

Media Coverage of Scientific Meetings Too Much, Too Soon?

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"I'm pretty well plugged in to what's going on in research," he remarked. "I hear on the news 'Major breakthrough in cancer!' And I think, Gee, I haven't heard anything major recently. Then I listen to the broadcast and realize that I've never heard of this breakthrough. And then I never hear of it again."

Dr Richard Klausner, Former Director,
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THE PRESS TRANSLATES MEDICAL research into news. How the press chooses stories to cover and how they present the findings are important, since the media can have a powerful influence on public perceptions. Research abstracts presented at scientific meetings often receive prominent media attention. It is easy to understand why. The general public has a strong desire to know about the latest developments in science and medicine, and the meetings hold the promise of dramatic stories about new cures, discoveries, and breakthroughs. Press coverage also may be attractive to the sponsors of the meetings, the scientists, their institutions, and funding agencies^{2,3}; such coverage generates publicity that may help the organizations raise funds, and may help the scientists advance in academia.

But it is also easy to understand why media coverage of scientific meetings could be a problem.^{4,5} Scientific meetings are intended to provide a forum for researchers to present new work to colleagues; the work presented may be preliminary and may have undergone only limited peer review. Frequently, the presentations represent work in progress.

Context Although they are preliminary and have undergone only limited peer review, research abstracts at scientific meetings may receive prominent attention in the news media. We sought to describe news coverage of abstracts, characterize the research, and determine subsequent full publication in the medical literature.

Methods We searched Lexis-Nexis to identify news stories printed in the 2 months following 5 scientific meetings held in 1998 (12th World AIDS Conference, American Heart Association, Society for Neuroscience, American Society of Clinical Oncology, and the Radiological Society of North America). We searched MEDLINE and contacted authors to determine subsequent publication in the medical literature within 3-3.5 years of the meetings.

Results A total of 252 news stories reported on 147 research abstracts (average, 50 per meeting); 16% of the covered abstracts were nonhuman studies, 24% randomized trials, and 59% observational studies. Twenty-one percent of the human studies were small (ie, involving <30 subjects). In the 3 years after the meetings, 50% of the abstracts were published in high-impact journals (based on Institute for Scientific Information ratings), 25% in low-impact journals, and 25% remained unpublished. The publication record of the 39 abstracts receiving front-page newspaper coverage was almost identical to the overall rate. Meeting organizers issued press releases for 43 abstracts; these were somewhat more likely to receive prominent news coverage (35% covered on front page vs 23%, $P=.14$), but were no more likely to be published.

Conclusions Abstracts at scientific meetings receive substantial attention in the high-profile media. A substantial number of the studies remain unpublished, precluding evaluation in the scientific community.

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Unfortunately, many projects fail to live up to their early promise; in some cases, fatal flaws emerge. Press coverage at this early stage may leave the public with the false impression that the data are in fact mature, the methods valid, and the findings widely accepted. As a consequence, patients may experience undue hope or anxiety or may seek unproved, useless, or even dangerous tests and treatments.

While others have reported on the fate of scientific meeting abstracts^{6,7}—approximately half are ultimately published⁷—we know of no attempts to follow those abstracts highlighted in the news and therefore most likely to influence the public. Herein, we report on the media coverage of abstracts at high-profile scientific meetings, de-

scribe the research, and determine whether these abstracts are subsequently published as full reports in the medical literature.

METHODS

To identify high-profile meetings that attract substantial media attention, we sought advice from journalists who actually cover the meetings. We con-

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sulted the medical editor of the Associated Press (AP), who provided us with a list of all meetings routinely covered by the wire service. In addition, we posted a request on the National Association of Science Writers listserv for the most important science meetings in terms of press coverage and were directed to their posted “list of great meetings” (ie, important meetings to cover). All the “great meetings” were included on the list provided by the AP wire editor.

Our goal was to identify the highest-profile medical meetings. To identify the meetings receiving the most media attention within each medical topic, we performed Lexis-Nexis searches on all 1998 meetings nominated by the AP medical editor and the science writers. Because we were interested in coverage of diverse medical topics, we considered only 1 meeting per medical specialty (eg, only 1 cardiology meeting). Based on the search, we selected the meetings held in 1998 with the highest number of citations: 12th International Conference on acquired immunodeficiency syndrome (AIDS)

(World AIDS Conference), American Heart Association, American Society of Clinical Oncology, Radiological Society of North America, and the Society for Neuroscience. We contacted each organization to learn each meeting’s process for scientific review and publicity (TABLE 1).

