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# COMMENTARY

## Improving Public Understanding: Guidelines for Communicating Emerging Science on Nutrition, Food Safety, and Health

*For Journalists, Scientists, and All Other Communicators*

*Based on an advisory group convened by the Harvard School of Public Health and the International Food Information Council Foundation\**

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Twenty-five years ago, the chances were slim that a food and health-related study in a scientific journal would make the evening news or greet readers in their morning newspapers. Now, hardly a week goes by when a breaking dietary study doesn't make headlines.

There are a number of reasons why. Public interest in nutrition and food safety has increased dramatically. And food stories—because they are inherently so personal—make for compelling news. Just as important, scientists have much to gain from increased visibility. And the same holds true for the journals that first publish the studies or other communicators who have an interest in advancing public understanding of the issues.

But there's another reality about emerging science, the media, and the public. And that's confusion. Surveys tell us that the high volume of media coverage has not brought clarity to or improved understanding of a topic of such obvious impact. More has not always meant better.

Again, there are several reasons why. First, the public's unfamiliarity with the scientific process can make the evolutionary nature of research appear contradictory and confusing. Second, scientists, themselves, don't always agree on what constitutes scientific evidence sufficient to warrant changing recommendations to the public. And, perhaps most important of all, how emerging science is communicated—by scientists, the journals, the media, and the many interest groups that influence the process—also can have powerful effects on the public's understanding, on its behavior and, ultimately, on its well-being.

To examine these issues and assist the communications process, the Harvard School of Public Health and the International Food Information Council Foundation convened an advisory group of leading experts. Following the initial meeting in Boston, Massachusetts, a series of eight roundtables was held around the country involving more than 60 other nutrition researchers, food scientists, journal editors, university press officers, broadcast and print reporters, consumer groups, and food industry executives. (See "Appendix" section.)

Based on input from the participants at these meetings, a set of guiding principles for the communication of emerging science has been developed. The first draft of guidelines was subse-

quently reviewed by a second meeting of advisory group members and revised, and the final draft circulated to roundtable participants prior to publication. At the heart of these principles is the belief that food-related science *can* be effectively communicated in ways that serve both public understanding and the objectives of the communicators.

Of all the questions surrounding the communication of food-related studies, perhaps the most basic is, should single studies be communicated at all to the public at large? Almost by definition, much of the information involved is preliminary, not conclusive, and therefore not a strong basis for change in public policy or behavior. Even so, these studies, and the news stories they spawn, can be useful in raising public awareness of key nutrition, health, and food safety issues—if they are expressed in enough context to enable the average person to weigh the information appropriately.

These guidelines are intended to suggest how that context can be provided. They outline the necessary data, disclosures, and contextual qualifiers to help the public evaluate a study's relevance and importance. However, there is no expectation that every news story will include all or most of the suggested information. Instead, these guidelines can help communicators focus on the most vital information the public should have in order to form the most useful net impression of a particular study's findings.

With each study, the information will vary. The key to evaluating one study may be the limitations of its methodology; for another, it may be an understanding of which population groups are most affected by the findings. These guidelines will help communicators ask key questions so that they can identify which specific answers will best inform the public.

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\*Correspondence to: Amelia Morgan, International Food Information Council Foundation, 1100 Connecticut Ave., N.W., Suite 430, Washington, DC 20036.

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The guidelines are presented in several groupings—first, general guidelines relevant for all, followed by more specific guidelines for scientists, journal editors, journalists, and interest groups. They purposely are expressed as questions, rather than imperative statements, to encourage self-inquiry and suggest measures of responsible communication. As such, they are intended to help ensure that sound science and improved public understanding are the ultimate guides to what is communicated and how.

HARVEY V. FINEBERG  
SYLVIA ROWE

## Advisory Group

Marcia Angell, M.D.

*The New England Journal of Medicine*

Elaine Auld, M.P.H.

Society for Public Health Education

David Baron

National Public Radio

Julianne Chappell

*Journal of the National Cancer Institute*

Harvey V. Fineberg, M.D., Ph.D., M.P.H.

