

# The “omnipotent” *Science Citation Index* Impact Factor

*The IF is a poor measure of the worth of journals, journal articles and authors*

TELL ME THE NUMBER; what is the ranking? All of us seem to love ratings. Whether it is the standings in the Rugby World Cup, the box office success of Harry Potter or the melting rate of Arctic ice, we all want numbers. So, why would it be any different for medical journal articles or even medical journals themselves?

Who attaches importance to medical journal ratings? The owners/publishers of the journals, readers, advertisers, librarians and journalists may all be interested in journal ratings to varying degrees. Likewise, authors have a need to discern just how a publication is valued before deciding where to send the products of their labours.

How can we evaluate the quality of an article or a journal? Properties of a medical journal that can be assessed include total circulation; readership numbers and surveys; quality of the editorial board, staff and peer reviewers; number of manuscripts received, percentage accepted, and turnaround; *Science Citation Index* (SCI) raw numbers, Immediacy Factor and Impact Factor (IF); number of paid subscribers; advertising revenue; listing on Medline; international distribution; cost to the reader; and page or peer-review charges to the author.<sup>1</sup>

But what do authors most value? Frank and colleagues have surveyed the Stanford University School of Medicine faculty regarding the factors that influenced their decisions about where to send manuscripts. The top attribute selected was “prestige”.<sup>2</sup>

Impact factors are also used to adjudicate on academic performance. Some universities, especially in certain European countries, have decided that the IF of journals in which a faculty member publishes will enter into personnel decisions such as appointment, promotion and rate of pay.<sup>3</sup> One

would like to think that intelligent deans, chairs of departments and administrators, who work daily with faculty members, would have a better way to ascertain quality of performance than an arbitrary number.

Seglen, of Norway, was an early critic of the IF, drawing attention to its narrow worth, and calling for its application to be reined in<sup>3</sup> — but apparently to no avail. My belief is that the IF has one specific meaning: it is a clear measure of the extent to which a given journal functions as a connector of researchers in a specific field. This is one (but only one) critical function of medical journals.

When I began as the editor of *JAMA* in 1982, *JAMA*'s IF was in the range 3–4. Some considered this an embarrassment, so we set out to raise the IF as part of our efforts to improve the quality of the journal. We succeeded, to the extent that by the time I left the journal in 1999 its IF was in the range 10–11. Strange as it may seem, during the mid-1990s I deliberately tried to slow the growth of *JAMA*'s IF. I was afraid that we were changing the character of the journal away from its fundamental purpose — to be useful to all doctors in their practices — and too far towards a research journal, used by researchers to communicate with each other.

In this issue of the Journal, Walter and colleagues<sup>4</sup> (page 280) criticise the IF, clarifying what it is and what it isn't. They describe an alternative way they have devised to judge the quality of articles (and presumably journals, if article scores are aggregated and averaged), using a five-person voting method guided by six criteria. It would have been interesting to see a side-by-side comparison between the article rankings of the selection panel and the SCI IF scores for each article. Walter and colleagues' form of post-

publication peer review is now into its second year. The authors invite others to try it, and I hope there will be some who take up the challenge.

In 1982, when I and my colleagues were developing plans to celebrate the *JAMA* Centennial, we tried an approach to evaluating medical articles somewhat like that of Walter et al. We wished to identify and republish the best 50 articles from the first 100 years of *JAMA* as “landmark articles”. A list of prospective articles for inclusion was compiled from three sources: nominations by *JAMA* editorial board members and staff, entries in the 1976 edition of *A medical bibliography (Garrison and Morton)*, and the most-cited *JAMA* articles from the Institute for Scientific Information. A total of 150 articles were nominated. The editorial board and staff then ranked the articles by a Delphi process and the top 50 were named “landmark articles”.<sup>5</sup> The article publication dates ranged from 1884 to 1968, with representatives from each decade.

A subsequent analysis of the landmark articles by Eugene Garfield, founder of the Institute for Scientific Information (and father of the noted [or notorious] IF), demonstrated that of the 100 *JAMA* articles most cited by SCI up to 1983 only 13 were among the top 50 landmark articles, garnering from 174 to 506 citations by 1987.<sup>6</sup> Thus, 37 landmark articles were not included in the top 100 *JAMA* articles ranked by total citations alone. Notably, such hugely impor-

tant articles as those of Salk<sup>7</sup> and Sabin et al<sup>8</sup> had only received 39 and 90 citations, respectively, by 1987. So, number of citations and the derived IF are connected, but only to a limited degree.

I would hesitate to suggest that the post-publication peer review process described by Walter et al could supplant the IF as the way that academic institutions, or even governments, decide on the merit of a publication or an author. But I can say with conviction that man (and academia) should not live by numbers alone.

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## Allergy prevention — what we thought we knew

*Previous recommendations for preventing allergic disease need to be critically re-examined*

A MARKED INCREASE in allergic disease has occurred over the past century. For example, between 1992 and 1997, the prevalence of asthma increased by 26% and skin-prick sensitivity to house dust mite (HDM) increased by 63% in Australian children.<sup>1</sup> In determining the causes of this increase it is important to distinguish between primary and secondary causes of allergic disease. Primary causes are those considered to induce allergic disease in a non-sensitised person, while secondary causes are those that trigger symptoms in people who are already sensitised. Primary prevention strategies are aimed at reducing sensitisation. In the early 1980s it was considered that a clean environment, avoidance of pets, the provision of synthetic “allergy free” bedding (rather than feather bedding) and prolonged breastfeeding were all important in primary prevention. But recent epidemiological studies have challenged these beliefs.

There is evidence that a clean environment in early life may actually promote rather than inhibit the development of allergy. The “hygiene hypothesis” is based on epidemiological studies comparing the prevalence of allergic disease in “clean” and “dirty” environments. For example, children growing up in East Germany before the fall of the Berlin Wall had a lower prevalence of allergic disease than children in West Germany, despite having more exposure to pollution and infection.<sup>1</sup> These results have been confirmed in

similar comparative studies. Other relevant studies supporting the “hygiene hypothesis” have demonstrated fewer allergies in children from large families, in younger siblings, in children exposed earlier to day-care centres, and in children growing up on farms in Europe.

Prevention programs for allergic disease have recommended avoidance of pets, particularly cats. However, recent studies showing either less asthma or less sensitisation among children exposed to cats in infancy have challenged this view.<sup>2,3</sup> Exposure to cats in infancy does not appear to increase the risk of developing asthma. With regard to sensitisation, the evidence is conflicting, with some studies suggesting decreased sensitisation following cat exposure in infancy and others indicating the reverse. Cat exposure is associated with increased environmental levels of bacterial endotoxin. There is a hypothesis that endotoxin derived from pets may play a role in the prevention of allergy, as endotoxin can induce immune deviation away from “allergic” T<sub>H</sub>2 responses.

The common belief that feather bedding promotes and synthetic bedding prevents allergic disease is now in doubt. This belief arose because of purported allergy to feathers or accumulation of HDM allergen in feather products. In fact, feather pillows contain up to eightfold lower levels of HDM allergen and accumulate this allergen more slowly than