

# THE UNIVERSITY OF ARIZONA COLLEGE OF MEDICINE

## Institutional Self-Study for the Liaison Committee on Medical Education October 2005

### INSTITUTIONAL SELF-STUDY FOR THE LIAISON COMMITTEE ON MEDICAL EDUCATION

#### Introduction

University of Arizona Self-Study for LCME 2

Many of the strengths noted in the Report of the Survey completed by the 1998 LCME survey team characterize the College of Medicine today. The faculty continues to be outstanding and strongly committed to teaching medical students throughout the curriculum, and derive justifiable pride from their educational activities. The Dean's Staff and administration, especially the student services staff, are effective and valued by the students. Integration and coordination between the Tucson and Phoenix campuses remain strong as the relationship enters a new phase with the planned expansion of the Phoenix program. Students are highly valued, and their opinions and recommendations about the undergraduate educational program are solicited and considered. The College's community-based service-learning programs, in particular the student-managed Commitment to Underserved People (CUP) program, are exemplary and reinforce the students' strong sense of altruism. Educational facilities, including the Arizona Health Sciences Library and the Learning Resource Center, and other services such as teleconferencing capabilities, support student learning. These strengths promote an excellent learning environment for medical students.

**Progress in Areas of Concern** The period from 1999 to 2004 has been one of significant instability at the highest levels of administration, with several changes in leadership of the dean and the vice president for health sciences. Although this instability has delayed progress in College endeavors, and hindered our ability to address some of the concerns identified in the last accreditation process, the College is entering a new period of accomplishment and growth. In March 2004, Dr. Keith Joiner began his tenure as Dean and is moving the College forward with a new emphasis on strategic planning and growth in all missions of the College.

The 1998 survey team identified the need for a more coherent and detailed strategic plan. As described in this Self-Study Report, the College has embarked on a sequential approach to the development of research, clinical and educational plans. Planning for the MD degree program has been launched with the curriculum revision process of *ArizonaMed*. An updated Strategic Plan for Research recently was completed, as was a new strategic plan for the clinical enterprise, "*Clinical Vision and Strategic Priorities 2005-2010*". The clinical strategic plan will be coordinated with strategic plans for University Medical Center and the University Physicians Healthcare practice plan, and all three organizations have expressed a commitment to transparency in the sharing of financial and organizational data. This agreement will help the College rectify the 1998 survey team's concern regarding inadequate sharing of financial information among the College, clinical affiliates and the clinical practice plan. The College also has recently engaged the services of an outside consultant, Tripp Umbach Healthcare Consulting, Inc., a national leader in academic medical center planning, to work in partnership with the administration and faculty to develop an overall strategic plan for the College of Medicine.

In the last LCME review both the College of Medicine's Self-Study Task Force and the LCME Survey Team identified several areas of concern about the educational program that have not been optimally addressed in the past eight years. However, the current curriculum revision process, *ArizonaMed* (described throughout this self-study summary report and in Appendix II), has provided a new opportunity to address these areas of concern and implement new procedures that will enable the College to better meet educational standards.

In the 1998 report of the survey team, the College of Medicine was commended on its robust educational

objectives to guide program planning and evaluation. The College of Medicine's Self-Study Task Force indicated that these same institutional objectives had not been tested through their use in program planning and evaluation; this situation has not changed significantly in the past eight years. However, in the recently implemented *ArizonaMed* curriculum revision project, the proposed curricular program and the strategies for evaluation of student performance are based directly on a new set of institutional objectives.

The 1998 Survey Team identified another opportunity for improvement in the inadequacy of strategies to evaluate interdisciplinary areas of the curriculum. In response to this concern, the Curriculum Committee instituted an Interdisciplinary Topics Subcommittee charged with surveying curricular coverage of specific interdisciplinary topics deemed insufficient, as identified in the AAMC Graduation Questionnaire, the LCME Annual Reports, and other sources of student feedback on the curriculum. This subcommittee University of Arizona Self-Study for LCME 3

also is charged with creating proposals to incorporate these topics into the curriculum. A plan for the integration of evidence-based decision making emerged from this subcommittee and has been approved as a curricular thread for the new curriculum. Additionally, the *Interdisciplinary Seminar Series* was developed to provide educational sessions on interdisciplinary topics considered to be lacking or deficient in the curriculum. When the *ArizonaMed* curriculum is fully implemented, interdisciplinary topics, which have been developed as themes/threads, will be woven throughout the curriculum. Professional staff will be identified to manage each theme/thread, and along with careful adherence to institutional objectives in the design of student performance assessment, a structure will exist through which interdisciplinary areas of education can be monitored, updated and evaluated.

Although not listed as a specific concern, the 1998 Survey Team suggested that the Curriculum Committee apply the same rigor exercised in our in-depth course/clerkship review process to the curriculum as a whole. The Evaluation Subcommittee of the Curriculum Committee was created to provide a strategy for review of the curriculum as a whole. This subcommittee is charged with triangulating evaluation data from numerous sources (student feedback on courses, graduation questionnaires, the Residents'/Residency Directors' Questionnaire, in-depth course/clerkship reviews, and student focus groups) to identify trends and make recommendations regarding the entire curriculum. The new curriculum design, the availability of an on-line curriculum management system, and the proposals for curricular governance currently being discussed in Curriculum Committee, should facilitate review and oversight of the curriculum as a whole in a more comprehensive fashion.

The clerkships still struggle with providing consistent structured and observed assessments of students' clinical skills, as identified by the 1998 Survey Team, thereby losing opportunities to facilitate formative evaluation. Since the last visit, most of the clerkships have implemented strategies by which faculty observe students' clinical skills and provide critique and instruction. For example, students are observed performing two mini-Clinical Examinations (CEXs) in the Medicine Clerkship. In the Surgery Clerkship, students are observed completing two histories and physical examinations and a set of five checklists for the appropriate examination of common surgical problems. Despite these improvements, students request additional opportunities to be observed performing clinical skills and to receive critiques; working with the clerkship directors, we will continue to develop and refine these procedures.

Issues with student health care coverage still exist, as identified in 1998, primarily regarding the lack of prescription coverage. However, student accessibility to health services has been improved with the opening of a student health satellite clinic on the College of Medicine campus. In addition, in 1998, the protocol for handling infectious disease exposure was neither clear nor coordinated. Immediately following the LCME visit, a new system for addressing potential exposures was created, described in the Medical Students section under Universal Precautions.

A final concern identified by the 1998 survey team was faculty confusion about the operational meaning of tenure and the related institutional obligations, and insufficient institutionalized control over the award of tenure positions. A Special Assistant to the Dean for Faculty Development recently was named. One of her first projects is to design an orientation for new faculty, which will provide both new faculty and their department leadership with another source of information and explanation of the promotion and tenure system at the College of Medicine and University of Arizona.

**Management of the Current Self-Study** To accomplish the current self-study, a task force and five committees, consistent with the five database sections, were formed with representatives from the faculty at-large, administration, professional staff, clinical affiliate faculty and medical students. The Dean for Academic Affairs and the Associate Dean for Curricular Affairs provided oversight for the entire process.

Professional staff from the Office of Curricular Affairs provided support for each of the committees. Each committee reviewed database materials and the Medical Student Survey, and completed its task with a written report answering each of the self-study questions, and including a list of strengths, areas for improvement, and strategies to make those improvements. The Task Force, consisting of the chairs of each self-study committee, department heads, teaching faculty, center directors, students, administration, and professional support staff, synthesized these reports and generated a summary report. The Self-University

of Arizona Self-Study for LCME 4

Study Summary Report concludes with a list of the strengths and areas of improvement considered to be most critical and proposed strategies for addressing each area.

This self-study was completed at a time of significant and rapid change, making it somewhat difficult to complete, because programs and resources and issues all are changing daily. Regardless of the difficulties inherent in conducting a review in such a dynamic environment, this self-study has proven to be enormously useful. It has served as a catalyst for reviewing our strengths and how these strengths can be employed to support achievement of new goals. The self-study has also focused our attention on areas that will hinder our progress until identified improvements are made. This Summary Self-Study Report will be widely distributed and discussed in General Faculty meetings in Tucson and Phoenix, and in the policy-level committees through which strategies for improvement will be implemented.

## **I. INSTITUTIONAL SETTING**

### **Governance and Administration**

**Institutional Planning** Institutional priorities for the College of Medicine are set by the Dean, in consultation with advisory groups in four major areas: 1) education, 2) research, 3) clinical programs, and 4) Phoenix programs. Broad planning and priority setting are accomplished through the Dean's Cabinet and the Dean's Faculty Advisory Committee according to a policy of shared governance, and through regular meetings among the Dean, the Dean for Academic Affairs, the Associate Dean for Clinical Affairs, the Associate Dean for Research, and the Associate Dean for Administrative and Financial Affairs. The Dean's Cabinet (comprised of the associate deans for Clinical Affairs and for Research, and three faculty leaders appointed by the Dean) advises the Dean in setting institutional priorities for growth and development, goals for research, leadership in the organization, and development of the College's clinical enterprise. The Dean's Faculty Advisory Committee (comprised of six faculty members elected for three-year

terms by the general faculty) advises the Dean and informs the faculty on matters of strategic planning: budget, personnel policies, compensation, promotion and tenure, curriculum policy, admissions policy, and student affairs. Phoenix planning was conducted as part of overall planning in the College. In August 2004, an initiative was begun to build a full four-year medical school campus in Phoenix as an expansion of the University of Arizona College of Medicine, with the first class starting in 2007. These efforts required development of a new planning structure for Phoenix. Planning for the Phoenix Program is beyond the scope of this self-study. Based on a January 2005 visit and ongoing consultations with LCME, this will be the subject of a separate report and site visit.

The College of Medicine is entering a new era emphasizing strategic planning, and has embarked on a sequential approach developing research, clinical and educational plans, each of which will be integrated into a broad institutional plan for the College. A Strategic Plan for Research is in place and updated annually. Strategic planning for the clinical enterprise has been the most complex in that it extends outside the governance of the College. However, a COM clinical plan, "*Clinical Vision and Strategic Priorities 2005-2010*", has recently been completed and will be coordinated with the strategic plans for University Medical Center and the University Physicians Healthcare practice plan. Planning for the new medical student curriculum (*ArizonaMed*) currently is underway.

The intent of these planning initiatives is to complete and integrate plans both within the College of Medicine (research, clinical and educational) and with our partners (UMC, UPH, other colleges). Planning activities in the venues of education, research and clinical enterprise are summarized below.

**Education Planning** There is currently no planning effort that addresses coordination of the entire educational mission for the MD degree program, graduate science education, and graduate medical education. Heretofore, educational planning efforts have centered on the MD degree program. Curriculum planning for the MD degree program has not been successful in achieving broad changes. A prior attempt in the 1990's at planning for global curricular change (Comprehensive Curriculum Analysis and Planning Project, or CCAPP) met with significant department head and faculty resistance, a

University of Arizona Self-Study for LCME 5

challenge that the Dean was unwilling to assume with the additional political pressures affecting the College at the time. Nevertheless, the CCAPP process did stimulate some changes, including the introduction of a problem-based learning unit, more small group activities in courses, better integration among courses that ran concurrently, and implementation of a clinical preceptorship in Years I and II, the *Longitudinal Clinical Curriculum (LCC)*.

In 2004, the Dean for Academic Affairs implemented a major MD curriculum redesign initiative (*ArizonaMed*), organizing teams of faculty, students and staff to develop a new four-year curriculum. Six teams of faculty and students have been charged to design various aspects of a new curriculum. The **Integration Team** is charged with developing a curricular structure that integrates the learning of normal function, disease, prevention, treatment, clinical skills, social and behavioral content and topics in humanism. The **Learning Team** is developing instructional templates that utilize multiple learning approaches emphasizing active learning. The **Evaluation Team** is examining methods for assessing student performance that support the recommendations of the Learning Team. The **Humanism Team** is working on recommendations for incorporating ethics, professionalism and cultural competence content, among many topics, into the new curriculum. The **Interprofessional Team** is collaborating with other professional colleges at the University of Arizona to develop opportunities for learning as part of a collaborative team. Finally, the **Faculty Rewards Team** is charged with recommending financial and recognition rewards for faculty that are appropriate to the quality and quantity of their contributions in this new educational structure.

Before this initiative, planning for the educational program leading to the MD degree took place primarily in the deliberations of the Curriculum Committee, meetings of Course and Clerkship Directors, and course/clerkship-based planning by the teaching faculty. The Curriculum Committee provides oversight to the educational program and establishes general policy regarding the offering of the educational program. Decisions regarding the inclusion or deletion of courses or changes in graduation requirements are made by the general faculty based on recommendations forwarded from the Curriculum Committee. Graduate medical education (GME) planning is governed by the GME Committee, the institutional committee charged with responsibility for monitoring all aspects of residency education and ensuring compliance with established standards and policies of the Accreditation Council for Graduate Medical Education (ACGME). Continuing medical education (CME) is advised by the faculty-elected CME Committee. There currently is no overall governance or planning structure for graduate science studies. These activities are decentralized to the five College of Medicine departments that have graduate science programs or to the graduate interdisciplinary program committees.

**Research Planning** Research planning is accomplished with the advice of the Dean's Research Council (DRC) and the Dean's Cabinet. The DRC, which is chaired by the Associate Dean for Research, is a standing faculty committee with membership elected by the faculty. The DRC members represent senior faculty with active research programs, national study section experience, and on-going translational, clinical, or basic science research, with membership of proportional representation from departments, centers and units. The DRC advises the Dean on matters pertaining to the research programs of the College (e.g., space, faculty career development awards, core facility funding, faculty start-up funds, conflict of interest, legislation, animal welfare/animal rights, indirect cost recovery policy, technology transfer, interdisciplinary programs, and future strategies).

The DRC develops strategic plans for research, which are reviewed by the Dean's Cabinet and approved by the Dean. The most recent update of the Strategic Plan for Research was completed and distributed in January 2005, identifying the following priority areas:

- Strengthening multi-disciplinary research programs in cancer, diabetes, neuroscience, and cardiovascular biology

  - Recruiting more faculty working in multidisciplinary research

  - Maximizing research space utilization

  - Developing a policy for research core support services

  - Developing research incentive plan

University of Arizona Self-Study for LCME 6

- Coordinating research with the Bio 5 Research Institute, a collaborate research program among the colleges of Medicine, Agriculture & Life Sciences, Pharmacy and Engineering

  - Developing biomedical translational research

  - Increasing research education and training

Improving communication throughout the COM research community

Research planning has been successful as evidenced by grant awards received and expansion of research activities and facilities. While the College of Medicine ranks 55th among LCME accredited medical schools in terms of NIH research funding, it is among the highest ranked for a medical school of its size, according to the Computer Retrieval of Information on Scientific Projects database (<http://crisp.cit.nih.gov/>). The amount of total research awards to the COM has increased consistently over the past five years. In FY 2003 and 2004, the College of Medicine received approximately \$121 million and \$136 million respectively in research funding from federal, state and local agencies, private foundations and industry.

Some research relationships have developed primarily on individual bases, rather than through a coordinated, planned institutional effort. The department heads in Tucson and the directors of the various Centers of Excellence have significant research relationships with individual faculty members or institutions in Phoenix. These relationships will be strengthened with future expansion of research activities in Phoenix.

**Clinical Planning** Clinical planning is complicated by the separate governance structures of the College of Medicine (COM), the University Medical Center (UMC) and University Physicians Healthcare (UPH) practice plan. This has inhibited previous efforts at cooperative strategic planning. A joint COM, UMC, and UPH retreat was convened in September 2004, at which time the Dean made a commitment to initiate joint planning by first developing a clinical strategic plan within the COM. A Joint Strategic Planning Committee was established composed of the Dean, the CEOs and CFOs of UMC and UPH, the Associate Dean for Clinical Affairs, the Associate Dean for Finance and Administration, and two clinical department heads. As a first step, a COM plan, "*Clinical Vision and Strategic Priorities 2005-2010*", has been produced under the direction of the Associate Dean for Clinical Affairs and vetted with the faculty, and will be coordinated with the updated strategic plans of UMC and UPH. A weekly Clinical Issues meeting is also held to address operational issues involving the three organizations.

