Problem Based Learning

The information revolution has created such a huge data base that it is no longer possible for students to absorb and assimilate all that is required to prepare for graduate medical education or to practice their profession. We can not assume that students are floppy discs, with virtually unlimited capacity to master the subject matter considered necessary for professional practice in the 21st century.

Therefore, medical education excessively relying on the passive lecture, needs to be reexamined. Passive learning, at the least, needs to be balanced with active learning techniques such as problem based learning (PBL). This will produce individuals prepared to be self directed learners. Such graduates not only have problem solving skills, but also the discipline needed to become active learners.

In addition, a large percentage of what they learn today can be expected to be outdated in five years. This results in an additional problem, namely that we can not predict what it is that will become obsolete or require modification. In practicing any aspect of health care, being unaware of important changes in the delivery of care can be crucial to patients.

PBL produces problem solvers and active rather than passive learners

Standardized Patients and OSCE/CLX

Introduced in 1964 by Barrows and Abrahamson, the use of standardized patients (SP's) has finally permeated medical education so that in a 1993 survey, 80% of those schools which responded indicated that they used SP's. Simulated patients simulate real clinical situations, providing a standardized presentation of the same patient problem from examinee to examinee. The SP is usually a non-physician trained to act as a specific patient in a consistent and standardized manner. They interact with students as if they were real patients.

There is a growing recognition of the importance of standardizing the clinical evaluation of students. Objective structured clinical examinations (OSCE) have been described as short, focused encounters between (OSCE cont’d pg. 2)
PBL (cont’d)

needed to go through the process of solving the problem that was presented. These concepts are often referred to as learning issues which are somewhat analogous to learning objectives. However, it is the student rather than the instructor who ultimately determines these essential issues.

Faculty members who serve as facilitators ask questions as appropriate and refrain from giving didactic information to the students. Should students come to an impass where they collectively are unable to provide the knowledge or do not have the conceptual base to proceed, the group session stops. At that point, the students go to whatever source they deem necessary to acquire the knowledge and concepts that they identified as needed to continue the process of resolving the clinical problem. This may involve using the medical library, arranging to meet with consultants, or doing anything else to continue the problem solving process. In some instances, this may involve requesting a faculty member to provide a brief lecture on a specific concept.

When they complete the task of acquiring the information that they lacked to proceed with the process, the student group arranges to meet again with their faculty facilitator and continue the problem solving process. Typically it takes a number of sessions until a problem is solved. Problems are carefully selected so that the learning issues identified by the group result in the completion of the objectives established in the curriculum.

Studies have shown that students who have gone through curricula that were essentially problem based perform on National Board examinations at about the same level as those who had more classical, lecture oriented instruction. However, it appears that the students who employ PBL, retain what they learned for a longer period of time.

Getting faculty to adopt PBL can sometimes be a problem. First, it is a major shift in the method of instruction that they have been used to employing as well as quite different from the way that they learned when they were students. In addition, many feel that PBL requires much more faculty. Since PBL is quite clinical in its approach, if it is used early in the course of study, basic science faculty may feel that their need by the medical school could be reduced. PBL reduces the need for lecture hours and saves a considerable amount of preparation since formal presentations become less frequent. However, reducing lecture and preparation time permits developing mentor relationships, identifying student problems earlier, and selecting and providing opportunities to students with certain interests and strengths.

OSCE and CPX cont’d

students and patients, where student performance is rated by examiners guided by checklists. The OSCE uses SP’s to simulate parts of a patient encounter so that students can be evaluated as to their competence in specific clinical tasks or skills.

The clinical practice examination (CPX) is a student assessment method in which the SP simulates the complete doctor-patient encounter. The student is provided with the patient’s complaint and then must acquire a history, perform an examination, order as well as interpret tests, and produce a diagnosis and management plan.

Most OSCE’s are 5-10 minutes in duration compared to 15-20 minutes for a CPX. Some OSCE’s may include one or more stations in which there is no SP but another clinical situation such as an X-ray, ECG, or a set of laboratory test results.
Highlights in Medical Education

Medical ethics

Unfortunately, the initial exposure to ethics that students receive in the preclinical years is often the last structured engagement they have with the subject. Teaching students to appreciate ethical principles in decision making requires substantial incorporation of moral reasoning skills into clerkship training. Students need to exercise cognitive skills learned in the classroom in the real-life environment of the clinic.


COGME

Between the year 2000 and 2010 the generalist physician supply is projected to remain stable at 63 to 67 per 100,000 population, compared with the staffing estimates of the Council on Graduate Medical Education (COGME) of 60 to 80 generalist physicians per 100,000 population. Using the midpoint, this represents a modest shortage of 20,000 generalists by the year 2000. This declines to 8,000 (or near balance) in 2010.

Educational programs will have to produce physicians with different knowledge, attitudes, and skills. Changes will be needed in the content of the educational program and the sites used for clinical training to prepare physicians with a new set of competencies to practice in a managed care environment.


Compensating faculty

In a cost-competitive healthcare environment with a truly level playing field, there should be direct payment to clinical faculty for time spent in teaching. This is unlikely due to financial pressures on hospitals, medical schools, and clinical departments. The sense of privilege and the personal rewards of teaching will remain important, but uncompensated teaching time is likely to be an issue in an era in which financial compensation for physicians’ activities is more closely watched.


Ambulatory medicine

Undergraduate education in medicine can no longer be solely limited to the inpatient setting. A balance of inpatient and ambulatory education is required: Clerkship Directors in Internal Medicine (CDIM).


PBL cont’d

The first and perhaps even part of the second year of installing PBL into the curriculum may be labor intensive because of the time it takes to develop the mix of patient problems. However, even this can be reduced by utilizing problems already developed and available at other medical schools with years of experience with PBL.
Why Problem Based Learning?

1. Students are more likely to become self-directed learners.
2. Students are more likely to have a greater intrinsic interest in learning.
3. Retention of knowledge is enhanced.
4. Students report that the learning environment is more humane and stimulating.
5. The stress and anxiety of medical school is reduced.
6. Interpersonal skills are enhanced.
7. Attitudes towards patients are better (e.g. patient centered, and more empathetic).
8. Students place more emphasis on learning rather than memorization.
9. Studies show no difference in biomedical knowledge on National Board scores between traditional and PBL students.
10. Less cramming on examinations is reported by PBL students.
11. Faculty spend up to 40% more time with students without increasing the time they spend teaching.
12. It does not cost more in terms of staff time.
13. Students report PBL promotes enjoyment of learning without loss of basic knowledge and skills.
14. Teachers analyze their discipline for the critical elements essential to medical practice.
15. PBL integrates clinical and basic science with critical thinking.
16. PBL encourages innovation and autonomy.