

# Interpreting Health Studies: Science Panel Offers Tips for Journalists

By ACSH Staff — October 29, 2007

**New York, NY -- October 2007.** Widespread misinterpretation of health-related research, especially reports that conflate association with causation, leads to confusion and mistrust of health advice, according to physicians and scientists associated with the American Council on Science and Health (ACSH).

A new ACSH publication, "[Distinguishing Association from Causation: A Backgrounder for Journalists](#) [1]," explains some of the basic issues and pitfalls involved in interpreting scientific studies. The paper offers tips to assist journalists and consumers in making sense of scientific reports.

"The news media are awash with headlines about the supposed risks or benefits of various foods, drugs, environmental chemicals or dietary supplements," said ACSH president Dr. Elizabeth Whelan. "But the supposed causal connections between exposures and health effects are often conflicting or change over time," she continued.

The ACSH report describes the different types of studies scientists use to explore links between exposures and health. In addition, it presents important criteria for distinguishing if a link between an exposure and a health effect is truly causal (e.g., smoking and lung cancer) or if the connection is merely an association (e.g., carrying matches and lung cancer). The most useful criteria include:

- *Temporality.* For an association to be causal, the cause must precede the effect.
- *Strength.* Scientists can be more confident in the causality of strong associations than weak ones.
- *Dose-response.* Responses that increase in frequency as exposure increases are more convincingly supportive of causality than those that do not show this pattern.
- *Consistency.* Relationships that are repeatedly observed by different investigators, in different places, circumstances and times, are more likely to be causal.
- *Biological plausibility.* Associations that fit the known biology of the disease or health effect under investigation are more likely to be causal.

"Imprudent optimism about the significance of results or the importance of a discovery can lead consumers to mistrust scientific evidence or to ignore it entirely. Unfortunately, over-interpretation or emphasis can lead consumers to believe that a harmless exposure is dangerous, or conversely that some useless or dangerous product might be beneficial," stated Dr. John W. Morgan, cancer epidemiologist at Loma Linda University.

Download the full ACSH report, "[Distinguishing Association from Causation: A Backgrounder for Journalists](#)"

[1], " at ACSH.org.

The American Council on Science and Health is an independent, non-profit consumer education organization concerned with issues related to food, nutrition, chemicals, pharmaceuticals, lifestyle, the environment and health.

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