Pharmacy is a major academic unit (a college or school) at nearly every university offering the PharmD degree. This occurs because pharmacy education requires comprehensive instruction involving both basic and clinical content. A great deal of effort goes into the preparation of each student, including pre-pharmacy training in the physical sciences, and building the foundation for pharmacy education by presenting the basic pharmaceutical sciences. In my opinion, pharmacists are scientists as well as clinicians, and basic science knowledge is what separates them from technicians. No one is better prepared to give drug information from the basic science level to the clinical level, and to combine all elements of their education into a comprehensive understanding of drug therapy. Keeping in mind that nearly two thirds of a pharmacist’s training is in the basic sciences, why are we producing graduates who are afraid of basic science principles? In medicinal chemistry, we call these students “chemophobes,” but the concept applies equally well to biochemistry, pharmacology and pharmaceutics. As the amount of clinical information continues to expand, there is a danger that basic science content in PharmD programs will diminish.

Part of the problem lies in the current standard of pharmacy practice. In many pharmacies, pharmacists are required to fill so many prescriptions that they are not able to spend time with patients, and patient counseling consists of having a sheet of paper stapled to a bag. In hospitals, pharmacies are often housed in basements, and except for clinical specialists, contact between the pharmacist and the patient is rare. We train our students in communication, drug information, psychology and patient counseling. Pharmacists are equipped to give information to patients, but don’t do it well, and continue to provide service based on distribution rather than making information a valued commodity. This situation makes it difficult for practitioners to utilize the knowledge they possess, both basic and clinical, and unused knowledge is all too soon forgotten.

The erosion of basic science content in pharmacy at some universities is made possible by accreditation standards. The American Council on Pharmacy Education’s (ACPE) Accreditation Standards and Guidelines for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree states that training in “biomedical sciences, including content in anatomy, physiology, pathophysiology, microbiology, immunology, biochemistry, molecular biology, and biostatistics; pharmaceutical sciences, including content in medicinal chemistry, pharmacognosy, pharmacology, toxicology, and pharmaceutics which encompasses physical/chemical principles of dosage forms and drug delivery systems, biopharmaceutics, and pharmacokinetics;” is required. Guideline 11.2 states that: “The biomedical and pharmaceutical sciences should be of such depth, scope, timeliness, quality, sequence, and emphasis to provide the foundation for and support of the intellectual and clinical objectives of the professional program in pharmacy. The biomedical sciences should provide the basis for understanding and treating humans in health and disease.” Unlike the standards for clinical practice, these requirements are vague and open to interpretation by individual programs. If basic science is not a part of the “clinical objectives” of a pharmacy program, it may be underemphasized. Steps should be taken to clarify the accreditation standards for basic science content in the PharmD curriculum.

Basic science content must be maintained in pharmacy curricula if the profession is to survive because basic science content is foundational for the understand-
ing of human disease and associated drug therapies. Curriculum committees must take responsibility for maintaining basic science content, and must be empowered to make changes to content in individual courses. This is not an issue of academic freedom, because pharmacy curricula are competency-based, and as such, course content must conform to ACPE standards. Like the ACPE standards, college competency statements relating to basic science content have the potential to be vague, and need to be strengthened to more clearly spell out basic science educational objectives and expected outcomes. If this is not done, erosion of basic science content can occur. This problem can be compounded by the composition of pharmacy faculty. Many of the faculty members in basic science departments are not trained in pharmacy, and clinical faculty members are often specialist practitioners who have long forgotten portions of their basic science training. Clinical and basic science faculty members need to work together to make sure that important basic science principles are reinforced in the latter portion of the Pharm.D. curriculum. At my institution as well as others, basic science and therapeutics in the second professional year have been integrated, so that students are presented with medicinal chemistry, pharmacology and therapeutics in a modular format organized around disease states. We also require each PharmD student to give one basic science seminar in the third and fourth professional year, and we are beginning to incorporate basic science content into our Advanced Problem Solving courses. Like other schools, we offer advanced practice experiences that are basic research-oriented. The goal of these approaches is not to ensure that students retain basic science information by rote, but rather to produce PharmD graduates who are conversant in basic science concepts. If pharmacy programs dilute their basic science content, their graduates will be ill prepared to move into exciting new roles presented by advances in biotechnology, roles that will be assumed by other health professionals.

REFERENCES