

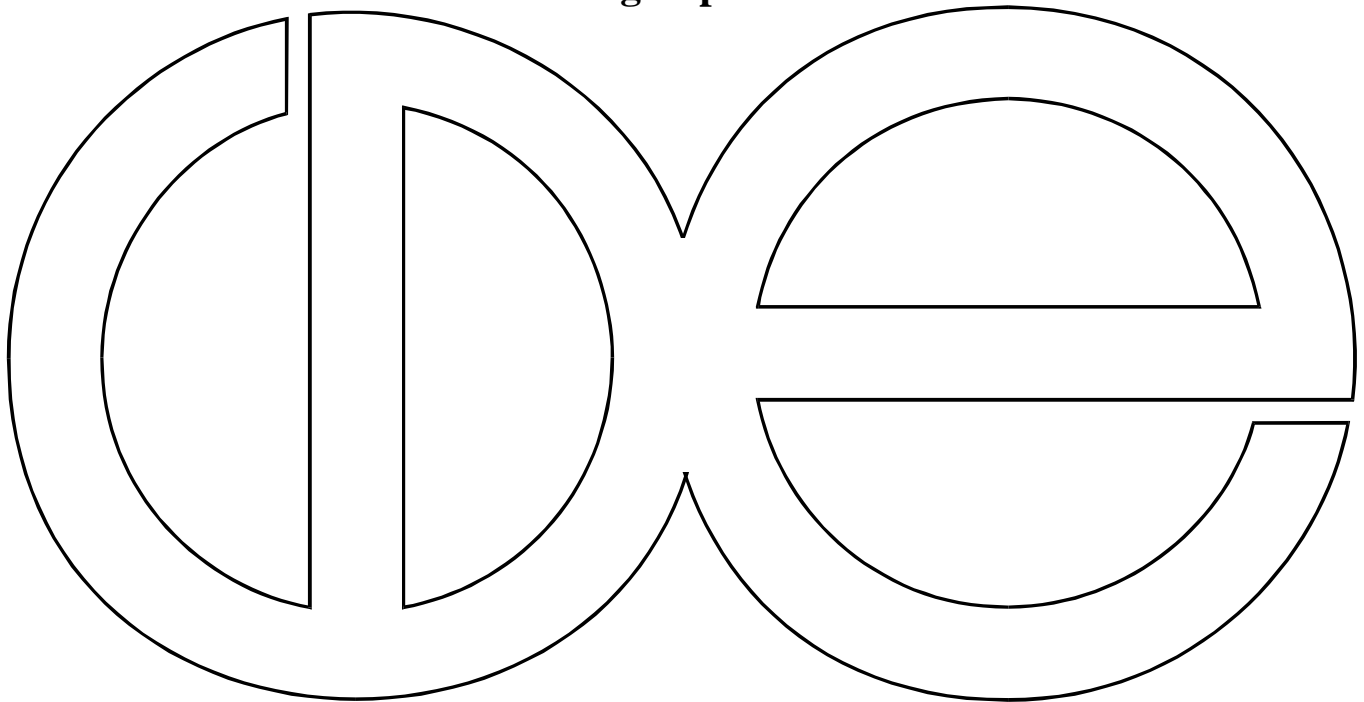
Center for Demography and Ecology

University of Wisconsin-Madison

**Newspaper Coverage of the 1988 Aspirin and
2002 Hormone Therapy Randomized Clinical Trials**

Karen C. Swallen

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**Newspaper coverage of the 1988 aspirin and 2002 hormone therapy randomized
clinical trials**

Karen C. Swallen, M.P.H, Ph.D.

