The Accreditation Council for Pharmacy Education (ACPE) adopted new standards and guidelines that became effective July 2000. Colleges and schools of pharmacy are to align their assessment activities with their missions and goals. Achievement indicators should be incorporated in formative and summative evaluations of programs and educational outcomes. The ACPE specifies that an examination of student outcomes “should extend beyond the acquisition of knowledge by students to the application of knowledge and skills in the care of patients in improving medication use.”

Prior to these new standards, curricular assessment and student learning outcomes were not a systematic process within these professional programs.

The changes in accreditation standards have provided major impetus for colleges and schools of pharmacy to incorporate student learning outcomes, student assessments, rigorous program and curricular assessments, and continuous assessment planning. These changes have led colleges and schools to ask questions such as: What is the difference between student assessment and institutional assessment? How does the assessment process differ from traditional examinations? What is involved in systematic assessment planning? Is there an appropriate assessment model for systematic planning? What assessment practices might we undertake to implement our assessment plan? How can we get more use from our assessment activities? To assist the colleges and schools of pharmacy in the movement towards assessment during the last several years, the AACP invited national and international speakers to the annual meetings, teaching seminars, and workshops to help colleges and schools learn about assessment and incorporate practices into their organizations.

In addition, this three-part methodological series on assessment has been written to respond to these questions and present principles, theories, and frameworks that colleges and schools of pharmacy may use in accomplishing their assessment endeavors. Why is this methodological series on assessment articles needed? Although 48 articles and 116 abstracts about assessment have appeared in the Journal from 1990-2003, these publications focus on the needs and viewpoints of particular schools and colleges. On many campuses there are individuals involved in monitoring institutional effectiveness and student outcomes assessment; few of the articles provide this type of higher education perspective. This series will provide an overview of assessment and present the information by incorporating models, principles, and theories from a higher education perspective and frameworks utilized in the medical health professions. The series will be beneficial to colleges and schools of pharmacy that are beginning the process as well as to those embarking on recycling through the process.

This methodological series addresses educational assessment questions and provides methodological guidance for the implementation or review of a college’s assessment process and plan. This series will consist of 3 articles. The first article, a primer on assessment from a higher education perspective, traces the emergence of educational assessment, discusses terms and definitions, and presents a taxonomy of levels of assessment. The second paper focuses on the student outcomes-assessment process, introducing the evolution of outcome-based education and competency-based education, and their relationships to health professions. Various frameworks and models are presented to familiarize the reader with these concepts and the developmental levels of students in health professions educational programs. The second paper places student learning outcomes assessment in context and highlights the steps typical of the associated process.

The third paper develops 2 main topics. The first section describes the assessment process and selected research issues that can affect the quality of assessment projects. The second section discusses educational impact assessment, includes a description of Astin’s I-E-O impact assessment model, and utilizes that model to frame sample research questions and hypotheses. Pharmacy education examples are incorporated through-

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Keywords: assessment, methodology, outcome-based education

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out the paper and additional terminology is provided to highlight the importance of reaching a consensus on the meaning of assessment concepts and terms. Each section contains a brief discussion of a case study to illustrate various aspects of the assessment planning process.

We envision this series of articles providing a methodology for devising, implementing, and maintaining a systematic approach to assessment in colleges and schools of pharmacy. The papers highlight the importance of the assessment planning process, of communication among pharmacy faculty members and administrators, and of reaching consensus on the terminology to be used, the student outcomes questions to be examined, and the methods and strategies to be used. Furthermore, these papers point out that the assessment process requires faculty members to make many choices. These choices involve various aspects of assessment planning, implementation, use of results, and continual revision of the process. Our intent is to provide rationale and tools to enable administrators, faculty members, staff members, and students, whether early in the assessment process or well-established, to collaboratively strive for continuous quality improvement in curricular assessment and student learning outcomes. Finally, a glossary is included in this preface that lists various terms that will be discussed in the three-part series.

GLOSSARY

**Ability:** The capacity to perform at a certain level in a given context. Competence is an ability, and its presence must be inferred (judged) from a knowledge of both the performance and the context.²

**Alignment:** Process of linking content and performance standards to assessment, instruction and learning in classrooms.

**Assessment:** A systematic and continuous process that focuses on the collection and use of evidence to improve a program, or process or student learning.³

**Assessment plan:** A document that details the assessment process within a school, college, program or institution. The plan should emerge from the mission of the institution and college and it should relate and align with the institutions plan and objectives.

