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OSR RESOURCE HANDBOOK

ASSOCIATION OF AMERICAN MEDICAL COLLEGES

ORGANIZATION OF STUDENT REPRESENTATIVES

ONE DUPONT CIRCLE, N.W.

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OSR Resource Handbook

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Introduction

Society is rapidly changing, with dramatic increases in information, new ways of handling data through the use of computers, and more complicated technologies. Modern medicine is a microcosm of these societal changes. Over the past few years, medicine has developed an almost incomprehensible body of biomedical information, a large array of pharmacological interventions, and a vast composite of diagnostic and therapeutic modalities.

It has been said that the American educational system is responding to these societal changes by evolving from an emphasis on the three R's (reading, writing and 'rithmetic) to the three C's (computing, calculating and communicating). Yet, in the main, the medical education system has not changed from the traditional system which was codified in this country by the Flexner Report of 1910. This prompted the development of a highly structured university-based program with a scientific foundation combined with practical clinical experience. Currently in most American medical schools, the conventional four-year medical curriculum is divided into an initial two-year period of basic sciences followed by a two-year period of clinical rotations. This traditional curriculum was probably the most appropriate when the basic sciences comprised the body of biomedical information at the turn of the century, and clinical education was based on a mentor relationship with a highly experienced clinician.

Today's two years of basic sciences consist of an assortment of faculty relaying the most up-to-date details on a plethora of biomedical topics. Students are evaluated on ability to recall details rather than ability to learn, synthesize data, or think. Clinical education is primarily taught by those who have little more clinical experience than the medical student and insufficient, if any, instruction in teaching-- the

interns and residents. Many students graduate from medical school with no faculty member fully evaluating a student's physical exam skills or interviewing techniques. Enough for the problems. What can students do?

For the past several years, the OSR and other student organizations have been very supportive of an alternative model of medical education-- problem-based learning. Although it is not a panacea for medical education, it does embody many of the concepts put forth in the GPEP Report and meets many of the LCME guidelines for accreditation. Essentially, it embodies the potential to incorporate a change in the content, process, and evaluation of medical education.

Some thoughts on change...

Cynthia Carlson, University of Washington
School of Medicine

I entered medical school, as most of my colleagues did, with some fear and a good deal of excited anticipation of what was to come. After entry, we learned that medical education is neither as bad, nor as good as expected. We found plenty of room for improvement ranging in scale from changing the focus of a single paper in a single class, to a major overhaul of the entire medical education system as proposed in the GPEP report. Faced with a wide open field of opportunities, we are confronted with the questions "where do I start?" and "how does one go about creating change?".

Several articles and seminars have outlined the steps and factors in the change process. Although there are numerous articles and books on change, AMSA's Pearls of Change are a concise and useful overview of the process. Obviously, the specific steps of change will vary depending on the project undertaken and the school or environment in which the process is carried out. The principles presented, however, give some guidelines and can be used to help focus one's effort.

Although the change process is complex, the critical areas to be analyzed a priori are a negotiable definition of the problem solidly based on knowledge, a plan for how the change agent(s) can mobilize fellow studnts to act on the problem, and a sense of the change process.

An example illustrating how incomplete information can compound resolution of a problem was experienced at the University of Washington following a student initiated proposal to correct an honors grading policy that was perceived to be unfair. During the year-long debate, a group of faculty and administrators proposed a return to A-F grading. One student decided to survey the students to see where they stood on the issue. We

were quite startled to discover that a large percentage of the students quietly favored a return to traditional grading policy. This then necessitated both an education campaign for students to alleviate fears of the residency selection process and a more vigorous lobbying campaign on the part of students against the proposed change. This exemplifies not only the need to know who is for and against a proposal, but also why.

"Unleashing the change process in medical education," identifies four steps involved in the change process. The four steps are:

1) Identifying the nature of the problem

2) Developing a proposal to address the problem, and concurrently, selling the proposal

3) Implementing the proposed changes directed toward resolving the problem

4) Monitoring the change to ensure its effectiveness

Another critical area is the change agent. This section pertains to the person asking, "where do I start?". Enthusiasm and commitment to seeing the improvement implemented are the keys here. These must be combined with the knowledge and belief that one actually has the power to create change. Each of us, individually and as a group, has the power to create change. Change is also variable with some being small, quick and/or easy and in other circumstances being slow, difficult, and requiring a group effort. As the "Pearls of Change" state, 'go for an early, easy win'. Then use that win to fuel your enthusiasm and commitment to change. Also, just as one needs to develop a support system to successfully navigate medical school, one also needs to develop a support system for being a change agent. One's participation in the OSR is part of that

support system. Remember that one of the most important aspects of being a change agent is the belief that one can produce change.

The key word for a change agent is diplomacy. This is not a concrete action area, but an attitudinal area. Diplomacy comes from a combination of knowledge of the problem, commitment to reform, and an open-minded, non-defensive attitude that allows one to hear what those opposed are against. It is vital to overcome the "us versus them" stance that frequently accompanies change and to replace it with open cooperative discussion that considers different aspects of the proposed change.