Center for Demography of Health and Aging

Department of Sociology

University of Wisconsin

1180 Observatory Drive

Madison WI 53705

608 262-2923

608 262-8400 (FAX)

kswallen@ssc.wisc.edu

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ABSTRACT

Newspaper coverage is an important source of medical information for Americans, but coverage may be biased and inaccurate. I studied American newspaper coverage of two major randomized clinical trials— aspirin for prevention of cardiovascular disease (the Physicians' Health Study) in 1988, and combination hormone therapy for prevention of cardiovascular disease (the Women's Health Initiative) in 2002-3. Based on this case study, newspaper coverage of important randomized clinical trials is not much improved between 1988 and 2002. The use of statistics has not improved, and the vilification of physicians and the pharmaceutical industry has markedly increased.

INTRODUCTION

Once upon a time...there was a randomized clinical trial designed to determine if a commonly used drug was effective for primary prevention of cardiovascular disease. Because of surprising results, the randomized clinical trial was stopped after only about five years. The results were leaked to the press one day early. Massive media coverage ensued...

Although the story above may sound familiar to readers as the story of the recent findings from the Women's Health Initiative (WHI) on hormone therapy (Writing Group for the Women's Health Initiative 2002), it equally could be written about the Physicians' Health Study (PHS) and aspirin (Anonymous 1988). The goal of this case study is to compare newspaper coverage of these two randomized clinical trials.

The PHS was a randomized clinical trial of the effects of aspirin on cardiovascular mortality and beta-carotene on cancer incidence. 22,071 American male physicians ages 40-84 were given aspirin, beta-carotene, or both, in a double-blind placebo trial to test whether aspirin reduced cardiovascular mortality and beta-carotene reduced cancer incidence (Hennekens and Eberlein 1985). In late 1987, after approximately 4.9 years, the aspirin portion of the trial was halted because the results were so positive that it seemed unethical to withhold the benefits of aspirin from the total population (Anonymous 1988). Reuter's news service released the story one day before the official embargo period ended. The PHS continues to be an important source of biomedical research although recent research concluded that aspirin provided no primary prevention benefit for cardiovascular mortality (Boltri, Akerson and Vogel 2002).

The WHI was designed to assess prevention and control of common causes of mortality and morbidity for postmenopausal women (Women's Health Initiative Study Group 1998). 16,608 women in the combination hormone therapy arm were randomized to combination hormone therapy or placebo. In July 2002, after 5.2 years of follow-up, the trial was stopped (Writing Group for the Women's Health Initiative Investigators 2002). Cox News Service and some other media sources released the news of the study's results one night early.

We know that the modern news media is an important source for health and biomedical information for patients and physicians. In addition to popular media, physicians may read peer reviewed journals or textbooks, sometimes for continuing medical education credits (Holm 2000). A recent survey revealed that although internists read for an average of 4.4 hours a week, 63% read only abstracts in a few select journals (Saint et al. 2000). Although physicians say that academic sources are important in determining prescription decisions, drug company representatives actually exert the most influence (McGettigan et al. 2001). The majority of drug promotion monies are still spent on promotions targeting physicians directly (Rosenthal et al. 2002). Even continuing medical education is linked to pharmaceutical firms (Relman 2001; Wazana 2000). Further, editors of medical journals are increasingly concerned that clinical trials are being conducted in a non-objective fashion (Davidoff et al. 2001).

Patients get the health and biomedical information that they do not receive in formal medical settings from the popular press. Pharmaceutical advertising that targets consumers also is an increasingly important source of information for patients (Moynihan, Health and Henry 2002; Rosenthal et al. 2002). With the increasing emphasis

on shared decision making in clinical decisions, providing patients with accurate and complete information has become more important than ever (Coulter 1997; Ford, Schofield and Hope 2003; Hope 1996; Lee and Garvin 2003). In addition to individual patients, public policy is often influenced by media reporting, especially in major newspapers (Dowie 1998; Hartz and Chappell 1997; Nelkin 1995).

