

# Effective Medical Writing

Pointers to getting your article published

Peh W C G, Ng K H

## Authorship and acknowledgements

### ABSTRACT

**All persons designated as authors of a scientific manuscript should qualify for authorship, and all those who qualify should be listed. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content, and have made substantial intellectual contribution to the submitted manuscript. All contributors who do not meet the criteria for authorship should be listed in the acknowledgements section. Ghost authors are undesirable while professional medical writers are helpful to authors who are not native English speakers, have language difficulties, or lack training or expertise in medical writing.**

**Keywords: acknowledgements, authorship, ghost authors, medical writing, professional medical writers, scientific paper**

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### INTRODUCTION

In biomedical publications, being designated as an author of a paper has important academic, social and potential financial implications.<sup>(1)</sup> An author who is listed, is assumed to have made substantive intellectual contributions to a published study. The requirements for authorship are succinctly listed in the document "Uniform requirements for manuscripts submitted to biomedical journals", compiled by the International Committee of Medical Journal Editors (ICMJE).<sup>(2)</sup>

Yet, the correct listing of contributors to a manuscript appears to be a challenge to many. Issues such as who qualifies as an author, order of authorship, problems with "ghost authors", and who should be acknowledged may be a source of dispute and ruined friendships. On occasion, the journal editorial office is inadvertently drawn in to mediate a dispute and this unpleasant task is one that most editors would strive to avoid.

### AUTHORSHIP

All persons designated as authors should qualify for authorship, and all those who qualify should be listed. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. Authorship credit should be based only on: (1) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; (2) drafting the article and revising it critically for important intellectual content; and (3) final approval of the version to be published. Conditions 1, 2 and 3 must all be met.<sup>(2)</sup>

#### Box 1. ICMJE criteria for authorship:

- Substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data.
- Drafting the article and revising it critically for important intellectual content.
- Final approval of the version to be published.

All three conditions must be met to qualify for authorship.

Acquisition of funding, collection of data, or general supervision of the research group, by themselves, do not justify authorship.<sup>(2)</sup> Merely being a holder of an administrative position, such as department chairman or head or centre director, also does not justify authorship; neither does copyediting or checking for typographical errors. "Political" or "gift" authorships should be avoided.

There is an increasing trend for journals to ask authors to provide information about the contributions of each person named as having participated in the submitted research. Many journals now publish such information about individual contributions, as well as identifying the author responsible for the integrity of the work as a whole, i.e. act as a guarantor.<sup>(2)</sup> All others who contributed to the work who are not authors should be named in the acknowledgements section, and specifically what they did should be described.

**Singapore Medical Journal,**  
2 College Road,  
Singapore 169850

Peh WCG, MD, FRCP,  
FRCR  
Editor

**Biomedical Imaging and Interventional Journal,**  
c/o Department of Biomedical Imaging,  
University of Malaya,  
Kuala Lumpur 50603,  
Malaysia

Ng KH, PhD, MIPEM,  
DABMP,  
Editor

**Correspondence to:**  
Prof Wilfred CG Peh  
Tel: (65) 6223 1264  
Fax: (65) 6224 7827  
Email: smj.editor@sma.org.sg

There is no fixed rule for the number of authors to be listed for any particular work. Much depends on the paper category. For example, it is hard to justify more than two authors for an editorial or commentary, or more than four authors for a case report. In general, up to six authors for an original paper would be considered reasonable. Authorship lists of, say, more than 12 will certainly draw the attention of a journal editor and may require justification.<sup>(3)</sup> It is in the lead author's interest to keep the number of authors small. If there are only one or two authors, both would certainly be quoted. With three or more authors, the remaining authors in the lower order may be consigned to "et al". Many journals only list the first three or six authors in the references section.

The order of authorship should be a joint decision of the study contributors. There is no widely-agreed formula for the order of listing of authors. It is universally agreed that the first author is the most important one and should ideally be the intellectual progenitor of the work being reported. However, in many institutions, the first author is the junior (e.g. graduate student, trainee or junior academic) who is in most "need" of the publication for academic or professional advancement. The senior academic or supervisor may take up the position as the second author or the last author, with the latter position being favoured by some as being prestigious. The other authors are generally listed in descending order of contribution.

Authors should be prepared to explain the order in which they are listed. This is particularly important in multicentre groups where the presence and order of individual authors should be decided from the outset, as well as those who are listed in the acknowledgements section. Journal editors do not wish to be involved in conflicts relating to authorship issues. All disputes among a group of researchers should be kept private and if brought to the journal editor's attention, will certainly result in a delay, as any processing or decision regarding the manuscript will be kept on hold until the journal editorial office is satisfied that all concerns that arose have been addressed.

## GHOST AUTHORS

A ghost author is a professional writer who is paid to write books, articles and other material which are then officially credited to another person. In scientific articles published in medical journals, the ghost author is often not acknowledged for his writing service. This practice is undesirable as pharmaceutical companies may pay doctors or scientists to produce papers in journals on the outcomes of new drugs, devices or forms of treatment, but hire a ghost author to write up the company's products for publication.

Ghost authors should be distinguished from professional medical writers whose role is to assist with preparing drafts of the article with the aim of saving the author the time and effort of choosing words to express the author's intellectual content. This service is particularly useful for authors who are not native English speakers, have language difficulties, or lack training or expertise in medical writing. The European Medical Writers Association has published guidelines to ensure that professional medical writers carry out their roles responsibly and ethically.<sup>(4)</sup> There are also good publication practice guidelines for pharmaceutical companies, setting out principles for professional writers in industry-funded publications.<sup>(5)</sup> Professional medical writers' expertise in presenting scientific data may be beneficial in producing better quality papers.