Another example from the University of Washington illustrates what power diplomacy can have in the change process. One existing required class was notoriously poor and was the focus of yearly improvement discussions in the curriculum review process. One aspect of the course which was felt to be essential to improvement was development of a syllabus. Several years passed with students demanding a syllabus and administration quietly pushing faculty to produce one. Course chairs slowly worked on the project in an atmosphere of animosity towards students and their "demands to be given the answers without any true learning." At this point, a small group of students who had not yet taken the class but were aware of the poor reviews approached the course chairs to offer their help in improving the class and/or creating a syllabus. The students discovered an overriding defensive attitude about the course and a highly polarized faculty versus students stance. It was clear that the problem as identified -- lack of a syllabus -- was not the biggest problem. The area of most concern was the extremely defensive faculty which did not trust students. After several sessions with course chairs, this group of students convinced faculty that they were truly committed to improving a class they were yet to take. They used open-minded but firm

discussion on student ideals to change an atmosphere of mistrust to collegiality. A syllabus was produced by the following quarter by faculty, feedback during the course was requested frequently, taken seriously, and acted on, and the course became highly successful.

Two final notes. The first part of this change occurred with the faculty who became staunch student advocates and enthusiastic participants in many areas of curricular change. The second part of the process was to return to the students and convince them that the course had changed and to be open-minded during the course. Both parts were required for successful change.

In the next pages are some articles about specific change at different medical schools. There are two things to get out of this. One is some ideas on how to go about producing change. The second is that change is possible and that the OSR members are part of your support system for improving medical education.

Suggested Reading:

Association of American Medical Colleges. "Physicians for the Twenty-first Century". Journal of Medical Education 59:11. November 1984, Part 2.

Barrows, Howard B., and M.J. Peters, eds. How to Begin Reforming the Medical Curriculum. Springfield, IL: Southern Illinois University School of Medicine, 1984.

Beckhard, Richard, and R.T. Harris. Organizational Transitions: Managing Complex Change. Reading, MA: Addison-Wesley Publishing Company, 1977.

Excerpt from AMSA Workshop:

Summary Points - The Pearls of Change

1. **Know the players**	Make no assumptions! Assess the attitudes, abilities, readiness, and potential barriers. Do a "stake-holders" analysis - how does each player view the world?
2. **Know the system**	How are decisions made? What are the communication lines? Who has power to approve change? Realize that the "informal" system is as important as the "formal" system.
3. **No surprises**	All relevant parties must be (or at least feel) involved in the planning and implementation.
4. **State the problem**	In a way to minimize opposition. Capitalize on mutual interests. Try to be consistent with the beliefs and practices of as many players as possible.
5. **Get commitment**	Identify key individuals whose commitment is needed. Develop a plan for getting the commitment.

6. **Develop your strategy**	What needs changing? Where shall we intervene? How shall we intervene? Who will manage?
7. **No new wheels**	Don't reinvent the wheel. Study and adapt what's worked elsewhere.
8. **Make an action plan**	Be task-specific with intermediate goals and timetables. Be adaptable with contingency plans. Have a monitoring system.
9. **Go for an early, easy win**	Demonstrate your credibility and competence. Show the benefits of the "new". Don't lose steam through overly prolonged planning.
10. **Evaluate**	Use the feedback to fine-tune. Continue to monitor and improve.

A. Problem-Based Education from a Student's Perspective

Jennifer Hoock, Duke University Medical School

I arrived at medical school, as many of us did, with a well-developed appetite for intellectual pursuit and interests that were as broad as any undergraduate education could offer. Though I had heard about the horrors of medical training, I don't think I understood it would happen to me. Idealistically, I expected an intimate "graduate" environment with small classes, individualized instruction, close relationships with my mentors and a learning system in which students actively worked together to gain an understanding of medical science concepts in an applied context. The curriculum I encountered had no such components, and as an act of self-preservation I became involved in educational reform.

Through my activities within AMSA (the American Medical Student Association) I learned that over the last 20 years several institutions across the USA and Canada have gathered their resources and devised "experimental" curricula which incorporated an innovative educational method, "problem-based learning" (PBL). PBL is an active, student-directed system of education which is generally conducted in a small group tutorial setting. PBL is not an entirely new concept, having some roots in the "case-method" used in business and law schools. It is referred to in the educational literature as "adult" or "task-oriented" learning, focusing on its quality of assured relevance and current applicability. Its efficacy is supported by cognitive psychologists' conclusions that learning is most efficient if it is tied to information already possessed by the student (learning by elaboration rather than memorization), and learned in the context in which it will eventually be applied.

By design, PBL is an answer to the Report of the Panel on the General Professional Eduction of the Physician and College Preparation for Medicine (GPEP). The report defined general curricular revisions important in the establishment of an educational system that would be; 1) responsive to the "interdependence of the development both of the whole person and the specialized professional," and 2) able to "anticipate the circumstances that are beginning to alter the practice of medicine" while striving to prepare medical students to confront them in the future. It states that medical students must be taught to evaluate and care for patients in an efficient, effective and humane manner, and to be self-directed learners. The report reminds medical educators that they "can't teach...everything", but they are responsible for providing an environment where students can learn the knowledge, attitudes and skills necessary for the practice of medicine, including the ability to continue their own educational process for life. It recommends revision of teaching methods in undergraduate medical programs, primarily in the pre-clinical years, by a) **setting attainable educational objectives** (for faculty and students); b) **increasing unscheduled time** (to allow for independent study); c) **reducing lecture time** (replacing it with small group meetings); d) **increasing activities that promote independent learning and the development of problem-solving skills**; and e) **using appropriate evaluation methods** (derived from the established objectives and incorporating the use of problem-solving and self-directed study skills). The PBL method meets these criteria.

