

**Pennsylvania State University
College of Medicine**

LCME Self-Study Summary Report

2001

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Self Study Summary

Introduction and Background

Since the last Liaison Committee on Medical Education (LCME) site visit in 1995, the Pennsylvania State University College of Medicine has experienced a series of major changes, but has emerged as a stronger, more highly focused and efficient organization committed to a common vision and shared values, and to re-establishing balance among our missions of education, research, patient care, and service.

The curriculum for Year 1 and 2 students has changed substantially, and is now more centrally organized, integrated, coherent, and multi-disciplinary. The first class to experience the new curriculum entered in 1997 and recently graduated. Comments from the Association of American Medical Colleges (AAMC) Graduating Student Questionnaire (GSQ) were very positive about the curriculum (in retrospect), especially the Problem Based Learning (PBL) portion, despite concerns initially raised by students and faculty alike. Our faculty put forth a tremendous effort in designing and implementing the new curriculum in just over 17 months.

While the new curriculum was being designed for implementation in January, 1997, the Medical Center leadership announced a merger of the clinical enterprise (hospital, faculty practice, and clinical sites) with the Geisinger Health System to be effective on July 1, 1997 (for more details refer to our LCME progress report of May 7, 1997). An enormous amount of faculty and staff effort was invested in dozens of transition teams to prepare for the merger, and subsequently in a variety of task forces and committees established to manage the new organization.

The increasing and unyielding economic pressures placed upon all academic health centers and health systems by managed care, third party payors, and the Balanced Budget Act of 1997 resulted in smaller than expected margins from the new Penn State Geisinger Health System, and eventually in a threatened erosion of the academic support payment to the College of Medicine. Furthermore, faculty perceived a shift in the balance of our missions heavily toward clinical care at the expense of education and research, and eventually lost trust in the leadership of the new organization. Faculty and staff turnover increased dramatically, and finally University and College leadership decided to unwind the merger as of July 1, 2000. In June, 1999, the Senior Vice President for Health Affairs, Dean, and Chief Executive Officer announced he was retiring as of July 1, 2000.

Unwinding the merger took another enormous commitment of faculty and staff effort to reestablish separate academic units, business systems, academic information systems, clinical units, educational programs, and research programs which had been united or integrated during the period of the merger. All this was accomplished in less than eight months - another incredible feat.

President Spanier appointed a search committee chaired by Julien Biebuyck, M.D., Senior Associate Dean for Academic Affairs at the time, to identify candidates for the position of

Senior Vice President for Health Affairs, Dean, and Chief Executive Officer on a very short time frame. The search process was extraordinarily efficient, candidates were identified and interviewed, and Darrell G. Kirch, M.D., was appointed to the position effective July 1, 2000, just as the Penn State Geisinger Health System was dissolved.

Dr. Kirch immediately began the exceptionally complex, but necessary, process of reunifying a divided campus, rebuilding confidence and trust with faculty and staff, and rebalancing the missions. The Unified Campus Teams governance structure ([Appendix A](#)) was one mechanism for reunifying the campus as well as engaging a larger number of faculty and staff in governance. Frequent, open communications with faculty, students, and staff were effective in establishing trust and confidence in the new leadership. Dr. Kirch and Steven Baron, our new Executive Director and Chief Operating Officer of Penn State Milton S. Hershey Medical Center, led the Unified Campus Teams and the Teams Council through a strategic thinking and planning process in developing “The Next Generation: Our Penn State College of Medicine and Milton S. Hershey Medical Center in the 21st Century” which provides clear statements of our mission, vision, values, guiding principles, strategic actions, and performance indices and goals. This “living” document has been widely distributed and discussed by faculty, staff, students, alumni and other stakeholder groups. All this was occurring during the self-study period, and served to unite the strategic planning and self-study processes involving largely the same people.

We have emerged from these events understanding that our greatest and most important resource is the people who work and study here, and who have proven resilient, creative, and committed to moving ahead boldly into the “Next Generation” rather than being bound by the past. There is a palpable sense of teamwork and collaboration as well as a substantial increase in morale throughout the campus, and the educational program is stronger now than it was in 1995 despite all of the recent changes and distractions. This is a tribute to our faculty, staff, and students for maintaining a focus on and commitment to the educational mission and its associated programs.

