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# Occupational Medicine Clinical Update

**Occupational Health Clinics for Ontario Workers Inc, Sarnia-Lambton**

*Dedicated to the prevention of occupational illness and injuries, and promoting the well-being of all workers*

*"The fact that a review article is published in a peer-reviewed journal, even a prestigious one, is no guarantee of scientific quality."*

## Should You Be Reading Review Articles?

*"We often turn to review articles to keep up-to-date with new information. A good review article can be a wonderful tool for a busy clinician, greatly reducing the amount of work required to find and evaluate new research findings."* [1]

This statement regarding reviews appeared in a 1997 article from *American Family Physician*. It presents the perhaps idealistic notion that physicians "often" take time to read review articles. The reality, however, may be quite different.

In many ways we, as physicians, have become the medical equivalent of the fast-food nation. The frenetic pace of office practice, compounded by shoe-horning a "life" into the few remaining hours in a day, has turned us into quick-fix medical info junkies. The flourishing of *Journal Watch*-style publications reflects our need for drive-thru window scientific input.

Consequently, for many of us "critical appraisal" has become the art of flash-scanning the table of contents of journals, as they arc gracefully into the nearest recycle bin.

Despite this sobering reality, it is true that a good review article can be an invaluable tool for quickly acquiring a large amount of information on a particular topic . However, the "bottom line" of a review article can also be a very poor representation of reality.

Flaws in methodology used to acquire, assess and interpret the studies used in a review can result in a skewed conclusion. Conflict of interest can also taint the veracity of a review. This is more prone to occur when the topic article is used to promote a therapy or intervention, or attack/defend an issue of causality (see box on page 2).

As one authority on critical appraisal of review articles states, "The fact that a review article is published in a peer-reviewed journal, even a prestigious one, is no guarantee of scientific quality." [2] Often the problems begin with the very people we turn to for advice - the experts.

The Problem with Experts

Since the time of Hippocrates the medical literature has relied on expert opinion in the form of "authoritative reviews." However, as Richard S. Wurman [3] points out in his book, *Information Anxiety*:

> *Familiarity breeds confusion. Those afflicted are the experts in the world who, so bogged down by their own knowledge, regularly miss the key points as they try to explain what they know. You ask them the time and they will tell you how to build a clock.*

Not only can experts sometimes have difficulty expressing the salient points of a topic they are too familiar with, studies have also shown they have difficulty agreeing with one another.

Consistency of peer-reviewer's ratings of journal articles have been shown to be poor at best - with correlation coefficients of 0.19 to 0.54 [4].

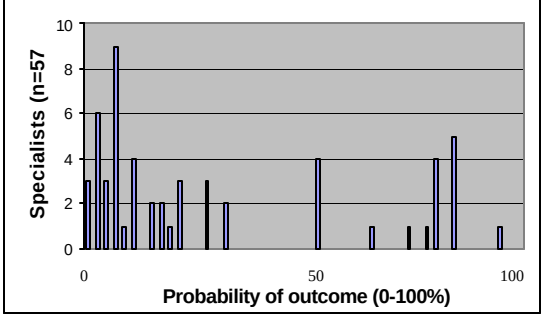
In another study, 57 specialists (who requested their field not be identified) were asked to develop a guideline for a common and important intervention (see figure 1). They estimated the probability (%) of the particular outcome for patients receiving the intervention in question. As can be seen from the graph in figure 1, the specialists' estimates ranged from 0 - 100% [4].

*(Continued on page 2)*

**Table 1: Guidelines for assessing review articles**
(Adapted from Mulrow [5] and Oxman/Guyatt. [7])

| | |
|---|---|
| 1. Purpose of article | Clearly stated? |
| 2. Data identification | Citation search sources identified? |
| 3. Data selection | Inclusion/exclusion criteria specified? |
| 4. Validity assessment | Standardized methodological assessment of primary study validity? |
| 5. Reproducibility | Assessment of primary studies reproducible and free from bias? |
| 6. Variation | Variation in findings of primary studies analyzed? |
| 7. Synthesis | Findings of primary studies combined appropriately? |
| 8. Conclusions | Reviewers conclusions supported by the data cited? |

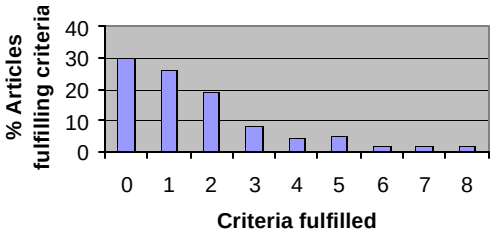
**Figure 1: Specialists' estimates.** (Adapted from Oxman. [4])



Moving from Authoritative to Systematic Reviews

Due to the recognized shortcomings of authoritative reviews, the last two decades have seen increasing emphasis on the use of systematic methods in producing review articles. In 1997, Mulrow [5] applied

**Figure 2: Percentage of review articles that fulfilled specific methodologic criteria. (adapted from Mulrow. [5])**




explicit criteria to 158 different reviews (see figure 2). However, she found a significant lack in the use of systematic methods to identify, assess and synthesize the information in these reviews.