It is the combination of components in the theoretical base of PBL which sets it apart from other methods incorporating the use of clinical cases and/or problem-solving in medical education. The first of these components is the **use of the "ill-structured problem"** (Herbert Simon). This is the situation

occurring most frequently in real life where 1) all the information necessary is not available at the outset of the problem, 2) as more information becomes available, the nature of the problem may change completely, 3) there is no one "right way" to solve the problem, and 4) one is never sure the problem is solved. Problems like these are best approached in a hypothetical-deductive manner otherwise known as clinical reasoning (problem-based learning). The second component of the PBL method, the **incorporation of the system of clinical reasoning used by physicians and researchers** includes a)information gathering, b) hypothesis generation, c) research and investigation, d) hypothesis revision and problem-synthesis. Third, is an emphasis on **student-directed learning**. As students discuss the case problem in tutorial, they are actively involved in identifying the questions they need to pursue before understanding the scientific basis of the patient problem, its social science context, and eventually the diagnostic and patient care options.

Following from this, the fourth unique component in this system is the **development of skills in self-education**. These include the ability to self-evaluate (know what you don't know) and self-teach with development of the understanding that education is a life-long process. One must constantly work to integrate new knowledge and skills into one's practice of medicine (clinical or research) in order to remain a competent physician.

The fifth component is the **use of a clinical case** as the basis for basic science education. This structures the students' learning in a clinical context, resulting in increased relevance and motivation for study.

The final and most unique feature, at least in my experience of preclinical medical education, is that **students have fun learning**. They pursue issues in to

the evening and over the weekend with friends and fellow classmates, seeking not just "the answer," but true understanding of the question and its implications. Various combinations of the above components are included in other methods of instruction used in medical education today, but only in PBL do they all come together to form a whole which is greater than its parts.

The unique structure of PBL results in a very different learning atmosphere. Students are responsible for their own schedule (outside of tutorial meetings). They develop their own study groups and are encouraged to work cooperatively rather than compete for grades/class rank. "I don't know" is a commonly used phrase indicating a self-assessed lack of knowledge rather than an admission of imperfection or lack of application to one's studies. Students learn from a variety of resources, choosing those they find individually to be most effective with an emphasis on information management, not memorization and recall. Ongoing evaluation is part of the learning process and occurs regularly with a focus on "formative" assessment and constructive feedback. To succeed, students must eventually meet both program and personal objectives as evaluated by themselves, their peers, and their tutors. Students interact closely and frequently with the faculty who are involved with students in several capacities--tutor, resource person, or advisor.

When a tutorial group meets, they receive the presenting complaint of an actual patient. Students take various roles in the process that follows--one will serve as reader, another will be the recorder at the blackboard, and a third will man the dictionary as questions about terms arise. These roles alternate with each session, and the tutor oversees the process, preventing the students from getting bogged down in minutia. Students work together to develop a "Problem List", identifying the problem(s) with possible

explanations (Generating Hypotheses) for each identified concern. The focus is on the underlying mechanisms, not the differential diagnosis. At this point the tutor will often encourage the students to decide which hypotheses are most likely and discuss their understanding of them (Rank Hypotheses and Test Hypotheses using current knowledge). The group then begins to identify "Learning Issues"-- topics for study before the next meeting. Core issues are studied by all group members, but minor topics are assigned to individuals who will report on them at the next meeting. At this point, the tutor might make an effort to encourage the participation of a quieter student by giving him/her a specific "leadership" role for the next session. Following assignment of study topics, the group holds a brief evaluation of the session with members offering praise and constructive criticism of the groups' functioning for the day. At this point students may seek feedback from their peers and tutor on their role in the group process and knowledge brought to discussion of the problem. They are encouraged to offer their own assessment first. Throughout the meeting, the emphasis is on the students to "do the work". Their control of the learning environment generates excitement and leads to a sense of ownership over the understanding gained.

McMaster University in Canada started the first problem-based curriculum in undergraduate medical education with its inception in 1969. As their program matured, others adopted varying degrees of the original concept. These include longstanding tracks at the University of New Mexico School of Medicine and Michigan State University School of Medicine, more recently developed programs at Rush Medical College, Mercer University School of Medicine, Harvard Medical School, and Bowman Gray School of Medicine of Wake Forest University. In addition, several schools including Southern Illinois University, Tufts University School of Medicine, Case Western Reserve University School of

Medicine, and Georgetown School of Medicine are running problem-based units or components within their traditional basic science curricula. There is a great deal to be learned from studying these programs both individually and collectively.

Last year, I conducted a series of site visits to survey and compare the curricula at several of these institutions. My purpose was to examine both the method, its strengths and weaknesses, and the value system which forms the philosophical basis for this type of education, with implications at both the organizational and instructional levels. The specific aims of this study were to 1) describe the characteristics of five existing PBL programs operating in medical schools as a method of preclinical education; 2) determine the self-identified goals and essential components of these programs; 3) report the strengths and weaknesses of existing PBL programs as described by students, faculty and administrators; and 4) develop a personal analysis of these programs (in terms of their origination, implementation and success) based on the information and impressions I gained.