Significant Concerns and Recommendations from the 1995 LCME Survey

Concerns resulting from the 1995 survey have been addressed in written progress reports to the LCME dated May 7, 1997; August 27, 1998; December 29, 1999; and August 28, 2000. These progress reports were reviewed and accepted by the LCME. The concerns and our responses to them are as follows:

1. The responsibility and authority of the associate/assistant deans vis-à-vis department chairs, various committees, and between themselves is unclear to most faculty and students. The span of responsibility of the associate dean for medical education is too broad for one position without adequate senior staff and should be re-evaluated.

Response: The decanal structure has been reviewed and revised since July 1, 2000. There are now three vice deans with clear responsibilities for educational affairs,

research affairs, and faculty and administrative affairs. Each vice dean is supported by an appropriate infrastructure which may include assistant or associate deans, office or program directors, or program coordinators. The former associate dean for medical education is now Vice Dean for Educational Affairs and has increased support from two associate deans, six assistant deans, and a larger staff in the Office of Medical Education. The past practice of having Department Chairs also hold decanal positions has been eliminated (with the exception of J. Herman, Chair of Family and Community Medicine who also serves as Associate Dean for Primary Care). This provides clearer separation of roles and responsibilities in the eyes of our faculty, students, and staff.

2. As per LCME standards, “There must be integrated institutional responsibilities for the design and management of a coherent and coordinated curriculum... The committee should monitor the content provided in each discipline in order that objectives for education of a physician are achieved.” The curriculum committee, which on paper has the responsibility to meet the LCME standard, has not reviewed the full range of data, i.e. NBME scores, student evaluations, graduation questionnaires, that are necessary for evaluation of the curriculum and clerkships. This is particularly important with the change in curriculum and hospital affiliations.

Response: The organization of curriculum oversight, implementation, and evaluation is shown in [Appendix B](#). The Committee on Undergraduate Medical Education (CUMED) Oversight and its two subcommittees have accepted the responsibility for setting policy and monitoring the content provided in all courses throughout the four years (refer to LCME progress report of August 27, 1998, item number 1). The Curriculum Evaluation Committee (CEC) provides independent review of the curriculum and each course, and has implemented a process for monitoring the linkage of lecture objectives to course objectives, and course objectives to College educational objectives. The CEC provides regular structured feedback to CUMED Oversight and thus ensures a process for continuous improvement in the curriculum. CUMED Oversight and CEC use multiple data sources, including USMLE Step exam scores, AAMC’s Graduating Student Questionnaire, internal examinations and pass rates, NBME subject exams, student evaluations of courses and faculty, and the end of Year 3 Objective Structured Clinical Examination (OSCE) to monitor the effectiveness of the curriculum. CEC has undertaken a thorough review of Year 1 during the past six months, and is now reviewing Year 2. The CUMED Subcommittee for Years 3 and 4 has reviewed the objectives of all required clerkships. The clerkship directors condensed the objectives into core knowledge topics and competencies which were used to develop the end of Year 3 OSCE.

3. The curriculum for the first year lacks the integration and clinical correlations found in the exciting and well-received second year curriculum.

Response: As described in the LCME progress report of August 27, 1998, item number 1, the new, integrated curriculum implemented in Fall, 1997, has eliminated all discipline-based courses during Years 1 and 2, centralized responsibility for the curriculum within CUMED Oversight and the Office of Medical Education, and supported interdisciplinary organization and teaching in each course. Each course is developed and implemented by a multidisciplinary committee (ICC) consisting of basic and clinical faculty from relevant disciplines. Clinical correlations and problem-based learning using paper cases now permeate the first two years.

4. Although university and college rules dealing with standards for dismissal and academic sanctions for reason of academic performance or professional behavior exist, the survey team notes its concern for the apparent reluctance to dismiss students (i.e. no dismissal of students after they reach their third year for many years).

Response: The concern was taken seriously by our faculty and has resulted in a greater willingness of faculty to issue Low Pass (marginal) or Fail grades during Years 3 and 4. The Academic Progress Committee for Years 3 and 4 meets with students who have two or more Low Pass evaluations or a single Fail grade in any course or clerkship during Years 3 and 4. Since 1995, 41 students have received Low Pass evaluations on clerkships, 14 students have received Fail grades on clerkships, 12 students have met with the Academic Progress Committee for Years 3 and 4, and the Committee has recommended dismissal of 4 students. Three of the four have been dismissed and one decision is still pending.