How media outlets decide to frame stories has been hotly debated (Entman 1993; Entwistle 1995; Gans 1980; Nelkin 1996). Although journalists and scientists are both interested in “truth,” their audiences and purposes are quite different. Scientists want to provide extensive detail and qualifications for trained readers while journalists aim to provide readable and appealing material for general audiences (Nelkin 1996). Journalists are more interested in “new” news than in carefully validated and peer-reviewed research (Gans 1980; Nelkin 1996). Understandings about risk and uncertainty are also quite different inside and outside science (Friedman, Dunwoody and Rogers 1999; Nelkin 2002; Priest 2001). Previous research on the communication of biomedical research in the media has noted such problems as overreliance on press releases (Bartlett, Sterne and Egger 2002), sensationalism (Cooper and Yukimura 2002; Molitor 1993; Schuchman and Wilkes 1997), unjustified optimism or fear (Brown, Chapman and Lupton 1996; Cooper and Yukimura 2002) and misstatement of risks and benefits (Brown, Chapman and Lupton 1996; Moynihan et al. 2000). In general, American news coverage of science is neither excessively critical, nor excessively full of praise (Logan, Zengjun and Wilson 2000; Nelkin 1995).

I studied the newspaper coverage of two common drugs— aspirin and hormone therapy—in the 38-week period following the initial popular press publication of the

halting of the study and the study's findings. I examine the magnitude and placement of the coverage, as well as sensationalism and framing, statistics, and the overall impression left of the specific drug.

Two previous studies have assessed media coverage of aspirin for cardiovascular disease. The first (Molitor 1993) focused on the immediate news coverage of the PHS in 1988, and found sensationalization and errors of omission to be prominent. The second (Moynihan et al. 2000) looked at media coverage between 1994 and 1998, and found serious problems in quantitative reporting. No previous research has assessed media coverage of current research on hormone therapy in a systematic way, although one recent editorial did point out some of the flaws in the media coverage of the WHI (Dentzer 2003) and a letter to the editor in *BMJ* also pointed out some sensationalistic coverage of WHI (Baum 2002).

METHODS

I chose the top five circulating newspapers (the *Wall Street Journal* (Eastern Edition), *USA Today*, the *New York Times*, the *Los Angeles Times* (Home Edition), and the *Washington Post*) to search. Although the *Washington Post* was not the 5th largest circulating newspaper in 1988, I chose to use the same newspapers for both time periods. Using the on-line newspaper databases (Lexis/Nexis Academic Universe and ProQuest Newspapers), I searched article citations and abstracts for any reference to “aspirin” (January 27-October 18, 1988) and any reference to “hormone” (July 9, 2002-March 31, 2003)—38 weeks in both cases.

I read abstracts of all articles or scanned complete articles when abstracts were not available; relevant articles were included in the database. Relevance was determined by assessing whether the article drew any information from the scientific studies (PHS or WHI). Most articles excluded on “aspirin” focused on the new warning for pregnant women in 1988; most of the articles excluded on “hormone” focused on growth hormones, especially hormone-treated meat. (The original search was on “hormone therapy” or “hormone replacement therapy,” but this led to a serious undercount of articles, so the search was broadened to “hormone.”)

Table 1 shows the details of the search results by newspaper name.

The full-text of the 61 relevant articles containing the key word “aspirin” and the 154 articles containing the key word “hormone” were then read and analyzed by the author, using content analysis and standard statistical techniques (Weber 1985). Odds ratios and chi-squares are reported. Chi-squares are calculated on the assumption of independence. An odds ratio greater than one indicates that the outcome was more common in the hormone therapy articles; an odds ratio less than one indicates that the outcome was more common in the aspirin articles.

I assessed:

- 1) the total count of articles and timing of publication
- 2) placement of the article
- 3) overall framing of the article—was the headline dramatic? Were overly positive or negative frames used? I looked for emphasis on “saves lives” in the aspirin articles, and cancer scare phrasing in the hormone articles.
- 4) the presence of “villains,” especially physicians and the pharmaceutical industry.

