Lake Erie College of Osteopathic Medicine has developed an independent study pathway as an alternative to the traditional medical school curriculum design. Beginning with the 2001-2002 academic year, three equivalent and distinct curriculum pathways will be available to medical students at the Lake Erie College of Osteopathic Medicine: the lecture/discussion pathway, the problem-based learning pathway, and the independent study pathway (ISP).

The ISP program will provide flexibility for students during their preclinical years. Using highly structured faculty-developed modules, students in the ISP program will be responsible for their own learning in a self-directed, independent manner, including when, where, what, and how to study. Examinations will be taken when students consider themselves ready. If examinations reveal deficiencies in student preparation, these deficiencies must be remedied before students continue their studies. Faculty will be available, as needed, to assist the students through difficult concepts and material.

(Key words: medical education, independent study)
Advantages
The following are advantages of the ISP:
- Reinforces skills needed throughout a medical career, for example, self-directed learning, independent learning, and time management.
- Involves students in an active versus passive learning process.
- Self-paced; more time can be devoted to difficult topics or for which the student desires greater depth of knowledge, with less time spent on material already understood.
- Modules allow faculty to recommend greater variety in study materials: texts, journal articles, audiovisuals, Internet resources, etc.
- Less stressful; flexibility (when, where, what, and how to study) allows students to build confidence in their mastery of material before proceeding.
- Provides students the opportunity for approved leaves of absence (research, special experiences, extended illness, familial problems, etc) without penalty.

Disadvantages
The following are disadvantages to the ISP:
- Not well suited for students who cannot manage time effectively.
- Compulsive students may move too slowly, putting off examinations until they believe they have learned everything.
- Extra patience and focused guidance required of students as they adjust to the new learning structure and learn how to better budget their time, take accurate and precise notes, outline information, and use learning objectives to guide their study.

ISP program structure
The program structure required to develop and offer an independent study pathway differs little from that required of a lecture/discussion pathway or a problem-based learning pathway. The basic elements within each pathway are essentially the same; however, the unique structure of each pathway requires a different manner of addressing those elements. The specific manner of approach-
to the ISP students will be identical to those offered to the LDP students and PBLP students. These identically structured curriculum elements are listed under "traditional setting and approach." While the content of these components will be identical and will be conducted in group settings, there will be noticeable differences. For example, the anatomy courses will be presented off-sequence from the LDP program during June and July and will be completed before the ISP students begin their study modules. As another example, osteopathic principles and practices will be presented to ISP students in the same manner as for the LDP students; however, it will be offered on different days of the week.

Instructional processes
Modules drive the independent study process; each module guides students in learning. Once fully developed, all modules will have a common format. The introduction will include a rationale regarding the importance of the topic to future physicians and how the module relates to other modules in the overall curriculum. This rationale will be followed by comments on specific learning resources for the module, suggested reviews of previously studied material, laboratories or other special sessions (required or optional) that complement the topic, and the nature and scope of faculty involvement to be expected. Learning objectives for each module will clearly describe material to be learned so that students do not pursue material not required unless they wish to do so. The learning resources portion of each module will list the materials available for students to use to master the learning objectives. Suggested learning resources can include books, journal articles, audiovisual materials, slides, and video materials. Module authors will be allowed and encouraged to offer their own perspective regarding the topic, for example, presenting material not readily available elsewhere or integrating material from several sources so that students will gain a unique interpretation from the faculty member’s perspective.

Student responsibilities
Students will be given time guidelines for the completion of each module and examinations of the ISP program. They will be allowed to proceed on a self-established pace within certain limits (max times). Module authors (faculty members) will be available to the students as resources, conduct individual tutorials as requested by the students, and voluntarily attend discussion sessions and clinical correlation conferences.

Evaluation of students
Module examinations will cover one to four modules and will be administered on an individual basis when students consider themselves adequately prepared. The examinations will last 2 to 5 hours and will be in an objective-response format. Some examinations will be accompanied by visuals that require other types of responses. Students who score below a criterion percentage on any module section will be required to remediate that portion with the module author within 2 weeks. Oral or written retesting will be administered by the module author to assure that the student has achieved the minimal acceptable level of knowledge for the topic in question. Following successful remediation, the original score will be raised to the preestablished, minimally acceptable score to pass.

At the end of the first year of study, each ISP student will be required to pass an oral exercise administered by a basic science faculty member (one of the module authors). This exercise will test for deficiencies in skills deemed important in the student’s development as a physician: the ability to communicate, the ability to organize an oral presentation, and the ability to reason. Also, each ISP student will be required to take a shelf test from the United States Medical Licensing Examination on the areas of cell biology, biochemistry, and physiology at the end of the first year. At the end of the second year of study, each student will be required to take the National Board of Osteopathic Examiners’ Comprehensive Osteopathic Medical Licensing Examination Level 1 test. Unless passed, students will not be allowed to enter third-year clinical rotations.

Program evaluation
Program evaluation will be accomplished in numerous ways using various processes. At the completion of each module, students will be asked to fill out a questionnaire to evaluate the module regarding content, construction, and examination. On an annual basis, the ISP Curriculum Committee will evaluate each module for currency and overall fit with the other modules in the curriculum. Students’ test results and progress through the modules will be monitored, assessed, and evaluated for trends that may indicate necessary modifications. As data permit, comparisons will be made of students across the three curricular tracks. At the least, it will be expected that no group of students will perform at a significantly lower level than any other group of students, regardless of curriculum track. Finally, students will be asked to complete a questionnaire at the end of their first year and at the end of their fourth year. This will give some measure of how they performed depending on the curriculum track they pursued. Questionnaires will be sent to intern directors and residency directors of the graduate programs where LECOM graduates pursue their specialty training. From the directors’ responses, it should be possible to discern any substantial differences in perceived competency of the graduates related to the track they were in as preclinical students.

Comments
The Lake Erie College of Osteopathic Medicine has developed an independent study pathway program. When implemented in the 2001-2002 academic year, three equivalent and distinct curriculum pathways will be available to medical students to pursue their medical degree: the LDP, the PBLP, and the ISP. The ISP program will allow students to study independently at their own pace. They will be required to study content normally presented in a lockstep manner in the first 2 years of the typical medical
curriculum. A major goal of the ISP program is to provide medical students with rigorous learning opportunities in a minimally structured environment, similar to the environment that they will face as competent, lifelong, self-directed learners.

References