**Governance Structure** The College of Medicine governance structure deals most effectively with issues in the research arena through the Dean's Research Council, which is directly advisory to the Dean. Education decision-making is less direct, because the associate deans for curriculum, student affairs/admissions and graduate medical education report to the Dean through the Dean for Academic Affairs. The COM's influence on governance is most complicated in the clinical arena, because the governance of University Physicians Healthcare (UPH) and University Medical Center (UMC) lie outside the jurisdiction of the College of Medicine; the Joint Strategic Planning Committee was formed to address this challenge and achieve cooperative clinical planning and decision-making.

All three entities (COM, UMC, UPH) have reporting responsibilities to the Arizona Board of Regents (ABOR): creation of new departments or academic programs require prior approval from ABOR before action can be taken; University Medical Center and University Physician's Healthcare are required to advise ABOR of major initiatives such as building projects, and further need the President's authorization to expend more than \$300,000 and \$250,000, respectively.

**Relationship of the Medical School to the University and Clinical Affiliates** The position of Vice President for Health Sciences (VPHS) has recently been eliminated, resulting in a governance structure that divides advocacy for the needs of the four health science colleges. The Dean of the College of Medicine and the other health sciences deans (Nursing, Pharmacy, Public Health) now report directly to the Provost. The Dean has been added to the President's Cabinet, a position previously held by the VPHS, and *de facto* serves on behalf of all the health sciences colleges. The Provost has organized a Health Sciences Council composed of the four health sciences deans, which meets twice monthly.

University of Arizona Self-Study for LCME 7

However, the President's Cabinet and the Health Sciences Council concentrate on academic issues and do not address issues related to the clinical enterprise and relationships with UMC and UPH.

The College has a strong influence on UPH governance; a majority of Board seats are held by COM faculty and administrators, and the chairs of major committees are drawn from the faculty. The relationship of the College to UMC is less direct, although the Dean and one faculty member, elected by the UMC medical staff, serve on the UMC Board of Directors, as does the President of the University. The relationship of the College to UMC also is being addressed through the newly-formed Joint Strategic Planning Committee. The Southern Arizona Veterans Affairs Health Care System (SAVAHCS), like all VA hospitals, also has its own governance and administrative structure, which affects its relationship with the College of Medicine.

There are many formal opportunities for leadership of the clinical affiliates and the COM to discuss educational issues and there is frequent interaction. The widely held opinion is that these venues for conversation and coordination successfully promote the education of the medical students. As described above, there has been a commitment made by the COM, UMC and UPH to integrate their planning more closely.

The day-to-day informal interaction and cooperation among staff at clinical affiliates and COM faculty and Department Heads is positive, collegial and directed toward assuring the quality of medical student education. Formal opportunities at this level, however, are infrequent and limited to faculty who are curriculum leaders. Department Heads and faculty rely on Clerkship Site Directors to bring any medical student issues to their attention in a timely manner.

There is considerable communication and collaboration among all eight Phoenix teaching affiliates and the College of Medicine. Dialogue occurs through many venues, particularly with the Board of the Arizona Medical Education Consortium, which includes the Dean, and whose meetings are attended by the Dean for Academic Affairs, and the Associate Deans for GME (both Tucson and Phoenix-based).

**Organizational Stability** The College of Medicine is emerging from a period of leadership instability at the VP/Dean level that began in 1999. This instability clearly affected planning and major decisionmaking in the College. Significant decisions such as revision of the curriculum, changing alliances with clinical affiliates, and selection of new department heads were difficult under these conditions. The current Dean, Dr. Keith Joiner, assumed his position in March 2004 and important decision making and planning are now moving forward.

There is significant stability among the Dean's staff. Dr. Kenneth Ryan has served as Dean for Academic Affairs since the end of 1999, including a 22-month period as Interim Dean prior to Dr. Joiner's appointment. The Associate Dean for Curricular Affairs and the Senior Associate Dean for Admissions and Student Affairs have held their positions for more than 10 years. The current Associate Dean for Research was appointed in 2002. The positions of Associate Dean for Graduate Medical Education and Associate Dean for Clinical Affairs were filled more recently, following a period of reconfiguration of the responsibilities of these positions.

There has been stability of administrative roles at the Phoenix campus, and the number of administrators has been sufficient for the class size and required functions of the regional campus. Currently, the administrative structure of the Phoenix Program is being reconfigured to facilitate its new mission as a four-year medical education program of the COM.

#### **Academic Environment**

**Graduate Science Programs** Graduate programs contribute to our educational mission and are vital to the research mission of the College of Medicine to "make nationally and internationally recognized contributions to both basic and clinical biomedical research". Active graduate programs also provide opportunities for medical students to participate in medical research. Further, graduate students provide University of Arizona Self-Study for LCME 8

learning resources for the medical students as teaching assistants in small groups, classrooms and laboratory experiences, and as content resources for medical students in understanding course materials. There are five departmentally-based graduate programs in the College of Medicine (Cell Biology and Anatomy, Biochemistry and Molecular Biophysics, Medical Pharmacology, Physiology, and Microbiology & Immunology). In addition, four of the 15 Graduate Interdisciplinary Programs (GIDPs), which report to the Vice President for Research, Graduate Studies and Economic Development, are in the biomedical sciences (Biomedical Engineering, Cancer Biology, Neuroscience, Physiological Sciences). A total of 143 graduate students were enrolled in the five College of Medicine graduate programs in 2004-2005: 110 in doctoral programs and 33 in masters programs. The quality of students is high as measured by their grade point averages, research activities, and evaluations of their performance while in their programs. The overall quality of the graduate programs is high and graduate students publish their dissertation work in peer-reviewed journals and are competitive for jobs both in academia and industry. Both departmental graduate programs and GIDPs are reviewed every seven years, and evaluated on the quality and quantity of students, the effectiveness of the training program and the availability of coursework. Overall, these reviews have been positive; some recommended changes include expanding the enrollment in some graduate programs, creating better integration and/or updating coursework, and providing more elective experiences for graduate students.

State funding for graduate students is limited, but training grants from the NIH have been extremely successful in enhancing the ability of several programs to attract top graduate degree candidates. The

newly established Bio5 Research Institute has improved the ability to attract strong candidates in the basic sciences; new areas of emphasis include interdisciplinary approaches, translational research, and the availability of scholarships to outstanding incoming candidates.

**Residency Training Programs and Continuing Medical Education Activities** Residents are actively involved in teaching medical students. Resident teaching occurs in the vast majority of clerkship sites, with the exception of some preceptorial sites used for the Family & Community Medicine Clerkship. Residents participate in formal didactic instruction of medical students and mentor and work with students on research activities. Residents' teaching skills and performance are evaluated by medical students in their student feedback on clerkships. The majority of students in the 2004 AAMC Medical School Graduation Questionnaire agreed/strongly agreed (79%-99%) that "Residents and fellows provided effective teaching during the clerkship". Likewise, students agreed/strongly agreed (82%-99%) that "Overall, the teaching I received from residents and fellows enhanced the educational value of my clerkship." In the LCME Medical Student Survey, students rated "Quality of Teaching by Residents" as 3.6, with a rating of 4 as "excellent". The largest challenge facing Graduate Medical Education is providing Program Directors with sufficient financial support and protected time for their educational and administrative responsibilities. A clinical teaching workgroup, the Graduate Medical Education Committee, is addressing this issue and working with the Dean to obtain financial support for Program Directors' protected time.

There are no changes in the number of residents or problems with Tucson-based graduate medical education at this time, but opportunities to expand graduate medical education are constantly being sought. The University Physicians Healthcare Hospital at Kino is the major site targeted for expansion, particularly for Family and Community Medicine. Residency programs in Phoenix are not under COM sponsorship, but relationships with Phoenix hospitals have been robust and beneficial to our medical student education. While the sole orthopedic residency in Phoenix lost its accreditation in January 2005, there are still elective experiences available in Phoenix for orthopedic training. One teaching affiliate's internal medicine residency has received a preliminary report of a significantly negative Residency Review Committee (RRC) review; should that site no longer be acceptable for medical student training, there is more than sufficient capacity at other sites.

The Office of Continuing Medical Education provides physicians and other health care professionals with high quality educational experiences. Programs are available to medical students providing additional elective educational opportunities. The clinical departments sponsor a variety of on-going CME events that are required activities in some medical student clerkships.

University of Arizona Self-Study for LCME 9

**Research Activities of the Faculty** The College of Medicine has the research expertise, infrastructure and facilities to promote the mission of the College. Biomedical research at the College encompasses basic science, translational research, clinical trials, epidemiologic and population investigations, health outcomes and pharmaco-economic studies. There are focused areas of research excellence and strong collaborations to translate basic research findings into clinical applications. Clinical research is most visible in the Centers of Excellence.

**Resources for Research** The current and future dedicated space meets the research needs of the College of Medicine, and equipment is more than sufficient. Research space has increased considerably since the last LCME review, including new construction of the Steele Memorial Children's Research Center, the Arizona Cancer Center expansion, the Arizona Arthritis Center, the Sarver Heart Center, and the Life Sciences North building. A new Medical Research Building (MRB) also is now under construction. The Keating Bioresearch Building, which will house the Bio5 Research Institute, also is currently under construction. While not an exclusive COM facility, it will provide significant laboratory space for COM researchers. College of Medicine researchers also have access to research laboratories through the Arizona Research Laboratories (ARL) and the Southwest Environmental Health Science Center. Extramural research funds awarded to faculty have increased more than 68% over the past six years, from \$71.8 million to \$120.8 million, contributing to institutional advancement. There are an adequate number of graduate students in the biomedical sciences to assist in the research program under the direction of their faculty advisors.

**Impact of Research Activities on the Education of Medical Students** A number of programs offer opportunities for medical students to participate in research, including: (1) the Medical Student Research Program (MSRP) supported by the National Institutes of Health and the Dean's office, which has awarded fellowships to more than 500 medical students since its inception in 1981; (2) a combined

M.D./Ph.D. program established in 1990; ten students have graduated, and another ten students are currently at various stages of their training; (3) the Department of Pathology's post-sophomore fellowships for medical students who wish to gain more exposure to research and clinical services in pathology, including wet lab and participation in a research project; initiated in 1996, 27 post-sophomore fellows have been trained; and (4) an extensive elective program that offers research electives in almost every department; more than 53% of 2004 graduating medical students reported in the AAMC Graduation Questionnaire that they participated in a research project with a faculty member.

### **Strengths**

1. An extensive planning process for a new medical student curriculum, referred to as *ArizonaMed*, has been launched to restructure the curriculum from discipline-based to an integrated systems approach emphasizing active learning. The first year of the *ArizonaMed* curriculum will be implemented in the fall semester of 2006.
2. The research program is strong and growing. The College has more than adequate resources to support the research agenda, a strategic plan for research that is used in setting research priorities, and substantial research opportunities that benefit the program for medical education. The College also benefits from cross-campus collaborations and research relationships.
3. Significant stability exists among the Dean's Staff, providing experience upon which to draw in planning and administering the College of Medicine.

### **Areas for Improvement**

1. The educational mission is underrepresented in the College of Medicine governance structure. Currently, the Dean does not interact directly with Dean's Staff in the areas of graduate medical education, undergraduate medical education, or graduate science education. There is also no venue for coordinated planning and governance of graduate science programs in the College of Medicine.

University of Arizona Self-Study for LCME 10

Strategy: The Dean recently has announced the formation of a Dean's Education Council to include the Dean's Staff in medical student education and graduate medical education. A new administrative position will be created to represent graduate science education and to serve on the Dean's Education Council.

2. The elimination of the Vice President for Health Sciences position has left a governance void that is not addressed adequately by the current reporting relationship to the Provost.

Strategy: Work with the incoming new President of the University of Arizona to reestablish a position with appropriate authority to coordinate governance and planning for the health science colleges, and other health sciences entities such as UMC and UPH.

3. Joint strategic planning among the College and its major clinical affiliates—University Medical Center and, to a lesser extent, the SAVAHSC—historically has been inadequate.

Strategy: COM strategic plans for research and clinical programs are now in place. Education planning has focused on the new *ArizonaMed* curriculum, but a broader plan including GME, CME, and graduate science programs will now be developed. These plans will be knitted into an overarching COM strategic plan with the aid of the Tripp Umbach consulting firm. This plan will include strategies for maximizing our relationships with clinical affiliates in both Tucson and Phoenix.

## **II. EDUCATIONAL PROGRAM FOR THE MD DEGREE**

### **Educational Objectives**

The current *Educational Objectives for the Program Leading to the MD Degree* were initiated by the Curriculum Committee and endorsed by the general faculty in 1997. These objectives are organized in six general categories: Problem Solving and Critical Thinking, Clinical Skills, Use of Information, Communication and Professional Behavior, Social and Community Contexts of Health Care, and Selfknowledge

and Lifelong Learning. Because these institutional objectives were developed for an already well-established curriculum, they did not guide initial planning of the curriculum. However, they are stated in terms of sufficient breadth to encompass the current curriculum and learning expectations, as well as reflect LCME standards at that time.

In 2004, the Curriculum Committee recognized the need to update the institutional objectives and drafted a new set to reflect the longitudinal nature of medical education (medical school through residency), imperatives articulated in the Medical School Objectives Project (MSOP), ACGME competencies, and changes in the LCME standards. A subcommittee of the Curriculum Committee reviewed these documents along with objectives from a number of other medical schools to create these objectives.

These draft institutional objectives now place added emphasis on competencies in evidence-based practice, health care delivery in today's socio-economic and political environment, and population health. They have also updated learning expectations in medical knowledge, lifelong learning, patient care, communications and professionalism. Following the basic format of the ACGME competencies, the draft objectives identify a list of skills and competencies keyed to the objectives and appropriate for undergraduate medical education. In this manner, the institutional objectives will better guide the development of an educational program that prepares students for the next stage of their training in graduate medical education.

The draft objectives have not been formally ratified in order to maintain their flexibility and to allow continued development in concert with the development of the redesigned *ArizonaMed* curriculum (see Appendix II). The institutional objectives are guiding the redesign process and each *ArizonaMed* curriculum component and evaluation tool developed to measure student performance will be directly matched to the institutional objectives. In our current curriculum several of the clerkship directors recently reworked individual clerkship objectives and student performance evaluation instruments to conform more closely to the draft institutional objectives. Ultimately all of the *ArizonaMed* curriculum will reflect these objectives. By using the draft objectives to guide curriculum planning and evaluation of both students and courses, a level of familiarity and understanding of the objectives will be achieved by students and teaching faculty that the College has not been able to realize by dissemination of the objectives alone.

University of Arizona Self-Study for LCME 11

### **Structure of the Educational Program**

**Current Curriculum Structure** The basic structure of the educational program leading to the MD degree is fairly traditional. The College of Medicine has attempted only one structural change in the curriculum with the Comprehensive Curriculum Analysis and Planning Project (CCAPP) in the 1990's. CCAPP was not successful in supporting a structural change in the curriculum; positive outcomes, however, included the integration of a clinical preceptorship experience throughout the first two years (Longitudinal Clinical Curriculum-LCC), a unit of problem-based learning (Integrated Problem-Based Learning), and additional small group activities in the courses.