- 5) statistics. Accuracy of the statistical reporting was compared with the original scientific literature. I also examined whether both absolute and relative statistics presented.
- 6) overall impression of the drug—positive, neutral, or negative. The overall impression is based on “speculation of a common-sense kind on the likely impression made on an average audience” (McQuail 1992, 227).

RESULTS

Table 2 shows results overall and by newspaper.

The story of the halting of the PHS broke on January 27, 1988. All five newspapers carried front-page stories on January 27, 1988, and followed with additional stories over the next week. In total, nineteen stories were published in the first week on the aspirin study in these five newspapers. The WHI story broke on July 9, 2002 in the *New York Times* and *USA Today*. The following day, 13 stories were published in the five newspapers, including front-page stories in the *New York Times*, the *Los Angeles Times* and the *Washington Post*. Figure 1 demonstrates that the overall coverage of hormone therapy was greater and longer-running.

Figure 1 also notes when the major follow-up events that received coverage took place. Follow-up articles focused on coverage of other biomedical studies (Hays et al. 2003; ISIS-2 Collaborative Group 1988; Lacey et al. 2002; Peto et al. 1988; Zandi et al. 2002) that either supported or contradicted the original findings, business-related news, and governmental reports and regulations. Except for the *New York Times*, all newspapers placed a higher proportion of the articles on aspirin on the front-page than the articles on

hormone therapy. It is also notable that none of the follow-up stories generated the same level of media coverage as the original findings did—given the expected preference of the media for “new” news, this is unsurprising.

I examined the headlines for any trends in loaded words, or overly positive or negative implications. Sample headlines are included in Box 1. On the whole, the headlines seem reasonably appropriate for the results they are reporting.

In addition to the headlines, I looked for other sensationalistic coverage within the text. There was no statistically significant change in overly positive or negative reporting between the two cases. 23% of the articles on hormone therapy were framed to frighten women about cancer risks—for example, sometimes only the statistics for breast cancer were provided. Of the articles on aspirin, 28% dramatically emphasized that aspirin could save lives. In both cases, there often was additional information buried deep within the text. However, the casual reader would come away from these articles without a balanced view. See Box 2 for examples of sensationalistic headlines.

Box 2 also provides examples of physicians/scientists or the pharmaceutical industry portrayal as villains. The use of villains was more common in the hormone therapy coverage. The pharmaceutical industry was nine times more likely to be vilified; physicians were 2.84 times more likely to be vilified. Only one article on aspirin portrayed the pharmaceutical industry as villainous. In the hormone therapy coverage, the pharmaceutical industry was accused of being uninterested in science and willing to manipulate scientific data, physicians, and the public to achieve their goals. One cynical physician who wrote the *New York Times* thought that the new negative findings on hormone therapy and quality of life (Hays et al. 2003) were “probably preparatory to

offering women other drugs to keep us ‘happy’” (Roberts 2003). Some journalists and their sources did try and temper the disdain for medical advice. For example, Dr. Elizabeth Barrett-Connor said “physicians acted in the best interest of their patients. They believed in their heart that they were doing the right thing” (Mestel 2002). However, the general impression given of physicians in many of the articles is as unintelligent incompetent dupes or worse.

Turning to statistics, 50% of the articles on aspirin and 26% of the articles on hormone therapy provided statistics. Not all statistics provided were accurate—37.5% of the statistical hormone articles contained inaccuracies and 10% of the statistical aspirin articles contained inaccuracies. In part, this may be because the interpretation of the aspirin findings was simpler. In total, 13% of the aspirin articles and 3% of the hormone therapy articles provided accurate statistics, and included both relative and absolute risks.

In terms of the overall impression of drug, the aspirin articles were more favorable; the hormone therapy articles were more negative. This is not surprising given the scientific findings. Although the first impression by the first articles on the two drugs was strongly biased in the opposite direction, more moderation did appear in the press coverage over the 38-week cycle. Many of the articles that are coded as neutral on aspirin are actually about the *New England Journal's* embargo policy, and mention the details of the study in passing. The only positive coverage that crossed newspapers was in November, with the publication of the study on the association of hormone therapy with Alzheimer's disease prevention (Zandi et al. 2002).