Harvard School of Public Health

Beverly Freeman

Harvard School of Public Health

Jeanne Goldberg, Ph.D., R.D.

Tufts University

School of Nutrition Science and Policy

Mary Ann Howkins

*Glamour*

Timothy Johnson, M.D., M.P.H.

ABC News

George Lundberg, M.D.

*Journal of the American Medical Association*

Amelia Morgan

International Food Information Council Foundation

Michael Mudd

Kraft Foods

Richard Nelson

Monsanto

Tom Paulson

*Seattle Post-Intelligencer*

David Rosenthal, M.D.

American Cancer Society/Harvard University Health Services

Sylvia Rowe

International Food Information Council Foundation

Walter Willett, M.D., Dr.P.H.

Harvard School of Public Health

Margaret Winker, M.D.

*Journal of the American Medical Association*

Mary Winston, Ed.D.

American Heart Association

## General Guidelines for ALL PARTIES in the Communications Process

1. Will your communication enhance public understanding of diet and health?
  - Is the study credible enough to warrant public attention?
  - With the information you provided, will the public be able to properly assess the importance of the findings and whether they should have any immediate bearing on their food choices?
  - Have you avoided an overly simplistic approach that may inappropriately characterize individual foods, ingredients, or supplements as good or bad? Have you helped the public understand how the food, ingredient, or supplement can be consumed as part of a total healthful diet, or why it should not be consumed?
  - Have you appropriately represented the study's overall conclusions and avoided highlighting selective findings which, on their own, might present a misleading picture?
2. Have you put the study findings into context?
  - If the findings are preliminary and nonconclusive, have you made that clear?
  - If the findings differ with previous studies, have you indicated this and explained why? If the results refute previously released results, do you provide a weight of evidence comparable to the earlier findings?
  - Have you clarified to whom the findings apply? Have you avoided generalizing the effects when the study was restricted to populations of a certain age or sex or with specific genetic, environmental, or other predisposing conditions?
  - Have you included information about risk/benefit trade-offs of consuming or not consuming certain foods, ingredients, or supplements? Have you explained how these risks and benefits compare with other factors (e.g., level of physical activity, genetic history) that may also contribute to health?
  - In explaining a dietary risk, have you distinguished between population-wide estimates and individual risk? Have you cited statistics on absolute risk and not just relative risk, e.g., expressing an increase in incidence from "one in a million to three in a million" and not just as "three times the risk"?
3. Have the study or findings been peer-reviewed?
  - Has the study been peer-reviewed by independent scientists or published in a peer-reviewed journal? At the same time, have you understood that while peer review is an important standard, it does not guarantee the findings are definitive or conclusive?
  - If a study has not been peer-reviewed (e.g., a paper presented at a meeting or convention), are the findings so important that they should be communicated to the public before peer review?
  - Have you distinguished between actual study findings and editorials or commentaries that may have been written about the study? Have you clarified that an editorial is an expression of personal views and has not always been peer-reviewed? Have you investigated how widely held these views are or whether the editorial represents a narrowly-held opinion?

4. Have you disclosed the important facts about the study?
  - Have you provided adequate information on the study's original purpose, research design, and methods of data collection and analysis?
  - Have you acknowledged any limitations or shortcomings the study may have?
5. Have you disclosed all key information about the study's funding?
  - Have you publicly disclosed all funding sources for the study?
  - Are you reasonably confident of the study's objectivity and independence?
  - Have you considered what the funders stand to gain or lose from the study's outcome?
  - Have you allowed the validity of the science to speak for itself, regardless of the funding?

