

## Who wrote this paper anyway?

### *The new Vancouver Group statement refines the definition of authorship*

John Hoey

In March 1922, *CMAJ* published its most famous paper, reporting that pancreatic extract dramatically reduced blood sugar levels in a diabetic patient.<sup>1</sup> The authors were Banting, Best, Collip, Campbell and Fletcher. Notably missing was Macleod, who would, with Banting, receive the 1923 Nobel Prize for medicine and share his portion of the prize money with Collip, as Banting shared his with Best. Macleod and 3 others (Henderson, Fitzgerald and Graham) were thanked at the end of the paper for "their hearty co-operation and kindly assistance and advice." As Michael Bliss has entertainingly documented, the sometimes explosive disputes over the control of the research that led to the discovery of insulin and over who should take credit for it were legendary even at the time.<sup>2</sup>

Would the authors of the 1922 paper have met present-day criteria for authorship? Banting is usually credited with persisting with the idea that the pancreas contained a substance that regulated blood sugar. Best devised the initial crude method of extracting the substance that would later be named insulin. Later, Collip refined the extraction process. Campbell and Fletcher oversaw the administration of the extract to 14-year-old Leonard Thompson. Macleod, as head of the University of Toronto's Department of Physiology, took a chance on Banting's idea and provided financial, logistical and intellectual support.

In May 2000 the International Committee of Medical Journal Editors (ICMJE; also called the Vancouver Group) revised its statement on authorship to read as follows:

Authorship credit should be based only on 1) substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; 2) drafting the article or 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. Acquisition of funding, the collection of data, or general supervision of the research group, by themselves, do not justify authorship.<sup>3</sup>

These criteria would have made the byline of the 1922 paper problematic. Collip's refinements to purifying the pancreatic extract were original, however, for this paper describing the clinical experience, his contribution would not constitute authorship. Campbell and Fletcher's collection of data would not, in itself, qualify them for authorship either. On the other hand, Macleod made original contributions to the design and interpretation of the research and

probably participated in writing the manuscript.<sup>2</sup> It seems that he should have been an author.

This difficulty in identifying who is or is not an author would surprise any 5-year-old, for whom an author is someone who thinks things up and writes them down. The creativity and originality of this labour is what makes an author an author; it is that for which credit is due. But the corollary of *credit* is the ability to take *responsibility* for what is written. These are the twin attributes of authorship.

Abuses of the role of scientific author became painfully evident in the early 1980s when it was discovered that John Darsee, a Harvard research fellow, had published 9 papers based on fabricated data.<sup>4</sup> One of these described a family with a high incidence of an unusual heart condition. Close examination of the pedigree reveals a 17-year-old man who, if the details were to be believed, fathered the first of 4 children at the age of 9 or 10. This implausibility passed unnoticed by editors, reviewers and, one presumes, the co-author.<sup>5,6</sup> At about the same time Robert Slutsky, a radiology resident at the University of California, San Diego, was publishing a new scientific article every 10 days. When a university committee examined his 137 publications they found numerous fabricated experiments, incorrect or non-existent measurements and statistical analyses that were reported but never performed. In both instances, many colleagues (including many prominent researchers) had been named as authors without having participated in the research.<sup>7</sup> As a preventive remedy, the ICMJE published its first statement on authorship in 1985,<sup>8</sup> and the criteria it set out rapidly became the standard for editors in their effort to ensure that credit is given only where due. But the changing culture of medical research has required that some refinements be made.

In 1922, most research published in *CMAJ* and other medical journals listed only one author. The multidisciplinary investigation of Banting, Best and their colleagues was unusual, and perhaps heralded the increasing complexity of clinical research to come. Now, much of medical research is multidisciplinary, and large studies typically involve multiple centres. The contributions of individual participants have become more diffuse and more difficult to quantify. The unethical practice of gift authorship continues, despite the policing efforts of journal editors.<sup>9</sup> At the same time, the increasing complexity of research has made it legitimately difficult for all authors to take public responsibility

for all aspects of the research and its publication. In recognition of the latter problem, the new ICMJE criteria require that

[e]ach author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. One or more authors should take responsibility for the integrity of the work as a whole, from inception to published article [my italics].

The revised ICMJE statement attempts not only to ensure that credit is given *only* where it is due, but that it is given *wherever* it is due. Thus, provision is now made for those who did not contribute to the design of the study but who contributed data, provided that they participated in the drafting and revision of the research report. Moreover, the criteria stipulate that no one who qualifies for authorship be omitted. As part of our editorial responsibility, *CMAJ* now requires all authors of papers accepted for publication to sign a statement confirming that, to their knowledge, there are no other authors who qualify.

As in all aspects of research ethics, transparency is key. The revised ICMJE statement has adopted the the recommendation made in 1997 by Rennie, Yank and Emanuel that the contributions of all participants in a research report be specified.<sup>10</sup>

Authors should provide a description of what each contributed, and editors should publish that information. All others who contributed to the work who are not authors should be named in the Acknowledgements, and what they did should be described.

Since 1998 *CMAJ* has been collecting information on the specific contributions of authors to papers submitted to the journal. Beginning with this issue we will include that information with published papers. If this had been the journal's practice in 1922, Macleod's contested contribu-

tion to the discovery of insulin would have been spelled out. Campbell's and Fletcher's qualification for authorship would have been clarified. And the secondary roles of Henderson, Fitzgerald and Graham would have been explicitly described in the acknowledgements.

Of course, they would have had to duke it out among themselves first.

Dr. Hoey is the Editor of *CMAJ*.

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