To identify media coverage of abstracts at these 5 meetings, we searched the general news database of Lexis-Nexis for stories appearing 2 months after each meeting. Our search strategy used the “more options” form, which conducts full-text searches for combinations of phrases: (name of meeting) w/10 (scientific session\$ OR conference OR meeting\$). The “w/10” feature identifies news stories in which “scientific session,” “conference,” or “meeting” appears within 10 words before or after the name of each meeting. For the AIDS meeting, we searched for *12th International Conference on AIDS* OR *12th World AIDS Conference*. We included only those news stories reporting a specific research finding (n=252; 117 not reporting findings were excluded).

To match each story to an abstract, we searched the meeting proceedings (compendium of abstracts, schedules of presentations) for the author (if quoted), as well as the topic or specifics of the study. To characterize the research designs, we recorded the following from each abstract: study design (randomized trial, meta-analysis, observational study); participants (human subjects, animals, lab specimens); and number of participants (for human studies).

In February 2002, we performed MEDLINE searches to identify subsequent publication of abstracts (3-3.5 years elapsed after each meeting). About 95% of meeting abstracts that are ever published are published within 3 years of the time of the meeting presentation.⁷ We searched MEDLINE and PREMEDLINE for all abstract authors. If we did not identify a MEDLINE publication, we directly contacted abstract authors to determine whether a manuscript was ever submitted and to learn its publication status. We received responses from all but 6 authors reporting on the status of a

Table 1. Description of Scientific Review Process for Submitted Abstracts and Publicity Process for the 5 Meetings*

Meeting	Scientific Review Process			Publicity Process
	Explicit Process	Abstracts Submitted	Accepted, %	
12th World AIDS Conference (June 1998; Geneva, Switzerland)	Yes	7000	90	28 Press releases of specific presentations Abstract book available to the media prior to the meeting Regular media briefings each day of the meeting Online news service with 24-hour updates
American Heart Association (November 1998; Dallas, Tex)	Yes	12 500	25	52 Press releases of specific presentations News department arranges for selected authors to hold press conferences during meeting
American Society of Clinical Oncology (May 1998; Los Angeles, Calif)	Yes	2400	40	25 Press releases of specific presentations Communications committee selects abstract for a news program distributed to journalists when they register for meeting 3-4 Media briefings and 1 “meet the expert” session held each day of the meeting
Radiological Society of North America (November 1998; Chicago, Ill)	Yes	7700	35	Topics for press coverage selected by the abstract reviewers for their scientific merit, outcomes, new research, or human interest 9 Press releases distributed to media and author interviews arranged at media request Committee chair chooses topic for press conferences during the meeting
Society for Neuroscience (November 1998; Los Angeles, Calif)	No	15 000	100	Public information officers select the 300 “most newsworthy” presentations; a committee then selects 12-18 for press release/conference, and more than 200 others for lay-language abstracts A book of the more than 200 lay-language summaries and 13 press conference news releases sent to the media 1 week before the meeting

*AIDS indicates acquired immunodeficiency syndrome.

relevant manuscript. We considered abstracts to be published only if we could match the abstract and article in terms of the study objective, design, and approximate number of patients.

We used publication as a proxy (admittedly imperfect) for the validity and importance of the work. Our hypothesis was that any medical research of sufficient importance for the general media would also appear in the medical literature. Given the variable quality of journals, we further categorized publication based on the Institute for Scientific Information impact factor.⁸ We classified journals as “high impact” if their impact factor was among the top 10 in either the general medicine, research and experimental medicine, or relevant specialty topic lists. While not a universally accepted metric, many feel the impact factor reflects a journal’s value to the scientific community.⁹

We used the χ^2 test to compare differences in proportions, and used STATA v7.0 (Stata Corp, College Station, Tex) for analyses; α was set at .05.

RESULTS

Table 1 summarizes the review process for selecting submitted abstracts for presentation at each meeting, and the publicity process. The Society for Neuroscience had no explicit scientific review process; consequently, all 15 000 submitted abstracts were accepted for presentation. Abstract submissions to the other 4 meetings underwent scientific review either by an individual or a committee ranking procedure; acceptance rates varied from 25% (American Heart Association meeting) to 90% (World AIDS Conference). Organizers at each meeting actively sought press coverage, generally by issuing pre-meeting press releases, conducting media briefings before and during the meeting, distributing press packets at the meeting, and arranging for interviews with selected authors.

How Much Media Coverage Did Meeting Abstracts Receive? We found a total of 252 news stories reporting on 147 abstracts within 2 months of each meeting—an average of 50 news stories per meeting (TABLE 2). Some sto-

ries reported on multiple presentations; several reported on the same presentations. The AIDS meeting received the most coverage (84 stories), followed by those of the American Heart Association (65), the Society for Neuroscience (42), the American Society of Clinical Oncology (39), and the Radiological Society of North America (22). With the exception of the *Wall Street Journal* (where only 1 story appeared), 9 or more stories about meeting abstracts appeared in each of the nation’s 5 highest-circulation¹⁰ newspapers (*USA Today*, *New York Times*, *Los Angeles Times*, *Washington Post*).

