Scientific Fraud

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The first time I came across the situation of an employee of a group physician practice being admitted to the hospital owned by that practice for a slip-and-fall accident on a monthly basis amazed me. I was horrified to discover that the employee had 30 to 40 active insurance certificates, including health insurance, accident insurance, workers' compensation, and automobile personal injury policies. This spurred my interest in the subject of medical fraud and insurance fraud involving medical providers.

From the standpoint of fraud investigation and fraud control medical fraud poses an interesting dilemma. On one hand, it is seldom self-revealing, and, on the other hand, it is best considered as a spectrum. The spectrum ranges from, as a former chairperson of the American Medical Association Council on Ethics and Judicial Affairs once said, "Physicians don't commit fraud; they may merely shade the truth, when ..." to a systemic looting of the healthcare system," as evidenced by the Los Angeles physician and his brother who billed for more than $1 billion of services that were never rendered.

The fundamental differences between fraud investigation and fraud control rest on one's perception of whether the bigger problem is one of known fraud or unknown fraud. In the case of self-revealing fraud, such as credit card fraud, the extent of the fraud eventually becomes known. Certain methods are used to investigate the fraud, and, in fortunate situations, the perpetrators are stopped and made to recompense the aggrieved parties. Sparrow\(^1\) indicates that medical fraud, on the other hand, is much more complex and in most circumstances unknown. Indeed, there are 3 foci, namely the patient, the payer, and the medical provider. The common objective of the fraud is generally to obtain money.

As the editor of a scientific journal, one is particularly concerned about scientific fraud. When one asks oneself about the nature and extent of the fraud, whether it should be regarded as known or unknown, who is potentially involved, and what their objectives, incentives, and motives are, it is evident that scientific fraud is considerably more complex than medical fraud and insurance fraud involving medical providers.

Although there is no commonly agreed upon definition of scientific fraud, the definition of health insurance fraud used in the Medicare carrier's manual could serve as a model: "An intentional deception or misrepresentation which an individual or entity makes, knowing that the deception could result in some unauthorized benefit to the individual, the entity or some other party." We simply cannot rely on the working definitions that most academic institutions use, that is, "I know it when I see it," as US Supreme Court Justice Potter said in 1964 when he tried to define sexual obscenity.

Three particular areas of potential fraud with which we, as editors, must deal are the deliberate use of incorrect data and statistical methods, the absence of information about
The deliberate use of incorrect data and statistical methods may range from simple fabrication of either the number of experiments or experimental data to use of previously published data by others as the researcher’s own. SigmaMetrics, on its web page, points out that there are considerable examples of statistical “malpractice” that are likely to be fraudulent. They reported a random study of 500 issues of more than 100 journals held on the open shelves of the Radcliffe Science Library in Oxford, UK. They found that the Student t test was used on 217 occasions and only correctly by fewer than 10 investigators. It must be noted that SigmaMetrics provides, as a service, independent assessment of investigative statistical practice before publishing. Finally, the company reported a meeting held under the auspices of the British Medical Association on November 4, 1997, where the “generally revealed wisdom” was that presently 12% of papers included falsified data.

The origin of funding and financial relationships were discussed in a recent newspaper article. The writer quoted a study by Krimsky and Rothenberg, who found that 0.5% of 62,000 articles published in 1997 included information in which the author’s research was related to financial interests, such as stock ownership or patent rights. Another study by Krimsky was quoted as saying that in a separate investigation of 800 scientific papers 2 years ago, he found that 34% of the authors had conflicts of interest that had not been disclosed.

Inappropriate authorship may range from a coworker allowing his or her name to be attached to a scientific paper to which he or she had no scientific input, to the colleague who for one reason or another demands recognition, to the frank plagiarist of taking published scientific work in one language and translating it into another but transposing authorship to a group who never earned it.

Fraud generally becomes suspected, and thus known, when a researcher complains about the conduct of a colleague or former colleague. Sometimes, experiments cannot be reproduced, but rarely is it because of a serendipitous finding during the editorial process. The question, however, remains about the amount of unknown fraud that appears in the scientific literature. In the scientific process, there are more foci than the simple triangle of patient, payer, and provider. Interested parties may include the scientist, the institution, communications media, the company or corporate entity and its shareholders, and the funding agency. The objectives, incentives, and motives are not simply money, although perhaps in the final analysis the ability to control money may be a major motive.

The academic researcher has 2 goals, the pursuit of truth and the desire for credit. The latter can often be translated into peer recognition, academic preferment, the granting of administrative fiefdom, and monetary rewards. The institution has its reputation to consider, and, as Broad and Wade noted, “The conventional ideology of science cannot satisfactorily explain the phenomenon of fraud. It deals with fraud only by denying it to be a problem of any significance.”

The institution that finds fraud has an incentive to deny it. The institution faces a slur on its reputation, and it risks having to return research money to funding sources and being banned from future research efforts. The reputation of the institution may fall, and recruiting and maintaining faculty could then become a problem. The communications media have objectives usually related to money through the selling of additional copies of publications. It behooves the lay press to interpret research in terms of human interest and involvement to the extent of its credibility. Likewise, the scientific press is not adverse to prepublication hype.

The company or corporate entity developing some pharmaceutical weapon against disease or the medical device company have vital interest in the results of research. Indeed, the New York Times reported on a whole in-
dustry of clinical tests for certain therapeutic
drugs that were either partially erroneous or
completely faked. The notice of the US Food
and Drug Administration release of drugs
may have a profound effect on the share price
of the manufacturer. Likewise, adverse effects
after the release of a drug may have dispro-
portionately disastrous effects on the value of
the company.

So what is our responsibility as editors of
a scientific journal? Obviously, in the long
run, we have to support efforts to determine
the nature and the extent of the problem of
scientific fraud. It is a tremendous task and
one that is not likely to be popular with the
scientific community. We must set up our re-
view processes to give us the best chance of
detecting falsified data and the deliberate
misuse of statistics. We must be cognizant of
the potential for conflict of interest surroun-
ding financial relationships. We must have ed-
itorial policies that precisely define the con-
tribution of each author to the study.

We must educate our scientific colleagues
about the nature of fraud and convince them
to work with us to understand that when we
discover fraud in a finite period, we identify
the incidence and not the prevalence which is
contained in the literature. The prevalence is
likely to be many times the frequency of the
incidence. We can, as editors, have reviewers
who will assess the methodology and results,
but they generally cannot review the original
research or the records of the submitted
work. We can look for plagiarism. We must
understand the difference between the fraud
investigation process and fraud control mod-
els.

Finally, we must educate our scientific col-
leagues to understand, in the words of Broad
and Wade, that “It is not fraud that must be
dismissed, but conventional ideology.”

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