RECOMMENDATIONS/BEST PRACTICES

Reporting on science-based stories like the health effects of nutritive sweeteners requires a great deal of journalists. Not only do they need to understand an often complex and evolving scientific debate, they also need to translate the science into terms that can be understood by news audiences with little or no scientific training. But it's important to get this story right, because this is the only window that most news consumers have onto the intricacies of a scientific process that directly affects their everyday lives. This is truly "news you can use," and the goal should be to make the news as useful as possible.

Based on the findings of this study, we would make the following recommendations for journalistic best practices that would make future coverage of nutritive sweeteners more consumer-friendly. In principle, most of these recommendations could also be applied to other long-running scientific controversies over public health issues.

FOLLOW THE SCIENCE

When authoritative scientific bodies issue reports summing up the current state of scientific knowledge, reporters should pay attention.

With a never-ending stream of press releases touting new research findings, it is difficult for news consumers to know what really matters. Part of the problem is a conflict between scientific values and news values. In the scientific community new ideas are tested and re-tested before they become accepted, and the burden of proof lies with a new theory or discovery. For journalists the newest and most startling claim is the most newsworthy, whether it's later proved right or wrong.

Although journalists lack the luxuries of time and specialized knowledge that scientists take for granted, they can make use of resources provided by scientists to do their job better. Authoritative professional bodies often weigh in with formal statements on the current state of the evidence. In addition, researchers conduct literature reviews or meta-analyses that weigh all the available evidence. These tools provide something missing from news stories that focus entirely on what's new – the state of the science and the overall context of the debate.

In 2008 and 2012 clear statements from authoritative professional bodies addressed how HFCS and sugar related to each other and the obesity debate. First the American Medical Association and then the Academy of Nutrition and Dietetics issued statements concluding that the existing evidence did not support claims that HFCS has a unique role in causing obesity beyond the effects of any other form of sugar. The 2008 AMA statement was more cautious, calling for further research. The AND statement was more detailed, concluding that HFCS and sucrose were equivalent in their metabolic effects, subjective effects, and adverse effects such as risk of weight gain..

These statements could have provided meaningful reference points against which reporters could measure the significance of new research and theories. Yet the proportion

of coverage disputing the equivalency of HFCS and sugar actually increased after the ADA statement appeared. Using either the AMA or AND statements as a basis for discussing new research (or at least referencing them) would provide a meaningful context and frame new evidence as one small piece of information in a larger body of work and scientific thought.

MAKE REPORTING MORE EFFECT-IVE

Comments on the health effects of sweeteners were often too vague or imprecise to be useful to news consumers. Many assertions that HFCS or sugar was harmful simply urged people to avoid the substance or labeled it as unhealthy without further discussion. This left out important issues being debated by scientists. For example, is it dangerous at all levels of consumption, or can it be safely consumed in moderation? Is it harmful to everyone equally, or will the effect be greater on some individuals than on others? Without such follow-up information, news consumers lack the knowledge necessary to take appropriate action

EXPERTS – TRUST BUT DIVERSIFY

Scientific experts make up a significant portion of the sources in stories on nutritive sweeteners. They not only provide information but also lend authority to the reporter's conclusions. But experts can have agendas of their own. Whether it is promoting a new book, a new research center, or a broader public policy agenda, even independent academic researchers can have their own interests that shape the opinions they express. Recognizing and identifying such agendas serves the public as much as pointing out the financial interests that may color the views of industry scientists.

This problem is confounded by the tendency of reporters to return repeatedly to a small group of experts with high public visibility and media skills. The most heavily quoted experts in our study are all recognized authorities in their fields. They are also all active in supporting policy initiatives, and media opportunities provide publicity for the causes they support. With the best will in the world, their public commitments and activities nonetheless make them unrepresentative of the scientific community as a whole.

For example, the most visible scientist in our study, Dr. Robert Lustig is well known for characterizing sugar as a "poison" that is "evil." Few scientists would be comfortable using such terms, which is one thing that draws journalists to him – his quotes are unencumbered by the usual qualifiers. But the attention he draws from reporters may make his positions seem more prominent than they actually are within the scientific community.

While it is not always possible to find experts representing all points of view in a health controversy, it is certainly possible to diversify the pool of experts beyond the "usual suspects." Reporters have only to access the review articles, meta-analyses or statements by professional societies discussed above, in order to find experts on a given

topic who may be hiding in plain sight. Their peers know who they are; it is up to reporters to communicate their expertise to news consumers.