My visits were for 3-5 days each to the University of New Mexico, McMaster, Harvard, Tufts and Case Western. Though I'm still in the process of formally compiling the results, I am convinced that the problem-based method is sound, and would like to see it implemented at schools across the nation in at least some portion of the curriculum. However, I realized as I traveled that the problems with medical eduction are much more far reaching than questions of methodology. There is the issue of priorities, allocation of resources and commitment to undergraduate education which must be addressed before questions of method and educational philosophy can really be determined. The truly far reaching accomplishment of programs like McMaster, New Mexico and the others is that they have decided that medical education is important and deserves

a commitment to excellence equivalent to patient care and biomedical research.

AAMC Problem Based Learning Workshops

Stimulated in part by initiatives of the Organization of Student Representatives, a workshop focusing on the development and implementation of problem-based learning in medical school curricula is offered under thte aegis of the AAMC Management Education Program. The workshop is entitled, "Managing Institutional Change: Introducing a Problem-Based Learning Curriculum." The purpose of this workshop is to assist the leaders of North American medical schools in managing institutional change, specifically adopting a curriculum change in the form of problem-based learning. Participants learn how to analyze the culture and climate of their own institutions in determining readiness for change. During the workshop, participants interact with colleagues in like roles from other institutions and with the members of their own institutional team as they work through the case studies and exercises in an effort to develop an institutional plan.

Objectives of the workshop are:

* to provide participants with an opportunity to experience the problem-based learning methods and analyze the nature and process of the approach. Participants are placed in the role of students who work through a problem case in a small group tutorial.

* to examine strategies for increasing the likelihood of the implementation of the planned change.

* to understand the involvement of the leadership of the organization and the levels of their participation in the change.

* to analyze external forces impinging on change issues at the institution

* to explore the costs associated with the problem-based

learning approach and mechanisms for financing.

* to explore and discuss various methods for evaluating the curriculum and assessing students' abilities.

* to discuss ways of obtaining faculty commitment to change.

Schools bring teams of four to six individuals to the workshop to explore the problem-based approach and identify ways to implement the curriculum change at their own institution.

B. Introduction of case study approach to second year pharmacology curriculum: An application of "Principles for Change"

Julie K. Drier, University of Minnesota-Minneapolis

After 3 months of listening to my fellow classmates and myself grumble about our year two pharmacology course, I decided that action was needed. Initially, I informally discussed the pros and cons of the course with classmates, in order to identify perceived problems and clarify students' perspectives. Informally, I attempted to obtain consensus among classmates with respect to perceived problems and needed changes. Several "unplanned" lunch meetings led to stimulating and informative discussions which increased my understanding of the varied opinions of my classmates.

I tried to focus on understanding my classmates' experiences and interpretations versus my own, so that I might best work as a class representative. This approach was beneficial in that: 1) final conclusions and suggestions were more reasoned and rational, and 2) focus on the "common good" rather than on a "personal agenda" reflected my role as an informal representative of the second year class. My credibility and power as a spokesperson was increased by the ability to express myself as a representative of a group, as opposed to an individual with personal "gripes" about the course.

Discussions with fellow students revealed a range of opinions and degrees of emotional investment. Some of the most active complainers were also least able to develop constructive approaches to the problems. It was useful to identify "complainers," who used the failures of the course as a focus for pent-up frustration and

anger. These individuals seemed to seek emotional expression, so I listened as they vented their frustrations, but did not attempt to actively involve them in strategy planning sessions. Rather, I sought reasoned, rational students who were able to assume constructive advocacy roles as representatives of the class.

Once my homework was done, I drafted a document which outlined strengths and weaknesses of the course and highlighted suggestions for improvement. This document served as a springboard for discussions with faculty, Educational Policy Committee members, and students.

By formal letter, I requested an opportunity to discuss my concerns about the pharmacology course with the Chairperson of the Pharmacology Department (also course director) as a representative of the second year class and an AAMC-OSR representative. My request was granted. I found the head of the department to be very receptive-- definitely not the ogre I had expected based on the stories I had heard from other students. He made positive suggestions, such as requesting permission to circulate the document, which I had prepared, to all Pharmacology Department faculty for comments and suggestions. He referred me to several department members who were interested in specific areas discussed in the document, and suggested that I directly approach these individuals. I did so, and slowly (very slowly) noted progress.

I found that interest and motivation for change were already present in the department. The faculty seemed to be waiting for a reason to act-- a reason to exert the extra energy needed to make changes. As an excited, interested, energetic student, I partially filled the role of "a reason." I prodded them on, stimulating the "teacher" in them to get busy and work toward improved medical education.

To some extent, the success of my proposal reflected the persistence and energy with which I pursued the goal. I definitely sensed that several proponents of the status quo thought I would lose interest and that would be the end of the proposal. I surprised them with my polite persistence and interest. At first it seemed as though several faculty who were known to have previously refused to seriously consider major change, were simply "humoring" me. Nevertheless, I "hung in there" and slowly noticed that, at least sometimes, the did listen. With slow persistence, I was able to gain respect, and influence and stimulate them to consider the need to examine the quality of the curriculum and work toward its improvement. Eventually, I found myself working with various faculty members to reach compromises, which resulted in the institution of some major changes (e.g. the introduction of case studies into the year two pharmacology curriculum, and increased awareness of student interest in the quality of lectures and teaching).

Incidentally, it was most interesting to note that one of the strongest supporters of the case study idea was a faculty member, who had previously entertained similar ideas. I noticed that this faculty member referred to the case studies as his idea. Despite this small insult to my pride, I realized that my attempts to get "powerful" faculty members to buy into my idea had been successful.

