely to view the author as having made little or no contribution to the study.¹³

Whatever the tradition in your academic field, most academics seem to agree that the lead author is the one who does more work on the paper than his or her fellow authors.

There are specific responsibilities associated with the role of lead author which are outlined as follows.

Key tasks of lead author

- Obtaining the journal guidelines and ensuring the requirements are met;
- Producing the first draft of the manuscript;
- Coordinating the feedback from co-authors;
- Ensuring all authors are in agreement before the final version is submitted;
- Coordinating the signing of the copyright agreement;
- Acting as the corresponding author, the person who corresponds with the journal's editor(s);
- Responding to reviewer comments (if invited);
- Reviewing the proofs.

Some journals advise the authors to mutually agree the author order, but they do not give particular advice on how this should be done, e.g. the author instructions of the journal *Wilderness & Environmental Medicine*⁴ which states: "The order of authorship should be a joint decision of the co-authors".

Group authorship has become increasingly common where large multi-centre studies have been conducted. In such circumstances the ICMJE notes that it is important that a smaller number of authors take responsibility for the paper, and the "corresponding author should clearly indicate the preferred citation and identify all individual authors as well as the group name." (see: www.icmje.org/). We see a nice example of this in at the most recent edition of the medical journal *The Lancet Neurology*.¹⁴ The paper entitled 'MRI profile and response to endovascular reperfusion after stroke (DEFUSE 2): a prospective cohort study' has twenty listed authors listed followed by the statement 'for the DEFUSE 2 study investigators'. The latter group of even more collaborators is then listed separately at the end of paper. Or similarly a recent paper by one of us 'Clean birth kits to improve birth practices: development and testing of a country level decision support tool' in the journal *BMC Pregnancy & Childbirth*¹⁵ list four authors followed by the statement 'for the Birth Kit Working Group'. Table 1 in the text of that paper lists the group members.

Does order matter?

Author order can make a difference. There is evidence that the first author gets greater credence

for the work.⁶ For some academics, their career can depend on where they are placed in terms of authorship, for example academic progression, grant funding, and invitations to join national or international committees in one's discipline or invitations to editorial boards of scientific journals will depend on the visibility of the researcher. In journals using the Harvard style of referencing articles with three or more authors are usually listed using the name of the first author followed by the Latin expression for 'and colleagues' or et al. This way of referencing reduces the visibility of all authors apart from the first one.

In conclusion, deciding who qualifies for authorship, and the order that the authors will appear in, is an important but somewhat complex process. It is vital that you start this discussion early in the writing process, some researchers will even decide the format of papers when planning their research, and follow the journal guidelines carefully. In this way you can avoid authorship disputes, which are not only time consuming but may even stop the publication of your paper.

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