DISCUSSION

How much have things really changed? Both in 1988 and 2002, randomized clinical trials make newspaper news. This analysis only looks at coverage in the five highest circulation newspapers in the United States. In this sample, the volume of coverage is higher in the more recent era. According to Elias Zerhouni, Director of the National Institute of Health, we should not be surprised that the hormone therapy coverage was more extensive; after all, “the reaction to a new scientific finding is really in proportion to the dogma it is upending” (Kolata 2002). Other explanations for the increase in coverage would include the expectation that bad news gets more press than good news (Baum 2002; Fallowfield 2002; Lichter and Noyes 1997; Wattenberg 1984), the fact that women’s health gets more news coverage than most health topics (Bartlett, Sterne and Egger 2002), or possibly a general increase in newspaper coverage of biomedical stories.

Perhaps more surprising is the finding that the coverage of hormone therapy has been so overwhelmingly negative. In addition to the somewhat expected negative coverage about the specific drug, there has been an increase in negative coverage of both the pharmaceutical industry and physician/scientists. It could be that increased vilification is a natural phenomenon when a new risk of a drug is found. Previous research has noted that conflicts between scientists (Nelkin 1995) and theatrically dramatic presentations of media storylines (e.g. “good” versus “evil”) may create negative impressions for readers (Hansen et al. 1998). Second, it may be that the vilification of science is a natural outgrowth of patients’ empowerment. Previous research has emphasized that patients do not trust physicians as they used to (Light 2000). Already Karpf (1988) saw an increase in negative media portrayals of physicians. Distrust in physicians arguably even is increasing today (Gray 1997; Mechanic 1996). On the other

hand, physicians frequently are portrayed positively in the press and continue to be cited as experts (Lupton and McLean 1998). Third, it could be that other period effects are at play; perhaps journalists use more villains in 2003 than they did in 1988. In general, there is no evidence that Americans' opinions have become more polarized in the last 25 years (DiMaggio, Evans and Bryson 1996; Mouw and Sobel 2001) making it unlikely that media coverage has become more polarized. One New York Times science reporter, Gina Kolata, was heavily criticized for her deference to corporate power in the interim (Dowie 1998); given that the change has occurred across all five newspapers, a change in Kolata's style alone could not explain the finding.

The other major surprise of this case study is that coverage of statistical findings in newspapers has not improved between 1988 to 2002/3. Although biomedical journals have been placing an increasing emphasis on providing relative and absolute statistics for readers (Angell and Kassirer 1994; Bailar and Mosteller 1988; Julian 2002; Moher, Schulz and Altman 2001), there is no evidence that this has translated into better statistics in major newspapers. Indeed, fewer newspaper articles on hormone therapy met the highest criteria in 2002-3 that did articles on aspirin in 1988.

Clinicians are encouraged, indeed enjoined, to read the complete text of randomized clinical trials as they are published in the biomedical journals. According to the former editor of the New England Journal of Medicine, Arnold Relman (1988), "doctors cannot give sound professional advice on the basis of a broadcast or a newspaper story." However, many physicians do not read the biomedical journals, at least not critically (Saint et al. 2000).

Patients also need to understand risks and benefits of treatments and medications if they are going to participate with physicians in models of shared decision making (Coulter 1997; Ford, Schofield and Hope 2003; Lee and Garvin 2003). Most patients do not read the biomedical journals, and must rely on information from physicians and the popular press. Informational materials provided by physicians to patients have many of the same problems as the popular press—including ignoring uncertainty and adopting a patronizing tone (Coulter, Entwistle and Gilbert 1999). Today's patient has an amazing array of sources for medical information (Kassirer 2002). In addition to traditional sources, the Internet is a rapidly expanding source of biomedical information (Cline and Haynes 2001; Kassirer 2000; Powell, Darvell and Gray 2003; Richards, Colman and Hollingsworth 1998). Although positive in some ways (Cline and Haynes 2001; Powell, Darvell and Gray 2003; Richards, Colman and Hollingsworth 1998), the Internet is notoriously inaccurate (Cline and Hayes 2001; Sastry and Carroll 2002) and difficult to regulate (Allum and Mersey 2002; Bannon 1999; Terry 2000).