### **Communication Guidelines for Scientists**

1. Have you provided essential background information about the study in your written findings, or to journalists or others requesting it, in a language that can be understood?
  - Have you explained all details of the study including purpose, hypothesis, type and number of subjects, research design, methods of data collection and analysis, and the primary findings?
  - Are you reporting study findings consistent with the original purpose of the data collection?
  - Were appropriate scientific methods of inquiry used? Did you disclose any study shortcomings or limitations, including methods of data collection? Were objective health measurements used to help verify self-reports?
  - Was the study conducted in animals or humans? Are limitations of animal models noted in terms of their applicability to humans?
  - Have you waited to report the results until the study has been independently peer-reviewed? If not, did you disclose to the media that the findings are preliminary and have not yet been peer-reviewed?
2. Have you clarified dietary risks and benefits?
  - Did you explain the dosage of a substance or amount of food or ingredient that was linked to the health outcome? Is this amount reasonably consumed by the average individual?
  - What was the original risk of developing the disease? Have you expressed the new level of risk in terms of both absolute and relative risk?
3. Have you met the needs of the media?
  - Are you available for media interviews the day before/after the release? Do you make every attempt to respond to media inquiries in a timely fashion?
  - Does the news release prepared for the study communicate the primary findings faithfully and without exaggeration? Have you reviewed and approved the final version of your institution's news release?

### **Communication Guidelines for Journal Editors**

1. Does your embargo policy enhance public communication?
  - Do you make embargoed copies of the journal available to

- all journalists who agree to respect the embargo, not just a select group of reporters?
  - Do you notify scientists whose studies will likely receive press attention when the embargoed issue is being made available?
  - Do you provide the relevant articles from the embargoed journal to study authors so they can preview other related work in that issue, helping them respond to questions?
2. Do you encourage responsible media reporting on study findings?
    - If you issue a news release on an article in your journal, is it faithful to the underlying research? Does it provide adequate background information?
  3. Have you considered the effect of the study findings on consumers?
    - Have you considered what might be the effect of the study finding on the general public?
    - Does the study warrant an accompanying editorial to help put the findings into context? If so, is the editorial content included in the news release?
  4. Does your submission policy permit scientists to clarify results of abstract presentations with the media?
    - Does your submission policy make it clear that scientists presenting abstracts should submit the complete report for peer review? Have you stressed they should not distribute copies of the complete report of the study, or figures or tables from that study, to the media before publication in a peer-reviewed journal?

### **Communication Guidelines for Journalists**

1. Is your story accurate and balanced?
  - Have you established the credibility of your primary source?
  - Have you asked other reputable scientists and other third-party health sources if they believe the study is reliable and significant? Have these scientists reviewed the study?
  - Do the third-party sources you are quoting represent mainstream scientific thinking on the issue involved? If not, have you made it clear that such opinions or commentary differ from most scientific perspectives on this topic? If such opposing viewpoints are expressed by only one or two individuals, does the amount of coverage given reflect that these are clearly minority opinions?
  - Have you received and reviewed a copy of the study publication—not simply reviewed abstracts, news releases, wire reports, or other secondary sources of information?
  - After reviewing the study results and limitations, have you concluded it still warrants coverage? Have you objectively considered the possibility of not covering the study?
  - Are words used to describe the findings appropriate for the type of investigation? Cause and effect can only be shown directly in studies in which the intervention is the only variable modified between the experimental and control group.
  - Is the tone of the news report appropriate? Do you avoid using words that overstate the findings, e.g., “may” does not mean “will” and “some” people does not mean “all” or “most” people?

- Are the headlines, photo images, and graphics consistent with the findings and content of your article?
2. Have you applied a healthy skepticism in your reporting?
    - In talking to sources and reading news releases, have you separated fact versus emotion or commentary?
    - Do the study findings seem plausible?
    - Have you used any hyped or “loaded” terms in the headline or body of a report to attract public attention, e.g., “scientific breakthrough” or “medical miracle”? Does the report indirectly suggest that a pill, treatment, or other approach is a “silver bullet”?
    - Have you applied the same critical standards to all sources of information—from scientists, to public relations/press offices, to journals, to industry, to consumer and special interest groups? What does the information source have to gain if its point of view is presented? Have you considered a range of conflict-of-interest possibilities beyond dollars?
  3. Does your story provide practical consumer advice?
    - Have you translated the findings into everyday consumer advice? For example, if a study reports on the effects of a specific nutrient, have you considered identifying the foods in which it is most commonly found?
    - How do action steps relate to the larger context of existing dietary guidance (e.g., Dietary Guidelines for Americans, USDA Food Guide Pyramid, importance of balance, variety, and moderation)?
    - Have you provided credible national, state, or local resources where consumers can obtain more information or assistance on the diet and health topic—especially if the findings present an immediate threat to public health and safety (such as foodborne or waterborne illness outbreak), e.g., brochures, toll-free hotlines, online resources?
  4. Is your reporting grounded in basic understanding of scientific principles?
    - Are you aware of the difference between evidence and opinion? If not, have you consulted knowledgeable sources?
    - Are you familiar with the scientific method of inquiry and various terms such as hypothesis testing, control groups, randomization, double-blind study, etc.? Do you understand and communicate that science is evolutionary, not revolutionary in nature?
    - Are you familiar with different types of studies, why they are used, and the limitations of each?
    - Do you stay current on diet and health recommendations, so as to help identify the true significance of new findings?