5. While the library is spacious, it has a limited collection of newer textbooks and does not function as a modern learning resource center. There are inadequate computer facilities for education throughout the medical center. The exception is in the Department of Anesthesiology. New resources will be required. (Cited in 1987 LCME visit).

Response: The LCME progress report of August 27, 1998 (item number 2) describes our initial response to this concern. We have continued to expand the print and non-print resources of the library substantially since 1998. Specifically, (1) there has been a 230% increase in monograph expenditures such that the latest edition of all texts is available; (2) the number of electronic, full-text journals has increased from none to nearly 2000; (3) several electronic databases have been added; and (4) several electronic references have been added. Students view the print and non-print holdings as adequate, but our faculty are more critical and recommend further expansion of the holdings. The computer resources and workstations have been upgraded and expanded, and the library's holdings are now available to all desktop computers throughout the campus.

6. There appears to be weak leadership in the Department of Psychiatry especially during times when the institution is making change in their educational program and when changes in clinical practice are occurring.

Response: The chair of the Department of Psychiatry retired in 1997, and has been replaced by a new Chair who is more engaged in curriculum development and implementation as described in the LCME progress report of August 27, 1998 (item number 3). The department participates in designing and implementing the Psychiatry section of the Patients, Physicians and Society course during Year 2, and continues to sponsor a required 4-week core clerkship during Year 3.

7. All twelve of the deans, the chairs of most key committees, and all but one department chairperson are men. Lack of women in leadership positions in this medical school leaves an absence of role models for a major segment of the student body. The survey team notes this absence of women in leadership positions and recommends that the school examine this imbalance and that the dean be supported by the entire university, administration, trustees, and faculty in developing strategies to correct this imbalance.

Response: Since 1995 all search committees for leadership positions have been urged to identify qualified women and minority candidates during the search process. This resulted in the appointment of Joanna Cain, M.D., as Chair, Department of Obstetrics and Gynecology in 1996 and the consideration of such candidates for other positions. Unfortunately, Dr. Cain left the College in 2001 for a leadership position in another medical school. One woman (Joan Lakoski, Ph.D.) serves as Interim Chair of Pharmacology. Additionally, several decanal appointments have been made to women – Luanne Thorndyke, M.D., as Assistant Dean for Continuing Education (1996); Linda Famiglio, M.D., as Assistant Dean for Medical Education at Geisinger Medical Center (1998 through 2000); and Harriet Isom, Ph.D., as Assistant Dean and Director of the MD/PhD Program (2001), a position previously held by Judith Bond, Ph.D., Chair, Department of Biochemistry and Molecular Biology. Four women lead or co-lead a Unified Campus Team, and 33 participate as members of a team. Five women serve as co-chairs of an Interdisciplinary Course Committee during Years 1 and 2. Luanne Thorndyke, M.D., is currently participating in the Executive Leadership in Academic Medicine (ELAM) program; Catherine Abendroth, M.D., has completed the Harvard Macy Scholars in Medical Education program; and Kathleen Eggli, M.D., has completed Harvard’s “Skills for the New World of Healthcare” program. We have made a consistent and concerted effort to include women and minority groups in leadership positions, and will continue to do so.

I. Objectives

The goals and objectives of the College of Medicine have been revised during the self-study period. The process was initiated by the Curriculum Evaluation Committee, but included broad input from faculty, students, alumni, administrators, and other stakeholder groups. The revised goals and objectives stimulated healthy discussions about the balance in emphasis between primary care and specialty care, the support systems for training clinical investigators (MD/PhD program, K30 training grant, and the General Clinical Research Center), and the methods used to evaluate communications skills and professionalism of our students. In the end, we achieved consensus support for the revised goals and objectives, and approval by the Faculty Organization.

The Curriculum Evaluation Committee has developed a process for aligning lecture, PBL case, course, and College objectives, as well as for aligning assessments and outcomes to goals and objectives.

We have added several assessment methods since 1995, including small group facilitator assessment of all students during Years 1 and 2, and a mandatory Objective Structured Clinical Examination (OSCE) at the end of Year 3. A Standardized Patient (SP) program has been developed to support the OSCE as well as other courses and clerkships.

The self-study process identified the need to add assessment of our graduates' performance during their first post-graduate year to our toolbox. We are in the process of designing an instrument to do so, and expect to have data during the 2002-2003 academic year. We also are in the process of developing OSCE's at the end of Years 1 and 2 to supplement existing assessment methods.