What kinds of decisions might patients and physicians be making that could be influenced by media coverage? In the case of aspirin, inappropriate self-medication could result from inaccuracies in press coverage. Hormone therapy does require a prescription and thus consultation with a clinician. Inaccuracies in press coverage could have implications for women's health even if every physician read the scientific evidence accurately—since women, if scared enough, might choose to disregard their physician's advice. Beyond the direct implications for persons who choose to take or not take any specific drug, the increasing portrayal of the doctor as either the dupe of the

pharmaceutical industry or the incompetent professional acts to increase patients' distrust in physicians.

Adequate statistical coverage in major respected newspapers might be one counter to other inaccurate and biased sources. Here I find the major respected American newspapers are not providing adequate statistical coverage. I note however that all newspapers (except *USA Today*) included at least one article that provided accurate relative and absolute statistics for both aspirin and hormone therapy. Doctors need to continue to encourage fair and accurate coverage (Dentzer 2003; Myers 1996; O'Donnell 2002; Schuchman and Wilkes 1997). Since other sources are even more likely to be biased, more effort should ensure that major newspapers "get it right."

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Table 1. Articles found in five leading newspapers based on search on key words and 38-week period. Number of relevant articles relevant both in raw numbers (n) and percent of articles on that key word in that newspaper (%).

Newspaper	Aspirin, 1/27/88-10/18/88			Hormone, 7/9/02-3/31/03		
	Database	Found n	Relevant n (%)	Database	Found n	Relevant n (%)
Wall Street Journal	ProQuest	14	10 (71%)	ProQuest	57	21 (37%)
USA Today	Lexis- Nexis	15	7 (47%)	ProQuest	30	22 (73%)
New York Times	Lexis- Nexis	31	26 (84%)	Lexis- Nexis	121	60 (50%)
Los Angeles Times	Lexis- Nexis	23	10 (43%)	ProQuest	29	16 (55%)
Washington Post	Lexis- Nexis	10	8 (80%)	Lexis- Nexis	110	35 (32%)
TOTAL	---	93	61 (66%)	---	347	154 (44%)

Table 2. Results of content analysis for five newspapers and two topics. Percentage of articles, and odds ratios comparing coverage in the aspirin stories with coverage in the hormone therapy stories presented.

Topic	Aspirin	Hormone Therapy	Odds Ratio, Chi-Square
Front Page Articles Total	38	11	
Wall Street Journal	100	0	0.30** (20.52)
USA Today	57	9	
New York Times	12	12	
Los Angeles Times	40	19	
Washington Post	25	14	
Sensationalistic Total	28	23	
Wall Street Journal	30	14	0.84 (0.47)
USA Today	29	27	
New York Times	15	25	
Los Angeles Times	50	19	
Washington Post	38	26	
Pharmaceutical Villains Total	2	15	
Wall Street Journal	0	14	9.11 (7.79)
USA Today	0	27	
New York Times	4	32	
Los Angeles Times	0	38	
Washington Post	0	20	
Physician/Science Villains Total	10	28	
Wall Street Journal	10	19	2.84* (8.12)
USA Today	0	32	
New York Times	19	27	
Los Angeles Times	0	25	
Washington Post	0	34	
Include Statistics Total	38	26	
Wall Street Journal	100	33	0.53* (10.72)
USA Today	57	41	
New York Times	38	13	
Los Angeles Times	50	38	
Washington Post	75	29	
Include accurate, complete statistics Total	13	3	
Wall Street Journal	10	5	0.25 (7.49)
USA Today	0	0	
New York Times	12	2	
Los Angeles Times	20	6	
Washington Post	25	6	

* significant at the p=0.05 level; ** significant at the p=0.01 level.

