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EDITOR'S PAGE

Warped Speed

How COVID-19 Transfected and Transformed Medical Journals

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"I feel the need—the need for speed"
—Peter "Maverick" Mitchell
(fictional character in the movie *Top Gun*) (1)

The back-to-back announcements by the *Lancet* (2) and the *New England Journal of Medicine* (3) that they were retracting research papers on coronavirus disease 2019 (COVID-19) because of questions about the provenance of the data residing in a proprietary database of electronic health care records administered by Surgisphere, a for profit health care analytics company, sent a series of seismic shocks and after-shocks rippling throughout the medical community. How could 2 of the most prestigious medical journals with highly qualified editorial boards with countless years of editorial experience publish articles whose validity was uncertain at best and fictitious at worst. The answer(s) to the question of how and why this happened is likely multifactorial. As will be discussed in this Editor's Page, I believe that the retractions by the *Lancet* and the *New England Journal of Medicine* are symptomatic of subtle changes that have crept into the field of academic publishing over the past 60 years. I would like to begin by stating at the outset that none of my comments are intended to be critical of my colleagues who were directly or indirectly involved with these retractions, rather my comments are intended to shine a light on why retractions of this nature will continue to happen in the future unless we begin to understand the underpinnings of these mistakes.

Prior to emergence of medical journals in the 17th century, scientific meetings were the main way of communicating new scientific information (4). The British *Philosophical Transactions of the Royal Society* of London, which was started by Henry Oldenburg in March 1665, remains the world's first and longest-running scientific journal.*

The first edition of the *Transactions* (volume 1, issue 1) included articles with engaging titles such as "An Account of a Very Odd Monstrous Calf" or a "A Narrative Concerning The Success Of Pendulum-Watches At Sea For The Longitudes" (5). The advent of medical journals provided a new and exciting portal though which the scientific community could learn about the latest scientific developments monthly, rather than waiting for annual meetings. As newer scientific disciplines emerged, these communities began to publish articles that were better suited to their own interests. By the end of the 18th century, several general medical journals were established, followed by the emergence of specialist medical journals at the beginning of the 20th century and subspecialty journals by the end of the 20th century (4). These advances resulted in exponential growth in print scientific and medical journals, which plateaued in the 1990s, but were then followed by a veritable explosion in the growth in open access journals, which were not only able to publish articles online much faster than print journals, but also enjoyed profit margins that greatly

*The *Journal des sçavans* was the earliest academic journal published in Europe. The journal content included obituaries of famous men, church history, and legal reports in Europe. The first issue appeared as a 12-page pamphlet on January 5, 1665, 2 months ahead of the first appearance of the *Philosophical Transactions of the Royal Society,* on March 6, 1665. The journal stopped publishing in 1792 during the French Revolution and did not resume publication until 1816. The journal is currently published as the *Journal des savants* by the Académie des Inscriptions et Belles-Lettres, which is a French society dedicated to the humanities. (Journal des Sçavans. Wikipedia. Available at: https://en.wikipedia.org/wiki/Journal_des_s%C3%A7avans. Accessed June 21, 2020.)

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exceeded those of print journals. Thus, what began in 1665 as means for disseminating new information to the scientific community, blossomed into a profitable business model that, like all businesses, had to compete for articles and readers in order to stay in business.