The revised goals and educational objectives have been widely distributed to students, faculty, and appropriate staff, and are posted on our web site.

II/III. Governance and Administration

As noted in the Introduction and Background section, both executive leadership and governance have changed recently. The governance structure continues to be a strength of this College of Medicine, particularly during periods of rapid, often turbulent, internal and external change. One key feature is that a single individual, Darrell G. Kirch, M.D., is the Senior Vice President for Health Affairs, Dean of the College of Medicine, and Chief Executive Officer of Penn State Milton S. Hershey Medical Center. As such, he ensures tight linkage to the University in reporting directly to President Spanier, and unifies the strategic thinking and planning processes of the College of Medicine and Penn State Milton S. Hershey Medical Center. He provides a single locus for decision making when necessary.

Dean Kirch has reorganized the Deans Office, and he is now supported by three Vice Deans (Educational Affairs, Faculty and Administrative Affairs, and Research Affairs) whose

lines of responsibilities have been clarified. With the recruitment of Jay Moskowitz, Ph.D. as our next Vice Dean for Research Affairs, none of the three Vice Deans will also be a department chair or hold other major administrative titles in the College, thereby minimizing the potential for conflicts of interest. Since 1995, there are three new Associate Deans and six new Assistant Deans – all of whom are part-time in their decanal position, and eight of whom provide support to the Vice Dean for Educational Affairs.

Other direct reports to Dean Kirch include Steven Baron, Executive Director and Chief Operating Officer of Penn State Milton S. Hershey Medical Center; Wayne Zolko, Associate Vice President for Finance and Business, Controller of the College of Medicine, and Secretary-Treasurer of Penn State Milton S. Hershey Medical Center (who also reports to Penn State's Senior Vice President for Finance and Business and Treasurer); 21 Department Chairs or Interim Chairs; and 3 Center Directors.

The Unified Campus Teams governance structure (Appendix A) has been operational since October, 2000, and we believe it adds strength to our organization. First, there is ample evidence that teams make better decisions when confronted with complex issues than do individuals. Second, since each team has 12 to 16 members, the teams provide an opportunity for many more staff and faculty (approximately 120 formally, and many others informally) to participate in governance. Third, teams can recruit needed expertise and skill sets to address complex issues which cut across many or all work or administrative units, such as, the billing and collections revenue cycle, respect and mistreatment in the work or study place, and diversity of our campus. A survey of all Unified Campus Teams members in March, 2001, indicated the teams structure was serving to unify the campus (81% agreed), creating a greater sense of ownership and accountability (80%), and that members felt their team was effective (89%). We do plan to continue to evaluate the process periodically, and to make changes or modifications which seem appropriate or necessary. As an example, during the self-study process we learned that inter-team communications and interactions needed to be improved, so we provided opportunities for each team to meet with all other teams in order to share active issues lists and action logs, and to identify areas of mutual interest or concern. This led to several inter-team subgroups meeting to address specific issues, such as academic information technology needs to support the curriculum (Academic Team and Information Resources Teams), or setting tuition for medical students (Finance Team and Academic Team). The Unified Campus Teams structure is definitely a work in progress, and will undoubtedly require additional changes. However, we are committed to make it work, and believe it will improve the quality of our decisions.

There has been considerably more change in departmental chairs than expected since 1995. Eight of the 21 departments currently have interim chairs. Five of the current chairs have been appointed since 1995, and 4 other chairs appointed after 1995 are no longer chairs here. Active searches are underway for chairs in Anesthesia, Humanities, Obstetrics and Gynecology, Orthopaedics & Rehabilitation, Pharmacology, and Radiology. Some of this turnover would have been expected, some undoubtedly occurred because of the internal organizational changes we have experienced, and one change was because of untimely death. We have had strong interim leadership during transition periods, and one interim chair has been appointed chair here at the conclusion of the search process. While one could view such transition as a source of

concern, we believe it provides an opportunity to recruit the next generation of leaders who share a common vision and common values.

The Faculty Organization has been energized and more fully engaged in selecting and overseeing its committees, including the Faculty Promotion and Tenure Committee, the Committee on Undergraduate Medical Education (CUMED) Oversight, the Medical Student Selection Committee, and the Academic Progress Committees (formerly Promotions Committees). Faculty participation in governance, committees, and teaching has been well-maintained despite obvious pressures to do otherwise.

