

**Medicine and the media:
An uneasy relationship: the tensions between medicine and the media**

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The enduring tensions between medicine and the media are largely due to the different perspectives of biomedical scientists and journalists, as this final essay in the series on medicine and the media underscores. These tensions arise because of perceived differences in defining science news, conflicts over styles of science reporting, and most of all disagreement about the role of the media. In the 1990s, scientists are especially concerned by media messages that question their credibility. Since scientists and journalists depend on each other in the communication of science and the shaping of the public meaning of science and medicine, the tensions are likely to increase. In 1993, an experiment at a George Washington University laboratory elicited a remarkable media response. The researchers had "twinned" a non-viable human embryo to create additional embryos, but journalists wrote about the experiment as if it were a cloning technology for the mass production of human beings. Whereas scientists regarded their research as a contribution to the technique of in-vitro fertilisation, reporters envisioned selective breeding factories, the production of children as organ donors, and a cloning industry for selling multiples of human beings. Time reported a "Brave new world of cookie cutter humans"; to the media, medical scientists were "playing God".¹

This incident illustrates the differences in the perspectives of biomedical scientists and journalists. Though increasingly interdependent in the "media-ized" world, these two professions often differ in their definition of what is newsworthy about science, their styles of communication, and their vision of the media's role. The authors of the preceding articles in the series on medicine and the media have all commented on these differences.²⁻⁸ This concluding essay will focus on them, for they underlie tensions that are bound to increase in the coming years in view of the significant changes taking place in the public face of science.

Defining the news

To scientists, research becomes reliable, and therefore newsworthy, through replication and endorsement by professional colleagues. Research findings are tentative, undigested, preliminary--and therefore not newsworthy--until they are certified by peers to fit into the

existing framework of knowledge.⁹ For journalists, by contrast, established ideas may be "old news", and of far less interest than fresh or dramatic, though possibly tentative, research. Seeking to entertain as well as to inform, they are attracted to non-routine events, especially those that are not of immediate concern to many readers, and, as Vladimir de Semir suggests (April 27, p 1163),³ those that appeal to the editors who control what ultimately appears in the press. Varying substantially in their importance, newsworthy events have included the latest health and dietary information, the discovery of gene mutations related to susceptibility to cancer, new treatments for wrinkles or baldness, and the health effects of silicone breast implants. The media are especially attracted to disputes. The experiment on "twinning" embryos clearly fits the bill; it was newsworthy not because it represented an important scientific advance, but because it played into public concerns about "tampering with genes" and "Frankenstein" fears of cloning human beings. And, in the context of the antiabortionists' noisy opposition to fetal and embryo research, the experiment was inevitably controversial.^{10,11}

Especially newsworthy are scandals--from the radiation experiments on human subjects during the Cold War, to the falsification of data for research on alternative breast cancer therapies, to the ethical abuses of genetic information. Routine science is less newsworthy than are the problems. However, defining a "newsworthy problem" depends on the political context. In 1986, at the height of the Cold War sensitivity, the media virtually ignored a troublesome human experimentation programme on the effects of radiation run by the US Department of Energy (DOE). Researchers and activists had brought the details of these experiments to media attention through press conferences and massive documentation.¹² But the media responded with silence. Subsequently, a 1986 subcommittee of the House of Representatives chaired by Congressman Edward Markey investigated the DOE programme and produced a provocative paper called "American nuclear guinea pigs: three decades of radiation on US citizens", which was reported, but only as back-page news. 7 years later, the media, no longer constrained by Cold War values, covered the same material in dramatic front-page stories as "revelations". And in the light of growing concern about scientific misconduct, reporters not only probed the government archives at DOE facilities, but also looked for similar scandals in the medical records at their local universities.

Fraud in science is especially newsworthy because it so flagrantly violates accepted norms.¹³ To scientists, incidents of fraud are a rarity, reflecting individual aberrations. Scientists define the problem as professional misconduct, insisting that science is self-correcting, and that problems can and should be managed within the scientific community. Journalists, however, define cases of fraud as collective failures, and they use their reports to question traditional assumptions about science. Can scientific honesty be assumed? Does the peer-review process offer enough protection against fraud? And are scientists able to control the integrity of "big science" involving many investigators and multiple institutions?