THE NEED FOR SPEED

As journals evolved and expanded, journal editors recognized that to continue to flourish and maintain market share, they needed to have a broader appeal to their readership that extended beyond publishing scientific articles, which led to journals to publish timely reviews and letters that informed the readership on the latest developments in their respective fields. Indeed, Sir Theodore ("Robbie") Fox, the prolific and transformative editor of the *Lancet* (1944 to 1964) would often refer to the *Lancet* as a newspaper (4). Pari passu with the transition of journals from being a gateway for reporting the latest scientific articles to providing timely newsworthy content to their readers, in the 1990s, journals also began to simultaneously publish articles on late-breaking clinical trials that were being presented at national meetings. Whereas the *New England Journal of Medicine* has been always been particularly adept at attracting topline clinical trials presented at national meetings, it is important to note that all of the major journals adopted this practice to remain competitive within this specific journalistic space. As noted by Larry Husten, a veteran journalist who has covered cardiology news for decades, "simultaneous publication…brings a lot of benefits, including more rigorous peer review and superior and more widespread availability of trial results. Reducing the time between initial presentation and publication helps shorten the gap between the acquisition of new knowledge and its application to clinical practice." However, Husten also notes that simultaneous publication of clinical trials has "unintended consequences," including "the publication barrier seems to be far lower when a trial is published simultaneously at a major medical meeting." He also states that clinical trialists have confided to him that "compared to non-meeting related publications, the peer review process will be both less rigorous and less prolonged" (6). Although hard data are lacking with respect to whether the peer review process is actually less rigorous for articles that are submitted for simultaneous publications, the editorial process surrounding late-breaking clinical trials changed and became more streamlined, given the competing pressures imposed by the abbreviated time frames for peer review, for statistical review, for editorial oversight, and for generation of fully formatted articles that were available online at the time of the presentation at a meeting. Whereas journals have been remarkably successful at accomplishing these tasks year after year, the need for speed in publishing changed the way in which the editorial process works, which laid the groundwork, at least in part, for the way for the way in which journals have faced the challenges imposed by COVD-19.

WARPED SPEED

As the sheer magnitude of the COVID-19 pandemic began to become apparent, the pace of scientific publishing accelerated rapidly, dramatically compressing the time from months to weeks for performing experiments and submitting findings to journals, in an effort to mitigate the devastating consequences of the COVID-19 pandemic. Journals also had to scramble to handle the increased volume of submissions and to compress review and publication time frames by as much as 50% to provide timely information to the scientific community, with the hope that it might save lives. The World Health Organization described the onslaught of new information as an "infodemic—an overabundance of information—some accurate and some not" (7). At some point, and it is hard to know when this occurred exactly, the need to balance scientific rigor against the need to rapidly disseminate new information tipped in favor of releasing information as fast as possible. Retraction Watch, a blog that reports on retractions of scientific papers, has reported that, at the time of this writing (June 21, 2020), 20 COVID-19 papers had been retracted, 2 had been temporarily retracted, and 2 papers have been cited as containing misleading information (i.e., expressions of concern) (8). By the time this Editor's Page appears in its final form, the number of COVID-19 retractions will almost assuredly have increased.

In a remarkably prescient article titled "The Trouble With Medical Journals," Dr. Richard Smith, editor of the *British Medical Journal* from 1991 to 2004, wrote that "the values that underpin journals are almost always implicit rather than explicit. Medical journals are a confluence of medicine, science and journalism—and might be expected to have the values of all three. Sometimes, however, these values conflict. The values of both science and journalism, for example, might favour publication of a weak study with a conclusion that could cause a 'scare' among the pubic—because publication and debate are

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fundamental values to both. In contrast, medical values, which put a strong emphasis on 'doing no harm,' might favour waiting until stronger evidence emerged" (4). The COVID-19 pandemic has exposed and amplified many of the long-standing tensions that have existed with journals, dating back to 1665. Should journals favor scientific rigor over timeliness of reporting science that may change the response to a global crisis? In a perfect world, journals should be able to accomplish both of these goals. In the imperfect world that we live in, in which the planet is facing a crisis brought about by a global pandemic that has crushing human and economic costs we cannot even begin to fully wrap our heads around let alone fully understand, it is perhaps inevitable that journals will get it wrong at times, in an earnest and honest effort to get it right for humanity. Going forward, we as a community need to acknowledge these shortcomings and better understand the underpinnings of these mistakes, lest we continue to repeat them. I suggest that that a salient guiding principal that should inform the way in which journal editors face the next crisis (COVID-20?) is to let their decisions be informed by 1 of the first lessons that I learned in medical school: *primun non nocere*.

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