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Co-authorship – a bone of contention

PERSPECTIVES

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Co-authorship is crucial for earning merit and has academic, social and financial implications. This notwithstanding, it is understood and practised in different ways. A correct interpretation of Criterion 2 in the Vancouver Recommendations may prevent conflicts over co-authorship.

It is our view that a thorough interpretation of the rules for inclusion and exclusion of colleagues, as well as of the scope and handling of contributions to an article, may prevent conflicts over co-authorship. It is obvious that all co-authors need to make a substantial contribution. It is less obvious what minimum requirements should be set for active participation in the preparation of an article. As members of the Research Ethics Committee at the University of Oslo we are frequently asked for advice on this matter. In this article we will therefore discuss Criterion no. 2 in the Vancouver Recommendations from the International Committee of Medical Journal Editors, which deals with contributions to the manuscript (1).

Co-authorship is an ambiguous term that may give rise to vagueness, uncertainty and conflict. Not only does it tell us who is included, but also who is *not* included, but perhaps should have been. In addition, the order in which the authors are listed signals the role, rank and standing of each of them. In the eagerness to publish, it is easy to forget explicit and less explicit concerns that should be taken into consideration to demonstrate good ethical integrity (2–4).

Many conflicts

Conflicts over co-authorship occur frequently (5), and we are aware of numerous examples of these leading to requests to retract articles. However, such conflicts only rarely cause an article to be retracted (6, 7). The recommendations from the advisory Committee on Publication Ethics (COPE) are also clear on this point: unless there are doubts regarding the content of the

article, disagreement on authorship should not lead to a retraction (8). Editors may publish authorship corrections if valid grounds to require this come to light.

Such conflicts should, however, be resolved in the group of authors or by the research institutions. These hold the primary responsibility for compliance with the Vancouver Recommendations, and this is where contradictory requirements and allegations may be investigated. Journal editors also have an independent responsibility for the integrity of the published material, but to exercise this responsibility the editors are dependent on good processes in the institutions (5). In addition, the introduction of *open access* may also complicate this situation considerably. The transition to open access means that publishers and journals increasingly obtain funds associated with publication, rather than by giving access to published material. This change gives rise to challenges for both serious publication channels and researchers. We have not yet seen the full effect of this change. The difficulty in ensuring good publication practices is likely to put an increased pressure on editors, individual institutions, individual research communities and individual researchers (9).

Nearly one-half of all cases processed by the Research Ethics Committee at the University of Oslo involve co-authorship. The same applied to the cases brought before the Research Ombud at the Faculty of Medicine in 2012–13 (10). In Norway, co-authorship came into sharp focus in the wake of the Sudbø affair (The Lancet retracted Sudbø and his co-authors' paper published in 2005). It was also a key topic in the clean-up after the Macchiarini affair at the Karolinska Institute. Here, the investigation concluded that a number of the co-authors of discredited articles were guilty of research misconduct or had acted reprehensibly (11). This underscores the responsibility of each individual who has been entered on a list of authors and how complicated the role of co-author might be (1–4).

Complying with the Vancouver Recommendations

Clear, explicit and agreed rules for granting authorship are a fundamental element of good publication practice. The Vancouver Recommendations provide a recognised basis for this. The University of Oslo applies these recommendations for granting scientific authorship. Magne Nylenna provides an overview of problems associated with co-authorship in medical and health research and the attempts to solve them (12), and thus for the background to the criteria applied by the Vancouver group, which are recognised as binding by all medical faculties in Norway Box 1). In addition to vouching for those parts of the work that he or she has produced, a co-author should ensure that all research questions that have been investigated by the other co-authors have been satisfactorily handled, thus enabling each co-author to be held accountable for the work as a whole. In international literature, the concept of research ethics is often replaced by 'research integrity' ((2, 13). Integrity

encompasses honesty in all aspects of research, accountability in performance, professional respect and fairness in collaboration with others and appropriate handling of research undertaken on behalf of others (1).

Box 1 According to the Vancouver criteria for authorship (1), all co-authors should:

1. provide substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
2. draft the work or revise it critically for important intellectual content; AND
3. provide final approval of the version to be published; AND
4. agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

«It is less obvious what minimum requirements should be set for active participation in the preparation of an article»

Agreeing to the criteria and content of research integrity is easier than complying with them in practice (12), not least because key terms in the recommendations can be given different interpretations (3). Especially with regard to Criteria 1 and 2, disagreement may arise as to who should qualify for authorship.