In 1994, for example, reporter John Crewdson exposed a case of data falsification in one of the hospitals involved in a large clinical trial on the relative efficacy of lumpectomy and mastectomy as cancer treatments.¹⁴ The story provoked weeks of outraged media coverage. The director of the research programme had decided not to reveal the incident because, in his professional judgment, the falsification in this single hospital would not affect the validity of the final research results. But journalists believed that the public had a right to know about any possible uncertainties in a study that had such important clinical implications; accountability, they insisted, was essential. Focusing on the delay in notification, journalists framed their coverage of the case in structural terms as evidence of a breakdown in the way large-scale projects were controlled. They condemned the scientists involved in the incident, the organisation running the clinical trials, and the National Cancer Institute (NCI) that had sponsored the research and was responsible for monitoring it.

The media have also reported on changes in the traditional sources of research funding, questioning the influence of growing corporate support on the integrity of science. To scientists, corporate investments are a welcome substitute for declining public funds, and they rely on the norms of objectivity in science to maintain research integrity in situations where there may be conflicts of interest.¹⁵ They do not consider their sources of funding to be important news. But journalists often comment on the profiteering of academic scientists and the gold rush atmosphere in some biomedical fields (eg, ref 16). Holding an image of science as an objective, unsullied profession, science writers call attention to the non-medical interests--the entrepreneurial ventures and quest for profits--that are driving science and its clinical applications.¹⁷ Disillusioned, they often portray scientists as tycoons, merchants, or molecular millionaires.

Tensions over defining science news are amplified by overzealous researchers who seek media coverage of "hot" research before the time-consuming process of peer review. Scientists at the University of Utah went to the media with their claims for cold fusion, hoping that this would attract venture capital to the research.¹⁸ Behavioural psychologists at the University of Minnesota sought press publicity for their studies of identical twins when their work was rejected by professional journals.¹⁹ Scientists studying biological predisposition to homosexuality publicly announced preliminary findings before they appeared in a peer-reviewed journal. Geneticists working in highly competitive and potentially lucrative fields such as cancer genetics are especially aggressive sources of information for the press. They attract media interest to their research by suggesting its therapeutic implications, even when these may be far in the future: "The long awaited era of genetic healing has at last arrived", wrote a scientist in 1993.²⁰ Molecular biologist, French Anderson, exuberant about the future of gene therapy, told a Time reporter that "Physicians will simply treat patients by injecting a snippet of DNA and send them home cured".²¹ The isolation of the colon cancer gene prompted an enthusiastic scientist to tell a New York Times reporter that "Death can be avoided".²²

Scientists believe that national visibility through the media is useful for ensuring favourable science policy and the financial support required to sustain costly research facilities. Some use the media to advance an ideological agenda that they believe may have social importance. Whatever their reason, scientists and their institutions are increasingly seeking to define science news and to shape the content and style of science communication. Their reliability and honesty as sources of information, as Tom Wilkie suggests (May 11, p 1308)⁵ is critically important to the quality of science and medical reporting.

Styles of communication

In 1924, the editor of the first science writing syndicate in America described his view of science journalism. "The public we are trying to reach is in the cultural state when three-headed cows, Siamese twins and bearded ladies draw the crowds to the side shows". That is why, he explained, science is usually reported in short paragraphs ending in "-est": "The fastest or the slowest, the biggest or the smallest, and in any case, the newest thing in the world".²³

Panel: The polarised coverage of AIDS by the media

The polarisation of AIDS coverage in the US media has been remarkable. On the one hand media reports have reassured the public by framing AIDS in terms of "high risk groups". On the other hand, sensational stories and headlines warn readers about a "deadly plague".

Throughout the 1980s, new stories were shaped by moral judgments about homosexuality, blaming the disease on promiscuity and "immoral" behaviour. AIDS, according to the press, was not a viral disease such as hepatitis, but a "sexually transmitted disease" such as syphilis. Searching for a cause, most journalists used a language of blame and rebuke. Even as attention turned to the growing number of intravenous drug users and women and children with AIDS, reporters described AIDS as a disease of "others": gays, drug users, Africans, Haitians, or those engaged in deviant life styles. This reporting effectively ghettoised the disease. It was their problem, perhaps affecting spouses and children, but not a disease of society. Indeed, the media have systematically underplayed the profound impact of AIDS on culture and social institutions--health care, social services, prisons, and the family.

As epidemiological studies increasingly documented the spread of disease, the media sensationalised the issue by focusing on the vulnerability of everyone. A story in Life

magazine, for example, announced: "AIDS breaks out of high risk groups". "No-one is safe from AIDS". A Times magazine headline read: "A scourge spreads panic". Headlines called attention to the "deadly new epidemic", to "the public health threat of the century".