The first two years of the current curriculum are comprised of courses in anatomy, histology and cell biology, physiology, biochemistry, medical and molecular genetics, pathology, microbiology/immunology, and pharmacology. In addition, students take three interdisciplinary courses: Human Neurosciences (coordinated among the departments of Cell Biology and Anatomy, Neurology, Physiology and Pharmacology), Social and Behavioral Sciences, and Preparation for Clinical Medicine. Required clinical clerkships in medicine, surgery, family and community medicine, obstetrics and gynecology, pediatrics, psychiatry and neurology comprise Year III. The fourth year is entirely elective; students must complete 33 weeks of electives to graduate, at least 18 of which must be supervised by College of Medicine faculty. The structure of the current curriculum will change with implementation of the *ArizonaMed* curriculum, with Year 1 scheduled for implementation in fall 2006. A more complete description of the planned *ArizonaMed* curriculum, to the degree determined at the writing of this report, is contained in Appendix II and in more detail at <http://curriculum.ahsc.arizona.edu>.

**General Professional Preparation** The curriculum at the University of Arizona College of Medicine has been successful in preparing students for all specialties, as evidenced by the broad range of residency positions in which our graduates have been accepted. The Self-Study Committee for the Educational Program defined the educational content considered essential to a general professional education. In addition to a sound foundation in the basic sciences, a general professional education was defined to include: wide clinical exposure and experiences; training in communication skills, professionalism, and competency in issues of diversity; self-directed learning skills and preparation for the use of information. These areas are discussed in more detail below.

**Clinical Education** A strength of the College is that the clinical resources for providing students with broad exposure and experience in clinical settings are particularly rich. Students participate in clinical experiences throughout the curriculum that include appropriate numbers of patient encounters, and a wide range of types of encounters in multiple outpatient and inpatient clinical settings. The student's clinical education is not limited to required clinical clerkships in Year III and clinical electives in Year IV, but begins in the Year I course, Preparation for Clinical Medicine, in which students learn interviewing, communication, and physical examination skills both with patient models and Standardized Patients (SPs). The College of Medicine SP program is excellent and has been an important resource for the curriculum since its inception in 1978. Year II students participate in a preceptorship, the Longitudinal

Clinical Curriculum (LCC), meeting at the preceptors' practice sites every two weeks in the first semester and weekly in the second semester. Students also gain early clinical experience through two elective programs: the Commitment to Underserved People (CUP) program, in which 90 percent or more of the students participate, and the Rural Health Professions Program (RHPP), a longitudinal preceptorship in sites throughout the state of Arizona to which 15 students are admitted each year.

The College location in the Southwest provides students ample opportunities to work with patient populations from widely diverse cultural, ethnic and socioeconomic groups. In particular, the CUP program and the RHPP expose students to the health and social needs of the medically underserved providing significant experience with the complex interaction of social conditions and health, both at an individual and community level. In the 2004 Graduation Questionnaire, almost 95 percent of respondents reported that they had participated in delivering health services to underserved populations, compared to University of Arizona Self-Study for LCME 12

62% nationally. More than 82% of respondents rated the amount of content on health issues for underserved populations as appropriate (73% nationally).

Access to a wide variety of patients and clinical settings continues in Year III clerkships and Year IV clinical electives. The College of Medicine at the University of Arizona has the benefit of two welldeveloped campuses in Tucson and Phoenix, with multiple and diverse clinical education sites. All required clerkships may be completed in the Tucson or Phoenix areas; one-third of the students complete their last two years in the Phoenix area. In the fourth year, students have available resources of clinical settings serving large and diverse patient populations. These resources make it possible to offer approximately 400 electives split between Tucson and Phoenix, with some offered in the rural areas of Arizona. The totally elective fourth-year curriculum with the strong clinical resources representing a broad spectrum of specialties, provide students maximum flexibility in making educational choices. However, this level of flexibility necessitates greater support for career guidance and selection; students noted in the LCME Medical Student Survey that they would like more career guidance.

Coordinating educational programs across multiple clinical sites is a challenge, particularly in maintaining the comparability of clinical education experiences. The clerkship directors actively address this issue through systems such as regular meetings with clerkship site coordinators, using the internet to disseminate clerkship information, and teleconferencing to review teaching goals and analyze student feedback. Consistency also is promoted by several methods: each clerkship identifies core didactics to be covered at each site; methods of testing and evaluation must be identical at all sites; each clerkship has or is developing methods of ensuring that students see the number and type of patients necessary to meet clerkship standards. At this time, some of the clerkships have written quantified objectives regarding the number and type of patients to be seen on the clerkship. The consistency and comparability of the clerkship education across sites also is monitored through the site-specific clerkship feedback reports prepared by the Office of Educational Development, and the in-depth course and clerkship review process conducted by the Curriculum Committee.

Student activities on clerkships are appropriately balanced between education and service, with educational activities comprising the decided majority of students' time. The recent mandates regarding billing in teaching hospitals has affected the patient care role of students; medical students no longer fill a major service role and the requirements for their attendance and involvement in patient care is oriented more directly to those aspects that best enable their education. A new concern has emerged in clerkship education--whether students feel superfluous to patient care. The clerkship directors were informally surveyed, asking if they perceive that "faculty may be excluding students from activities" because of changes in billing requirements. None of the directors indicated that students were being excluded, although one acknowledged that students "may be relegated to a more passive role," and another felt that "students don't get as much practice writing notes." Despite occasional complaints that their clinical notes "don't count," students rated their "level of involvement in patient care" highly in the LCME Medical Student Survey (2.9 on Neurology; 3.2-3.5 on the other required clerkships on a scale of 1-4; 4 being "excellent").

**Communications and Professionalism Curriculum** Communication skills and professionalism are considered important components of a general professional education. As noted above, students learn the basics of medical interview and physical exam beginning in the first semester in the Preparation for Clinical Medicine course. The unit on Medical Interviewing also teaches students how to work with patients around issues of high risk behaviors (substance abuse, tobacco use, sexual practice); protect patients' rights and privacy; provide patient education; and integrate psychosocial factors that influence

health and disease (such as family characteristics, gender, sexual orientation, socioeconomics, age, culture, spirituality and level of education). The Social and Behavioral Sciences course also includes content on counseling about sexuality (including adolescents, parents, gay/lesbian patients, and issues related to STDs and HIV), domestic violence, eating disorders, exercise, substance abuse, nutrition, grief, somatoform disorders, parents who have children with developmental delay, cancer, dying children and adults, and pregnancy options. Many of these didactic sessions are paired with small group sessions during which students can reflect on their own experiences and beliefs, and how to discuss and answer questions on these difficult topics. Both of these courses run the length of the first two years. Most University of Arizona Self-Study for LCME 13

students also participate in the annual bioethics conference organized by the American Medical Students Association chapter, which provides additional exposure to issues critical to development of professionalism.

In clerkships, experience with communication and exhibiting professional behavior is inherent. Students gain experience in the clinics, in hospital out-patient settings, performing histories and physicals, and learn through modeling. In addition to experience gained through patient care, the Family & Community Medicine (FCM) Clerkship uses small-group, case-based, problem-solving sessions where patient-doctor communication is an integral component. In academic year 2004-05, the FCM Clerkship introduced an online module entitled "Culturally Effective Care" in which students are presented with three different cases and taught an approach to patients that is both culturally appropriate and patient-oriented. The Medicine Clerkship includes a core didactic on counseling for behavioral change and an ambulatory clinic in which communication with patients and patient families is modeled and interactions are discussed post visit. Professional behavior and communication skills with patients, families and other health care professionals are important components of the feedback on clerkship students. As the competencies of the new institutional objectives are integrated into the curriculum more formal opportunities will evolve to teach and evaluate these characteristics.

Participation in the CUP program further provides an opportunity to develop and demonstrate professional behaviors, attitudes, and communication skills with patients, their families and medical professionals. The CUP program also provides an early opportunity to begin learning how to advocate for patients and work with the communities and governmental entities to access care for these underserved populations.

**Diversity Curriculum** Competency in diversity issues is emphasized throughout the curriculum.

In addition to the examples of learning activities that include diversity described above, a Dean's Teaching Day was instituted in 2004 that focuses specifically on diversity. The first offering was designed as a skills session to help students develop interviewing and communications skills necessary for their future interactions with diverse patient populations. A plenary address was followed by a case study video presentation illustrating the proper use of the BELIEF and ETHNIC cultural interviewing tools to elicit a patient's health belief system. The students then participated in two small group activities: a medical interview small group in which students worked with trained standardized patients and conducted a cross-cultural interview under the guidance of a trained faculty facilitator, and a video vignette group in which students participated in a guided discussion based on the "Worlds Apart" video series. Both first and second-year students were required to participate in this inaugural session. The 2005 session, "Communicating with our Native American Patients", emphasized Native American health issues.

Following a plenary address by two members of the Native American Cardiology Program, a program physician and the Cultural Liaison, first-year students participated in two small group sessions. In the medical interview small group, students worked with trained Native American standardized patients and conducted a cross-cultural interview under the guidance of trained facilitators. The second session was a Pow-Wow, during which students learned about the meanings of cultural gatherings and health beliefs of Native Americans.

Students have organized a Cultural Competency conference every spring semester since 1999. One half day is reserved in the Year I and II schedules for this activity and all College of Medicine students, faculty, and staff are invited, as are the students and faculty from the colleges of Nursing, Pharmacy and Public Health. These conferences generally are organized with a keynote speaker followed by small group sessions that focus on various diversity-related issues. Some of the session titles have been: Cultural Diversity in Medicine and Culturally Competent Healthcare, Unlearning Racism, Health Care for a Diverse America, Cultural Competence: Self Knowledge as Prerequisite to Skill, Cultural Competence and Cultural Humility: Components of Exceptional Health Care in the 21st Century, The Challenge:

Eliminating Health Disparities Through Cultural Competency, Identifying the Barriers in Culturally Competent Care, Bridging the Divides between the Sick and the Well: Narrative Medicine and Culture, and Racial Profiling in Medicine. The cultural competence conferences are well attended by medical students, although participation by the other colleges has been limited.

University of Arizona Self-Study for LCME 14

Arizona graduates are aware of the impact of culture on medical care. Based on the 2004 AAMC Medical School Graduation Questionnaire, 86% of University of Arizona 2004 graduates agree/strongly agree that "The perspectives of individuals from racial and ethnic groups different than your own were often brought into your medical training", compared with 76% nationally. Also, 74% of UA 2004 graduates agree or strongly agree that "My knowledge or opinion was influenced or changed by becoming aware of a different perspective", compared with 68% nationally. More than 80% rated the amount of content on cultural differences and health related behaviors/customs, and the amount of content on culturally appropriate care for diverse populations to be "Appropriate".

**Education in Using Information – Self Directed Learning** The College considers self-directed learning skills and the ability to access and appropriately use information to be skills critical for a general professional education. Since the last LCME visit, activities designed to encourage self-directed learning have increased. The impact of these increased activities, however, has been limited by three factors: many of the self-directed learning activities are not weighted to be an important component in assessing student performance in the courses; the level of self-directed learning required to successfully perform the activity is limited; and the students are not afforded sufficient independent-learning time in which to complete these activities. This aspect of the curriculum has not been successfully developed to meet the College's value for independent learning skills. In an informal survey conducted for the purpose of this self-study, clerkship directors indicated that some students begin their clerkship education with inadequate self-directed learning skills.

Ability to access and use information is integrated in the curriculum to some degree. First year students are given an orientation in the first few weeks of school about use of the library. However, this is an optional activity and those students who do choose to take advantage of the opportunity report that when the demands to use these skills are most acute, they have not had sufficient practice and have forgotten much of the information.

Mechanisms in the preclinical curriculum include opportunities to learn about gathering and synthesizing necessary information to problem solve about clinical scenarios. For example, in the Medical Biochemistry course, students are given a clinical vignette of a patient with a biochemical disorder and are expected to diagnose, research, and present the disorder, including the basis for the signs, symptoms, pathology, tests and treatments. Students are expected to use additional sources of medical information beyond class materials to understand and solve clinical problems. Several courses include similar exercises that require students to develop information gathering and self-teaching skills. The clerkships use a variety of strategies that encourage self-directed learning and require use of information technologies. For example, the Family & Community Medicine Clerkship uses interactive learning modules (1 - Delivering Culturally Effective Care, an interactive 3-module internet course on cultural competence; and 2 - Diabetes and Skin Lesions, which is an interactive CD). In other examples, students in the Medicine Clerkship are expected to show evidence of consulting literature when engaged in patient discussions and students in the Psychiatry Clerkship are responsible for researching the sideeffects

of medications and making informed recommendations to attending physicians.

Students participating in the Medical Student Research Program organize regular lectures and a journal club during Years I and II in which they develop the ability to critically assess and present data and techniques used in basic and clinical research. These activities allow students to develop proficiencies for searching literature databases, and to analyze and apply the data for research, presentation or teaching.

According to the 2004 AAMC Medical School Graduation Questionnaire, Arizona graduates report being confident with their knowledge and skills with technology: more than 97% of Arizona graduates agreed or strongly agreed that they have basic skills in clinical decision making and application of evidence-based information to medical practice. Nonetheless, the LCME self-study committee reviewing the educational program determined that improvements should be made in the curriculum to better support the development of self-directed learning skills and skills in the retrieval and use of information.

University of Arizona Self-Study for LCME 15

## Teaching and Evaluation

**Student Performance Assessment** The number of opportunities for students to receive formative feedback is a strong component of student performance assessment in Years I and II. In addition to midterm exams, a “diagnostic exam” is administered approximately five weeks into the first semester. The Diagnostic Exam, comprised of material from all of the Year I fall courses, helps students understand the level and depth of study needed to be successful in medical school, and the extent to which their study strategies are supporting their own learning. The exam counts for 10% of the grade in each course. In the spring semester of Year I, the Human Physiology course also provides formative assessment, administering a Physiology Skills Assessment, similarly designed to help students evaluate their learning and study needs for this material. In addition, several courses in Years I and II offer mock exams and computerized quizzes with immediate response systems to provide formative feedback to students. Human Gross Anatomy employs progress checks created to assist students in keeping on task with dissections. Medical Microbiology & Immunology provides study questions, “test yourself” quizzes, and practice exam questions throughout the course. While some of the quizzes and computer labs are online, others are included in the syllabus.

Formative feedback on clerkships is more problematic. The mode of mid-clerkship evaluation is direct feedback from faculty and/or clerkship director, often based on written evaluations collected from supervising faculty and residents. Mid-clerkship evaluations are more difficult to effect in the three-week Neurology Clerkship, relying on feedback from faculty assigned to observe students’ physical examination skills, and web-based self-assessment questions for each unit of the Clerkship. Although these efforts and others (observed mini-OSCEs, observed histories and physicals) provide students information upon which to gauge their progress, the evidence that students incorporate the results of these formative assessments is unclear. An informal survey of students completed by the Student Records Office indicated that about one-third of the clerkship students in any year are surprised by lower clerkship grades than expected. Additionally, students do not receive prompt summative feedback on clerkship performance. Student Records Office staff report that, on average, students’ grades are received two months after completing individual clerkships; further, some faculty delay in completing evaluation forms to the point that they do not remember the student they are being asked to evaluate. There are few incentives or requirements for faculty to return student performance assessments in a timely manner.

**Faculty Teaching Development** The preparation of faculty for teaching responsibilities is not standard within or between departments. The most widely used mechanism to help faculty understand the context of their individual teaching and the learning objectives of the course/clerkship in which they teach is providing access to the course/clerkship syllabus (through email, on the web, by hard copy), allowing teaching faculty to familiarize themselves with the content and objectives. However, there are no mechanisms to ensure that the syllabi are read. A few clerkships have more formal mechanisms to acquaint faculty with the course/clerkship: Medicine residents are prompted to review the clerkship manual at the beginning of each block; the Psychiatry Clerkship Director meets with residents as a group annually and individually on a weekly/monthly basis where they review clerkship objectives and discuss teaching methods/techniques. The Medicine Clerkship also provides opportunities for residents to improve their teaching skills—second-year residents attend a retreat that incorporates teaching techniques from the Stanford Faculty Development Plan

Faculty development for teaching skills is available through the Office of Educational Development (OED) to help faculty prepare for their teaching responsibilities; however, these services are not well utilized on the Tucson campus. For the past four years, a Best Practices in Medical Education seminar and discussion series culminating in a poster session and dinner has been conducted for the Phoenix faculty and has been well attended and highly regarded by the faculty. This series has sparked a variety of faculty interactions, including research projects and innovations in clinical education.

