

Posters and Presentations at the RESPIRATORY CARE OPEN FORUM: Valid and Objective, or Biased and Misleading?

During the American Association for Respiratory Care (AARC) 54th International Respiratory Congress in Anaheim next month, posters corresponding to the 269 abstracts published in this issue of the Journal will be displayed and discussed at 18 different OPEN FORUM poster symposia. Along with networking with other professionals and the opportunity to learn about the latest products and services, the convention will offer its attendees 2 premier features: the educational sessions and the RESPIRATORY CARE OPEN FORUM. By means of individual lectures and symposia, the scheduled educational sessions review and update what is known about topics important to the practice, teaching, and administration of respiratory care. In contrast, the OPEN FORUM introduces new findings, research results, and case analyses never previously published or presented to a national or international audience. This editorial reviews the purpose and history of the OPEN FORUM, mentions some of the shortcomings of abstracts and the challenges posed by poster presentations with respect to reporting new findings, and provides a practical “user’s guide” for attendees aimed at facilitating an accurate appreciation of the validity and importance of the work presented.

What Is the OPEN FORUM?

According to the dictionary (<http://www.merriam-webster.com/dictionary/forum>), a forum is a public meeting place for open discussion, or a public meeting or lecture that involves audience discussion. The first OPEN FORUM at the 1973 Annual Convention of the American Association for Respiratory Therapy was conceived with just that definition in mind.¹ The idea was to provide a place and a mechanism for convention attendees to present their own original work, and thus to both disseminate their findings and get feedback from their peers. Seven abstracts were presented that first year.² This number increased steadily in subsequent years, to 30 in 1979 (the first year the abstracts were published in RESPIRATORY CARE) and to 53 in 1980. In 1981, supervision of the OPEN FORUM at the convention was taken over by the Journal.¹ By the time the AART became the AARC in 1986, abstracts submitted for presentation at the OPEN FORUM had been separated into the 3 categories—original investigations, method or device evaluations, and case studies—in use today.³ Finally, in

1987, the OPEN FORUM completed its evolution into its present configuration, with all abstracts grouped into mini-symposia according to subject matter and each poster summarized orally by its presenter after a period of free viewing, followed by audience discussion.⁴

When I first attended the OPEN FORUM in 1980, it was held in a basement meeting room some distance from the convention’s lecture halls. Aside from the presenters and Philip Kittredge, RESPIRATORY CARE’s editor, the attendees at that OPEN FORUM could literally be counted on the fingers of one hand, and there were very few questions from the audience. How times have changed! At the last half-dozen International Congresses, many of the paired, simultaneous OPEN FORUM sessions—now highlighted in the printed program and prominently featured in the convention center—have been standing-room-only, with vigorous audience participation and stimulating discussions.

Why Do People Submit Abstracts to the OPEN FORUM?

There are several potential motivations for submitting an abstract:

1. To advance knowledge, improve patient care, contribute to the profession, and facilitate personal growth
2. To solicit comments and criticism prior to manuscript preparation or submission
3. To obtain permission and/or support for attending the convention
4. To advance and publicize one’s point of view, approach, or procedure
5. To promote the sales or use of a specific product or service

The first of these has always been assumed by program committees and convention attendees to be the main drive for presenting and publishing original work. It is the highest, most altruistic reason for doing research, and is unquestionably behind many if not most submissions. Similarly, the desire for informal peer review and the opportunity to improve one’s work prior to submission for publication is a valid and commendable reason for sending in an abstract. However, motivation 3 also needs to be

acknowledged as a practical reality. For many would-be International Congress attendees, having an abstract accepted for presentation at the OPEN FORUM is the only way they can get financial support or sponsorship by their institution, or obtain permission to travel to the meeting.⁵ This may especially be the case for attendees from outside the United States.

But there are also other potential motivations, of which readers of abstracts, viewers of posters, and attendees at symposium discussions need to be aware. Individuals may use the OPEN FORUM to draw attention to a pet topic or personal agenda, or to promote a particular point of view. This motivation is usually pretty apparent, and is not necessarily a bad thing, so long as it does not have financial implications. It is motivation 5—commercial motivation—that is the problem, and the primary stimulus on the part of the Journal's editors for the writing of this editorial.

Bias and Conflict of Interest

The terms “bias” and “conflict of interest,” which are the crux of the matter here, are defined in Stedman's Medical Dictionary as follows:

- Bias: Any trend in the collection, analysis, interpretation, publication, or review of data that can lead to conclusions that differ systematically from the truth; deviation of results or inferences from the truth, or processes leading to deviation.
- Conflict of interest: A conflict between the professional or personal interests and needs of a health care provider and his or her professional responsibilities toward a patient or other consumer (eg, financial gain based on a particular outcome or use of one drug rather than another).⁶

They are not the same thing. Bias is always a serious problem, because it diverts us from the truth. Great efforts are made by investigators, by editors, and by educators to prevent bias, to identify it when present, and to avoid allowing it to exert inappropriate influence in decision making. Conflict of interest promotes bias, but the existence of the former does not always imply that the latter is present.