My experiences with this project reminded me of the lack of reward and incentive for quality teaching. Several of the faculty described mostly negative instructions with students who came to their offices to complain. Most of them had never been complimented by a student for an excellent lecture or handout.

In conclusion, affecting meaningful change takes time, energy, persistence, and dedication, and remember...

The Moral of the Story If you are trying to institute change for the "glory of it all"-- you may be disappointed! Rather, my experiences as a change agent are more appropriately described by the cliche "It's a dirty job, but somebody's got to do it!!!"

C. How to use a computer in medical school

Andy Spooner, M.D., University of Tennessee, Memphis

In the late 1970s, computers got small and cheap enough for the average person to buy one. Americans bought them, and most of them gathered dust in dens and family rooms, used only for games and an occasional attempt to waste time cataloging recipes and album libraries.

Medicine, a conservative profession, has taken a while to realize the utility of small computers. This is unfortunate, since computers should have become a common tool for doctors to use in handling medical knowledge years ago.

In this short commentary, I will express my opinion as to how computers should be used in medical schools and how individual medical students may attempt to enhance their education by the use of these tools. I welcome suggestions from other medical students and anecdotes about how computers are being used at other schools.

First, you need to know what you want to do with a computer.

Later on, I'll talk about computer applications in medicine, but for now bear in mind that computers are useless unless you have something you need done that a computer can help you with. Computers in medical schools have been used as general information management tools, as substitutes for laboratory activities, as tools for medical research, as information sources, as instruments for student evaluation, or as adjuncts to communication.

You can make it through medical school without a

computer. But if you learn how to use them while in medical school, you'll be able to take advantage of them later in your practice of medicine. This is the most important reason to seek computer literacy in medical school.

Second, you need a computer.

Many medical schools are seeing the value of providing "computer labs" in which small computers are available for student use. These machines are used for assignments or for general word processing or whatever the student desires. It is a cheap way for a student to learn how to use the machines. If your school does not have a computer lab, you , as the OSR rep, need to find out why and work to correct the situation.

Many campus bookstores have discount programs for their students on Macintoshes, IBM PCs, or IBM compatible machines. A lease-purchase program may lessen the impact of this purchase, which usually runs $1500 to $2500. You should be pretty serious about computers before you take this plunge, so try out the computers in the computer lab, or a friend's, before buying.

A modem (a device used to hook up the computer to a telephone line) should be considered basic equipment for the medical computer user.

Third, you need software.

Basic software includes four components: a word processing package, a spreadsheet program, a database program, and telecommunications software. These four types of programs are often sold as a unit. "Public domain" (free) programs are available for use, especially for the IBM compatible line, but these programs tend to be simplistic and lack good documentation. Purchasing software is a good

investment, and computer magazines are filled with ratings and reviews of popular packages.

Other programs you might need are:

*Statistical software, if you are involved in research and need to crunch numbers

*Advanced telecommunications software that allows more efficient access to on-line information services

*Graphics software for your artistic side

*Desk top publishing software for more advanced presentation of newsletters and other printed matter

*An endless supply of other programs depending on your specific needs (let's not forget game software for relaxation!)

Stick to the basic four at first-- you'll find that these programs can handle almost all of your needs in medical practice. You do not need specific "medical software" to use computers in medicine!

The basic four types of software can be used in the daily pursuit of medical education.

Everybody knows how small computers are employed most: word processing. Even in the era of multiple-choice, computer-scored tests, medical students are required to write at least a little, Debate rages over whether a computer can actually help you to write better. They cannot; computers can only help you keep track of what you write and print it in a more readable form than you might otherwise. This is a tremendous help.

Another fundamental function of computers is, well, computation. Medicine tends not to be a

quantitative field, but a spreadsheet program, which allows you to arrange numbers in rows and columns and perform calculations on them (means, standard deviations, sums, etc.) helps greatly in the field of biomedical research. Everyone should try to perform an analysis of variance while in medical school, but no one should have to do it by hand.

Keeping track of information-- usually in the form of words and numbers-- is the task of database management. Medical students are exposed to this when they use the hospital computer to look up lab results or a patient's room number. Other uses in medical school include keeping track of journal reprints, looking up drug interactions, or obtaining medical literature citations. The latter function is usually achieved via an on-line service, which brings us to the fourth basic type of software-- telecommunications.

Telecommunications is the most complex, yet the most exciting function of computers in medicine. using a device called a modem, one attaches the computer to a phone line and hooks the computer up electronically to another computer. The other computer then sends information right to your screen. The most popular use of this is a medical literature retrieval service. Most medical school librarians do this for a fee, but you can do it yourself for much less money and more conveniently at home. There are several on-line information networks that provide student discounts, most notably BRS Colleague and the National Library of Medicine's MEDLINE database. There are other commercial services that provide information of a more general nature, as well as software that can be sent through the phone to your computer.

OSR has a role in computers in medicine.

If computers are not being used at your school, either in the rather mundane ways I have described above

or in more exciting ways such as computer-based tutorials and laboratory simulations, you as OSR rep need to talk to your deans. As a practicing physician, you will use computers. You will use them for billing, patient records, data analysis, lab instrument control, self-testing, literature searches -- the list goes on. It is a part of your general medical education to have some basic computer literacy.