Thirty-nine of the 147 (27%) abstracts received front-page (ie, page 1) coverage in at least 1 newspaper. The distribution of front-page coverage varied across the meetings, with ASCO (50%) and AHA (35%) presentations most likely to receive front-page coverage ($P=.01$)

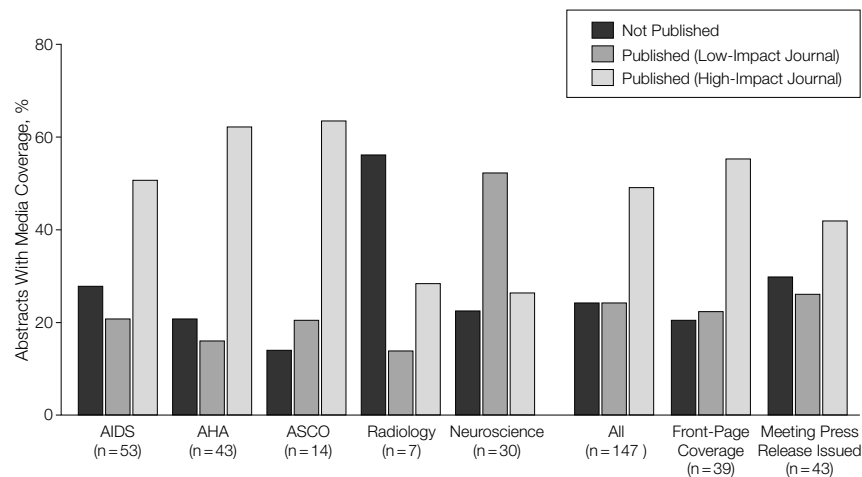
What Kinds of Studies Received Media Coverage? Sixteen percent of the covered abstracts were nonhuman (ie,

Table 2. Description of Research Abstracts Presented at the 5 High-Profile 1998 Scientific Meetings, and Associated Media Coverage*

	Meeting					All
	12th World AIDS Conference	American Heart Association	American Society of Clinical Oncology	Radiological Society of North America	Society for Neuroscience	
News Stories Generated, No.						
All	84	65	39	22	42	252
Front-page (ie, page 1) stories	6	9	8	1	5	29
Top 5 circulation newspaper stories						
<i>Wall Street Journal</i>	1	0	0	0	0	1
<i>USA Today</i>	3	6	0	0	0	9
<i>New York Times</i>	6	1	6	0	0	13
<i>Los Angeles Times</i>	3	0	2	1	4	10
<i>Washington Post</i>	7	1	3	2	2	15
Abstracts Receiving Media Coverage, No.						
Any newspaper coverage	53	43	14	7	30	147
Front-page (ie, page 1) coverage	6	15	7	1	10	39
Official meeting press release	8	12	9	6	8	43
Abstract Study Design, No. (%)†						
Nonhuman study	2 (4)	2 (5)	0 (0)	1 (14)	18 (60)	23 (16)
Human studies						
Randomized trial or meta-analysis	16 (30)	9 (21)	8 (57)	0 (0)	2 (7)	35 (24)
Observational study	33 (62)	31 (72)	6 (43)	6 (86)	10 (33)	86 (59)
Small studies‡	7/49 (14)	8/40 (20)	0/14 (0)	3/6 (50)	7/12 (58)	25/121 (21)

*Some abstracts generated multiple news stories and some news stories reported on multiple abstracts. AIDS indicates acquired immunodeficiency syndrome.
 †Percentages do not total 100% because 3 cost analyses were not included in any of the categories. Percentages use the number of abstracts receiving any media coverage as the denominator, except for the “small studies” category.
 ‡Randomized controlled trials or observational studies with ≤ 30 patients.

Figure. Profiles of Abstracts Receiving Media Coverage Within 3-3.5 Years



"High-impact journal" defined as a journal with top 10 impact factor ratings in the general medicine category, research and experimental medicine category, or the relevant specialty area (eg, oncology, neuroscience). Thus, low-impact journals did not appear on any of 3 top 10 lists. AIDS indicates 12th World AIDS (acquired immunodeficiency syndrome) Conference; AHA, American Heart Association; ASCO, American Society of Clinical Oncology; Radiology, Radiological Society of North America; and Neuroscience, Society for Neuroscience.

animal or laboratory) studies, 24% were randomized trials, and 59% were observational studies. Twenty-one percent of the human studies were small (ie, involving <30 subjects).