Although there are other kinds of conflict of interest in respiratory care,⁷ commercial motivation in the presentation and interpretation of ostensibly objective research findings is of greatest concern to the OPEN FORUM, to the Journal,^{8,9} and in scientific publishing in general.¹⁰ The potential for conflict of interest can exist whether or not a researcher believes that the relationship affects his or her scientific judgment.¹⁰

Because respiratory care as a field is intimately involved with medical devices and their application, close interac-

tion among clinicians, researchers, and industry is not only inescapable but also desirable, and ultimately in the best interests of patients.⁷ However, when commercial interests are—or could be—involved in the carrying out and interpretation of research, the need for transparency and disclosure becomes acute. As anyone who has served on the AARC's Program Committee or moderated an OPEN FORUM symposium can attest, there have been a few egregious examples of blatant product promotion disguised as objective research. By implication, just as a few bad apples threaten to spoil the whole barrel, these unfortunate instances have brought increased scrutiny to all industry-connected OPEN FORUM abstracts, and made it harder for those who do honest, objective research to convince everyone that it was not commercially motivated.

Some General Observations About OPEN FORUM Posters

The Journal has published a number of articles aimed at helping aspiring researchers, abstract submitters, poster preparers, and project summarizers,¹¹ and other excellent resources are available.¹²⁻¹⁶ However, this editorial is for the OPEN FORUM attendee, rather than for those carrying out the research and staffing the posters. It focuses on what attendees should know and how they should approach the process to get the most benefit from the findings presented while recognizing and avoiding being misled by bias and conflict of interest, whether intentional or unintentional.

Although it requires a great deal of effort and causes no small amount of anticipatory anxiety, presentation of one's work at the OPEN FORUM is not the final step in the creation of new knowledge. Instead, it can be thought of as a way station along the road leading from research concept to data-collection to peer review to formal publication as part of the literature of respiratory care.¹⁷ The purposes of abstracts and poster presentations are to provide preliminary communication of findings, to facilitate feedback to presenters in order for them to improve and refine their manuscripts, and to promote interaction between researchers and attendees in the context of the study subject. OPEN FORUM abstracts, posters, and discussions do not constitute finished work: they present work in progress, not yet vetted by the scientific community, and not to be used as sole justification for changes in clinical practice. This is why citing research that has only been presented in abstract form is frowned upon in scientific publishing.

Like other professional organizations, the AARC limits the size of abstracts submitted to the OPEN FORUM, so only a limited amount of information about the study or case can be included.¹⁸ One can seldom tell just from the abstract whether the study design was optimal, the measurements appropriate, the results valid, or the interpretation justified.¹⁹ As a result, the attendee needs to approach each

Table 1. Important Questions in Evaluating an Abstract or Poster That Describes a Clinical Study

Is the study's hypothesis or specific purpose clearly stated? The less focus a study presentation has, the more easily a bias is concealed.
Is there evidence of equipoise in the design and implementation of the study? That is, was the study designed and carried out <i>to prove that</i> something is true or an intervention is effective, or <i>to determine whether</i> it was so?
Was the study proposal submitted to the institutional review board before the study began?
If the study was done as a quality-improvement project, was the decision to submit an abstract made beforehand or only after the project was completed? (The requirements for appropriate quality-assurance projects and clinical research may differ. ²³)
What are the study's limitations and weaknesses? (Frank acknowledgement and discussion of these strengthen rather than weaken the poster.)
How do the findings differ from those of previous studies, and why are the differences important?
Are the conclusions and recommendations justifiable by the study's design and results?
What should I as a clinician (or educator, or student) take away from the study, and what changes in clinical practice do the authors recommend as a result of the study?

poster with an open mind, yet also with a certain amount of skepticism. Most OPEN FORUM abstracts are never published as full papers, some because the investigator/presenter dropped the ball and failed to complete the project,²⁰ but many because they were never "publishable" in the first place, primarily because of poor study design and other basic methodological problems that were not apparent in the abstract.²¹

Evaluating an Abstract or Poster That Describes a Clinical Study

A clinical study is the highest level of research activity in respiratory care. Not only can it be more directly applicable to patient care than equipment evaluations and anecdotal case studies, but also it is typically more complicated and difficult to carry out. Although not so obviously as in device evaluations, bias can also be a problem in clinical studies, not only because of commercial implications involving products or services but also because of advocacy and lack of objectivity on the part of the investigators.²²

Getting a sense of the investigator's overall approach to the project is important. Was the study designed *to prove that* the intervention is effective—to validate the investigator's conviction that it works or is better than other interventions—or *to determine whether* such was indeed the case? That is, does it appear that the investigator had *equipoise* with respect to the study's outcome? Equipoise is a state of uncertainty as to the balance of benefits and harm that may result from 2 or more therapeutic regimens, and an indication for a randomized controlled trial.⁶ It also refers to a balance among different social, emotional, or intellectual influences bearing on the researchers. Clearly, it may be hard for participants in clinical studies not to have personal opinions about the efficacy of the interventions they are studying, or to have preconceived notions about what they will find. However, the essence of clinical research is to design and carry out the study in such a way as to eliminate bias as much as possible.