The first thing to do is to encourage the funding and development of a computer lab. This can start with two cheap computers, a modem, some basic software, and a printer-- probably less than $2500 in total initial cost, with only small continuing costs for paper and on-line time.

The next thing to do is to encourage the use of computers in the curriculum. There are physiological simulations that can enhance the value of laboratory experiences ore replace live demonstrations. Literature searching should be a part of any curriculum that teaches the analysis of the literature. No epidemiology course is complete without actual experience in calculating the statistics on a computer.

OSR will attempt to include computers in all of its future meetings. AMA-MSS and AMSA already do; there are subgroups of these organizations dedicated to the promotion of computers as tools for the physicians. "Experts" in the sue of computers, i.e., medical students with previous computer experience, often congregate at these meetings to instruct other students in how to get started. If you get involved in the national medical educational scene, you will see computers. If your school is behind, push it ahead. If your school is advanced in the use of computers, help other medical students learn how to use these information management tools. You'll be a better doctor for it.

D. Affecting change in medical education from a student's perspective

Chris Bartels, University of Virginia School of Medicine

October of this past year heralded one of the most important student documents in years concerning a critique of the their year clinical rotations at the University of Virginia School of Medicine. What ever happens to those written evaluations hastily completed at the end of a clerkship; who sees them and what is done with them? A lack of answers to these queries prompted a group of fourth year students, sixty-four in all, to compile a forty page report which a) summarized the opinions of students from both the evaluations and personal interviews and b) made constructive criticisms and recommendations to the course directors.

The topics of discussion were:

1) Objectives of the course
   a) performance
   b) cognitive
2) Best possible format for ward teaching
3) Good/bad attendings, housestaff, etc. mentioned by name
4) Presence or absence of feedback to students
5) Lecture and conference evaluation

Simple, right?-- the best answers usually are. However, the ultimate success of the project rested on a few points:

A) Sufficient opinion was solicited-- almost half of the class of 1988 participated; a number unheard of in previous reports

B) Primary reviewers were entering specialties other than the clerkship they were reviewing

C) Report was timely

D) Using names (good and bad) and specific information got attention-- only the clerkship director and other higher ups had access to the unedited copy of the report (i.e. the names of the bad faculty and housestaff were blacked out on the copy made public)

E) Success relies on the understanding that the report is not a "hit list" but that students are concerned with medical education and are partners working with faculty to improve education at their institutions

F) The report was widely disseminated to both faculty and students

One point to add is that the climate was right for such a report when we printed it. The new Dean of the medical school expressed great interest in medical education when he entered his position two years ago. He called a retreat at the end of last year which attracted over 100 students and faculty to discuss the impact of the GPEP report thus far on the University of Virginia. Students were the first to print a written report of the conference. Finally, a strong student government and sixty-four fourth year students who were willing to spend time on a report that they would not reap the benefits of made the clerkship report such an important document.

Following is a sample copy of the report...

This form was given to each student reviewer:

CLERKSHIP EVALUATION FORMAT

Clerkship: Director:

Length:

Number of written reviews: (gathered from the usual questionnaires handed out by the course director)

Number of reviewers:

Objectives: 1. what are they
2. how are they stated
3. handout value

Ward Experience:

Format:
1. level of responsibility
2. teaching opportunities
3. call schedule
4. ambulatory care experience
5. coordination with attending's and housestaff's schedule
6. reading

Attendings: good/bad and why

Residents: good/bad and why

Evaluation: feedback, job performance, helpfulness

Lectures: organization, occurrence, good/bad and why

Exams: oral, written; quality; helpfulness in synthesizing information; importance for grade

Objectives revisited: were they met, suggestions for improvement

This report represents the consensus opinion of the class of 1988 about the clinical clerkships for the year 1986-87. The report was fashioned in six weeks from collective student input. One primary reviewer wrote each review by gathering information from written clerkship evaluations, group meetings, and interviews. Each primary reviewer intended to enter a field other than that of the evaluated clerkship. This initial review was then considered by five to ten other consultants, with consensus opinions resulting in the addition or deletion of comments. Finally, the entire report of all six clerkships was evaluated by fifteen final student reviewers, again to ensure that the facts and opinions expressed were both accurate and appropriate. The result is a comprehensive report involving over sixty students in its preparation.

An "objectives" approach has been used to evaluate how well the clerkship experience satisfies its objectives. Each review starts by stating the objectives for the clerkship, their use, and how they were initially addressed. The ward experience is then addressed with comments about the level of responsibility, teaching, and job performance feedback. Lectures, conferences, reading and examinations are reviewed to evaluate their effectiveness in helping students to assimilate the material. From the above base, the objectives are revisited, and finally, suggestions for improvement are made which summarize ideas expressed throughout the review.

Both strong and weak aspects of each clerkship are highlighted in the report. Constructive criticism is the standard, and every attempt has been made to give a fair appraisal. The names of specific individuals have been used to highlight both positive and negative ward experiences. It is the hope of the committee that this information will be used to provide feedback to encourage continued excellence in those who have taught well and to promote change in those who need

improvement.

A summary statement of general findings concludes this report.