## ACKNOWLEDGEMENTS

All contributors who do not meet the criteria for authorship should be listed in the acknowledgements section. This section appears at the end of the main text of the manuscript body, just after the concluding paragraph of the discussion section, and before the references section. Examples of those who may be acknowledged include a person who provided purely technical help, writing assistance, or a department head or chairman who provided only general support.<sup>(2)</sup> Financial and material support, including grants, should also be acknowledged in this section.

Groups of persons who have contributed materially to the paper but whose contributions do not justify authorship may be listed under a heading such as "clinical investigators" or "participating investigators", and their function or contribution described. Examples include "served as scientific advisors", "collected data", or "provided and cared for study patients".<sup>(2)</sup> This applies in particular to large multicentre studies where the number of collaborating doctors or scientists may run into dozens.

Because readers may infer their endorsement of the data and conclusions, it is a prudent practice for the lead author to get written permission from all persons listed in this section to be acknowledged, and to state specifically the individual's contribution.

### Box 2. Justifications for acknowledgement:

- Routine technical help.
- Data collection.
- Assistance with writing.
- Financial help, e.g. grant.
- General supervision of the research group.
- Minor contribution in a large multicentre project.

## SUMMARY

Authorship credit should be based only on substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; drafting the article and revising it critically for important intellectual content; and final approval of the version to be published. All other contributors should be listed in the acknowledgements section.

### Box 3. Take home points:

1. Only those who have made substantial contribution to the intellectual content of a manuscript should be listed as authors.
2. All contributors who qualify for authorship should be listed as authors.
3. All other contributors who do not meet the criteria for authorship may be acknowledged.

## REFERENCES

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**SINGAPORE MEDICAL COUNCIL CATEGORY 3B CME PROGRAMME**  
**Multiple Choice Questions (Code SMJ 200906A)**

	True	False
<b>Question 1.</b> The criteria for authorship, according to the International Committee for Medical Journal Editors include:		
(a) Substantial conception and design of study.	<input type="checkbox"/>	<input type="checkbox"/>
(b) Analysis and interpretation of data.	<input type="checkbox"/>	<input type="checkbox"/>
(c) Revising the manuscript critically for intellectual content.	<input type="checkbox"/>	<input type="checkbox"/>
(d) Being head of department where the study was performed.	<input type="checkbox"/>	<input type="checkbox"/>
<b>Question 2.</b> The following statements about authorship are true:		
(a) Many journals ask authors to provide information about the contributions of each person listed as an author.	<input type="checkbox"/>	<input type="checkbox"/>
(b) Ghost authors are required for all scientific papers published in medical journals.	<input type="checkbox"/>	<input type="checkbox"/>
(c) Ghost authors are synonymous with professional medical writers.	<input type="checkbox"/>	<input type="checkbox"/>
(d) Professional medical writers may be helpful to those who have language difficulties.	<input type="checkbox"/>	<input type="checkbox"/>
<b>Question 3.</b> Regarding the number and order of authorship:		
(a) Researchers should wait until the project is completed and the manuscript completely written before deciding on the order of authorship.	<input type="checkbox"/>	<input type="checkbox"/>
(b) The order of authors should be a joint decision of the study contributors.	<input type="checkbox"/>	<input type="checkbox"/>
(c) Case reports should ideally have a minimum of ten authors.	<input type="checkbox"/>	<input type="checkbox"/>
(d) Authors should be prepared to justify the number and order of authors listed to the journal editor.	<input type="checkbox"/>	<input type="checkbox"/>
<b>Question 4.</b> The following may be listed in the acknowledgements section:		
(a) Contributors who do not meet the criteria for authorship.	<input type="checkbox"/>	<input type="checkbox"/>
(b) Those who provided purely technical help.	<input type="checkbox"/>	<input type="checkbox"/>
(c) Those who provided writing assistance.	<input type="checkbox"/>	<input type="checkbox"/>
(d) Those who bought snacks for the researchers.	<input type="checkbox"/>	<input type="checkbox"/>
<b>Question 5.</b> The following statements regarding the acknowledgements section are true:		
(a) This section usually appears after the abstract section.	<input type="checkbox"/>	<input type="checkbox"/>
(b) It is a good practice for the lead author to get written permission from all listed in this section.	<input type="checkbox"/>	<input type="checkbox"/>
(c) Participating investigators in large multicentre studies may be listed in this section.	<input type="checkbox"/>	<input type="checkbox"/>
(d) This section serves to acknowledge any grant funding for the research project.	<input type="checkbox"/>	<input type="checkbox"/>

**Doctor's particulars:**

Name in full: \_\_\_\_\_

MCR number: \_\_\_\_\_ Specialty: \_\_\_\_\_

Email address: \_\_\_\_\_

**SUBMISSION INSTRUCTIONS:**

(1) Log on at the SMJ website: <http://www.sma.org.sg/cme/smj> and select the appropriate set of questions. (2) Select your answers and provide your name, email address and MCR number. Click on "Submit answers" to submit.

**RESULTS:**

(1) Answers will be published in the SMJ August 2009 issue. (2) The MCR numbers of successful candidates will be posted online at [www.sma.org.sg/cme/smj](http://www.sma.org.sg/cme/smj) by 15 August 2009. (3) All online submissions will receive an automatic email acknowledgment. (4) Passing mark is 60%. No mark will be deducted for incorrect answers. (5) The SMJ editorial office will submit the list of successful candidates to the Singapore Medical Council.

**Deadline for submission: (June 2009 SMJ 3B CME programme): 12 noon, 7 August 2009.**