## Guidelines for Industry, Consumer, and Other Interest Groups

1. Have you provided accurate information and feedback to the media?
  - Is your news release on the study in keeping with the findings, i.e., neither exaggerates or oversimplifies nor disregards or sensationalizes the findings? Does it provide new insight or help enhance public understanding of the study results?
  - Do you tactfully correct misinformation in the media? Do

- you provide scientific explanations of why the story is incorrect, not simply express opinions or judgments of a few individuals? Do you follow-up with journalists to acknowledge an accurate, insightful story?
2. Do you adhere to ethical standards in providing diet and health information?
    - Do you respect the embargo placed on a study, rather than attempting to scoop or “be first with” the news?
    - Have you avoided promoting or writing news releases on studies that have not been peer-reviewed? Have you acknowledged that results that have not been scientifically reviewed are preliminary findings and do not call for a change in behavior?
    - Have you identified your organization’s viewpoint and sources of funding?

## List of Further Resources to Accompany the “Guidelines for Communicating Emerging Science on Nutrition, Food Safety, and Health”

### Books

- Blum D, Knudson M, editors. A field guide for science writers. New York: Oxford University Press, 1997.
- Cohn V. News & numbers: a guide to reporting statistical claims and controversies in health and other fields. Revised ed. Ames (IA): Iowa State University Press, 1994.
- Gastel B. Presenting science to the public. Philadelphia: ISI Press, 1983.
- Kamrin MA, Katz DJ, Walter ML. Reporting on risk: a journalist’s handbook on environmental-risk assessment. Los Angeles: Foundation for American Communications, 1995.
- National Association of Science Writers. Communicating science news: a guide for public information officers, scientists, and physicians. 3rd ed. Greenlawn (NY): National Association of Science Writers, 1996.
- Rodgers JE, Adams WC. Media guide for academics. Los Angeles: Foundation for American Communications, 1994.
- Shortland M, Gregory J. Communicating science: a handbook. New York: John Wiley & Sons, 1991.
- Zinsser W. On writing well: an informal guide to writing nonfiction. 5th ed. New York: Harper Perennial, 1994.
- Evered D, O’Connor M, editors. Communicating science to the public. New York: John Wiley & Sons, 1987.
- Friedman SM, Dunwoody S, Rogers CL, editors. Scientists and journalists: reporting science as news. New York: The Free Press, 1986.
- Lewenstein BV, editor. When science meets the public. Washington (DC): American Association for the Advancement of Science, 1992.
- McRae MW, editor. The literature of science: perspectives on popular scientific writing. Athens (GA): University of Georgia Press, 1993.
- Moore M, editor. Health risks and the press: perspectives on media coverage of risk assessment and health. Washington (DC): The Media Institute, 1989.
- Nelkin D. Selling science: how the press covers science and technology. Revised ed. New York: W. H. Freeman, 1995.
- Burkett W. News reporting: science, medicine, and high technology. Ames (IA): Iowa State University Press, 1986.