An important component of faculty development programs at the College of Medicine prior to budget cuts in 2001 was a Dean’s Teaching Scholars (DTS) Program in which approximately eight faculty each year with demonstrated excellence and interest in teaching were selected to take part in a series of one-day workshops on various aspects of medical education, and to produce an education-related research project with guidance from educational specialists. In addition, an ongoing journal club/seminar series University of Arizona Self-Study for LCME 16

was conducted with current and past Dean’s Teaching Scholars. Since the termination of the DTS program, the OED offers faculty development courses to individuals on request, but few faculty participate, and productive and collegial faculty interactions relating to medical education topics are

fostered to a lesser extent. Centralized activities from the Office of Educational Development (OED) include the following workshops: What Do the Best Medical Educators Do?; Paradigms of Teaching and Learning; Better Didactics; Active Learning in Lectures; Giving Feedback to Learners; Clinical Thinking and Multiple-Choice Exams; Qualitative Evaluation; Team Learning. Unfortunately, there are no requirements or incentives for participation in faculty development. Rather than attempt to find ways to encourage faculty participation in existing programs, the Dean for Academic Affairs has decided to redirect OED efforts toward new faculty development programs supporting the *ArizonaMed* curriculum. Workshops focusing on new learning methods will begin in the spring of 2006.

Volunteer faculty who serve as preceptors in the Rural Health Professions Program participate in a development seminar series that addresses a variety of topics, including methods for effective feedback and evaluation, professional development issues and evidence-based medicine. This series also is well received by our rural faculty.

### **Curriculum Management**

**Governance** The current curriculum has been dynamic, with changes implemented in individual courses and clerkships. The College of Medicine utilizes a variety of tools to gather information about our students and graduates in order to make improvements. Sources of information include USMLE exam performance, OSCE results, student responses on the AAMC Medical School Graduation Questionnaire, student evaluation of courses and clerkships, assessment of graduates' performance through the Residents'/Residency Directors' Survey (RDQ), and student focus groups. Unfortunately, because of the time it takes to implement changes, the students who note deficiencies do not know that a change was made. This leads to student misperception that their evaluations/recommendations do not receive attention, a sentiment expressed in the LCME Medical Student Survey.

Individual courses and clerkships are evaluated through the in-depth review process conducted by subcommittees of the Curriculum Committee, a process temporarily suspended in lieu of LCME self-study activities. Another subcommittee of the Curriculum Committee, the Interdisciplinary Topics Subcommittee, was created to identify content areas in which students are insufficiently prepared, and create proposals to incorporate those topics in the required curriculum. A more global assessment of the curriculum is accomplished by the recently-implemented Evaluation Subcommittee of the Curriculum Committee, which synthesizes curriculum feedback received from multiple sources to identify problems and concerns, and create a *State of the Curriculum Report*. Despite this latest effort, curriculum review strategies are primarily oriented to the individual course or clerkship. Coupled with the fact that the College of Medicine does not employ a comprehensive system for documentation of curricular content, there are few strategies to systematically identify curricular redundancies and gaps, or otherwise evaluate the curriculum as a whole.

Making significant structural improvements to the curriculum has been difficult due to prevailing tradition and governance structure. As noted in the Institutional Setting section of this report, there has been no institutional-level planning for the medical student curriculum. Although the Curriculum Committee is the main body for oversight of the curriculum, it has little power to enact change based on the evaluation information it gathers. It has been successful in negotiating with the directors of individual courses and clerkships smaller changes recommended through the in-depth review process or the Interdisciplinary Topics Subcommittee. However, neither the Curriculum Committee nor the Chief Academic Officer (the Dean for Academic Affairs) have codified authority to implement large changes that affect several courses or structural changes to the entire medical student curriculum.

**Resources** The Office of the Dean for Academic Affairs has provided for the renovations to the physical plant and installation of new technologies in the classrooms—a recent example being installation of the Individual Response System in both lecture halls. The incorporation of the human patient simulator mannequin into both the Medical Microbiology course and the Pharmacology course was supported by Dean's funds to the Department of Anesthesiology for simulator exercises for the medical students.

University of Arizona Self-Study for LCME 17  
Availability of faculty resources to participate in the teaching program occasionally has been problematic. The two most common problems relate to identifying faculty and/or graduate students to facilitate laboratory exercises and small group activities. Despite extra efforts by course and clerkship directors, identifying faculty facilitators is a challenge in the face of competing demands for faculty time; this is particularly true regarding clinical faculty. The absence of centralized College of Medicine support for graduate students to work in medical student education makes graduate student participation dependent

on less stable research funding and departmentally controlled stipends.

### **Evaluation of Program Effectiveness**

There is evidence that institutional objectives are being achieved by students and that the curriculum has been successful in providing students with a sound foundation in the basic and clinical sciences.

Students perform well on Board Exams: over the last three years, the pass rate for first time takers has been 90-93% (Step I) and 94-97% (Step II), with scores that are at or slightly above the national average in each area.

The numerous clinical resources in all four years and the ongoing efforts of clerkship directors to monitor student experience (i.e., skills cards, on-line patient encounter logs, checklists, etc.) help ensure the acquisition of core clinical skills. Data from the Residents'/Residency Directors' Questionnaire indicates that 2002 and 2003 graduates and their residency directors rate the preparation provided at the College of Medicine favorably.

For the item "Compared to other first postgraduate year physicians in your current residency program, how prepared were you (was this resident) at the start of PGY 1?", residents rate themselves (vs. their directors) 3.9 vs. 3.6 in 2003, and 3.9 vs. 3.8 in 2002 (scale of 1-5, 3 being "average", 4 "above average").

For the item "Compared to other first postgraduate year physicians in your current residency program, how prepared were you (was this resident) in the Basic Sciences?" residents rate themselves (vs. their directors) 3.8 vs. 3.6 in 2003 and 3.7 vs. 3.5 in 2002.

For Directors and residents across the 18 skill items for 2002 and 2003, directors rated the residents higher than they rated themselves (4.2 vs. 3.2 for 2003 and 4.0 vs. 3.9 for 2002).

However, a common theme emerged from the student focus group data collected for the 2004 State of the Curriculum Report created by the Evaluation Subcommittee of the Curriculum Committee—the curriculum should provide more opportunities for students to develop and practice clinical skills, and more opportunities for students to be observed by faculty and receive feedback and critique on their clinical skills.

The Objective Structured Clinical Exam (OSCE), which is course/clerkship independent, provides one measure of student achievement of the institutional objectives. The OSCE is administered in the last month of Year III (June) and must be passed to graduate. The exam consists of nine standardized patient-based cases that are multidisciplinary in content and are representative of Year III clerkship curriculum. OSCE stations frequently are modified to reflect changing curriculum emphases and community expectations for physicians. For example, issues on aging, cultural competency, and high risk behaviors have been added to stations since implementation of the OSCE in 1991.

For measures of student attainment of institutional objectives on issues such as gender and cultural biases, and professionalism, the College relies mainly on responses from the AAMC Medical School Graduation Questionnaire and the Residents'/Residency Directors' Survey for student perception of their attainment of these objectives. Because clerkships have recently revised their student performance evaluation instruments to reflect more closely the institutional objectives, clearer measures of student attainment of objectives for such items will be more available in the future. Additionally, in the *ArizonaMed* curriculum, strategies for student performance assessment are being designed specifically to match with the institutional objectives and competencies.

University of Arizona Self-Study for LCME 18

### **Strengths**

1. There is a strong core of faculty in both Tucson and Phoenix committed to curriculum excellence as evidenced by faculty individually taking initiative in improving the content and delivery of their courses and clerkships.
2. A large and varied base of patient resources in Tucson, Phoenix, and throughout the state, enables the College to provide clinical learning experiences with culturally and economically diverse populations in all years of the MD degree program.
3. Standardized Patient (SP) Program and the OSCE Program are exemplary, well integrated into the MD educational program, and psychometrically sound. The College has provided leadership in both areas, having been among the first to implement these programs.
4. The Commitment to Underserved People (CUP) program is an exceptional community service program in which over 90% of the students participate, providing a wide variety of services to diverse underserved populations and significant educational experiences for the students.
5. Students receive a broad education in issues of diversity through the required curriculum and several

special programs supported by the College, such as the Dean's Teaching Day and the student-led annual Cultural Competency Conference.

#### **Areas for Improvement**

1. The current medical student curriculum is not well integrated among disciplines and across the educational program.

Strategy: See *ArizonaMed* description (Appendix II)

2. Although opportunities for independent-interactive learning have increased significantly since the last LCME review, these learning experiences are not optimally implemented to support the development of life-long-learning skills.

Strategy: See *ArizonaMed* description (Appendix II).

3. The institutional objectives have not been used consistently to guide educational program planning, curriculum development or student performance assessment. Although widely disseminated, there is little evidence that the institutional objectives are read or understood by teaching faculty.

Strategy: Use the draft institutional objectives to guide all aspects of curriculum design, including student performance assessment, in the new *ArizonaMed* curriculum (see *ArizonaMed* description, Appendix II). Because changes in required clerkships through *ArizonaMed* will not be implemented until fall 2008, continue to support Clerkship Directors in revising their individual clerkship objectives to more closely align with the institutional objectives, a goal already achieved by most of the clerkships. Additionally, the institutional objectives should be available and consulted at every meeting when faculty review curriculum issues, content, evaluation, and student progress.

4. The authority of the Curriculum Committee in curriculum oversight is not clearly defined and the Curriculum Committee does not have sufficient authority to implement change. Similarly, the authority of the Chief Academic Officer to ensure appropriate curriculum oversight is not stated explicitly.

Strategy: A subcommittee of the Curriculum Committee has been charged with proposing a governance structure that will support curriculum oversight and management according to LCME Standards for Accreditation. The proposal will include articulation of the authority of the Chief Academic Officer, along with the role of a curriculum committee, in management of the curriculum.

5. The College of Medicine does not employ a comprehensive system for documentation of curricular content, making difficult the systematic identification of curricular redundancies and gaps.

Strategy: See *ArizonaMed* description (Appendix II)

University of Arizona Self-Study for LCME 19

6. While faculty development participation among the Phoenix faculty is strong, Tucson-based faculty underutilize the opportunities available. There is no requirement for faculty to participate in faculty development; therefore, the preparation of faculty to teach relies on faculty members' individual initiative.

Strategy: Faculty development will be a central focus of the *ArizonaMed* curriculum (see description, Appendix II). In addition, a Special Assistant to the Dean for Faculty Development recently has been appointed to develop policies and programs to support faculty development.

7. Strategies for students to receive formative feedback on their clerkship performances are insufficient. Additionally, summative feedback on clerkship performance is not provided in a prompt manner.

Strategy: Policies and mechanisms to ensure that students receive adequate supervision, consistent formative feedback, and prompt summative feedback will be developed. Suggested policies and mechanisms include: instituting "student attendings"; requiring structured, documented formative feedback; requiring timely summative feedback through creation of online student performance evaluation forms; and developing policies that require clerkship faculty to participate in faculty development for teaching and evaluating in clinical education settings.

### **III. MEDICAL STUDENTS**

#### **Admissions**

The process and criteria for admission to the University of Arizona College of Medicine is adequate, as is the size of the applicant pool. Application to the College of Medicine is limited to residents of the state of Arizona and the WICHE states of Montana and Wyoming. The Admissions Committee uses six major criteria in the selection of students: academic record, Medical College Admission Test (MCAT) scores, personal statements, letters of recommendation, evaluations of the personal interviews (all qualified applicants receive two interviews: with a College of Medicine faculty member and with a community physician practicing in Tucson, Phoenix or Flagstaff), and relevant experience. Consideration of the

academic record includes not only grades, but trends in the grade point average, course loads, work experience while attending school, breadth of undergraduate education, extent of extracurricular interests and pursuits, and other factors that directly or indirectly influence the individual's academic performance. The MCAT scores provide a national comparison of each applicant with all those seeking admission to medical school. Personal statements in the AMCAS and interviews are used to determine the applicant's interest in medicine, motivation, career goals and personal character. In addition, interview summaries help the committee assess the applicant's communication skills and character. About 25% of applicants are accepted with approximately 35% of initial acceptances declining attendance. The current class size is 110. The criteria and process for application to the University of Arizona College of Medicine are described on the College of Medicine website: (<http://www.admissions.medicine.arizona.edu>). Beginning in 2004, a small number of educationally disadvantaged applicants were offered conditional acceptance to the College pending satisfactory completion of a post-baccalaureate program. The program requires that the students take one basic science course in the MD degree program and one upper division science or public health course, along with a narrative medicine course and a supplemental instruction course matched to the MD program course. The initial results have been deemed successful, and more extensive evaluation of program effectiveness will be implemented.

Selection criteria are validated by examining class performance on a variety of measures such as graduation rate in four years, board scores and acceptance rate into desired residency programs. Overall graduation rate is 99%, with 82% graduating in four years. The most common reasons for delayed graduation are moving to a decelerated program and taking a leave of absence for academic enrichment (e.g., research opportunities). Some students have taken a leave of absence for personal reasons. University of Arizona students perform well on Board Exams. Over the last 3 years, the pass rate for first time takers has been 90-93% (Step 1) and 94-97% (Step 2). Moreover, graduates achieve scores that are at or slightly above the national average in each area of the USMLE Step 1 and Step 2 examinations. Arizona students match at a rate comparable to the national average; 94.4% matched in 2005 compared to the national average of 93.7%.

University of Arizona Self-Study for LCME 20

**Resources for Teaching** Resources at the College of Medicine are more than adequate for student learning. The faculty to student ratio is quite good for both basic science and clinical education, and students rated faculty highly in the LCME Medical Student Survey, expressing that faculty are supportive, approachable, committed to medical education, and willing to spend time with students who need help. A large patient base and full range of clinical opportunities are available for medical students. There are nine hospital facilities in Tucson available for medical education and eight in Phoenix, as well as a range of ambulatory care facilities throughout rural Arizona, including Community Health Centers, private nonprofit clinics, and Indian Health Service (IHS) ambulatory care centers.

Resources of the Arizona Health Sciences Library were rated by students as good to excellent. Study areas/rooms, lounges, personal areas and computer services available to students in and around the medical school were rated good or above.

A few areas of concern were identified by the Self-Study Task Force. Educational support resources, while adequate to meet the current needs of students and faculty, are now utilized at full capacity. In preparation for the new *ArizonaMed* curriculum, additional resources will be needed for faculty training and development. There are some space concerns: seating capacity in the two main lecture halls is adequate for the current class size of 110 medical students, but it is not always possible to accommodate the graduate science students who enroll in five of the medical student courses; this issue will be resolved with the implementation of the *ArizonaMed* curriculum, because the courses will no longer be appropriate for graduate students and new courses will be designed for them. The current supply of small group meeting and study rooms also are fully used; occasionally, careful scheduling is necessary to meet the requirements of the educational program. Although not yet known, there may be increased need for small group meeting rooms in the new curriculum. This issue will be carefully evaluated, with plans for renovation of some additional space to meet increased demand. Finally, the Self-Study Task Force identified a need for increased emotional support and counseling services to address cultural differences and the unique needs of minority students.

