

FROM THE ACC

## President's Page: Too Much of a Good Thing

**I**nformation overload is the subject of intense investigation and concern. In testimony before a Congressional subcommittee on health, Dr. Edward Shortliffe defined the problem this way: "Clinicians have embraced new technologies rather quickly. But information technology presents some special problems for practitioners . . . It is not part of their education and seems foreign to the major thrusts of their professional interests . . . Too often physicians find that major investments resulted in inadequate systems solutions that failed to meet expectations . . ." (1). This concise description identifies an important issue faced by all physicians.

As physicians, we have been attracted either by the science of medicine and the art of applying this science or by the opportunity to add to the scientific base, in order to help patients with a broad range of clinical problems. These 2 facets continue to form the basis of medical practice today. Although straightforward in concept, it has become increasingly difficult to fully implement either facet in the current environment. This has resulted from several ongoing processes:

1. The pace of science continues to increase rapidly; every 5 years the total amount of printed knowledge doubles.
2. Technology has undergone a series of revolutions that have had a dramatic impact on communications opportunities.
3. Demands on physicians' time continue to escalate.
4. Patient and societal expectations about the quality of care play more prominent roles.

These issues have led to the development of information overload, which has been defined in varying ways from "too much information to pay prompt and careful attention to" to "information processing capability unable to cope with an exponentially increasing amount of information" (2). Responses to this deluge of information differ. Writing in 2002, Donald O. Case cited some potential consequences of choosing less than ideal coping mechanisms, which included "omissions, errors, delays, filtering, lowering standards, delaying and escaping" (3). Some of the ways physicians use to stay current with the deluge include scanning abstracts rather than critically reviewing the full published papers or relying on web pages or blogs for information. Some of these mechanisms are of course familiar to all of us; there are almost as many coping mechanism choices as there are people to use them.

The concept of information overload is applicable to medicine in general. However, it is even more of a concern for cardiovascular specialists who have led the way in developing and implementing new procedures and strategies of care, in performing multicenter randomized clinical trials, and in developing practice guidelines. There are currently over 7,400 medical journals indexed in PubMed, some are weekly, some monthly, some bimonthly. This number has increased by 2,000 in just the past 10 years. The amount of timely new information these journals publish is almost incalculable. This is in addition to the plethora of medical meetings, websites, and now, blogs related to the field.

This information overload only adds to the time-related pressures of busy practices, research deadlines, or increasing administrative and educational duties and responsibilities. It also comes during a time when there has never been more emphasis on evidence-based med-



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icine, which is now a crucial metric of quality of care and will impact all practices and all physicians. A recurring scenario faced by all clinicians is the request to see a patient with a specific set of clinical problems, and then being asked to render an opinion on the best and most current strategies of care. The clinician may not have read the most recent 400-page guideline related to this or may not have seen the most recent information related to the specific problem, but he or she is expected by the referring physician, the patient, the family, and society to render an expert opinion.

In response to the crisis of information overload, the American College of Cardiology (ACC) is working creatively to help meet the needs of all physicians in providing point-of-care information that is crucial for decision-making. Under the guidance of Rick Nishimura, MD, FACC, Pat O'Gara, MD, FACC, Marcia Jackson, MD, FACC, and Mary Ellen Beliveau, MD, FACC, and ACC staff, efforts are underway to transform how we apply information at the point-of-care. As part of this process, the ACC is redefining its approach to learning and education. The outmoded concept of education was to have teachers provide didactic information that may or may not be relevant to what the learners need, and that is then quickly forgotten. The optimal approach is for today's learners to be provided with the information they need to care for a patient at the point of care, which is both more effective and more relevant.

This concept of just-in-time learning is embedded then in point-of-care information. The ACC has spent incredible resources on the development of evidence-based guidelines, expert consensus documents, and appropriate use criteria. These, plus other seminal papers, form the scientific backbone or "heart" of cardiovascular medicine. This body of information, however, is a double-edged sword: it is extensive and very well documented but, by virtue of these attributes, it is not portable and cannot be used in a timely fashion when approaching a specific patient. The information on a specific condition, while potentially available, is very difficult to cull out.

To transform these papers into living documents requires a change in attitude, approach, and technology; it may also require a change in how guidelines are developed, written, and shared. The ACC team, working with industry educational partners, has identified a strategy to address this issue. The concept involves a specific technique called contextual search. This novel search technology will be used to drill down into guidelines, expert consensus documents, and other data (both internal and external to ACC clinical documents) to access the specific information needed to care for the specific patient at hand. All relevant content is then served up to the user in small, digestible chunks with context enabling users to validate and refine the relevant information they seek based on their personal requirements and needs.

The team involved in this project will be using a "semantic analysis," a proprietary technology specifically for the point-of-care use case. This technology will break down the meaning of a question asked about a specific patient situation and will match the question with information available in ACC-vetted documents. This information then will be immediately available via PDA devices. It has been piloted and tested on the first set of guidelines and will continue to evolve this year; it then will be launched in 2012 and is intended to be used at the point-of-care. This new technology differs from other approaches, which use traditional publishing techniques, serving up chapters or sections of chapters of single format textbook(s). In contrast, the ACC point-of-care tool will enable members to find answers derived from multiple sources of governed content, format agnostic, ensuring the broad and deep perspectives required for providing optimal evidence-based care.

Such an approach will indeed be a "game changer" for all patient/physician interactions as it will allow evidence-based medicine to be applied immediately and confidently. Going forward, the future will be even broader and more robust. The eventual goal will be to incorporate this point-of-care technology into all cardiovascular professional-patient care interactions, creating a portfolio of learning and quality of care opportunities. There will be the potential to interconnect with the American Board of Internal Medicine and other certifying agencies so that anonymous patient care learning encounters will be captured and physicians' requirements for maintenance of certification can be automated.

What then is the "take away?" Information overload is real; we all experience it on a daily basis. It represents an enormous challenge, but more importantly, it provides an enormous opportunity to learn more effectively, to apply the lessons learned more efficiently, and in so doing, to optimize patient care and outcomes.

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