- Fischer HD, editor. *Medicine, media and morality: Pulitzer prize-winning writings on health-related topics*. Malabar (FL): Krieger Publishing Co., 1992.
- Gannon R, editor. *Best science writing: readings and insights*. Phoenix (AZ): Oryx Press, 1991.
- Vander AJ, Sherman JH, Luciano DS. *Human physiology: the mechanisms of body function*. New York: McGraw-Hill, 1985.
- Berkow R, editor. *Merck manual of diagnosis and therapy*. Rahway (NJ): Merck Research Laboratories, 1992.
- Larson DE, editor-in-chief. *Mayo Clinic family health book*. New York: William Morrow, 1990.
- Herbert V, editor. *The Mount Sinai School of Medicine complete book of nutrition*. New York: St. Martin's Press, October 1990.
- IFIC review: how to understand and interpret food and health-related scientific studies. International Food Information Council Foundation, July 1997.
- Dunwoody S, Crane E, Brown B. *Directory of science communication courses and programs in the United States*. 3rd ed. Madison (WI): Center for Environmental and Educational Studies, 1996.

### Articles

- Shuchman M, Wilkes MS. Medical scientists and health news reporting: a case of miscommunication. *Ann Intern Med* 1997; 126:976–82.
- Multiauthored series. *Medicine and the media*. *Lancet* 1996; 347:1087–90, 1163–6, 1240–3, 1308–11, 1382–6, 1459–63, 1533–5, 1600–3.
- Taubes G. Epidemiology faces its limits. *Science* July 14; 1997.
- Barnes-Svarney P. Science writing today and tomorrow. *The Writer* 1994 Nov; 107: 15–7.
- Blakeslee A. Late night thoughts about science writing. *Quill* 1994 Nov/Dec;82:35–8.
- Dahir MS. Writing science & medical nonfiction: it's easier than you think. *Writer's Digest* 1995 Nov;75:29–31.
- Rowan KE. Strategies for explaining complex science news. *Journalism Educator* 1990 Summer;45:25–31.
- Miller JA. Journalist reading journals. *CBE Views* 1990 Apr;13:44–5.
- Ruppel-Shell E. The risks of risk studies. *The Atlantic Monthly* Nov;1987.
- Ross PE. Lies, damned lies & medical statistics. *Forbes* Aug 14;1995.

### Newsletters

- ScienceWriters. Newsletter of the National Association of Science Writers.
- Sciphers. Newsletter of Science Communication Interest Group, Association for Education in Journalism and Mass Communication.
- SEJournal. Newsletter of the Society of Environmental Journalists.
- Food Insight. Newsletter of the International Food Information Council Foundation.

### Workshops

- American Medical Association's Annual Medical Communications and Health Reporting Conference

### Online Resources

- EurekAlert! (<http://www.eurekalert.org>)
- FACSNET (<http://www.facsnet.org>)
- National Association of Science Writers (<http://www.nasw.org/>)
- New England Science Writers (<http://www.umass.edu/pubaffs/nesw/>)
- Society of Environmental Journalists (<http://www.sej.org>)
- Harvard School of Public Health (<http://www.hsph.harvard.edu>)
- International Food Information Council Foundation (<http://ificinfo.health.org>)
- Tufts University Nutrition Navigator (<http://navigator.tufts.edu>)

### Appendix

#### **Regional Roundtable Participants**

- Merle Alexander  
Food Writer, *The Oregonian*
- David Allison, Ph.D.  
Associate Research Scientist, Columbia University College of Physicians
- Elaine Auld, M.P.H., C.H.E.S.  
Executive Director, Society for Public Health Education, Inc.
- Cathy Barber  
Food Editor, *Dallas Morning News*
- Cookson Beecher  
Agricultural Reporter, *Capital Press*
- Amy Beim  
Reporter, *American Health*
- Dennis Bier, M.D.  
Professor of Pediatrics and Director, Children's Nutrition Research Center
- Carol Brock  
Food Editor, *Newark Times Ledger*
- Catherine Broihier, M.S., R.D.  
Freelance Writer
- Nancy Byal  
Executive Food Editor, *Better Homes & Gardens*
- Julianne Chappell  
Executive Editor, *Journal of the National Cancer Institute*
- Linda Ciampa  
Medical/Health Producer, *CNN-TV*
- Andrea Clark  
Editorial Assistant, *New Woman*
- Kristine Clark, Ph.D., R.D.  
Director of Sports Nutrition, Center for Sports Medicine, The Pennsylvania State University
- Patricia Cobe  
Freelance Writer

Anne Edelson  
Public Affairs, New York University Medical Center

Karen Elam, Ph.D.  
Senior Director, Consumer and Scientific Affairs, Nabisco, Inc.