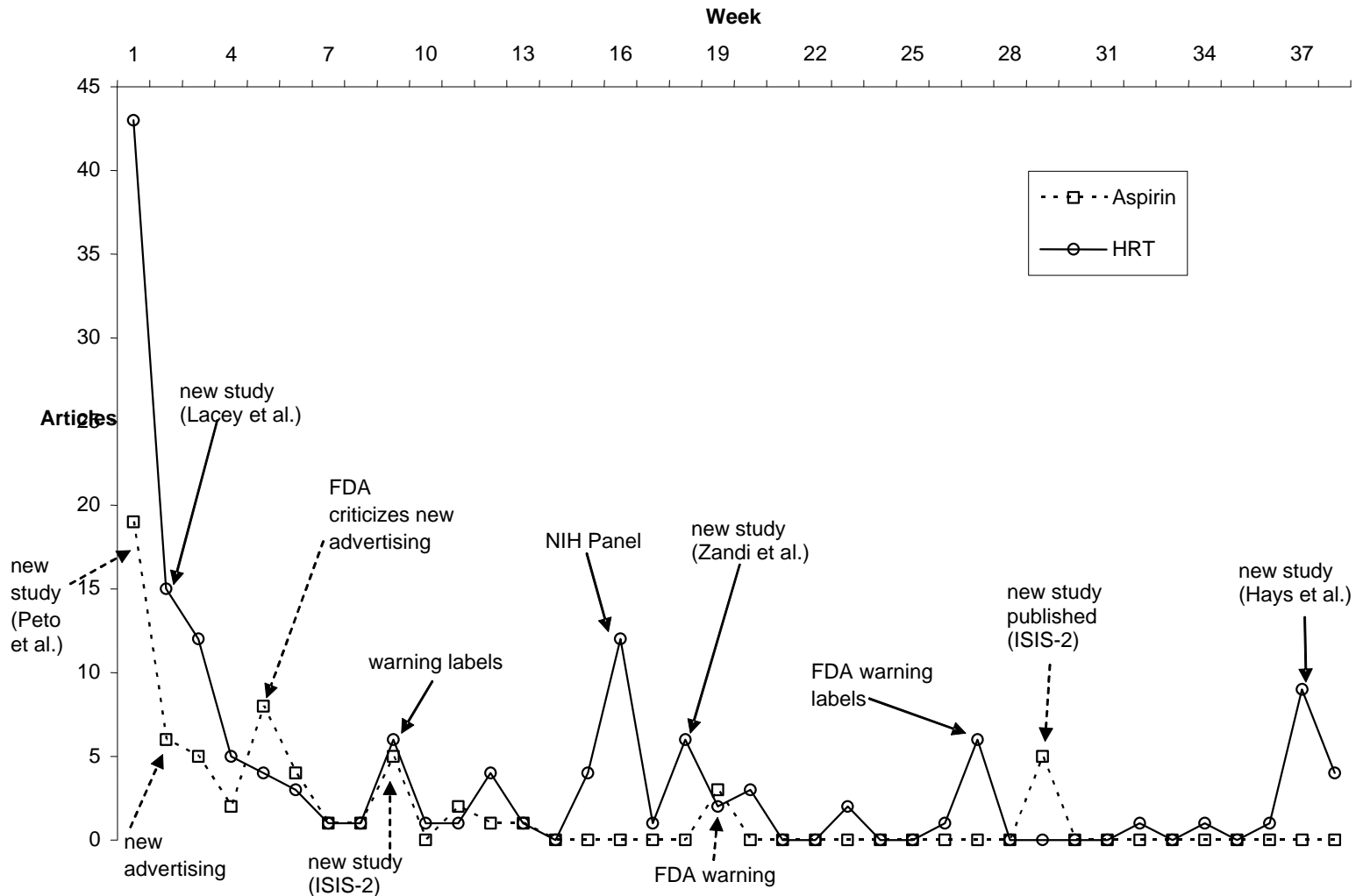
Box 1. Representative headlines on aspirin and hormone therapy

