

tion than a pulse oximeter? Are daily blood tests necessary, and what intervention would they precipitate? Is the patient's pain, presumably experienced with equal anguish by those with and without dementia, adequately addressed?

Finally, introduce the topic of advance directives sooner rather than later. The unpredictable events of hip fracture and pneumonia studied by Morrison and Siu drive home the point that the discussion should take place before the crisis occurs. Discussions about advance planning do not have to be lengthy or conclusive the first, second, or third time. But the topic should be an agenda item in every encounter with patients with dementia, much like nutrition or safety. There is no time like the present to begin plan-

ning future approaches to care. A few minutes spent can save a world of suffering.

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The Contributions of Authors

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READERS AND AUTHORS WILL NOTE A CHANGE IN OUR Instructions for Authors¹ as published in this issue of THE JOURNAL. For several years, *JAMA* has encouraged, but not required, authors to indicate the specific contributions they made to the work reported in their articles.^{2,3} Few authors have accepted this invitation to provide the details of their involvement in the papers to which their names are attached. In contrast, authors commonly provide the names and detailed contributions of those identified in the Acknowledgment section of the manuscript. Thus, *JAMA* readers are often given details about who is responsible for important tasks, such as manuscript preparation, clerical assistance, and technical assistance, but readers are left to guess about the specific substantive roles of the authors who stand to gain the most from their presence in the byline.

To provide information on the work done by authors and to resolve the inconsistency between the information provided for those named in the byline vs those listed in the Acknowledgment, *JAMA* will begin requiring authors to indicate specific contributions for all those involved in the manuscript. Consequently, authors will be required to describe their specific contributions as well as the contributions of those acknowledged but not listed in the byline. While many individuals may contribute to the work of an article, the contributors must decide for themselves what their contributions have been, and what level of contribution merits a place on the byline. We suggest that those in the byline should be listed in order of actual contribution made, as decided by the authors.^{2,4}

See also p 105.

Why is *JAMA* making this change? We have described problems with irresponsible authorship, including honorary authorship, ghostwriting, authors' refusal to accept responsibility for their articles despite their ready acceptance of credit, duplicate and redundant publication, and other deceptive practices.²⁻⁶ We suspected that the major cause was related to the increase in the number of authors per article, with a consequent diminution of accountability.^{6,7} We noted that ways to denote contribution by arranging the order of the byline were idiosyncratic, opaque, and ineffectual because the code used by the authors was never available to the journal or the reader. We were surprised that rules regarding authorship, for example, those of the International Committee of Medical Journal Editors (ICMJE),⁸ though thorough and widely disseminated, were also commonly ignored or flouted.^{5,9-11} We proposed that the credit authors receive for their published articles should be securely linked to public responsibility for the contents,² and that this responsibility might be helpful in solving authorship problems. Such problems are rife and constitute the most common reason for referral to the Harvard Ombudsman¹² and to the National Committees on Scientific Dishonesty in the Nordic Countries.¹³

The proposal to list author contributions, made in response to numerous examples of disconnect between credit and responsibility (for example, multiple publication of the same trial data by different authors without cross-reference¹⁴), has nothing to do with policing or regulating authorship. We do not suggest that such disclosure of contributions will by itself solve all the ills of biomedical research and publication, sort out dysfunctional relation-

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ships between coworkers, or remove inequalities due to differences in status and power. We are simply attracted by the simplicity, transparency, and utility of an idea that cannot hurt and might reduce such problems.^{2,7}

Simply to make a proposal is, though necessary, not sufficient. The impetus for change was provided by Richard Smith, editor of the *BMJ*, and Richard Horton, editor of *The Lancet*, who held a conference on authorship in Nottingham, England, in June 1996.¹⁵ Several speakers emphasized the need for action to deal with abuses of authorship. Two of us (D.R. and V.Y.) presented the proposal for identifying specific contributions of all authors. In 1997, *The Lancet* was the first medical journal to adopt our plan,¹⁶ and followed up with publication of a cluster of reactions to the proposal.¹⁷ The *BMJ* followed, asking for guarantors to be identified who were prepared to take responsibility for the whole article.^{18,19} The journal *Radiology*²⁰ and the *American Journal of Public Health*²¹ followed in 1998, and the Cochrane Library in 1999.²² The *Annals of Internal Medicine* started a variant in 1999 by asking their contributors to select from a list of defined contributions those that best fit the work they had done.²³ This information was initially disclosed to the editors of the *Annals* alone, but beginning in January 2000, is now published for readers as well. Correspondence with the editors of these journals has indicated that implementation is simple, accepted without complaint by the authors, and does not take much space. Author feedback has been positive.²⁴