Merle Ellis  
*Chronicle Features*, San Francisco

Robert Gravani, Ph.D.  
Professor of Food Science, Cornell University

Michael Greenwell  
Associate Director of Health Communications, Centers for Disease Control and Prevention

Kate Greer  
Editor, *Weight Watchers Magazine*

Phil Gunby  
Director, Medical News and Humanities, *Journal of the American Medical Association*

Bob Hahn  
Director of Legal Affairs and Research, Public Voice

Melanie Haiken  
Medical/Health Editor, *Parenting*

Joanne Lamb Hayes  
Food Editor, *Country Living*

Anthony Head  
Diet Watch Columnist, *Bon Appetit*

James Hill, Ph.D.  
Professor of Pediatrics and Medicine, University of Colorado Health Sciences Center

Sara Horton  
Editorial Coordinator, *Arthritis Today*

Mary Ann Howkins  
Food Editor, *Glamour*

Elizabeth Howze, Sc.D.  
Associate Director of Health Promotion, Division of Nutrition and Physical Activity, Centers for Disease Control and Prevention

Gerard Ingenthron  
Public Affairs Director, Monsanto Company

Candace Jacobs, D.V.M., M.P.H.  
Assistant Director, Food Safety and Animal Health, Washington State Department of Agriculture

Janis Jibrin, R.D.  
Freelance Nutrition Writer

Peggy Katalinich  
Food Editor, *Family Circle*

Kathy Knuth  
Director, Corporate Affairs, Kraft Foods

Sharon Lane  
Food Editor, *Seattle Times*

Valerie Latona  
Associate Editor, *Healthy Kids*

Susan Levy, M.S., R.D.  
Clinical Nutritionist, New York University Medical Center

Larry Lindner  
Executive Editor, *Tufts University Diet and Nutrition Letter*

Dawn Margolis  
Associate Editor, *Baby Talk*

Brian McDonough, M.D.  
Medical/Health Reporter, *WTXF-TV*, Channel 29 (Philadelphia), and Chair of the National Association of Physician Broadcasters

Jill Melton, R.D.  
Senior Food Editor, *Cooking Light*

Rochelle Melton  
Assistant Editor, *Seasons Magazine*

Elaine R. Monsen, Ph.D., R.D.  
Editor, *Journal of the American Diabetic Association*

Amelia Morgan  
Director of Media Relations, International Food Information Council

Michael Mudd  
Vice President, Corporate Affairs, Kraft Foods

Tom Paulson  
Medical/Health Editor, *Seattle Post-Intelligencer*

Colleen Pierre, R.D.  
Nutrition Writer, *Baltimore Sun*

Steve Pratt  
Food Writer, *Chicago Tribune*

Frances Price, R.D.  
Freelance Writer

Lawrence Proulx  
Health Reporter, *Washington Post*

Elizabeth Richter  
Public Television Consultant

Sylvia Rowe  
President, International Food Information Council (IFIC) and IFIC Foundation

Anastasia Shepers, R.D.  
Assistant Editor, *Environmental Nutrition Newsletter*

Elizabeth Somer, R.D.  
Author and Freelance Writer

Susan Starnes  
Medical/Health Reporter, *KHOU-TV* (CBS) (Houston)

Karen Straus  
Food Editor, *Vegetarian Times*

Blair Thompson  
Communications Manager, Washington Dairy Products Commission

Connie Welch  
Freelance Writer

Mary Winston, Ed.D.  
Senior Science Consultant, American Heart Association

Leslie Yap  
Health and Nutrition Editor, *Modern Maturity*