**Diversity** The College of Medicine is committed to achieving a diverse student body. Goals for gender, racial and economic diversity are outlined in the University of Arizona Affirmative Action Goals (<http://fp.arizona.edu/affirm/AA%20Goals.htm>) and the College of Medicine's Admissions Statements (<http://www.admissions.medicine.arizona.edu>). The College works to increase the size of the competitive

minority pool of applicants and acceptance of qualified minority students. The College was recently ranked seventh nationally by Hispanic Business Magazine in attracting and supporting Hispanic students. A number of programs are designed to expose underrepresented minority students to medicine and assist them with the medical school application process: Med-Start, FACES (Fostering and Achieving Cultural Equity and Sensitivity in the Health Professions), SMEP (Summer Medical Education Program), INMED (Indians into Medicine), among others. There is a great deal of competition for these programs as the number of available slots is limited. At present, there is no system in place that measures the effectiveness of these programs.

The gender ratio for the medical students has been nearly equal for the past 15 years but the number of minority students has fluctuated, with some decrease in recent years. More underrepresented minority applicants decline offers of acceptance than do majority applicants. The College of Medicine is losing high quality minority medical students to other schools, likely because the College does not offer comparable or competitive scholarship packages. The existence of other possible factors should be investigated.

**Transfer and Visiting Students** Transfer students and visiting students have no impact on the education of the COM students. There are approximately two transfer students a year, typically Arizona residents returning to the state for financial or personal reasons in their third year. About 80 visiting students attend the College of Medicine in their fourth-year to participate in clinical electives, and about 55 College of Medicine fourth year students are visiting students at other institutions.

University of Arizona Self-Study for LCME 21

### **Student Services**

**Student Attrition, Academic Counseling and Remediation** The level of student attrition is very low, and considerable efforts and resources are directed to helping students academically and personally. All medical students are offered extensive academic support services through the Office of Educational Development (OED) throughout their tenure at the College of Medicine, including assistance in preparing for USMLE and specialty exams during residency. Admitted students with risk factors for academic difficulty (students with young children, non-science majors, second career students, and students from disadvantaged backgrounds) are encouraged to participate in the Medical Student Summer Bridge Program prior to matriculation, which gives students early exposure to coursework and training in sophisticated learning techniques using first-year course content. Counseling services at the College of Medicine and through the University of Arizona's Campus Health Services are available to students experiencing academic problems due to personal or mental health issues. Students are allowed leaves of absence to resolve personal problems that may be interfering with their ability to be successful.

**Career Choice** Graduates of the College of Medicine select medical careers congruent with the goals of the College of Medicine and state of Arizona. The Arizona State Legislature expects that graduates of the College will work in Arizona, many in primary care, although these expectations are not codified in any way. According to the most recent Annual Alumni Survey almost half of all graduates (49%) practice in Arizona and approximately 53% report that they are primary care providers.

In the LCME Medical Student Survey, fourth-year students commented favorably on the elective system with respect to their preparation for residency. Students noted that the curriculum allowed them flexibility to schedule electives that met their career goals and faculty provided adequate supervision during electives. The current career guidance system, however, received a low rating and students requested more formal programs in career guidance or more information regarding career choices and specialty residencies.

**Tuition and Fees** Tuition and fees rank the College of Medicine among the least expensive third of public medical schools. The College makes concerted efforts to minimize the size of graduates' accumulated debt by maintaining low tuition and fee rates, educating students in budgeting strategies, providing personal financial aid counseling, awarding need-based grants and scholarships from institutional sources, and assisting students in obtaining outside grants and scholarships. The College of Medicine's philosophy is to provide institutional scholarship and grant support to as many students with financial need as possible; therefore, the number of students who receive institutional scholarship and grant support reduces the total amount available for each student. Over 80% of students at the College of Medicine receive institutional scholarship or grant monies; close to half the student body receives scholarship or grant monies from sources outside the institution. In May, 2005, the state legislature approved \$1.5 million for a medical student scholarship program, complementing the \$300,000 already available for the medical student loan program. Both are designed to retain physicians in Arizona after

completing their residencies. Combined with other scholarship sources, the new program should further lessen the financial burden on matriculating students.

It should be noted that tuition and fees, while remaining relatively low, have risen more than 52% since 1998-1999, and yet average educational indebtedness has increased only about 17%. Although unproven, it is believed that restraining student indebtedness is facilitated by the generous institutional student financial support and effective financial counseling. As expressed in the LCME Medical Student Survey, all classes are satisfied with financial aid and debt counseling services, rating it highly (3.4 - 3.8 on a 4-point scale).

**Personal Counseling and Health Services** The College has a tradition of generous and extensive personal counseling and mental health services provided by faculty counselors, support group leaders, and peer counselors. The Senior Associate Dean for Admissions and Student Affairs, who is based in Tucson, meets with students and makes referrals as needed to one of three Assistant Deans for Student Affairs. The Assistant Dean for Student Affairs in Phoenix is available to students at the Phoenix campus. The LCME Medical Student Survey rated personal advising and counseling services as "good".  
University of Arizona Self-Study for LCME 22

The following LCME standard came to the attention of College of Medicine administration while completing this self-study: "Professionals who provide psychiatric / psychological counseling or other sensitive health services to medical students must have no involvement in the academic evaluation or promotion of the students receiving those services". Two of the Assistant Deans for Student Affairs are highly visible and involved educators as Co-Directors of the Social and Behavioral Sciences (SBS) course, and one of these two Assistant Deans also is the Psychiatry Clerkship Director and responsible for the evaluation of clerkship students. The College of Medicine has not experienced any difficulty or problems associated with these directors performing dual roles, in large part because their roles have been explicit and transparent to students as soon as they arrive at the College. In addition, other individuals who are not involved in student education or evaluation are available, both through Student Affairs and the student health service, to provide counseling services. Nevertheless, in order to begin to satisfy this requirement, adjustments were made to the evaluation of students in the Psychiatry Clerkship, which is now the responsibility of another established faculty member. Implementation of the *ArizonaMed* curriculum, scheduled for fall semester 2006, will reconcile the problem for the first year of the SBS course, because the SBS first year will no longer exist in its current format. However, the conflict will not be entirely resolved until the second year of the new curriculum is implemented in the fall semester 2007.

**Health Services** Students have access to high quality, easily accessible health care through the Campus Health Services located on the main UA campus. There is also a convenient satellite clinic on the medical campus. Health services for students completing their clinical curriculum in Phoenix are less accessible for those relying on the University coverage, because they must travel to Arizona State University Campus Health Services to obtain care.

Medical students are offered health insurance through the University of Arizona as part of the statewide student health care plan for all enrolled students in the state of Arizona. Unfortunately, the student health insurance does not offer prescription drug benefits; neither are students allowed a choice in selecting a primary care provider. Medical students have expressed general dissatisfaction with the extent of their health insurance coverage. In the LCME Medical Student Survey, students in all classes gave low ratings to the student health insurance plan, and student health insurance was a common source of complaint in the narrative. Students stated that the statewide student health care plan is inadequate for medical students, who are exposed to increased risk of illness in their medical training, and that their health insurance should include prescription drug coverage. Medical students also lack coverage for dental and vision services, although the students did not identify these limitations as problems in the LCME Medical Student Survey. Disability insurance is provided by the College of Medicine for all students beginning their third year rotations, and appears to be adequate.

**Universal Precautions** All students are taught appropriate preventive measures for reducing the risk of exposure to infected blood and body fluids. Prevention measures for exposure to blood and body fluids are presented in the Preparation for Clinical Medicine (PCM) course at the beginning of the first year and the end of the second year, before students start clerkships. The sessions include live presentations by the PCM staff and Campus Health satellite clinic physicians, a video of safety measures, and a computerbased

self-study module. All students are given a wallet-sized card with explicit instructions for procedures to follow in case of an exposure.

It is the policy of the College of Medicine that any student who is exposed to blood/body fluids while engaged in a University-sponsored educational program receives prompt medical attention, including counseling, prophylactic drug treatment, and baseline and follow-up laboratory values, as necessary. Regardless of the student's location at clinical sites throughout the state, students exposed to blood or body fluids are to contact the Infectious Disease Attending through the University Medical Center's Physician Resource Line, who then advises the student and site personnel on appropriate initial treatment. All training sites are contractually obligated to provide local acute care. Long term follow-up of exposure is through our Campus Health Satellite Clinic, with costs for treatment covered by the College of Medicine.

University of Arizona Self-Study for LCME 23

### **The Learning Environment**

***Student Mistreatment and Acceptable Standards of Conduct*** The College has a Code of Professional Relations that describes standards for personal and professional integrity, respect for others, responsibilities of students, and institutional responsibilities to students. Both students and residents are provided the Code at their first-year orientations.

(<http://www.studentaffairs.medicine.arizona.edu/ProfCond.html>).

The Code designates an ombudsperson to serve as the official contact person for students who believe they

have been mistreated. The ombudsperson counsels students about options for handling situations, which may include reporting behaviors to supervisors. Upon review, it appears that the system would benefit from more formal mechanisms and policies to handle student complaints of mistreatment and greater efforts to educate faculty, residents and students about the Code.

Feedback on this issue is routinely obtained through the AAMC Graduation Questionnaire. A small number of graduates report that they were occasionally "publicly belittled or humiliated". The source of mistreatment during medical school was typically residents/interns. In the most recent questionnaire, no students reported

that they had "been threatened with physical harm or been physically punished" or "been asked to exchange

sexual favors for grades or other awards", nor were there any reports that students were mistreated, received

lower grades, or denied opportunities because of race or ethnicity, or sexual orientation. Although the number of graduates responding to this question was quite small, the College believes that any abuse is unacceptable and must be addressed.

***Student Advancement, Graduation, Disciplinary Action, Appeal and Dismissal*** Standards and policies for student advancement, graduation, disciplinary action, appeal and dismissal are available online ([www.studentaffairs.medicine.arizona.edu/StudProg.html](http://www.studentaffairs.medicine.arizona.edu/StudProg.html)). Students and course/clerkship directors are informed about the school's standards and policies, and are referred to the website to gain familiarity with these policies. Their level of familiarity with the standards and policies is not known.

***Access to and Confidentiality of Student Records*** Systems for providing students with access to their records and assuring the confidentiality of student records is more than adequate, including the policy of maintaining student records in locked storage. Access to students' records follows Family Educational Rights and Privacy Act (FERPA) requirements. Accordingly, students have the right to review their files upon request and may grant access to others as they wish. The Student Records staff, Senior Associate Dean for Admissions and Student Affairs, and Student Progress Committee members have access to student records for legitimate educational purposes. All other requests for access to student records are reviewed by the Senior Associate Dean for Admissions and Student Affairs to ensure a legitimate educational interest, that access to only relevant information is provided, and that an appropriate record of such access is maintained.

***Student Study Space and Resources for Learning*** Considerable efforts and resources are directed to providing an environment for medical students that facilitates learning. Results from the LCME Medical Student Survey indicate that students value the facilities and rate them between good and excellent. In addition to general teaching space, students at the Tucson campus have a comfortably furnished student lounge that includes a computer/conference room, kitchen and recreation room, multidisciplinary labs that house lockers and provide quiet study space, and the Learning Resource Center (LRC), which is a computer center with study applications and internet access for students. In addition, the LRC has 10 small group study rooms, each equipped with computers with internet access, overhead projectors, white

boards, view boxes, televisions and VCRs. There are 22 study rooms available to students in the Library along with resources of computers with internet access, televisions and VCRs. The Library also has a large common area with wireless access and a coffee shop where students can read and relax. Students at the Phoenix campus have a small lounge, kitchen and computer room next to the student services offices. Facilities are available at both campuses on a 24-hour-a-day basis and security escorts are available 24-hours a day at the Tucson campus to accompany students who request an escort to their cars.

University of Arizona Self-Study for LCME 24

### **Strengths**

1. The College of Medicine emphasizes recruitment of underrepresented minority students, and conducts a number of active outreach programs designed to expose underrepresented minority students to medicine and assist them in the application process.
2. Tuition and fees remain low; tuition is pegged to the lower one-third of public medical schools. Significant financial aid support is available; financial counseling and debt management services are effective.
3. Numerous and excellent student support resources are available, including faculty counselors, support groups, and peer counseling, as well as structured programs to facilitate students' adjustment to the physical and emotional demands of medical school. The College provides extensive educational tutoring and training in learning techniques.
4. There has been gender parity among the medical students for many years.

### **Areas for Improvement**

1. Several areas in the recruitment and admission of underrepresented minorities are not optimal: the pool of competitive minority applicants is not large enough; the effectiveness of outreach programs designed to expose minority students to medicine, such as Med-Start, FACES and SMEP, is unknown, as are the reasons minority applicants decline offers of acceptance.

Strategy: Develop stronger collaborations with minority-oriented programs in colleges, high schools, and community-based organizations, and with tribal programs and Indian Nations; evaluate outreach program effectiveness; implement methods to determine minority applicants' reasons for declining offers of acceptance.

2. The College does not provide an adequate system for career guidance to meet students perceived needs.

Strategy: The new curriculum will include a "Societies" program (see Appendix II) in which every student will be assigned to a mentoring/teaching group, one goal of which will be to provide career counseling and advice; implement more effective programs to provide information on careers and selection of medical specialties, including those programs offered through the AAMC.

3. Improved systems for addressing allegations of student mistreatment are needed.

Strategy: Educational programs will be implemented to increase faculty, resident and student awareness of the Code of Professional Relations and its implications, along with periodic surveys to monitor the effectiveness of these programs.

4. Emotional support and counseling services that address cultural differences and the unique needs of minority students are insufficient.

Strategy: Additional resources for minority students will be developed in partnership with the cultural centers on the UA main campus, community services, and alumni.

5. Student health insurance does not include coverage for prescription drugs, dental services or vision care.

Strategy: The College will continue to work with the University of Arizona and Arizona Board of Regents to expand student coverage.

University of Arizona Self-Study for LCME 25

## **IV. FACULTY**

### **Number, Qualifications, and Functions**

Both basic science and clinical science faculty are adequate in number, composition and quality to satisfy the needs of the educational, research, clinical and service activities. They are uniformly successful in fulfilling their missions in the College, demonstrating excellence in all areas of education, as well as research productivity and clinical care. The departments and the Centers of Excellence have all had strong and stable leadership since the last LCME review. The large percentage of the full-time faculty who are tenured with decades of experience in teaching, mentoring, research and clinical care offers a

stable and professional learning environment for medical students, residents and graduate science students. The current recruitment of three department heads with two more interim appointments awaiting searches offers opportunities to recruit new leaders with new visions for the College and its missions.

Faculty diversity is supported by the University's Diversity Resource Office, which assists all faculty search committees. The COM has made dedicated efforts to recruit and retain qualified minorities and female faculty, particularly for leadership positions, such as the GRACE Project (Generating Respect for All in a Climate of Academic Excellence), charged with developing strategies to eliminate gender disparities in the faculty. In addition, a Special Assistant to the Dean for Faculty Development recently was appointed to address issues of faculty equity. Currently one department head and one interim department head are women. Although the proportion of women at the rank of full professor at the COM is identical with national figures (14.8%), the College will continue efforts to improve this figure.

The representation of women on the basic science faculty is slightly higher than the national average (30.4% vs. 28%), and close to the national average (30.3% vs. 31.7 %) for clinical science faculty. However, the overall proportion of minorities on the COM faculty is lower than the national average, particularly among basic science faculty (10.8% vs. 23.3%). Although the percentage of Hispanic faculty (9.0%) is similar to the percentage of Hispanic medical students (10.5%), both ratios are considered inadequate considering the large Hispanic population in Arizona (25.3%).

Faculty recruitment and retention is facilitated by many characteristics: the mid-sized faculty body; the fact that the UA COM is the only allopathic medical school in a rapidly growing state; the collegial spirit among faculty members; the diverse patient population, including Hispanics and Native Americans, which is particularly attractive to faculty involved in population-based research; the cutting-edge clinical research and patient care offered by the Centers of Excellence; and the southwest climate. Recruitment and retention are hindered by: the relatively low physician salaries in Tucson; the particularly restrictive licensure requirements for the state; the high penetration of managed care among the patient base, thereby increasing the potential for lower reimbursement of clinical services; limited protected time for teaching and research and limited state finances for new faculty who may require startup funds for research and laboratory space; and the absence of a university-wide policy on spousal recruitment and on-site day care.