How Many Abstracts Were Subsequently Published? In the 3 to 3.5 years after the meetings, 50% of the 147 abstracts were published in high-impact journals, while 25% were published in low-impact journals, 25% remained unpublished (FIGURE). Of the 37 unpublished abstracts, 25 were never submitted as full manuscripts, 3 manuscripts were rejected, and 3 manuscripts were currently under review (6 authors did not respond to our inquiries). Publication in high-impact journals varied by meeting, ranging from 27% for the Society for Neuroscience to 64% for the American Society of Clinical Oncology ($P=.01$).

The publication record for the 39 presentations that received prominent (ie, front page) newspaper coverage was almost identical to the overall publication rate. Meeting organizers issued official press releases for 43 abstracts. These abstracts were somewhat more likely to receive front-page coverage (35% vs 23%, $P=.14$), but were slightly less likely to be published at all (67%

vs 78%, $P=.18$) or in high-impact journals (42% vs 53%; $P=.36$).

COMMENT

We found that research abstracts presented at prominent scientific meetings often receive substantial attention in the news media. This prepublication dissemination of medical research often brings findings to the public before the validity and importance of the work has been established in the scientific community.^{4,11} Adding to this concern, many of the abstracts receiving media attention have weak designs, are small, or are based on animal or laboratory studies; 25% remained unpublished more than 3 years after the meeting. Interestingly, presentations that receive front-page coverage are no more likely to be published than abstracts receiving less prominent coverage.

These findings should be interpreted in light of 2 limitations. First, we did not examine the extent to which the public pays attention to or is influenced by the news coverage. While there is evidence that the premature dissemination of research can affect both patient and physician behavior,^{4,11} the impact of the news coverage we have

highlighted is unknown. Second, subsequent publication is an imperfect way to measure the scientific quality of the meeting abstracts receiving press coverage. Some research may not be published because it is never submitted (true for two thirds of the unpublished abstracts in our study), which may reflect lack of time or concerns about validity.^{6,7} Poor-quality editorial or peer review may result in rejection of papers that should have been published or in publication of papers that should have been rejected. Finally, the proliferation of new medical journals may be diluting the meaning of publication. We used journal impact factor as a proxy for journal quality; a third of the meeting abstracts that were eventually published in our study appeared in low-impact journals.

We believe that our findings both stem from and highlight 2 competing purposes of scientific meetings. On one hand, the meetings serve a scientific purpose by enabling communication among researchers. In this context, it is not only appropriate but desirable that scientists share work in progress to get feedback and ideas for moving forward, perhaps the purest form of peer review. On the other hand, the meetings serve a public relations purpose, generating support for the meetings' sponsors and for the agencies funding research, and drawing attention to individual investigators and their institutions.

The most direct way to reduce public exposure to misleading preliminary findings is for meeting organizers to have more rigorous standards for issuing press releases. The selection of abstracts for promotion to the media should be based primarily on scientific merit assessed by scientists. Press releases also should be carefully written to convey the preliminary nature of the work and fairly depict the science; ideally they should be critically reviewed before release. Two examples from our study illustrate problems that might have been avoided had releases undergone a higher level of scrutiny. First, the headline of the press release

for an abstract presented at the 1998 American Society of Clinical Oncology meeting (and reported on page 1 on the *New York Times*) read, “Canadian study is first to show screening reduces prostate cancer death”; however, the study is now widely criticized for serious methodological flaws apparent at the time of presentation and the data are not considered evidence that screening is beneficial.¹²⁻¹⁴ Second, a press release reporting the early results of a raloxifene trial stated in the headline that “[raloxifene] may reduce risk of endometrial cancer in postmenopausal women”; by the time the final report was published, no such risk reduction was evident.

In addition, news organizations might also consider raising their threshold for reporting on scientific meeting

abstracts at all. If they do choose to report on such presentations, they might make a concerted effort to emphasize the preliminary nature of data presented, and apply the same level of skepticism in covering these stories that they do in reporting on political matters. In this way, the press might help readers to develop a healthy skepticism about the breakthroughs they repeatedly encounter in the news. Scientists presenting at meetings can also help by routinely emphasizing the limitations of their work when interviewed by the press.

The current press coverage of scientific meetings may be characterized as “too much, too soon.” Results are frequently presented to the public as scientifically sound evidence rather than as preliminary findings with still un-

certain validity. With some effort on the part of meeting organizers, journalists, and scientists, it will be possible to better serve the public.

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Drafting the manuscript: Schwartz, Woloshin, Baczek.

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