**Authentic Assessment:** An assessment procedure that emphasizes the use of tasks and contextual settings like those in the real world. It measures whether students are able to perform in a real-world task the way professionals in the field would perform.

**Closing-the-loop:** Using assessment results for program change and improvement.

**Competencies:** Statements that describe abilities needed to begin independent practice in a particular work setting. Competencies combine skills, understanding and professional values and are performed independently in realistic settings.²

**Competency-based education:** A planned sequence of student experiences designed to move students through the stages in the competency continuum. Different methods of instruction and evaluation are used as appropriate to each level of professional growth, and the entire sequence is coordinated to produce a competent beginning practitioner.²

**Competency-based evaluation:** Use of assessment techniques and decisions that match the stages along the competency continuum. Novices are assessed with tests, beginners with simulations, and competent students with authentic assessments.²

**Competency continuum (Novice-Expert continuum):** Stages through which learners’ progress as they become professionals. Stages are qualitatively distinct (not simply the accumulation of more knowledge or speed) and represent capacity to function effectively in more complex environments.²

**Content Analysis:** Research where one examines the patterns of symbolic meaning of text, audio, visual or other communication format. The focus is to identify common themes and highlight important issues in the data. In the assessment process, it can be used to further manage the data and begin to formulate appropriate impact questions.

**Data:** Numeric and non-numeric information and evidence that have been carefully gathered according to rules or established procedures.

**Data audit:** A procedure to determine what data have been gathered, how these data have been disseminated and how the information was used to improve relevant areas.

**Direct methods:** Assessments that gather visible evidence indicative of how students perform on an outcome. Students demonstrate that they have achieved a learning objective or outcome.

**Environmental variables:** Refer to the learning or educational experiences provided within the context of educational programs.

**Evaluation:** The utilization of the data collected through assessment to facilitate judgments about quality and effectiveness.

**Formative:** An assessment which is used for improvement (individual or program) rather than for making final decisions or accountability. Its role is to provide information which can be used to make immediate modifications in teaching and learning and in the program.

**IEO Model:** Input-Environment-Outcome model created by Alexander Astin that can be used for impact assessment.
**Impact Assessment:** Process in which you determine whether the assessment results in appropriate changes to what is being assessed.

**Indirect methods:** Assessments that gather reflections on student learning or capture students’ perceptions of their educational experiences and associated learning gains.

**Inputs:** The initial qualities and characteristics each student brings into the program, many of which are collected during the recruitment and admissions process and typically maintained in student or institutional records.

**Institutional effectiveness:** the measure of what an institution actually achieves.

**Objective:** Describes discrete skills or bits of knowledge that are specific to a given instructional context.

**Outcomes:** The consequences or results associated with instructional experiences; the end results of institutional, program or curricular goals.

**Outcome-based education:** An approach to education in which decisions about the curriculum are driven by the exit learning outcomes that the students should display at the end of the course.

**Performance Assessment:** Assessments in which students demonstrate their knowledge and skills. It is a specific sample of ability under specific conditions.

**Program Assessment (or Institutional Assessment):** Uses the department, program or institutional as the unit of analysis. It can be qualitative, quantitative, formative or summative. Ideally this would be driven by the program/institution mission goals.

**Qualitative assessment:** Findings are verbal descriptions of what was discovered via observation methods.

**Quantitative assessment:** Findings are summarized with a number that can be analyzed statistically.

**Reliability:** The extent to which a test/instrument is dependable, stable and consistent when administered to the same individuals at different times. The instrument should yield similar results over time with similar populations in similar circumstances. It asks the question “Are the responses consistent over time?”

**Structure of the Observed Learning Outcome (SOLO):** A taxonomy describing how learner performance and understanding for a subject grows in complexity. This taxonomy has five levels: prestructural, unistructural, multistructural, relational and extended abstract.

**Summative:** Assessments at the conclusion of a course or program. They are generally used for accountability purposes or to judge the value or worth of a program or course and are usually collected at or near the end of a program or course, as implied by the concept label.

**Triangulation:** The use of multiple assessment techniques to collect evidence to derive at the same/similar conclusions. An example of triangulation would be using surveys, interviews and observations.

**Validity:** The extent to which inferences made from assessment results are appropriate, meaningful, and useful in terms of the purpose of the assessment. The degree to which a test or other assessment measures what it is actually intended to measure. It asks the question: “Are you measuring what you intended?”

**REFERENCES**