The College of Medicine is an integral part of Penn State University despite the physical separation, and this relationship has grown stronger since 1995. The College continues to have the largest number of representatives to the University Faculty Senate of all academic units, and a faculty member of the College recently served as its Chair. Since 1995, several College of Medicine faculty members have served as chairs or vice chairs of Senate Committees. The College actively participates in the Life Science Consortium and we have 39 graduate students in Hershey as part of the Integrative Biosciences (IBIOS) program. The College and University also share an NIH-sponsored General Clinical Research Center with sites at University Park and Hershey. While we are satisfied with the current interactions and shared programs, we look forward to pursuing additional opportunities in the neurosciences, geriatrics and gerontology, bioengineering, microbial and environmental health, educational outreach, health outreach in rural Pennsylvania, and programs dealing with children, youth and family issues. It is very clear that “We are Penn State,” and there is ample documentation of such.

IV. Educational Program

The curriculum for Years 1 and 2 changed substantially in 1997. Year 1 students entered a new curriculum developed by our faculty which is organized into a series of multidisciplinary, integrated courses using a variety of teaching and learning modalities, including problem-based learning (PBL). The amount of PBL in the curriculum increases gradually throughout Year 1 (10% of all contact hours), and then is maintained throughout Year 2 (30% of all contact hours). The curriculum is centrally organized by CUMED Oversight, and administered by interdisciplinary course committees (ICC) consisting of basic and clinical sciences faculty members, with support from the Office of Medical Education. Faculty and student support for the curriculum has increased each year, and the graduating class of 2001 provided many very favorable comments on the AAMC Graduating Student Questionnaire (although critical of our failure to provide enough pharmacology during their first and second years).

The key to the success of the new curriculum was a series of qualitative and quantitative evaluation steps by students and faculty from the outset, and the willingness of faculty, ICC's, and CUMED Oversight to make changes as needed. We believed that in developing the new curriculum we would likely be able to anticipate approximately 75% of the needs at the end of the design phase, and that we would only learn about the remaining 25% of needs after implementation (rapid prototyping model). The systematic evaluation steps aided greatly in identifying additional needs, shortcomings, and mistakes, and allowed us to make appropriate

corrections either immediately or for the next course offering depending upon the urgency. For example, the 16-week Cellular and Molecular Basis of Medical Practice (CMBMP) course was divided into 2 discrete 8-week courses and the ICC co-chairs have changed based on feedback from both students and faculty. The embryology section of Structural Basis of Medical Practice (SBMP) has been reorganized this year, and will be reemphasized during Year 2 courses. The second year has been broken into smaller course units and reorganized to align courses which deal with similar concepts (e.g. acid-base balance). Principles of pharmacology have been introduced during Year 1, but are re-emphasized throughout Year 2 in both lecture and PBL sessions. After four years, we have entered the phase of annual review and continuous improvement, but we believe we have a fundamentally sound educational program during Years 1 and 2 as evidenced by the performance of our students on USMLE Step1 and during clinical clerkships, and by feedback from our students in the Graduating Student Questionnaire.

The self-study identified several opportunities related to the educational program. Following the 1995 site visit, we did follow through and develop both a Standardized Patient (SP) program, and, subsequently, an Objective Structured Clinical Examination (OSCE) for all students at the end of Year 3. The SP program is modest and we have the opportunity to make our SP's available for broader use as well as an opportunity to train new SP's. We have begun to advertise our SP program to course and clerkship directors, and to solicit their participation. The OSCE is administered only at the end of year 3, and we have begun to discuss end of clerkship OSCE's with our clerkship directors. One faculty member who co-chairs the Patients, Physicians, and Society course is planning to implement limited OSCE's for that course at the end of Year 1 and Year 2. We would like to see the SP program and OSCE add more value to our educational program. We have also identified the need for an instructional design specialist to work with our faculty and course directors as they strive to improve their educational materials and courses.

The self-study identified the need to focus on several aspects of the educational program during Years 3 and 4. The CUMED Subcommittee for years 3 and 4 has undertaken a careful review of the learning objectives for each required Year 3 clerkship. This review has resulted in the development of suitable cases having learning objectives shared by two or more clerkships for the OSCE, the development and implementation of a process for identifying students who demonstrate behaviors or attitudes judged unprofessional, and the development and implementation of a common procedural skills documentation process used across all clerkships. The Subcommittee has begun a review of the acting internships offered during Year 4.

