Abstracts of Clinical Investigations
A New and Standardized Format

I

witnessed an historic innovation in biomedical communications during my tenure as a Senior Editor of the Journal of the American Medical Association from 1962 to 1967. During this period, the summary and conclusions of articles were moved to the beginning of each report in JAMA. This move gladdened the hearts of the non-physician science writers who worked closely with us in publishing scientific investigations published in AMA journals. I recall one distinguished lay-journalist who teased our editorial staff by noting, "I don't understand the philosophy of physician editors! A fundamental precept in journalism is that in the opening paragraphs the author should provide for the reader the key messages which his story is intended to convey. Instead of following this principle, you medical editors keep as a deep dark secret the major conclusions of every study. The summary appears on the last page and the reader may have to plow through hundreds of words of discussion and other details before he can get to the summary! I'm glad you folks have entered the 20th Century!"

JAMA and the Canadian Medical Journal were the first to adopt this new role for abstracts, and other journals, including the Lancet, the New England Journal of Medicine and the Annals of Internal Medicine, followed suit soon thereafter. Today it is the rare biomedical publication which does not feature a summary or an abstract at the beginning of each major scientific report. This change was particularly timely because the transition to computer storage and retrieval of scientific data occurred at approximately the same time. The presence of an informative abstract as the introduction to medical reports was of enormous assistance to computerization in institutions such as the National Library of Medicine and other national and international data banks. These national and international computerized services are now available to those who possess personal computers, as well as to medical libraries. Currently, it is possible to obtain abstracts or complete articles through computerized services. The recent emphasis on informative abstracts has made the tasks of the investigator, teacher and clinician infinitely more productive.

The worldwide acceptance of the abstract indicates the unique importance of this element of medical journalism. I am indebted to Dr. Edward Rosenow, a member of the Editorial Board of Chest, for his suggestion that we consider implementing in our journal a new concept proposed by an ad hoc working group for critical appraisal of the medical literature. This group suggested that "A solution to some of these information problems is for authors of articles with direct clinical implications to prepare their abstracts so that key aspects of purpose, methods and results are consistently described in a standardized manner with a partially controlled vocabulary." The working group prepared an outline of the information which they believe readers most need to discern the validity and applicability of an article "reporting a preplanned clinical investigation." They indicated that the key information needed by clinicians for selecting articles of high relevance and quantity were as follows:

1. Objective: the exact question(s) addressed by the article.
2. Design: the basic design of the study.
3. Setting: the location and level of clinical care.
4. Patients or Participants: the manner of selection and numbers of patients or participants who entered and completed the study.
5. Interventions: the exact treatment or intervention, if any.
6. Measurements and Results: the methods of assessing patients and key results.
7. Conclusions: key conclusions including direct clinical applications.

Preparation of abstracts in accordance with these new guidelines means that many would exceed the maximum of 150 words which we identify in "Preparation of Manuscripts." However, the importance of enhancing the value of abstracts for our readers makes it imperative that we offer an experimental period to give the authors the option of preparing longer abstracts (synopses) than currently permitted. We propose that abstracts which are prepared in accordance with these new guidelines may be 250 words for articles less than ten typewritten pages in length, and 300 words for longer articles. There will be no change in the synopses or abstracts for other departments such as case reports, special departments and review articles.

In accordance with the proposals cited above, we have modified the description of the preparation of the synopsis (abstract), page 52. Authors may wish to refer to the more detailed account of the preparation of such a summary which appears in the Annals of Internal Medicine 1987; 106:598-604. The Editorial Board of Chest and I would appreciate receiving your criticism and comments in the months ahead. We are eager to hear from you.

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Cephalosporins in the Treatment of Pneumonias

Dr. Quenzer (see page 531) provides the clinician with a lucid description of the development, pharmaceutical action, and appropriate utilization of the cephalosporins in the treatment of pneumonias. However, his most important contribution may be contained in the four short paragraphs on cost considerations that extend far beyond antibiotic usage.

Hospital administrators and medical directors are finding the viability of their institutions threatened from all sides. Capitated payments are limiting the ability of the hospital to rob from the rich and give to the poor—yet the poor are always with us. Technology is reducing the need for hospital beds, leaving in the hospital only the sickest of patients who require increased hours of nursing and ancillary time—yet critics of the high cost of health care point only to the subsequent rise in per-day hospital costs as evidence of waste and mismanagement. HMOs and PPOs now trade discounted hospital payments for the potential of inpatient hospital volumes.

In response, at first in public and university hospitals and now in the private sector, hospital formulary committees are being asked to reduce hospital costs by selecting the least expensive of closely equivalent drugs for use in the institution, closing the formulary to more expensive items. Dr. Quenzer expands our view from cost per dose to cost per day. Cost per day includes the time and cost of the pharmacist, the nurse, the medication technician and the ward clerk—all of whom are involved in the transcription of orders, administration and documentation of treatment, records of which are essential if the institution is to fare well under Quality Assurance review or malpractice attacks.

A single adverse complication which adds a week of hospitalization could easily wipe out a year's saving of a lower cost/day formulary item. Therefore, the potential for, and incidence of, toxic reactions must be considered against the demographic characteristics of the population served by the hospital. Laboratory tests that are routinely required with the use of a medication now assume significant cost importance.

When the patient leaves the hospital, will the less expensive medication enhance or decrease patient compliance and subsequent disease relapse? For example, long acting, once-per-day therapy has consistently been associated with increased compliance when compared to treatment requiring dosing four times per day.

Unquestionably, cost is and will be an issue in therapy. Clinicians must quickly take the lead in understanding and quantitating true costs before others "help" us.

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Inverse Ratio Ventilation

PEEP in Disguise?

We note with considerable interest recent reports of inverse ratio ventilation (IRV) of infants and adults with severe pulmonary dysfunction. IRV is a ventilation technique which uses markedly increased inspiratory-expiratory ratios of up to 4:1. Inspiratory time is prolonged up to 80 percent of the respiratory cycle with a corresponding decrease in time allowed for expiration. Physiologic effects of IRV are unproven, but proponents postulate improved gas diffusion, and recruitment and stabilization of alveolar units. We propose a simple mechanism which could account for the heretofore unexplained effects of IRV on pulmonary gas exchange. In addition, we venture a note of caution against indiscriminate and widespread implementation of this technique until mechanisms and effects are more fully elucidated.

Inadequate expiratory time in mechanically ventilated patients can lead to air trapping and occult positive end-expiratory pressure ("auto-PEEP," "inadvertent PEEP," or "intrinsic PEEP"). The effect is functionally similar to installation of a PEEP valve on the expiratory circuit of the ventilator; alveolar pressure remains positive throughout the respiratory cycle with transmission of pressure to the pleural and intravascular spaces. IRV allows little time for expiration and is in all probability analogous to use of low inspiratory flow rates with conventional ventilation in propensity for producing auto-PEEP.

Auto-PEEP is a relatively common but seldom appreciated occurrence. Neither the presence nor magnitude of auto-PEEP is apparent during usual ventilator monitoring. Auto-PEEP can most easily be demonstrated by brief occlusion of the expiratory circuit at end-exhalation. Alternatively, the increased pleural pressure could be measured with an esophageal balloon.

The beneficial effects on pulmonary gas exchange attributed to IRV could be entirely due to the presence of additional, albeit occult, PEEP. Despite the obvious