The essential elements of a systematic review are listed in table 1 (page 1). There are several articles in the references that provide the specifics of these criteria. For the obsessives among us, an excellent on-line resource that goes over these issues in detail is the Cochrane Collaboration Reviews (www.cochrane.org) This resource was established in response to the work of people like Mulrow, Oxman, and many others who, "...drew attention to the poor scientific quality of healthcare review articles" [6].

The Cochrane Collaboration has focused primarily on reviews of randomized controlled trials (RCT's) because they are more likely to provide reliable data than observational studies (case-control and cohort) which, out of necessity, predominate in occupational and environmental investigations.

Even with the transparency that should exist with reviews of RCT's, it is interesting that the first section in the Cochrane Reviewers Handbook deals with the issue of conflict of interest:

> *Cochrane Reviews should be free of any real or perceived bias introduced by the receipt of any benefit in cash or kind, any hospitality, or any subsidy derived from any source that may have or be perceived to have an interest in the outcome of the review.*

Conclusion

Review articles do represent a potentially valuable resource for busy clinicians in need of a comprehensive review of the literature on a topic critical to their practice or understanding. It is important to recognize the potential limitations of authoritative reviews compared to those using systematic methods based on explicit criteria.

Even when systematic methods are employed, look carefully at the bottom line and ask yourself if the conclusion may affect someone else's "bottom line." If you are uncertain, be aware of the resources available to help you find out.

Remember that reading a review article is an investment of your most valuable resource - time. Make sure you know how to invest wisely.

The "Bottom Line" on Review Articles

- Potentially valuable resources
- Is there potential for conflict of interest?
- Are systematic methods used? (see table 1, page 1)
- Do you have resources/colleagues to help with detailed critical appraisal of the review if necessary?

All Reviews are Not Created Equal

A recent review by a group of experts published in a peer-reviewed journal came to the conclusion: "There is no scientific evidence of a causal relationship between exposure to substance x and disease y."

Without knowing anything about the topic several questions come to mind. How can a definitive statement such as, "There is no evidence…" be made in a review of largely observational studies (numbering almost 100 in the references)? What would be the need for the review in the first place if there was *no* evidence?

Another group reviewing the same literature concluded: "While the causal relationship between substance x and disease y remains unproven, the data makes this association highly probable."

How can such disparate conclusions be reached based on the same evidence? The answer often comes in the impetus for the review. An investigation revealed that the former paper was actually a medical-legal defence, subsequently published as an independent scientific review.

Sometimes conflict of interest in a review is not so obvious. A recent review concluded that there was no significant relationship between certain exposures and disease z. It became apparent that inappropriate weighting and combination of data, along with clearly biased dismissal of positive studies, had allowed the author to come to this conclusion.

Further investigation into the author's background revealed a lengthy relationship as a consultant for a multinational manufacturer of the substances in question. This was not declared in the article, nor was the source of funding.

Similarly, this newsletter is the product of physicians working on behalf of workers. There is therefore, potential for conflict of interest and bias. However, anyone reading this publication is plainly aware of this potential. Hence, there is a concerted effort on our part to be accurate, objective and accountable for the validity of our statements.

*References*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*Additional references available on request, but not provided here due to space constraints.*


O H C O W

***Occupational Health Clinics for Ontario Workers Inc, Sarnia-Lambton***



171 Kendall Street
Point Edward, Ontario
N7V 4G6

Phone: 519-337-4627
Fax: 519-337-9442
Email: sarnia@ohcow.on.ca
WEBSITE:WWW.OHCOW.ON.CA

Edited by:
*Warren Teel, M.D.*

Medical Staff:
*Abe Reinhartz, M.D.* areinhartz@ohcow.on.ca
*Jim Mackenzie, M.D.* jmackenzie@ohcow.on.ca
*Warren Teel, M.D.* wteel@ohcow.on.ca