Aspirin—early Aspirin found to cut heart attack risk; healthy men in large scale study	Wash. Post, 1/27/88
Aspirin study is first to show decline in coronary risk among healthy men	Wall St Journal, 1/27/88
Fewer 1st heart attacks occur in aspirin study	LA Times, 1/27/88
Aspirin—later Gambling on life	NY Times, 3/27/88
Aspirin study continues to raise health warnings from doctors	Wall St Journal, 4/14/88
FDA urges caution in aspirin use	LA Times, 6/3/88
Hormone Therapy—early Study is halted over rise seen in cancer risk	NY Times, 7/9/02
Risks of hormone therapy stop study	LA Times, 7/10/02
Hormone conundrum—increased risks prompt researchers to halt study	Wall St Journal, 7/10/02
HRT patients flood doctors’ phone lines	USA Today, 7/11/02
Shift in hormone science leaves women in the lurch	LA Times, 7/14/02
Many taking hormone pills now face a difficult choice	NY Times, 7/15/02
Hormone Therapy—later Report is latest case against HRT	USA Today, 3/18/03
Case against hormones grows	Wash. Post, 3/18/03
Data increases doubts about hormone therapy	Wall St Journal, 3/18/03
Delusions of feeling better	NY Times, 3/19/03

Box 2. Examples of sensationalistic or villainous coverage. Headlines are **bolded**; textual quotations are *italicized*. (See also Box 1 for other examples of headlines.)

Aspirin—sensationalistic Return of the wonder drug	LA Times, 2/5/88
Lives were at stake in aspirin-heart study	NY Times, 2/10/88
What soothes aches, makes flowers last, and grows hairs?—aspirin, the Model T of drugs	Wall St Journal, 2/19/88
<i>“medicine-cabinet marvel”</i>	LA Times, 10/30/88
Hormone therapy—sensationalistic Cancer risk of hormones may linger	NY Times, 10/24/02
Pharmaceutical industry as villain—aspirin <i>“drug companies anticipating a bonanza”</i>	NY Times, 1/31/88
Pharmaceutical industry as villain—hormone therapy <i>“false and misleading information with regard to its [hormone therapy’s] safety”</i>	LA Times, 7/12/02
<i>“massive drug company conspiracy”</i>	Wash. Post, 7/13/02
Researchers are worried that Wyeth will manipulate findings	Wash. Post, 10/19/02
<i>“hormone manufacturers have been skillfully and effectively skirting drug promotion restrictions for decades”</i>	Wash. Post, 3/18/03
Physicians or scientists as villains—aspirin <i>“denied the American people information that was obtained with their tax dollars”</i>	NY Times, 2/10/88
<i>“regulatory and professional opposition”</i>	NY Times, 3/18/88
Physicians or scientists as villains—hormone therapy <i>women treated as “guinea pigs”</i>	Wall St Journal, 7/10/02; Wash. Post, 7/11/02
<i>“When I asked my doctor if the HRT could have caused the cancer, he laughed at me.”</i>	LA Times, 7/14/02
<i>“cast doubt on the trustworthiness of medical advice and the value of expensive medical practices”</i>	USA Today, 7/24/02
<i>“Why should we trust FDA approval of any drug as safe and effective?”</i>	Wash. Post, 7/30/02

Figure 1. Weekly coverage of WHI and PHS, including important follow-up events.



Center for Demography and Ecology
University of Wisconsin
1180 Observatory Drive Rm. 4412
Madison, WI 53706-1393
U.S.A.
608/262-2182
FAX 608/262-8400
comments to: kswallen@ssc.wisc.edu
requests to: cdepubs@ssc.wisc.edu