Recognising AIDS as a major medical problem, editors have enlisted the most experienced medical journalists to cover the disease. Although news reports are often technically accurate, they have also conveyed an unrealistic and even counterproductive social message about how to prevent the spread of the disease. Reflecting conservative biases, the advice has been "abstain". Though this message clearly did not originate with the press, journalists, ideally an independent group, provided little critical analysis that might have drawn early attention to the complexity of changing behaviour to avoid the spread of disease.

In the 1990s, the press has been attracted to the growing conflicts--over condom distribution, sex education, free clean needles, and HIV testing. These disputes are often described as fundamental--debate over testing in hospitals, for example, becomes in the press a conflict between physician autonomy and patients' rights. And the debate over sex education becomes a moral dispute over irreconcilable values. Despite the attraction of conflict, however, the media have paid little attention to the deeper social tensions revealed by AIDS--over society's commitment to individual autonomy when community values are at stake, over the roles and responsibilities of government in managing disease, over trade-offs between scientific research and other costly programmes, and over the appropriate organisation of a humane health-care system.

Source is ref 25.

In this respect, little has changed. In the 1990s, research on embryo cloning, pregnant postmenopausal women, and genetically engineered pigs is drawing readers and selling magazines. And journalists emphasise the biggest collider, the newest bioengineering techniques, the riskiest technologies. Indeed, the style of reporting has been remarkably consistent over time. But even as scientists, eager to promote their latest breakthrough, contribute to hyperbole, the style of science reporting has been a continuing source of tension between medicine and the media.

Both scientists and journalists are committed to communicating truth, and the tensions over science reporting have less to do with accuracy than with style. Media constraints of time, brevity, and simplicity preclude the careful documentation, nuanced positions, and precautionary qualifications that scientists feel are necessary to present their work. While scientists are socialised to qualify their findings, journalists often see qualification as

protective colouration. Furthermore, readability in the eyes of a journalist may be oversimplification to a scientist. Many accusations of inaccuracy can be traced to reporters' efforts to present complex material in a readable and appealing way.²⁴

Journalistic efforts to enhance audience appeal may violate scientific norms. To create a human-interest angle, journalists look for personal stories and individual cases, though this may distort research that has meaning only in a broader statistical context. Similarly, to convince their editors about the newsworthiness of a science story, journalists will emphasise the uniqueness of individual events (the "first" discovery, the major "breakthrough"). Though scientists themselves contribute to the breakthrough syndrome, they are usually committed to the ideal of continuity and the cumulative nature of research.

The journalistic preoccupation with conflict, intended to attract reader interest, is a further source of strain. In covering risk disputes (such as the silicone breast implant controversy), journalists create polarities; a medical technology is either very risky or totally safe (see ref 25 and panel). Media coverage of biotechnology has ranged from optimistic visions of miracle cures to images of mad scientists and an industry that is out of control. Genetics in the media is "the medical story of the century", for it will "unlock the secrets of life" and "allow prediction and control of disease". But there is always another side to the story: "Lurking behind every genetic dream come true is a possible Brave New World nightmare . . . who should play God with man's genes". The norms of objectivity in journalism call for giving "equal time" to different points of view--for balancing conflicting claims. This is a source of irritation to scientists, because scientific standards of objectivity require not balance or equal time but empirical verification of opposing hypotheses.²⁶

Differences in the use of language add to the tensions between medicine and the media. Certain words routinely used by scientists have different meanings for lay readers. Scientists use the word "epidemic" to describe a cluster of health-related incidents greater than expected; to a lay person, an epidemic implies a rampantly spreading disease. The word "evidence" also has multiple meanings. Biostatisticians refer to evidence as a statistical concept; biomedical readers may define the critical experiment as evidence; the lay person, including journalists, accept as credible evidence anecdotal information or individual cases. Similarly, the word "predisposition" has different implications: to scientists, a predisposition to a genetic disease is less a prediction than a statistical risk calculation; but in media reports this statistically driven concept is often reduced to cause, and possible future states are defined as equivalent to current status.

Scientists use words to indicate regularities and aggregate patterns. They mainly communicate to a professional audience that shares certain assumptions and will assimilate information in predictable ways. Journalists write for diverse readers whose interpretations will vary with their interests, objectives, and technical sophistication. Choosing words for their richness of reference, suggestiveness, or graphic appeal,

journalists will refer to "the fat gene" rather than to the "marker that may predispose an individual to obesity". Whereas scientists talk of aggregate data, reporters address the immediate concerns of their readers: will I be harmed if I use saccharine, drink coffee, take oestrogen?