Table 1 offers a list of questions for OPEN FORUM attendees to consider as they evaluate an abstract and poster that describe a clinical study.

Critiquing an Abstract or Poster That Describes a Product Evaluation

Though clinical studies of drugs and other interventions are the focus of most concern for potential industry bias in most other areas of health care, in respiratory care it is the evaluation of devices where this is most often encountered. Product evaluations are an integral part of respiratory care research,^{7,24} and it is important to critique them objectively in assessing their potential validity and contribution to the field.

Table 2 lists 10 aspects of a product evaluation for OPEN FORUM attendees to consider. The attendee should not hesitate to query the poster presenter about these things. Though their presence would not necessarily equate to bias, they would indicate the existence of conflicts of interest. Identifying one or more of the things in the table should prompt further inquiry with respect to the possibility of bias in the design or conduct of the study, or in the interpretation of its results.

Attendees should be aware that bench evaluations can be set up so that one device will perform better than others simply as a result of the study design, although in highly technical bench studies this may not be easy to determine. Another important question to ask is, was the device studied the version that anyone could purchase, or was it an in-house prototype? Though the latter situation would not necessarily mean that the results were not important, the attendee should be aware of the distinction.

Some product evaluations come directly from industry. That is, one or more of the authors is an employee of the manufacturer of the product studied. This arrangement does not necessarily mean that the study's findings are biased. In fact, in recent years several such studies have passed peer review in full manuscript form and been published in *RESPIRATORY CARE*. However, because of the conflicts of

Table 2. Critiquing an Abstract or Poster That Describes a Product Evaluation

It would be reasonable to be concerned about possible bias and/or lack of objectivity if the developer, manufacturer, or vendor of the product did any of the following:
Funded the study, solely or in part
Proposed the study to the investigator
Designed the study
Participated in the data collection
Performed the statistical analysis of the data
Made (or provided the data for) the figures and/or tables
Had final approval over what was included in the abstract, poster, or manuscript
Designed or produced the poster
Paid for or otherwise supported the presenter's trip to the convention
Coached the presenter about how to present the study or respond to questions about the product

Table 3. Important Questions in Evaluating an Abstract or Poster That Describes an Individual Case

If the case deals with a new intervention, or a modification of an established intervention, or a departure from the institution's normal procedure, did the patient or the patient's legally authorized representative understand that it was experimental, and did they give informed consent?
Is the case made convincingly that something other than standard care was necessary in this patient?
Is enough clinical information provided to fully assess the intervention and its effects?
Do the physicians who took care of this patient know about this abstract, and were they given the opportunity to contribute?
In what ways might the intervention be dangerous or make things worse in other patients?
What generalizations and recommendations are justifiable based on the experience with this patient?
Has the intervention been adopted for clinical use in the author's institution, or was it used only this one time?
Has the observation or intervention led to a more formal evaluation or comprehensive study?

interest inherent in such studies, they merit special scrutiny of their design, methods, and data reporting and interpretation.

Assessing an Abstract or Poster That Describes an Individual Case

Although reports of individual cases are the bottom rung of evidence-based medicine's ladder, and should not serve as the basis for changing practice, case reports can be an excellent means of illustrating disease mechanisms or physiology, reminding clinicians of potential problems, and generating hypotheses to be addressed in formal studies.²⁵ Individual case studies have several important shortcomings, however, and many case studies turn out to be deeply flawed. Sometimes a case study turns out to be a product evaluation in disguise—and usually a biased one—presented as an interesting case of condition X, but in reality a vehicle for promoting product Y. It is therefore important for the OPEN FORUM attendee to maintain an attitude of objectivity and skepticism when assessing an abstract and poster in this category (Table 3).

Concluding Comments

The OPEN FORUM is intended to be just what its name implies: an open exchange and discussion of new infor-

mation of potential interest to its attendees. The bottom-line goal for this editorial, and for all the presentations at the OPEN FORUM, is transparency. Attendees deserve the truth. The questions and points raised here should be considered fair game in interacting with poster authors and summary presenters. If a poster or abstract has any of the problems listed in the tables above, attendees need to be aware of them so that they are not misled. On the other hand, if the study has no potential weaknesses or biases, everyone needs to know that too, to place the work in its best light. If the system functions as intended, presenters and attendees alike will benefit. Presenters will get valuable feedback for preparing their full manuscripts for submission, and attendees will expand their knowledge, gain new perspective, and perhaps be stimulated to submit their own abstracts to a future OPEN FORUM.

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