The average annual attrition rate (2000-2004) for COM faculty (6.7%) is slightly below the national average for 1995-1999 (7.4%). According to recent statistics analyzed by the College, attrition rates are comparable to the national average for clinical faculty (7.5%), but are considerably below the national average (2.8% vs. 6.5%) for basic science faculty.

The Dean has renewed the College of Medicine's commitment to increase faculty research activity and, in collaboration with the faculty, has identified areas of research excellence for future development (neuroscience, diabetes, cancer, cardiovascular, imaging). These identified areas of excellence provide a focus for distribution of limited resources. Resources to support the faculty, including sufficient research space, are improving with recent and on-going construction. In addition, the Provost, the Vice-President for Research, the Director of the Bio5 Research Institute, and the deans of the colleges of Engineering, Optical Sciences, and Sciences have contributed substantial resources to the recruitment of faculty within the COM. The COM Research Office also supports research faculty by facilitating extramural support for faculty training and helping faculty secure funding for their research programs. Between 1999 and 2004, University of Arizona Self-Study for LCME 26

extramural research funds awarded to faculty increased more than 68%, from \$71.8 million to \$120.8 million. Although this office was put in to place to support faculty research endeavors, some faculty have not found the structure entirely beneficial and believe that such support would be more effective if it resided within individual departments.

**Basic Science Departments** Over the last seven years, full-time basic science faculty increased almost 31% to 102 members; there are few faculty members with part-time appointments. The majority of faculty turnover in all five basic science departments (Cell Biology & Anatomy, Biochemistry & Molecular Biophysics, Microbiology & Immunology, Pharmacology, Physiology) has been at the level of assistant professor.

Funding sources for basic science faculty include state funds, research grants, industry funds and endowments. While some faculty members depend entirely on state dollars for support, the majority earn their salary by adding up these various components. Most tenure-track basic science faculty are supported by one or more national grants. Fortunately, with the exception of state funds, revenue

resources for the COM are stable and expected to grow over the next several years. For basic science faculty who have brought in significant grant funds, salaries are at or near the AAMC 50<sup>th</sup> percentile and those with substantial external funding may be higher. Faculty without external funding may have salaries well below the AAMC 50<sup>th</sup> percentile, depending on their other contributions to the missions of the COM. This situation creates an incentive for faculty to develop grants and engage in research. Some faculty have expressed the concern that reliance on external sources of funding to supplement salary levels detracts from time that can be dedicated to teaching.

Basic science faculty participate in the service mission of the COM at multiple levels including committee work for both the College and the University, performing service locally and regionally, and serving on national committees and study sections. In addition to service and medical student education, basic science faculty members contribute to numerous undergraduate programs, and department-based and interdisciplinary graduate programs, both in the College of Medicine and the programs located on the University's main campus. They also participate in a number of teaching activities in residency programs. In the COM basic sciences, there are currently 33 MS students and 110 PhD students working toward their degrees. Most basic science departments could absorb additional graduate and post-graduate trainees with added funding. The College anticipates that graduate education will continue to flourish as research funding increases, new space becomes available and new faculty members are recruited.

**Clinical Science Departments** There are 14 clinical departments (Anesthesiology, Emergency Medicine, Family & Community Medicine, Medicine, Neurology, Obstetrics & Gynecology, Ophthalmology, Orthopedic Surgery, Pathology, Pediatrics, Psychiatry, Radiation Oncology, Radiology, and Surgery). In addition to the stability of department heads, section heads have been quite stable. Associate department heads are identified among the Phoenix faculty for every department that offers a required medical student clerkship; these faculty positions also have been stable.

Community physicians are a valuable resource in helping to provide experience in the few subspecialties, such as otolaryngology, endocrinology, and pediatric nephrology, where there is a shortage of representation on the faculty. In addition to the eight FTE faculty and administrators at the Phoenix campus and the 167 faculty who are supported by affiliate institutions to teach our medical students, the current teaching program in Phoenix is highly dependent on volunteer community faculty. These volunteers provide important ties to the community and invaluable support for clinical teaching; they are sufficient for the current number of third and fourth-year students studying there. Because most Phoenix faculty are volunteer, the financial requirements of the Phoenix campus are minimal and adequately provide for the current teaching needs. Finances will need to be substantially increased, however, with the implementation of a four-year curriculum at the Phoenix campus.

Most clinical faculty members' salaries are primarily supported by clinical revenue and research grants. The mean salary is at the 50<sup>th</sup> percentile of AAMC public institutions. As with all medical schools, pressures to maintain market salary levels mitigate against allocation of clinical faculty time for teaching, University of Arizona Self-Study for LCME 27

which is supported by state dollars. While tension around allocation of funds has the potential to interfere with the educational mission, the COM is not having difficulty filling clinical teaching positions.

The COM has an extensive program in graduate medical education. There are currently 458 residents and 26 subspecialty fellows in a variety of clinical training experiences. The College benefits from a well-established

Graduate Medical Education Committee (GMEC) charged with the responsibility of monitoring and advising on all aspects of residency education. Presently, two residency programs have probationary accreditation, no programs are substantially changing in size, and no programs experience difficulty filling positions.

The plan, "*Clinical Vision and Strategic Priorities 2005-2010*", articulated goals to build on current strengths and, by 2010, to become a national leader among academic medical centers in cancer, pediatrics, telemedicine, and biomedical imaging. The plan also calls for a significant increase in the number of clinical faculty (between 150 and 180 new clinical faculty members) and substantial growth in all clinical programs to meet the needs of the state and further the missions of the COM.

More space for research endeavors has been made available with the new construction and renovations accomplished over the past decade. In addition, the COM Centers of Excellence have been instrumental in fostering collaborative and interdisciplinary research efforts that have been extensively rewarded with extramural funding. Expanding clinical science research to the newly acquired UPH Hospital-Kino offers a remarkable opportunity to increase the clinical research base over the next ten years. Clinical research

has not been emphasized in Phoenix, although this will increase with expanded activities there.

### **Personnel Policies**

The University of Arizona's Conflict of Interest and Commitment Policy was adopted by the Faculty Senate in 1998, and applies to all departments of the College of Medicine. As employees of the University, faculty must disclose in writing any substantial interests held by either themselves or their relatives, including all types of external activities or business transactions of University employees, not limited just to research activities. Disclosure forms may be turned in at any time, but are typically included as part of the annual review process. This policy is being adhered to by departments, but it is not rigorous in content; while there is good compliance with this process, the disclosure form itself needs greater specificity, and plans are in place to reevaluate its effectiveness. The policy can be found at: [[http://fp.arizona.edu/senate/conflict\\_of\\_interest.htm](http://fp.arizona.edu/senate/conflict_of_interest.htm)].

The systems for appointment, renewal, tenure and dismissal are clearly delineated, easily accessible online, communicated to faculty in a number of ways, and followed by the departments and College. The process and steps for career progression appear to be widely understood, based on a survey of faculty issued by the Dean's Faculty Advisory Committee in May 2000. All new faculty receive an initial letter of appointment that contains information about the appointment process. In addition to the COM appointment process, clinical faculty enter into a contract with University Physicians Healthcare (UPH), the terms of which describe conditions of employment, compensation policies and benefits. The period of appointments and renewals of appointments may not exceed one fiscal year. A newly-appointed Special Assistant to the Dean for Faculty Development is developing new orientation procedures, and evaluating faculty recruitment and retention issues, including issues of diversity.

Decisions regarding renewals of appointments and progress toward promotion and tenure are based on annual performance reviews (delineated in the *University Handbook for Appointed Personnel*, <http://uhap.web.arizona.edu/chap3.html>); these reviews consider past and present performance; professional progress and future expectations; teaching effectiveness; research, scholarly growth and other creative activity; service and outreach activities; and peer and student evaluation. Progress toward promotion and tenure requires scholarly accomplishment over a period of years in the broader range of faculty responsibilities, and includes evaluation by external referees. Ultimately, multiple levels of review (peer, departmental, and administrative) contribute to promotion and tenure decisions. Tenure-track assistant professors have a mandatory mid-term evaluation at three years that includes a review by the College of Medicine Promotion and Tenure Committee. After tenure, faculty members undergo an annual University of Arizona Self-Study for LCME 28

post-tenure review in a rotating schedule in which 20% of the faculty are evaluated each year.

Department heads are charged to ensure that promotion and tenure decisions occur in a timely manner. Teaching is highly valued at the College of Medicine and the importance of teaching is delineated in its mission statement [<http://www.medicine.arizona.edu/overview.html>]. Individual departments employ a variety of techniques to evaluate the teaching skills of their faculty members, providing opportunities for feedback and improvement. Evidence of the quantity and quality of faculty teaching efforts is an integral and important part of career advancement decisions. Strategies are needed, however, to improve or expedite documentation of teaching excellence and scholarly activity to facilitate the promotion and tenure process.

Each annual performance review includes the past three to five calendar years of the individual faculty member's performance, with substantial emphasis on the most recent year for evaluation of teaching. The assessment of performance shall include an evaluation by both a peer review committee of the unit and the immediate administrative head, and provides a vehicle by which to correct unsatisfactory ratings through specific improvement plans. Department heads are relied upon to monitor faculty teaching performance. To assist in this, each department head receives reports on the student evaluations of teaching by departmental faculty. These reports are available to the Dean for Academic Affairs who annually receives a special report highlighting faculty who are underperforming in their medical student teaching. The Dean for Academic Affairs confers with the department head individually to devise plans for remediation or reassignment of faculty. Performance reviews of department heads are conducted by the Dean.

### **Governance**

Communicating policies and issues facing the College is a priority of the administration. The Dean of the COM and the Dean for Academic Affairs meet with department heads twice a month, and maintain frequent email contact. Using electronic listservs, the Dean distributes monthly bulletins to all appointed

personnel and staff regarding current issues of importance at the College of Medicine. In addition, a monthly Dean's Faculty Luncheon recently was introduced to increase opportunities for face-to-face interaction between faculty and administration. The luncheons are an open forum during which the Dean updates the faculty on an issue announced in advance, such as teaching, research, and promotion and tenure, followed by a free exchange among attendees. These lunches complement the Dean's breakfasts, held once or twice a month, when the Dean meets with small groups of individuals from training programs and other interest groups.

Faculty members serve on a variety of committees that provide input to the administration of the COM. The fact that faculty are elected by their peers to serve on certain committees (as opposed to being appointed by either department heads or administration) encourages independence of opinion and perspective.

Two general faculty meetings per year are held in Tucson, and meeting minutes have been distributed at the next meeting; however, meeting minutes will now be distributed soon after the meeting. The meeting minutes of the Department Heads Council are distributed to faculty in a timely manner, and announcements of upcoming events and important developments are circulated via email. Within departments and throughout the administrative structure of the Phoenix campus, there is a collaborative environment that supports open communication. Phoenix-wide faculty meetings are held semi-annually; newsletters and announcements are sent to faculty by email; there are regular departmental meetings and bi-monthly Associate Department Head meetings; and meetings of Clerkship Directors and other clerkship leaders are teleconferenced between Phoenix and Tucson quarterly.

The College of Medicine is one of sixteen colleges of the University of Arizona. Decisions made by the University's central administration have an impact on faculty of all the colleges, including the COM. During meetings of the Department Heads Council, the Dean informs unit heads of activities of the Academic Council, which includes the deans of all UA colleges. This information flow is good, but not sufficient to truly inform the faculty-at-large of campus-wide activities. Some COM faculty perceive that they do not have a voice in activities campus-wide, fostering a sense of isolation. The UA President University of Arizona Self-Study for LCME 29

sends regular electronic announcements to all University employees, including monthly Financial Bulletins. While this vehicle of communication serves to adequately inform faculty of major decisions and institutional directions, some faculty still perceive that the opportunity for input and response to universitywide

decisions is limited. Phoenix faculty participate on all major COM committees and also meet with Phoenix Associate Department Heads and Phoenix Clerkship Site Directors, offering input into discussions and decisions affecting the College of Medicine.

### **Strengths**

1. Faculty members from both the Tucson and Phoenix campuses possess considerable expertise in teaching in all educational venues, providing a stable and professional learning environment for all students.
2. Faculty endeavors in both basic science and clinical research are strong. The department heads in Tucson and the directors of the various Centers of Excellence have significant research relationships with individual faculty members or institutions in Phoenix.
3. Clinical faculty provide high quality clinical and other services, and are poised for substantial growth in all clinical programs to meet the needs of the state and further the mission of the COM.

### **Areas for Improvement**

1. Despite the COM's strong commitment to faculty diversity, the proportion of minority faculty, particularly in the basic sciences, is lower than is acceptable for a state with large Native American and Hispanic populations.

Strategy: The College has created a Diversity Advisory Committee under the leadership of the newly designated Special Assistant to the Dean for Faculty Development. The Diversity Advisory Committee is developing a Diversity Action Plan for the COM to design strategies to increase the number of minority and female faculty and promote greater diversity.

2. A more thorough and rigorous conflict-of-interest policy needs to be developed.

Strategy: The Dean has charged the Special Assistant for Program Development and the Special Assistant for Faculty Development to convene a faculty *ad hoc* committee to review conflict of interest policies and their application in the College of Medicine, and make recommendations for appropriate changes.

3. Efforts to recruit and retain faculty need to be enhanced.

Strategy: The Special Assistant for Faculty Development will develop new strategies that facilitate recruitment and retention of faculty. Ideas include: increased use of part-time faculty to cover clinical responsibilities for faculty working on research; refining the system of malpractice adjustments for clinical faculty who are less than full-time or externally funded for research; and systematically conducting exit interviews, as well as regular pulse interviews with faculty.

## V. EDUCATIONAL RESOURCES

### Finances

The University of Arizona College of Medicine is financially stable and currently has adequate resources to support its mission of teaching, research, patient care and service (see chart below). The various revenue sources are appropriately balanced, and the College is satisfied that the state of Arizona, the Arizona Board of Regents and the University of Arizona are in full support of the College's programs and its planned activities for the next several years.

The following chart illustrates that over the seven-year period from 1997 to 2004 revenue sources (as a percent of the total budget) have increased or stayed the same, except for state contributions, which decreased from 22.4% to 16.3%. Total income from all sources increased 55.3%, however, the College University of Arizona Self-Study for LCME 30

actually lost some purchasing power, because the costs for goods and services (after adjusting for inflation) increased 57.5%.

The University of Arizona has continued to experience diminished state appropriations. Despite these permanent budget cuts, state support is high in relation to the national average of public medical schools (approximately the 75<sup>th</sup> percentile nationally according to the Medical School Profile Report 2002-2003, published February 2005 by the AAMC). Total revenue for the College ranked at approximately the 38<sup>th</sup> percentile nationally for all public medical schools. Tuition and fees have increased over the past several years, although they remain low in relation to other comparable medical schools.

While state funds to the University are proposed to continue to be cut (one-half percent in FY 2006 and again in 2007), the remaining funds are to be realigned across certain colleges to allow for growth in the areas outlined by the University's strategic plan; the College of Medicine is one of those colleges. In addition, the COM is well-positioned to receive increased non-state funding, because a significant focus for research over the next five years will be in the biomedical sciences.

Until recently, no clearly defined mechanisms or policies have existed for the allocation of state dollars to departments based on teaching contributions; however, in FY 2005 the Dean initiated a measurement system for such allocation. In addition, there are no clearly defined mechanisms or policies to allocate state dollars to individual faculty based on their teaching contributions. As part of the planning for the new *ArizonaMed* curriculum, the Faculty Rewards Team is charged with making recommendations on rewards for faculty appropriate to the quality and quantity of their teaching, including a metric for allocation of funds based on teaching contributions.