Conflicting views of the media's role

Perhaps the most important source of strain between scientists and journalists lies in their different views about the media's role. The long struggle over the Ingelfinger rule, analysed by Lawrence Altman (May 18, p 1382; May 25, p 1459)^{6,7} reflects these different views. The issue, as Altman suggests, is control over information. Jon Turney (April 20, p 1087)² has documented the scientist's view of the media. They view the press as a conduit or pipeline, responsible for transmitting science to the public in a way that can be easily understood. Scientists expect to control the flow of information to the public as they do within their own domain. Confusing their special interests with general questions about the responsibility of the press, they are reluctant to tolerate independent analysis of the limits or flaws of science, or the relative costs or benefits of new technologies. They assume that the purpose of science journalism is to convey a positive image; they see the media as a means of furthering scientific and medical goals.²⁷ Most journalists, however, do not see themselves as trumpets for science, and many are beginning to suspect promotional hype. They are, in the 1990s, raising probing questions about science and technology: what are its social and ethical implications, who are responsible, and what are the stakes?

Growing awareness of the impact of the media is contributing to tensions over the messages conveyed to the public. The influence of specific media coverage on public attitudes is difficult to assess, since the effect of media messages depends on the social context in which they are received (see ref 28). This may include the readers' personal experience or prior knowledge, and the cumulative influence of previous media reports, popular representations, and other sources of information about science and medicine such as the television doctor stories described by Joseph Turow (May 4, p 1240).⁴

However, bad news about science can directly affect consumer behaviour. After extensive media reports on dietary studies relating cholesterol-producing foods with heart disease, consumption of beef, eggs, and fatty milk products declined. News coverage of toxic shock syndrome adversely affected sales of some brands of tampons. Bad news may also cause panic, thereby influencing patient behaviour. Media exposés of leaky silicone breast implants led to demands for remedial surgery. News reports about discoveries of a genetic mutation that was correlated with predisposition to breast cancer brought women to clinics demanding genetic testing and even preventive mastectomies.

The effect of good news was graphically illustrated by the remarkable history of Prozac (fluoxetine). After a prominent cover story in Newsweek,²⁹ the drug became a star, being

covered in talk shows, magazines, and news reports as the "feel good" drug. The result was an enormous increase in Prozac sales. Likewise, after the media reported on Retin-A (tretinoin) as a medical treatment for skin ageing (quoting a JAMA editorial), the stock of Johnson and Johnson increased by 8 points in 2 days.³⁰

Media coverage can also influence medical research policies in ways that may compromise the autonomy of science. The reporting of demands from gay activists in the early 1990s helped to convince the National Institutes of Health to release the AIDS drug zidovudine (AZT) before the completion of clinical trials. Media outrage over falsification of data in the research on alternative breast cancer therapies led to public hearings before a Congressional oversight committee and the resignation of the project director. And the public exposure of this incident forced the NCI to audit every research site and reanalyse all the data.

Media coverage may also influence research funding and, therefore, research priorities. The press dramatisation of infantile paralysis in the 1950s attracted millions of dollars to the support of research in this area. Dramatic news stories about people with AIDS helped to generate public funds for AIDS research. Widely published reports of declining US leadership in high technology during the 1980s influenced legislative decisions to support costly megascience projects. And then, 10 years later, media accounts of inefficiency contributed to the decline of federal funds. Similarly, during the 1980s the many media stories about biotechnology as "the next economic miracle" helped to attract venture capital. But a few years later, reports of public concerns associating biotechnology with environmental and health risks encouraged caution among potential investors.

Media messages matter. The media, as Tim Radford observed (June 1, p 1533),⁸ often serve simply as a form of entertainment. But they also help to create the unarticulated assumptions and fundamental beliefs that underlie personal decisions, public policies, and clinical practices. They influence the perceptions of a public increasingly sensitive to the social and ethical implications of science and inclined to question the credibility of scientists and technical institutions. Scientists in the 1990s are especially concerned about the information and images conveyed to the public. Faced with declining resources and threats of external regulation, they are less willing to tolerate criticism that might affect the public view (eg, ref 31). At the same time, science journalists, focusing attention on the social implications of research, are increasingly inclined towards critical and probing investigation. They are, appropriately, raising issues of responsibility and accountability and questioning the priorities guiding science policy decisions. Reflecting broader changes in the relationship between science and society, the tensions between scientists and journalists are bound to increase. Dependent on each other, they are wary collaborators in the important business of communicating science, of shaping the public meaning of science and medicine in an increasingly contested terrain.

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