Criterion 2 in the Vancouver Recommendations

Deciding what is sufficient to meet the first criterion requires both specific knowledge of the discipline and good familiarity with practices and customs in the area in question. This will naturally be open to discussion, and we will not go into further detail here. We are mainly concerned with problems that arise in connection with Criterion no. 2, even where there is agreement about who meets the requirements in Criterion no. 1. Here, it will be useful to see the issues in light of the dual purpose of the criteria: to ensure that *nobody is unfairly excluded* and *nobody is undeservedly credited*. Authorship is reserved for those who deserve to be credited for substantial contributions to the work, and *at the same time also* are in a position to be held accountable for the totality (1). Furthermore, it is underscored that the criteria should not be used to exclude colleagues from co-authorship by not inviting them to participate in the preparation of the manuscript and approval of the final version.

Anybody who meets the first criterion should thus *be given the opportunity* to meet the requirements in the others. However, this condition obviously implies that meeting the substantial requirement in no. 1, as well as the more formal requirements in nos. 2 and 3, *is not sufficient* for authorship.

Criterion no. 2 requires the authors to participate in the preparation of the article in a way that contributes to *important intellectual content*. But how can this concept be delimited? A reasonable interpretation, in light of the objective of the criteria, is that an author's contribution implies a systematic composition, made either in writing or through concrete contributions to the discussion. This can apply to the article itself, or as a minimum, to critical review of a draft that helps highlight the scientific content or idea of the article. Such a contribution can be made in writing or orally, initially or during the process, but it needs to appear as a *sine qua non*; without this contribution, the content of the article would have been different or of less intellectual value.

> ***«Having contributed only to the collection and/or processing of data would be insufficient, even for someone who has also read and approved the final draft»***

Thus, having contributed only to the collection and/or processing of data would be insufficient, even for someone who has read and approved the final draft. This interpretation of Criterion no. 2 will give rise to challenges for interdisciplinary research communities where there is an established practice of including everyone who has contributed substantially to data acquisition and analysis, but where a smaller group is charged with writing the article itself. Criterion no. 2 thus says that the authors are those who have contributed to the preparation of the article as such, either by writing (parts of) it or by giving critical input to the work on the manuscript. Irrespective of how this is done, through written comments or discussions, the group of authors must be able to give an account of the way in which each author has specifically contributed to the intellectual content of the article. Here, it will be insufficient to refer to acquisition or analysis of data that some of them have undertaken. It must also be possible to point to concrete, intellectually important contributions to the preparation of the article. When this requirement is not met, the appropriate form of credit will be a reference to research collaborators or recognition in the acknowledgements (2).

How should disputes be handled?

More than 15 years ago, COPE published guidelines for handling disputes over co-authorship (14). These guidelines were based on exactly the recommendations of the Vancouver group. The group has also specified the duties and concerns of authors, contributors and editors, including advice on procedures in case of disagreement and criticism regarding research ethics (1, Ch. II). In Norway we can add the advice provided by Nylenna (12), who

highlights two useful precautions for research projects: deciding the list of authors (and their order) at the earliest possible stage, and agreeing on a procedure for handling any disagreements that may arise over authorship.

Here, it is crucial to keep in mind that such early agreements should not be regarded as carved in stone. They are based on prerequisites and assumptions that often may change over time. In particular, this will apply to large projects that extend over a long period. Such projects involve numerous contributors, often in different workplaces, with varying competence and experience, with different levels of ambition and varying relations of ownership to the data. In such circumstances there is considerable risk that disagreements and conflicts associated with authorship may arise while the project is underway. To counteract this risk, an open review of applicable agreements is required at regular intervals. Both the order of listing of the authors and the contributors to be credited must be open to review along the way, in line with changing circumstances. Initial agreements should explicitly include mechanisms for this (15).

Finally, we wish to note that all research institutions are responsible for addressing cases involving possible breaches of 'recognised norms of research ethics', as stipulated by Section 6, first paragraph, of the Research Ethics Act (16). As a main principle, cases should be processed at the lowest possible level in the organisation, i.e. as close to the research community as possible. All institutions must have a committee on research integrity (16), which can be combined with a regular research ethics committee, such as at the University of Oslo. Cases that are not resolved at the faculty or research centre level can be brought before the committee. It undertakes a contradictory hearing that ends in a recommendation to the university management about the steps to be taken. The University of Oslo has also introduced a scheme for a Research Ombud, who is intended to have an advisory role and help prevent and resolve conflicts. The scheme is meant to constitute a low-threshold option for researchers who wish to discuss matters of research ethics.

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