During the late 1990s, all health care providers in the state faced financial challenges, primarily due to heavy managed care penetration of the market. Fortunately, the University Medical Center (UMC) and University Physicians Healthcare (UPH) weathered those challenges and both entities now show profit and growth. By 2010, the College of Medicine intends to be a national leader among academic medical centers in cancer, pediatrics, telemedicine and biomedical imaging. The COM, UMC and UPH are all poised for major expansion during the next five years to include an influx of new faculty, clinical resources and research space for COM programs. The Emergency Department at UMC is currently being expanded. A major UMC cancer clinic being built north of the main campus, to be completed in the summer of 2006, will provide much needed clinical space for cancer programs. UMC will add and additional four floors to its north bed tower, to be completed by early 2008.

The assumption by UPH of the management of the Kino county hospital is a major step that will provide a long-term opportunity for growth of the College. Improved management practices will be implemented by UPH-Kino to rectify the prior financial mismanagement and image problems associated with the county hospital. UPH-Kino is the first step in a long-term partnership with Pima County to create a second

**UA College of Medicine Revenue Distribution by Source; FY 1997, FY 2004**

34.3%

29.7%

22.4%

3.3% 4.1%

6.1%

37.2%  
16.3%  
3.3% 4.7%  
6.8%  
31.7%  
0%  
5%  
10%  
15%  
20%  
25%  
30%  
35%  
40%  
45%  
50%

**UPH Grants and**

**Contracts**

**State Hospitals Gifts and**

**Endowments**

**Parent**

**University /**

**Other**

FY 1997

FY 2004

University of Arizona Self-Study for LCME 31

campus for the COM on the 71-acre Kino site. This will include education and research programs as well as clinical service. Population growth in south Tucson will support increased utilization and revenue from UPH-Kino.

Infrastructure needs for the College are the shared responsibility of the UA central administration, UMC and UPH. The positive financial positions of UA and UMC are reflected in their individual bond ratings. Actual ratings from Standard & Poor and Moody's Investor's Service, respectively, are as follows: UA's bond ratings are Aa3 and AA; UMC's bond ratings are BBB+ and AAA; (UPH's bonds are not rated). The school's sound financial condition is such that present and future capital needs can be met.

Because most Phoenix faculty are volunteer, the financial needs of the Phoenix campus are minimal for the current teaching load. Finances will need to be substantially increased with implementation of a four-year curriculum.

**General Facilities**

**Teaching Facilities** Two floors of the College of Medicine are dedicated to instruction of first and second-year medical students. The area includes two lecture halls; a student lounge; multidisciplinary labs; the Gross Anatomy Lab; the Learning Resource Center; the Preparation for Clinical Medicine (PCM) Teaching Clinic; and the offices of Curricular Affairs, Educational Development, Admissions, and Student Affairs, including Student Records and Financial Aid. The lecture halls were renovated in 1998 to increase capacity to 125 seats, include more handicapped seating, and upgrade audiovisual equipment and space for patient demonstrations. As indicated earlier in this report, seating in the two main lecture halls is at capacity, and it is not always possible to accommodate the graduate science students who enroll in the medical student courses; this issue will be resolved with the 2006-07 implementation of the *ArizonaMed* curriculum. Another key educational resource is the NBME testing center, one of only seven school-based testing centers in the country. A new program, the Arizona Simulation Technology and Education Center, has been created to support the use of simulation technology in medical education. The Arizona Health Sciences Library contains 22 rooms appropriate for small group meetings or study sessions, and the Learning Resource Center has 10 small group rooms; the six multidisciplinary lab rooms also can be used for small group activities. The current supply of small group meeting and study rooms are fully used; occasionally, careful scheduling is necessary to meet the requirements of the educational program. Students report that finding unoccupied small group rooms can be difficult, and have suggested increasing the number. Implementation of the new *ArizonaMed* curriculum will involve less lecture-based learning and increased small group interactions and team learning activities, potentially requiring more small group learning space and modification of existing classrooms for team learning.

The Preparation for Clinical Medicine Teaching Clinic is designed for student instruction and practice in

clinical care. The clinic consists of a common area surrounded by nine exam rooms, a monitor room, a storage room, a bathroom, and a staff office. There are several shortcomings that hinder optimal functionality and efficiency of the clinic: (1) the monitor room is not large enough to accommodate multiple observers and monitors of patient sessions without crowding; (2) the number of exam rooms limits the amount of simultaneous teaching and exam sessions necessitating multiple scheduling to accommodate the class; (3) the common area is not sufficient for students to comfortably participate in pre-exam orientations and post-exam debriefings; (4) a kitchen facility would increase student convenience and comfort during day-long exams.

The teaching facilities of our clinical affiliates have been reported as generally good with most having onsite libraries, lecture/conference rooms, study areas, computers, call rooms, changing areas, and lockers for student use. A perception exists that UMC lacks adequate student space on patient care units with limited rooms for studying, sleeping, small group activities, one-on-one teaching, or congregating so that students may more actively and readily participate in their teams' activities. At the Southern Arizona Veterans Affairs Health Care System (SAVAHCS), a need exists for additional conference room and University of Arizona Self-Study for LCME 32

classroom space, and plans are in place to address this. On the Phoenix campus, the number and size of classrooms adequately meets the majority of teaching needs.

**Faculty Office Space** Space for faculty offices within COM facilities is quite limited, and some faculty have expressed concern over this issue. Many faculty have less than the 120 square feet of office space that is recommended by the Arizona Board of Regents, and several faculty are without an office entirely. Currently, and in anticipation of the projected substantial increase in clinical faculty, additional space for faculty offices is clearly needed. The Dean's Space Committee is working to address these issues.

**Security Systems** A safe environment for COM faculty, staff and students is essential, and there are adequate security measures for protecting faculty and students on the COM campuses and at affiliated clinical sites. At the Arizona Health Sciences Center, the combined security and technology provided by the UA Police Department and the UMC Security Department provides comprehensive coverage, 24-hour dispatch and quick, appropriate response in the event of emergencies. Each major clinical site in Tucson and Phoenix has a well-defined security system in place for their employees that also benefits COM students, residents and faculty. At the SAVAHCS located in South Tucson (an area with a higher crime rate than the University area), building entrances and side gates are locked by 6:00 pm. Parking lots have increased lighting for added after-hours security.

**Research Facilities** Current and future dedicated space for research adequately meets the College's needs. Since the last LCME review, the COM added the following research facilities in Tucson: the Sarver Heart Center (36,400 sf), the Arizona Cancer Center's Salmon Building (102,100 sf), and shell space in the Life Sciences North Building (32,952 sf). There are now 716 basic science research spaces accounting for 87,468 square feet, and 1471 clinical science research spaces accounting for 153,827 square feet. The Dean recently initiated a policy to link square feet of research space to the total direct and indirect grant dollars supporting that space, to facilitate redistribution of available space on a more equitable basis.

Construction of two new facilities, the Medical Research Building to be completed in the summer of 2006, and the Keating Bioresearch Building to be completed in January 2006, will add an additional 312,280 sf of available space for research. Although not a COM building, the Keating Bioresearch Building will bring together scientists from the colleges of Science, Medicine, Pharmacy, Engineering and Agriculture to collaboratively explore complex biological problems.

In Phoenix, research has not been emphasized, but with several research facilities opening or expanding in the area, research activities conducted by Phoenix faculty will increase. Two Phoenix research facilities have formal links with the COM: the Translational Genomics Research Institute (TGen), which has partnered with the COM to conduct and translate genomic discoveries into advances in human health; and the Scottsdale branch of the Arizona Cancer Center's clinical research operation. The Arizona Biomedical Collaborative (ABC-1), a downtown medical complex, is scheduled for completion in March 2007 and will provide new research space for the academic research programs and healthcare services of the COM, as well as biomedical research activities at Arizona State University. The two universities are working in partnership with TGen to develop complementary interdisciplinary research programs for the future, and COM faculty for the Phoenix program will have labs in the ABC-1 building to support their research programs.

### **Clinical Teaching Facilities**

A diverse set of 17 hospitals and seven major ambulatory care facilities, along with several private practice sites, provide the settings for required clinical clerkships and a wide range of clinical electives. The variety of sites available for student education constitutes a strength of our educational program. There are nine hospital affiliates located in Tucson, with a total of 2,385 inpatient beds, accounting for 120,844 annual admissions, and more than 1.8 million outpatient and ER visits a year. There are eight hospital affiliates located in Phoenix, with 2,721 inpatient beds, 133,351 annual admissions, and approximately 1.78 million outpatient and ER visits annually.

University of Arizona Self-Study for LCME 33

Educational program leaders report that the clinical inpatient and ambulatory facilities in which students are educated are appropriate for excellent patient care. Overall, the facilities are modern, well-equipped, and have adequate support services. The COM's ambulatory clinical affiliates include group practices, community health centers, hospital-based ambulatory care facilities, and Indian Health Service sites. All of the clinical affiliates maintain JCAHO accreditation.

In Tucson, the UMC and UPH-Kino Hospital attract numerous patients with complicated medical conditions that receive both outpatient and inpatient care. UMC performs a number of clinical procedures that are either unique in the state of Arizona or for which the state is markedly underserved. UMC is the only hospital in Arizona labeled as a "Magnet Hospital" by the American Nursing Association. UMC is ranked in the top 50 hospitals nationally in four areas by *U.S. News and World Report*. The affiliated medical centers in Phoenix offer specialty care services that attract patients from a wide region. The patient mix is diverse, in terms of both socio-economic-cultural characteristics and requirements for medical care, and the number of patients is sufficient to meet educational learning objectives. Both Phoenix and Tucson are experiencing population growth, and most of the teaching sites are major teaching hospitals with ACGME-accredited residency training programs, assuring an adequate patient base for medical education.

In May 2005, the Directors of Medical Education (DMEs) of the large clinical affiliate hospitals in the Phoenix area were informally surveyed and reported that there is sufficient capacity in Phoenix affiliate sites to increase the number of students in the required clerkships of Medicine, Surgery, Pediatrics, Obstetrics & Gynecology, Family & Community Medicine and Neurology. Accommodating more students in the Psychiatry Clerkship would require utilizing additional clinical sites. Results of this survey also confirmed that sufficient space would be available in these affiliate sites to accommodate the 24 new students projected to matriculate into the expanded Phoenix program in 2007.

Since the survey of Phoenix directors of medical education was completed, pressure for inclusion of osteopathic students in Phoenix area hospitals has increased. Senate Bill 1517, which provided startup funding for new four-year program in Phoenix, contains a clause prohibiting hospitals that offer rotations to allopathic students from excluding osteopathic students on these rotations. These positions previously have been exclusively allocated to College of Medicine students based on a non-binding policy from the COM. Some hospitals are responding by offering a limited number of open slots in existing clerkship rotations. This approach would not compromise our teaching programs at this time, but the larger issue of coordinating the placement of osteopathic students at Phoenix affiliates, and accommodating an even larger cadre of osteopathic students, remains unresolved.

The clinical faculty, including over 900 volunteer faculty in community-based sites throughout the state of Arizona, represent a wide variety of specialties. Their number is appropriate to provide enough supervisors to meet the educational needs of our students.

#### **Information Resources and Library Services**

The resources and functionality of the Arizona Health Sciences Library are excellent. Librarians and staff are friendly, knowledgeable and available to assist students and faculty; 24-hour essentially year-round access is convenient for all users; and audiovisual and computer technology is up-to-date with an adequate amount of equipment. Although the Library is within standards for the number of seats available, there is a great deal of competition for group study rooms. Using open library space for additional small group rooms or configuring it for other educational activities is under consideration. In Phoenix, the print collection is small and is only available during business hours, but there is 24/7 access to the Learning Resource Center and support staff are available during the day. Through use of the Arizona Health Information Network (AZHIN), students on clinical rotations have online access to all of the electronic resources of the Library and document delivery from Tucson is available to Phoenix students, with quick turnaround time. According to the Library Director, current funding is inadequate to maintain and expand the Library's collections (especially its collection of electronic journals), and the Director feels

that options for improving the library budget should be explored.

University of Arizona Self-Study for LCME 34

Information technology services related to medical student education are provided through the individual and combined efforts of the AHS Library, the Division of Biomedical Communications, the Office of Educational Development (OED) and the Office of Medical Computing (OMC). The Library and information technology resources of the affiliated teaching hospitals are coordinated with the Phoenix campus staff to provide adequate support for students while on rotation.

Each entity of information technology services contributes uniquely toward the educational programs of the College. Biomedical Communications supports the evolving digital curricular needs of the College with the staff and skills to create highly sophisticated instructional applications ranging from simple websites to complex on-line simulations. Among its many accomplishments, Biomedical Communications offers nationally recognized teleconferencing capabilities to facilitate the educational and administrative needs of the Phoenix and Tucson campuses. The Division is internationally recognized for its development of interactive, instructional applications, as well as its support of comprehensive distance education programs. The Arizona Telemedicine Program is supported by divisional resources and operates the telemedicine network. It is capable of fully two-way interactive videoconferencing to approximately 130 Arizona locations, allowing medical students on rotation at clinical affiliate hospitals and rural clinics access to a variety of educational programming from the Tucson and Phoenix facilities. The OED supports on-line exams and on-line student feedback and reporting for both graduate and undergraduate medical education. The OMC supports both Student Records with in-house transcripts and the Office of Curricular Affairs with databases that create class schedules, track curricular information, and an application that allows students to enroll in Enrichment Electives on-line.

The Library currently offers a variety of workshops and classes focusing on effectively searching the medical literature, accessing the services and resources of the Library, and improving information management skills. As there is no on-site librarian in Phoenix, Tucson librarians travel to Phoenix or use videoconferencing technology to provide these sessions. Members from the Library, Biomedical Communications and the OED have been working together to develop the new learning management system and digitized assets that will play a central role in the new *ArizonaMed* curriculum.

Information technology services at the COM currently are adequate to support the needs of the educational program. However, information systems within the college and with clinical affiliates could be better integrated. Progress is being made toward centralized planning and budgeting authority for information technology to help improve this situation. A Chief Information Officer (CIO) for the COM was appointed by the Dean in 2005. The CIO plans to consolidate academic information technology resources to support more effective use of information technology tools for learning, teaching, research, outreach and administration. Centralized information technology leadership and budgeting will support strategic network planning and development, as well as the integration of information technology into the new curriculum.

### **Strengths**

1. Revenue resources are stable and are expected to grow over the next several years enabling the College to meet its missions of teaching, research, patient care and service. Although the College of Medicine has experienced a decrease in state funding, total revenue has increased allowing the College to maintain a stable base for the education programs.
2. The COM is part of a strong healthcare environment, and our closest clinical affiliates in both Tucson and Phoenix are dynamic and growing. This growth will provide additional resources and new opportunities for medical education, research and clinical service for the College.
3. Research space has increased significantly since the last LCME review, and will increase again with the completion of two new research buildings currently under construction. In addition, the Arizona Biomedical Collaborative in downtown Phoenix will house UA College of Medicine researchers and focus on the research initiatives of the College. The increased capacity and flexibility of available facilities will accommodate a major expansion and diversification of the research program.

University of Arizona Self-Study for LCME 35

4. The Arizona Telemedicine Program, recognized both nationally and internationally as a leader, has greatly enhanced the COM's ability to expand its missions beyond the walls of the Tucson and Phoenix campuses, facilitating quality clinical care and educational programming across the state.

5. The Arizona Health Sciences Library offers exceptional facilities, 24/7 year-round availability, good collections, expert staff, and electronic access from rural sites via the Arizona Health Information

Network. The Library is an excellent resource for the entire state.

6. The Division of Biomedical Communications provides exceptional support for the educational and administrative needs of the College.

7. Good physical resources are available for students' use, including study rooms, lounges, computer services, as well as the Arizona Health Sciences Library and Learning Resource Center. One key resource is the NBME Testing Center, one of only seven school-based testing centers in the country.