SAMPLE REPORT:

Clerkship: ( ) Director: Dr. ( )

Length: 8 weeks

Number of written reviews: 105

Number of consultants: 7

Objectives: Course objectives were included in the introductory packet. In summary, they stated that during the ( ) clerkship students should (1) acquire knowledge regarding major ( ) diseases and preventive care in ( ); (2) apply knowledge of basic sciences and clinical medicine to clinical situations; (3) develop skills in history taking and physical examination with ( ) patients; (4) observe and perform commonly used ( ) procedures as indicated; (5) develop good physician-parent relationships; and (6) adapt well as a team member.

Ward Experience: Student either rotated through four weeks of wards at Roanoke Memorial Hospital and four weeks of the ( ) Center at UVA, or through four weeks of wards at UVA coupled with two weeks each of the ( ) and subspecialty clinics. Each group has been evaluated separately.

(1) **UVA Wards**: Students rated their overall experience very highly, with a mean score of 5.09/6. The enthusiasm and teaching ability of the housestaff and attendings were repeatedly cited as the strongest features of the clerkship. Lectures and subspecialty clinics were cited as areas that needed improvement.

Patient Care: Students felt that the number of patients assigned to them during the clerkship was appropriate, with and average of four at any one time (range 1-7).

However, the level of responsibility was felt to be limited, meriting a mean score of 2.51/5. Most students felt that their purpose was to write notes, and that resident/intern/student group H & Ps were a poor educational experience. The number of procedures, too, was overwhelmingly judged by students to be too few, opportunities meriting a quality rating of 1.66/5. Most students were not even allowed to draw blood on { } patients.

Rounds: Rounds were felt to be a positive learning experience with a rating of 4.51/5. They revolved almost exclusively around student presentations and had an educational focus. This focus was motivating and refreshing, a welcome change from other clerkships.

Subspecialty Clinics: The level of student involvement in the clinics was felt to be inadequate. While some attendings allowed students to see patients as the primary care physician, others permitted students only to watch. Students did appreciate the opportunity to read. Two clinics really involved students in primary patient care, namely cardiology and endocrine.
{ } night and weekend clinic: The opportunity for students to be the first to see the patient was outstanding. Further, having students interact with attendings and residents one-on-one for presentation enhanced the experience. This set-up should serve as a model for the ambulatory care experience.

Attendings: Students regarded the attending staff very highly with a mean score for interest and cooperation of 4.64/5 and for teaching effectiveness of 4.69/5. Attendings that evoked an especially strong positive response were Dr.s { }, { }, { }, and { }. Dr. { } provided a good interactive teaching experience during sit down rounds. Dr. { }, while a strong educator, was felt by students to teach by intimidation. Dr. { } was felt to be negative in her approach to students.

Residents: For being interested and cooperative, the housestaff received an average mark of 4.65/6, while for teaching they collectively received a mark of 4.43/5. Students felt that Dr. { }, { }, { }, { }, { }, and { } were all particularly interested in making time to teach and to include students in patient care.

Evaluation: Most students felt that they received adequate job performance feedback at the end of a particular attending's time, but did not feel that residents provided the same.

(2) **RMH Wards**: Students did not rate this ward rotation as highly as they did at UVA; however, it was still regarded as a favorable experience with a mean score of 4.39/6. Dr. { } was repeatedly cited as one of the strong points of the rotation and was described as an excellent clinician and teacher who took great interest in students. The clinic exposure was also noted to be quite good. Students felt that the ward exposure to a diverse patient population was lacking, this aspect receiving a mark of 2.30/5 for number and responsibility. Procedures, as at UVA, were felt to be inadequate, with a mark of 1.43/5. Lectures were felt to be good in providing general exposure to situations not encountered on the wards, and there was plenty of time to study.

{ }: This experience was felt to provide inadequate patient exposure and to be too long for a general { } clerkship. Very few general { } problems were encountered here. Including it as a subspecialty option for two weeks might be an option. This rotation combined with RMH gave inadequate exposure to { }. Still, the attendings, particularly Drs. { }, { }, and { } received high marks for their teaching concerns, and the housestaff was felt to be good in general. The { } staff was felt to be especially helpful as well. The rotating attending system was a negative feature

because of the decreased continuity in attending exposure and feedback in patient problems.

Lectures: Lectures were a weak point of the rotation. They received a value of 3.03/5 in educational value. Too many lectures were cancelled, and of those that did occur, their relevance was felt to be 3.63/5. On average, students would not have preferred lecture replacement nb reading assignment. Many students felt that the lectures would have been better had they used the case study format and a more pragmatic approach. Certainly, Drs. ( ), ( ), ( ), ( ), and ( ) used the previous suggestion to great advantage. Dr. ( )s lecture was not regarded as being particularly relevant.

Reading: Several sources were listed in the handout, and most students chose to use the Little Brown spiral by Roberts. This was felt to provide an excellent overview and to be quite useful for the National Boards exam.

Exam: The National Boards ( ) exam was felt to be fair and counted for 25% of the final grade.

Grades: Grades were felt to be fair, with the ward experience counting for 75%. However, in determining the ward grade, it was felt that the attending and residents should not consult in a "grading" conference but rather should grade on what was observed individually. These evaluations should be reviewed by the student with the attending and chief resident.

Objectives revisited: ( ) was felt to be a very academic clerkship with less patient exposure than on any other services. Most students felt that they had gained an excellent knowledge base, but concern about the ( ) rotation was expressed. Students felt that they were team members, but often felt bypassed by the resident and intern for patient care. The ( ) experience provided outstanding practical patient care

and knowledge, as did the { } night and weekend clinic. The subspecialty clinics provided time to read, but otherwise did not involve students enough in the actual patient care. Students did not perform even a minimal standard for procedures, most notably not being allowed to draw blood on { } patients.