ID THE DETAILS

News stories aren't scientific journal articles, but some details about scientific studies are necessary to help ordinary readers or viewers make sense of a story. In the HFCS and sugar debate, five areas in particular would benefit from more detailed reporting:

Specify the dose A basic principle of toxicology is that the dose makes the poison. Identifying the dosage makes for healthy journalism. Fewer than half of the discussions of studies mentioned how much sweetener the test subjects were given. In the majority of cases, news consumers could not tell whether test subjects were getting the equivalent of a can of soda or a case of soda. This is particularly important in reporting on animal studies, which often involve huge dosages far beyond normal human consumption.

Identify the research design
Research on the health effects of sugars crosses many boundaries. It includes research on humans and animals; basic research on chemical or cellular properties; clinical and epidemiological studies; experimental and observational studies; secondary research that re-analyzes existing data, etc. News consumers need to know what kind of research a new finding is based on, and how this affects the conclusions that can be drawn from it.

Discuss how the sample was selected.
Journalists did better at mentioning the size of research samples than the method of selecting them. News consumers were often told nothing about how samples were selected in the research cited in the HFCS and sugar debate. Whatever sample selection techniques were used in the research, it is important to mention them when assessing the meaning and importance of results.

Report measures of statistical significance.
Research that makes it through the vetting process for peer reviewed journals will typically report statistically significant findings; this information should be passed on to readers. A simple phrase like "researchers found a statistically significant relationship between . . ." would be an improvement over much current practice. (Statistical significance doesn't necessarily imply theoretical significance, but that's another story.)

Put research in wider context
A journalist's shocking new finding is a scientist's outlier that needs further verification. Mirroring the point we made above, science is a cumulative process, and each new piece of data is weighed against existing models and understanding before being embraced as accepted fact. Many new research results leave a very

different impression when viewed in the light of previous work. It is important for news consumers to be aware of this wider context.

Appendix: Content Analysis

This study used the social scientific research technique of content analysis. This technique allows researchers to classify statements objectively and systematically according to explicit rules and clear criteria. The goal is to produce valid measures of program content, and the hallmark of success lies in reliability. Other investigators who apply similar procedures to the same material should obtain similar results, although their interpretations of those results may differ.

Clear rules and standards have to be set for identifying, measuring, and classifying each program. In making each decision, researchers are applying these rules, not expressing their own opinions. If the rules are sufficiently clear, two investigators working independently will come to similar conclusions, regardless of their personal opinions about the subject matter. Thus, a well-done content analysis combines an appropriate system of rules and categories with a successful application of that system to the material under review.

Content analysis is not a panacea. The quality of the study depends on the way the coding categories are constructed, the clarity and appropriateness of the rules that guide coders, and the skill of the coders in applying them. Nonetheless, the difference between content analysis and casual monitoring is akin to the difference between scientific polling and man-on-the-street interviews. Indeed, content analysis is to the study of communications as scientific polling is to the study of public opinion.

There are two basic forms of content analysis. Quantitative analysis measures specified messages in numerical terms. It presupposes the existence of well defined, mutually exclusive categories which are used to examine the data. Qualitative analysis, sometimes referred to as thematic or emergent analysis, lacks numerical precision, but is more sensitive to the nuances and differences between stories. It usually lacks the specified or defined categories of quantitative analysis. These two forms of research complement and supplement each other.

Researchers first employ qualitative techniques when exploring new territory where existing coding categories may not apply. This involves canvassing the universe of content to be examined. Extensive notes are taken on each item dealing with substance, style, and format. After this is completed, the notes are compared to see what common themes, symbols, and attributes emerge. From this information, researchers develop categories that are eventually used in the quantitative analysis. These qualitative techniques help research become "data sensitive" by developing categories that specifically accommodate the research material. Emergent analysis also allows researchers to record qualitative examples that can be used later to illustrate the quantitative categories.

This project combined there two research strategies. The first phase employed a qualitative emergent analysis which conceptualized and operationalized the system. Once the analytic categories were developed and pre-tested, they became the basis of the quantitative analysis. Researchers spent about two weeks on the qualitative analysis and developing the final coding categories. Two coders, in conjunction with the project director, spent several weeks in training to learn all of the categories and arrive at reliable

decisions. A minimum reliability of 80% was required for variables to be retained in the final analysis.