

THE ANNALS: 40-YEAR EVOLUTION

2006 marks the 40th year of publication for *The Annals*. Over that time, *The Annals* has been an important contributor to the development of clinical pharmacy. Throughout 2006, we are publishing articles reflecting on the history of clinical pharmacy through the eyes of practitioners, including those pioneering clinical pharmacy, as well as those who have more recently entered the profession and a well-established specialty. In addition, we are also presenting articles and editorials from the early history of *The Annals* that have given direction and shape to the practice of clinical pharmacy (see page 524).

Pharmacoeconomics: Historical Perspective

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For nearly 4 decades, there has been increasing attention on the costs and benefits of pharmaceutical therapies and pharmacy services. Today, some of the major policy issues related to pharmaceuticals are quality, safety, and cost. Forty years after Medicare was implemented, drug therapy has now become a vital component of Medicare benefits. Much of this change in policy is due to the increasing evidence that pharmaceuticals are generally very cost-effective agents in treating, curing, and/or preventing morbidity and mortality. These policy changes are in part due to the impact of the evolving discipline of pharmacoeconomics.

It is well documented that the emerging discipline of pharmacoeconomics has become adopted worldwide as a health science discipline by the pharmaceutical industry, academic pharmaceutical scientists, and pharmacy practitioners. It is generally defined as the description and analysis of the costs and consequences of pharmaceuticals and pharmaceutical services and their impact on individuals, healthcare systems, and society. The research methods used by scientists in this discipline (eg, cost-effectiveness, cost-utility, quality-of-life evaluations) are drawn from many areas—economics, epidemiology, medicine, pharmacy, and the social sciences. In essence, pharmacoeco-

nomics analysis uses such tools to examine the impact of alternative drug therapies and services on patient care outcomes. We believe that this discipline will continue to have a significant impact on the delivery and financing of health care throughout the world. Furthermore, we believe that pharmacoeconomics may influence health care and the practice of pharmacy at a magnitude at least equivalent to the impact of clinical pharmacy and pharmacokinetics.

During the early 1960s, pharmacy began evolving as a clinical discipline within the healthcare system. It was during this time that the pharmaceutical science disciplines such as pharmaceuticals, clinical pharmacy, drug information, and pharmacokinetics became a critical and integral part of pharmacy education and science. In the 1970s, pharmacoeconomics developed its roots. In 1978, McGhan, Rowland, and Bootman, from the University of Minnesota, introduced the concepts of cost-benefit and cost-effectiveness analyses in the *American Journal of Hospital Pharmacy*. Bootman and colleagues also published the first pharmacy research article in 1979 in which cost-benefit analysis was used to evaluate the outcomes of individualizing aminoglycoside dosages in severely burned patients with gram-negative septicemia using sophisticated pharmacokinetic protocols.

The Annals of Pharmacotherapy (DICP) has certainly been a key publication in the advancement of pharmacoeconomic information. In 1982, Bootman, McGhan, and

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Schondelmeyer published an economic methods article in *DICP*, and Harvey Whitney saw the importance of this budding area and established a regular column on this subject area in the journal. The actual term “pharmacoeconomics” did not appear in the literature until 1986 when the first of a 2-part presentation was published by Townsend titled “Post Marketing Drug Research and Development,” describing the need to develop research activities in this evolving discipline. Ultimately, all of these efforts led to the publication of the first textbook in the field, *Principles of Pharmacoeconomics*, published by Harvey Whitney Books. To date, many of the efforts in this discipline have been directed toward the refinement of the research methods and their application to evaluating pharmaceutical services and specific drug therapies.

Pharmacoeconomics continues to evolve similarly to another relatively new pharmaceutical science—pharmacokinetics. Pharmacokinetics surfaced in the 1950s in US colleges of pharmacy, and, in the 1970s, it became an integral part of the pharmacy curriculum. Many of the theoretical models for pharmacokinetics are based on the physicochemical principles developed by physicists, chemists, and engineers. As a parallel, pharmacoeconomics has borrowed from the basic economic and social sciences for most of its theoretical models. McGhan, Rowland, and Bootman introduced course material related to pharmacoeconomics into the undergraduate and graduate pharmacy curricula as early as 1976 at the University of Minnesota. However, the educational content was emphasized more at the graduate level than at the professional program levels. We now see much of this material being incorporated at the PharmD professional educational level alongside the disciplines of pharmacokinetics and pharmacotherapy.

Furthermore, upon examining the evolutionary path of pharmacokinetics, it is clear that its application in the clinical setting was a driving force that assured its place in the professional pharmacy curriculum. We believe that pharmacoeconomics will obtain the same level of recognition when its application in direct patient care is more complete. In other words, when pharmacy practitioners begin to apply the results of pharmacoeconomic research to therapeutic decision-making, thus positively influencing patient outcomes, the discipline will become an increasingly critical component in healthcare delivery. Likewise, the successful implementation of “pharmaceutical care” will come about only with sufficient pharmacoeconomic research that adequately documents the degree to which the benefits of such care outweigh the costs associated with

those services. In fact, the profession of pharmacy is unlikely to succeed in its role of providing pharmaceutical care without this critical body of knowledge. Pharmacists must become the key players in ensuring that drug therapy and related pharmacy services are not only safe and effective, but also provide real value in both economic and humanistic terms.

The newly enacted Medicare act will be another major stimulant for the continued evolution of the pharmacoeconomics discipline. The law will bring increasing pressure to ensure cost-effectiveness and will also mandate that cost-effective medication therapy management services will be provided, with the latter further influencing the health services research agenda. Additionally, the Institute of Medicine, as charged by Congress, will be releasing a major report examining the quality and safety of medications with the intent to provide guidance as to the most cost-effective solutions to ensuring appropriateness and safety of use.

We would not be complete in our discussion if we did not mention that all of the efforts around the evolution of this discipline also resulted in the birth of an international society whose goal is to promote the science and practice of pharmacoeconomics. The International Society of Pharmacoeconomics and Outcomes Research was established in 1995 with the help of these authors and, notably, William McGhan serving as its first president. This organization, starting with just under 100 individuals, now has over 2500 members from countries around the globe.

In essence, the pharmacoeconomics field has exploded in both discovery and application. We believe that applications for individualized patient therapy and outcomes monitoring are still much in their infancy, but the next decade will be identified as the period in which pharmacoeconomics reaches “full bloom,” with a bright and exciting future ahead.

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