Suggestions:

1. Make the { } a two week subspecialty option, and then involve Roanoke students in another subspecialty clinic as well.

2. Set expectations for attendings in the subspecialty clinics that focus on student involvement.

3. Involve students more in patient care discussions and interactions, while deemphasizing "group" H & P.

4. Allow students to draw blood { } { } as deemed appropriate, (e.g., easy sticks) or reevaluate procedures objectives.

5. Involve students in more procedures, not as observers.

6. Revise the lecture schedule to provide more pragmatic lectures to occur.

7. Provide more on-the-job feedback by residents and attendings.

Conclusion

Each clerkship needs clearly stated objectives which review the ward experience and the academic goals. There seem to be several general themes that run through this report. The war experience with the practical care of the patient is largely resident-dependent for

educational value. Expectations for resident teaching, in turn, are influenced by attending physicians. The role of the ward attending is to provide an active teaching discussion on rounds which involves students with both patient care decision-making and knowledge questions. In addition, a tutorial role for the attending is needed to cover patient care for illnesses not present on the wards.

Students learn the most in an atmosphere where they are treated as valued team members. Work rounds in which residents create lists of "scut" for students to do are note educational. In contrast, rounds through which students arrive at a list of patient care needs involves students in the patient-care thought process. A rigid pecking order of medical academic hierarchy discourages the free exchange of ideas and questions. Perhaps most important on the ward is a positive attitude towards student education from residents and attendings.

Residents and attendings need to be taught how to teach and must have teaching set as an expectation for their job performance. In addition, on-the-job performance evaluation for students should be encouraged from residents and attendings throughout the clerkships. Residents must learn how to evaluate. It seems that the current system of evaluation for evaluation's sake has lost the essence of teaching: to help students to become better clinicians. Call must be educational and must allow students to be involved with initial patient evaluation, a process through which some efficiency might be lost.

The academic part of the clerkships needs to be strengthened by providing a lecture series which focuses on patient management and uses case studies. Case conferences with student presentations should be more like tutorials. Reading as independent study, the skills of which are so important for the continuing

education of graduates, should be directed. It is not spoon-feeding, but rather, organization of an approach to assimilating the information that is needed.

Ambulatory care is quite prominent in all of the clerkships with the exception of medicine, and greater student involvement in the clinic should be encouraged in the third-year, where students learn the basics, not in the fourth year as a requirement. As the ward becomes more inhabited by critically-ill patients, the clinic will become the place for introduction to patient management. A system of active student involvement in clinic medicine must be established.

Students are quite interested in working with the faculty and administration to improve the third year and medical education in general, and as consumers of this education, students are a valuable resource. Clerkship planning committees are encouraged to have senior students as members. Working as future colleagues, students, faculty and administration are most likely to affect change together.

AAMC Clinical Evaluation Workshops

The AAMC Clinical Evaluation Program was initiated to improve the evaluation of students during their clinical training. A major outcome of the program has been a workshop series entitled "Systems for the Evaluation of Clinical Students: An Institutional Management Approach." The workshops are offered under the aegis of the AAMC Management Education Program. Six sessions of the workshop have been held sine 1986; 40 medical schools have attended the workshop. For each workshop, up to six schools send teams of four to six persons to analyze their current evaluation systems, design new ones or revise existing ones, and develop schedules for implementation.

Participants in all of the workshops to date have prepared reports on the progress of their activities since the workshop and their experience in implementing their proposed plans for action. This information is available in a report and will be used both as a means for offering assistance to schools and to derive relevant aggregate information about the "state-of-the-art" of clinical evaluation. Current plans are to hold two clinical evaluation workshops during 1988, with a revised format to reflect information and experience gleaned from the first two years of the workshop. As part of the revised workshop, participants from previous clinical evaluation workshops will serve as faculty facilitators to share their experience implementing clinical evaluation systems at their respective institutions.

E. Women in Medicine Project Ideas

Ann Reynolds, Medical College of Georgia

a. Start a Women's Organization (or revitalize ne that is already established)-- either a school-based organization or a local chapter of AMWA. Include students, residents, and faculty-- many schools have a "Women Physicians' Council" or "Medical Women's Association." For information about AMWA, call Eileen McGrath (212) 477-3788 or (212) 533-5104.

b. Brown Bag Lunches, Pot Luck Dinners, Wine and Cheese Parties-- as a support group to discuss women's issues and get to know residents and faculty--NETWORKING!!

c. Service Project-- teach Nutrition, Family Planning, etc. at local Girl's Club (program at U. Tenn., Memphis) or participate in a Rape Crisis Program.

d. Organize a Campus Day Care Center for students, residents, faculty and other employees with longer hours and sick care.

e. Provide a reading list (or shelf in the library) with books of interest to women (book reviews in Women in Medicine Update)

f. Get to know your AAMC Women's Liaison Officer-- have her share her copy of the Women in Medicine Update with you.

g. Newsletter for women on your campus.

h. Mentor program-- match students with residents or faculty

i. Reception to welcome new women students and residents, reception for alumni

j. Career planning seminar

k. Establish a committee such as "Status of Women Committee" appointed by the Dean to review women's concerns or complaints.