8. The College of Medicine regional campus in Phoenix provides a large and diverse patient population for the clinical training of the medical students and is expertly supported by the area teaching hospitals and volunteer faculty.

#### **Areas for Improvement**

1. The mechanisms and policies for the allocation of resources to departments and faculty for teaching contributions are unclear.

Strategy: An appropriate metric for the allocation of resources is under development, with input from the *ArizonaMed* Faculty Rewards Team. In addition, the criteria for the department head evaluation process will be updated to hold department heads accountable for assuring appropriate faculty resources to meet educational needs, and ensuring that research or clinical productivity demands do not interfere with the time necessary to teach.

2. The *ArizonaMed* curriculum will require space configured for team learning and some additional small group learning space.

Strategy: Facilities planners are aware of these issues and are responding as the needs of new curriculum become clearer. Plans are in progress to remodel the Multidisciplinary Laboratories to provide more appropriate space for the implementation of the *ArizonaMed* curriculum, Year I.

3. The impact of clinical affiliates in Phoenix accepting osteopathic students is unresolved.

Strategy: Assurances should be obtained between the University of Arizona and the Phoenix clinical affiliates that guarantee priority given to College of Medicine students for clerkship slots.

#### **SUMMARY OF STRENGTHS AND AREAS FOR IMPROVEMENT**

All of the areas for improvement noted in each of the sections of this report were identified through the deliberations of the self-study committees, and will be addressed. The list that follows indicates those strengths considered most characteristic of the College of Medicine and upon which we will rely most heavily in meeting future goals. The Self-Study Task Force considers the following areas for improvement to require priority attention.

The College of Medicine is confident in its capacity to address and resolve the areas requiring improvement and to move forward with its goals for growth, primarily because of the opportunities that are now available with the presence of stable leadership. There are significant issues that will have long-term impact on the future of the College, particularly the selection of a new President, building of the UPH-Kino campus, and expansion to a full four-year program in Phoenix. All of these present opportunities for the College of Medicine to grow and excel.

University of Arizona Self-Study for LCME 36

We see no significant threats to our ability to address our problems and build on our strengths. Specific strategies are indicated for improving or resolving each area for improvement.

#### **Strengths**

The quality of the faculty at the College of Medicine is high. Faculty members possess considerable expertise in teaching, research, and clinical service, providing a stable and professional learning environment for all students. There is a strong core of faculty committed to curriculum excellence.

A large and varied base of patient resources enables the College to provide clinical learning experiences with culturally and economically diverse populations.

The Standardized Patient Program and the OSCE Program are exemplary, well integrated into the MD educational program, and psychometrically sound.

The Commitment to Underserved People program is an exceptional community service program, providing significant educational experiences for the students. Of particular note is the high student participation (over 90%) and that all services are managed and administered by the medical students.

Tuition and fees remain low and most students receive financial assistance. Significant financial aid support is available, and financial counseling and debt management services are effective as evidenced by relatively low student indebtedness.

Numerous and excellent student support resources are available, including faculty counselors, support groups, and peer counseling, as well as structured programs to facilitate students' adjustment

to the physical and emotional demands of medical school.

The research program is strong and growing. The College has more than adequate resources to support the research agenda, a strategic plan for research that is utilized in setting research priorities, and substantial research opportunities that benefit the program for medical education.

Revenue resources are stable and are expected to grow over the next several years enabling the College to meet its missions of teaching, research, patient care and service.

#### **Areas for Improvement**

1. The current medical student curriculum is not well integrated, and the opportunities for active learning and for developing lifelong learning skills are suboptimal.

Strategy: See *ArizonaMed* description (Appendix II).

2. Joint strategic planning among the College and its major clinical affiliates--UMC and, to a lesser extent, the SAVAHCS--historically has been inadequate.

Strategy: COM strategic plans for research and clinical programs are now in place. Education planning has focused on the new *ArizonaMed* curriculum, but a broader plan including GME, CME, and graduate programs will now be developed. These plans will be knitted into an overarching COM strategic plan with the aid of the Tripp Umbach consulting firm. This plan will include strategies for maximizing our relationships with clinical affiliates in both Tucson and Phoenix.

3. The authority of the Curriculum Committee in curriculum oversight is not clearly defined and the Curriculum Committee does not have sufficient authority to implement change. Similarly, the authority of the Chief Academic Officer to ensure appropriate curriculum oversight is not stated explicitly.

Strategy: A subcommittee of the Curriculum Committee has been charged with proposing a governance structure that will support curriculum oversight and management according to LCME University of Arizona Self-Study for LCME 37

Standards for Accreditation. The proposal will include articulation of the authority of the Chief Academic Officer, along with the role of a curriculum committee, in management of the curriculum.

4. The educational mission is underrepresented in the College of Medicine governance structure. Currently, the Dean does not interact directly with Dean's Staff in the areas of graduate medical education, undergraduate medical education, or graduate science education.

Strategy: The Dean recently has announced the formation of a Dean's Education Council, to include the Dean's Staff in medical student education and graduate medical education. A new administrative position will be created to represent graduate science education and to serve on the Dean's Education Council.

5. Despite the COM's strong commitment to faculty diversity, the proportion of minority faculty, particularly in the basic sciences, is lower than is acceptable for a state with large Native American and Hispanic populations.

Strategy: The College has created a Diversity Advisory Committee under the leadership of the newly designated Special Assistant to the Dean for Faculty Development. The Diversity Advisory Committee is developing a Diversity Action Plan for the COM to design strategies to increase the number of minority and female faculty and promote greater diversity.

6. The mechanisms and policies for the allocation of resources to departments and faculty for their teaching contributions are unclear.

Strategy: The COM needs to develop more clearly defined mechanisms and policies in order to reward faculty and protect the educational mission. An appropriate metric for the allocation of resources is under development, with input from the Faculty Rewards Team. In addition, the criteria for the department head evaluation process will be updated to hold Department Heads accountable for assuring that there are appropriate faculty resources to meet the needs of students, and ensuring that research or clinical productivity demands do not interfere with the time necessary to teach.

7. A more thorough and rigorous faculty conflict of interest policy needs to be developed.

Strategy: The Dean has charged the Special Assistant for Program Development and the Special Assistant for Faculty Development to convene a faculty *ad hoc* committee to review conflict of interest policies and their application in the College of Medicine, and make recommendations for appropriate changes.

9. The elimination of the Vice President for Health Sciences position has left a governance void that is not addressed completely by reporting relationships to the Provost.

Strategy: Work with the President and Provost of the University of Arizona to give the Dean of

the College of Medicine appropriate authority to coordinate governance and planning for the health science colleges, and other health sciences entities such as UMC and UPH.

Appendix I 1

## **MEMBERSHIP OF THE SELF-STUDY TASK FORCE**

### **Name Title and Department**

Kenneth J. Ryan, MD (Chair)

Dean for Academic Affairs

*Chair, Self-Study Committee, Institutional Setting*

Keith A. Joiner, MD, MPH Dean, College of Medicine

James A. Warneke, MD Associate Professor, Department of Surgery

*Chair, Self-Study Committee--Educational Program*

Barry Morenz, MD Associate Professor, Department of Psychiatry

*Chair, Self-Study Committee--Medical Students*

Joseph S. Alpert, MD Head, Department of Medicine

*Chair, Self-Study Committee--Faculty*

Patricia A. St. Germain, MS Associate Dean for Administrative & Financial Affairs

*Chair, Self-Study Committee--Educational Resources*

Jacqueline A. Chadwick, MD Associate Dean for Clinical Affairs (Phoenix)

Bruce M. Coull, MD Head, Department of Neurology

Christopher A. Leadem, PhD Senior Associate Dean for Admissions and Student Affairs

Clark Lantz, PhD Associate Head (Interim Head), Department of Cell Biology

and Anatomy

*Chair, Self-Study Committee--Educational Resources*

Ronald S. Weinstein, MD Head, Department of Pathology

Neil M. Ampel, MD Professor, Department of Medicine

Southern Arizona Veterans Affairs Health Care Services

Christopher Deibert Medical Student , Year II

Shameema Sikder Medical Student, Year III

Appendix II 1

# **ArizonaMed**

## **Physicians for the 21<sup>st</sup> Century**

### **Curricular Revision at the University of Arizona College of Medicine**

<http://curriculum.ahsc.arizona.edu/>

The College of Medicine has launched a comprehensive project to completely revise the curriculum for the program leading the M.D. degree. The new *ArizonaMed* curriculum revision process is described under institutional planning (IS I.A). Details may be found by visiting the above web site and are summarized below. Two major retreats each involving 50-75 faculty have been held to discuss all aspects of the project. Implementation of the first year of the revised curriculum is scheduled for fall semester 2006.

#### **I. The *ArizonaMed* Curriculum**

The **Integration Team** has recommended an integrated block structure for the first two years. The block structure requires that humanism and doctoring content be integrated with basic science and clinical aspects in each block. The proposed structure reorganizes the currently discipline-based courses run by the academic departments into integrated blocks, beginning with basic foundational principles (*Foundations*) followed by organ-based (*Musculoskeletal, Neuroscience, Cardiovascular*) and systems (*Metabolism, Infection/Immunity/Inflammation*) learning blocks. The fourth semester blocks, including *Life Cycle, Cancer, and Advanced Topics* will provide a more advanced level of integrated learning on complex systems. In addition to the humanism and doctoring themes to be included in each block, the *ArizonaMed* Steering Committee has entertained the inclusion of special topics called Threads. These Threads are judged important enough to be woven throughout the curriculum. Three such Threads, *Evidence-Based Decision Making, Gender and Medicine, and Health Systems and Equity* have been approved; a new Thread proposal, *Aging, Special Populations and Chronic Care*, is in development. Faculty who "champion" these areas are empowered to participate in the design and implementation of all blocks by seeking opportunities to enrich learning exercises with their methods and content. A subgroup

of the Integration Team currently is addressing integration of the basic sciences into the clinical years. A separate, clinically-oriented group of faculty is focusing on the structure of the clinical curriculum, additional elective or selective opportunities, and integration among the clerkships.

The **Learning Team** has recommended three active learning methods designed to foster the development of life-long learning skills. These methods, Interactive Lecture (IL), Team Learning (TL), and Case-Based Instruction (CBI) will be employed with increasing sophistication as students progress through the curriculum. All three learning methods will be executed in a uniform *ArizonaMed* style across the curriculum. The Learning Team is preparing manuals for faculty to use in implementing each learning method; these manuals also are being used by the Office of Educational Development to design faculty development workshops. In conjunction with recommendations of the Evaluation Team (below), the communication, interactive, and professionalism aspects of these activities (particularly TL and CBI) will be a formal part of student evaluation. The template for block design requires at least one TL and one, two-part CBI per week along with significant independent learning/study time to make it possible for students to fully engage with the material.

The **Humanism Team** has identified topics such as humanism, ethics, professionalism, and cultural competence in the Social and Behavioral Science course and elsewhere in the current curriculum as a prelude for inclusion in *ArizonaMed*. The Team has also recommended some new and redesigned approaches to engaging students in this material, such as an expanded communications laboratory and video journal essays depicting the impact of disease on the lives of individual patients.

The **Interprofessional Team**, in direct response to the Institute of Medicine's challenge in *Health Professions Education: A Bridge to Quality* is preparing recommendations for educational activities emphasizing the collaborate effort of health and other professionals. This team has been working with Appendix II 2

representatives from each of the health science colleges, along with representatives from the colleges of law and business, to develop educational activities that emphasize collaborative, interprofessional care.

The **Evaluation Team** has recommended linking student evaluation to the overall *ArizonaMed* objectives, which are stated in the style of the six ACGME competencies. For all learning activities in basic and clinical sciences, faculty will evaluate not only the students' content knowledge—students also will be evaluated on communication skills, professionalism, and other attributes expected of a physician as demonstrated in the learning activities of each curricular block. The Team has further recommended a de-emphasis on "high stakes" examinations. Instead of the current midterm and final examination system, students will be evaluated in each block and during daily TL and CBI sessions. The goal is for faculty and students to track their progress in relation to both block objectives and institutional objectives.

The **Faculty Rewards Team** has developed a metric for quantifying the faculty time required for the methods recommended by the Learning Team. These values are now being matched with the allocation of financial resources available for medical student teaching and for other educational programs such as graduate and continuing medical education, and teaching in the graduate science programs. The Team also is exploring the creation of an academy that will both honor outstanding teachers and foster scholarship in medical education.

**Block Designers** who were selected in the spring are expected to complete the weekly schedules for their blocks by early November 2005. At that point the *ArizonaMed* process will move into the implementation phase with selection of block directors and co-directors who in turn will select the faculty to teach the individual sessions. Faculty development for those who will teach in the first semester will take place in the spring of 2006.

## **II. Student Societies**

Another curricular innovation through *ArizonaMed* is the development of a medical student societies program. Four societies each consisting of 27-28 medical students from each class and six clinical faculty mentors will be established to provide bedside clinical teaching and to solidify and integrate student learning in a clinical environment. The societies program is modeled after approaches used at Harvard, UCLA, and especially the University of Washington. Another goal of the societies will be to provide mentoring and career advising for the students. The core of the *ArizonaMed* societies will be bedside teaching by full-time clinical faculty, but will also incorporate student-directed activities under the guidance of the society faculty mentors. The societies program was announced at the October, 2005 *ArizonaMed* retreat and selection of the 20 faculty mentors will be accomplished by January, 2006.

## **III. ArizonaMed Online**

After extensive discussions and reciprocal visits with faculty at the University of California at San

Francisco (UCSF) concerning their digital curriculum, a decision was reached to proceed with our own version of a digital online curriculum. The first step was licensing the curriculum database developed at UCSF (*Ilios*) and installing it here. This is now accomplished. The database is the repository for all learning elements (notes, *PowerPoints*, images, cases, texts) and is primarily a faculty and administrative tool. The next step is creation of the online course tools the students will use to access material in the database as organized by the faculty for any learning session. This is now in progress. The goal is twofold: to make schedules and materials available online and to create an interactive environment that can be used in CBI and other learning activities both during scheduled sessions and in independent work outside of class time. These programs will combine online distance learning with face-to-face faculty interactions. Another element of the online environment will be the creation of virtual laboratories by the use of digitized histology and histopathology images. The Department of Pathology and the Arizona Telemedicine Program are world leaders in the use of this technology. *ArizonaMed Online* also will make it possible to document the curriculum along with learning and teaching tools. This will support faculty in their ability to build on and share materials, facilitate integration, and assist in the identification of curricular gaps and unwanted redundancies. The increased computer capabilities also will support tracking of student performance evaluation, and a patient encounter logging function to assist students, clerkship faculty and the College in assessing students' attainment of both clerkship and institutional objectives.

#### **IV. Curriculum Facilities**

A review of facilities available to implement *ArizonaMed* indicates we have the resources with the exception of space appropriate for Team Learning; *ArizonaMed* may also require greater availability of small group rooms, although the dimensions of the need will be clearer with greater specification of the curriculum. We expect to use TL with up to 55 students organized in groups of five to seven, which will require a large, flat room. A tiered lecture hall is suboptimal. To accomplish this, the Multidisciplinary Laboratories will be remodeled in the period between the end of spring semester and the start of the first *ArizonaMed* class in fall 2006. In addition, the rooms will be set up for online access and with projection equipment that will facilitate both *ArizonaMed Online* and virtual laboratories.

In summary, the *ArizonaMed* project will be successful in addressing the areas in need of improvement in our current curriculum by:

- Integrating curriculum among disciplines and across the educational program.

- Implementing independent-interactive learning experiences to support the development of lifelong-learning skills.

- Using the institutional objectives to guide curriculum development and student performance assessment.

- Employing a comprehensive system for documenting curricular content and facilitating the systematic identification of curricular redundancies and gaps.

- Implementing a requirement for, and appropriately acknowledging and rewarding faculty who participate in faculty development.

- Providing an avenue for student mentoring and providing more career guidance.