This is an unusual initiative in that it has been led by editors, who are usually a conservative bunch. The reason is obvious: editors are the ones to whom abuses of authorship are invariably exposed and they are the ones who must implement any changes in publication. But editors represent their readerships and cannot go it alone. Under the vigorous leadership of Frank Davidoff, editor of the *Annals of Internal Medicine*, and under the aegis of the Council of Science Editors (formerly the Council of Biology Editors), authorship workshops were held in Berkeley, Calif, in February 1998 and Montreal, Quebec, in May 1999, both being attended not just by editors but also by a number of prominent scientists, university administrators, and other stakeholders in a wide variety of disciplines.²⁵ A study of the disclosure of contributions by authors publishing in *The Lancet* found that descriptions of contribution were common to the majority of research projects, but the criteria for authorship outlined by the ICMJE were not completely congruent with the self-identified contributions of researchers.¹¹ The momentum generated by similar research findings,^{9,10} the initiative of a handful of journals, and meetings held to discuss problems and strategies have prompted several ongoing studies and recommendations for possible solutions.²⁶

In response, the ICMJE modified its statement on authorship during its May 2000 meeting in Copenhagen, Denmark. The "Copenhagen compromise" added the acquisition of data as a contribution that merits authorship provided

that those involved in the acquisition of data also meet the other criteria for authorship. The ICMJE now states "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."²⁷ The ICMJE also advises that "each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content" and that "one or more authors should take responsibility for the integrity of the work as a whole, from inception to published article."²⁷ Finally, the ICMJE recommends that authors provide a description of what each contributed, that all others who contributed to the work but who are not authors be named in the Acknowledgment with a description of what they did, and that editors publish these contributions.²⁷ We have modified the authorship criteria for *JAMA*¹ to follow the ICMJE changes.

Following the Montreal meeting, editors of the journal *Nature* decided to implement a voluntary policy of encouraging authors to list contributions.²⁸ This appears to have been ignored by most *Nature* authors. For example, in the 7 issues of *Nature* published from April 13 to May 25, 2000, there were 113 "Letters to *Nature*" (short reports of original research), and in 13 of these (11.5%) it was noted that 2 or more of the authors "contributed equally to the work." In none was any disclosure of actual contribution published. Perhaps this should not be surprising given *Nature's* Guide to Authors,²⁹ which states "*Nature* prefers authors to be listed without details of status; if it is essential to indicate that two or more co-authors are equal in status, they may be identified by an additional symbol with the caption 'these authors contributed equally to the work' immediately under the address list." Here, *Nature* confuses status, or rank, of authors with the contribution, or work, done by authors. Similarly, most authors have ignored *JAMA's* previous encouragement, but nonrequirement, for the identification of their specific contributions. The lesson is clear. At this early stage, unless editors insist, authors will not comply, if only because they do not know with what they are complying.

For *JAMA*, we plan to use a list of defined contributions to simplify the process for authors and editors (see p 111 in this issue of THE JOURNAL).¹ Each author will be required to complete a contributions checklist as part of the authorship responsibility statement that each currently signs. Authors will continue to certify that they have made substantive contributions that justify being named in the byline. If an author's indication of contribution is not consistent with the THE JOURNAL's authorship criteria, we may request verification of the reported contributions to re-

solve any inconsistency. Beginning in January 2001, JAMA will not publish any article without indications from all authors of their contributions. We will publish the list of contributions at the end of each article for all research and data-based articles, including reviews, but not for other types such as editorials, essays, and poems.

The general consensus appears to be that identifying and publishing specific contributions of authors is a venture that shows promise. But its utility must be demonstrated,³⁰ and the next questions to answer are whether readers care³¹ and how this information on contributions will be used by authors, academicians, and others who assess the credit given to publication.²⁶ We will watch closely what happens and report to authors and readers on our mutual progress.

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