A survey of our medical students at the end of Year 3 indicated that they are generally satisfied with the provision of timely, formative feedback and with the time available for reading or study except during the Surgery core clerkship. The results of the survey have been provided to the clerkship director who has shared them with the department chair and faculty. A plan for improvement is being implemented and students will be re-surveyed at the end of this academic year to determine whether the plan has been effective.

The provision of timely, summative final evaluations and grades after each required clerkship emerged as a concern of our students. Clerkship directors were convened during 2000,

and set a goal of 6 weeks for completing the final evaluations and grades. This is being tracked by the Office of Student Affairs and compliance has been improving, but is not yet 100%.

The self-study process identified the need to improve the system for assuring educational quality comparability and evaluation of students across different sites. We have relied on clerkship directors and department chairs to make such assessments historically, but have not previously gathered and analyzed site-specific student evaluations, or compared student grades or performance on NBME subject examinations by site. We have already begun collecting site-specific, anonymous student evaluations, and will implement student grade and performance comparisons during the next academic year. Most importantly, the variety and quality of our affiliated institutions and practice sites is viewed as a strength, particularly by our students.

Overall, we believe our educational program is sound and prepares students who are competitive for all careers in medicine as evidenced by their success and distribution in the matching process each year as well as by their competitive USMLE step scores.

V. Medical Students

Our medical students are a strength of the College of Medicine – diverse, talented, committed, and engaged. The applicant pool remains quite strong, although declining in keeping with the national pool, and approximately 1 in every 6 or 7 applicants nationally submits an application (AMCAS) here. Academic measures of our matriculants have remained stable since 1995, and our Medical Student Selection Committee continues to struggle in making choices among highly qualified applicants. The Primary Care Scholars programs for undergraduates has been particularly effective in recruiting students with interests in primary care practice. As noted in the LCME progress report of August 31, 2000, we increased class size from 110 to 125 students beginning Fall, 2000.

We are particularly concerned about rising tuition and debt of our students as noted in August 31, 2000 progress report. Tuition has increased each year since 1995 with the largest percentage increase during 2000-2001 year (13% for nonresidents; 19% for residents); however prior to 2000, we had been able to keep the increases in the range of 1% to 4% per year. Despite the increases, we currently have the lowest tuition among allopathic medical schools in Pennsylvania for both state residents and nonresidents. Student debt at the time of graduation has also risen each year. Among the graduating class of 2001, 82% of students had debt, and the mean for all students having any debt was \$104,507. While above the national average (\$99,089), it is below the average (\$118,546) among graduates of private medical schools (Penn State's College of Medicine is listed among the AAMC's private schools based on the limited state support it receives). Additionally, 11% of the graduating Class of 2001 had debt in excess of \$150,000. One strategy we have implemented to offset increasing debt has been to increase endowment for student scholarships. As part of Penn State University's Grand Destiny Campaign (\$1.3 billion), the College of Medicine's goal is \$145 million, including \$11 million for student scholarships. President Spanier and the University Development Office have made the College a priority during the remainder of the campaign. Additionally, the College of Medicine Alumni Society Board of Directors has set the laudable goal of having each graduating

class establish an endowed scholarship fund which will eventually support tuition for one student through all four years here. Thus far, all classes have established a fund, and several, including the first class to graduate in 1971, are already making awards. Hence, although we are troubled by and concerned about the trends in student tuition and debt, we are heartened by the responses of our benefactors and alumni. Our students do not report a strong influence of debt on career choice despite these trends.

The self-study has identified several areas for improvement in meeting students needs. Personal and career counseling are two such areas. During the past year, we have taken steps to strengthen the faculty advisor system and to identify a second ombudsperson for students to assist with personal counseling. The Student Mental Health Service continues to serve our students as well. We will survey students at the end of the academic year to determine whether additional resources are still needed. The Associate Dean for Student Affairs and Admissions has implemented the AAMC's Careers in Medicine program with Year 1 and Year 2 students in order to strengthen career counseling. As soon as we have all four years participating, we will revisit the need to provide additional resources with our students. We are currently considering an advisory dean program similar to that being used at the University of Rochester School of Medicine and Dentistry because of its purported success in supplementing both personal and career counseling

The Student Health Service is another area of concern to students. Although we have improved the confidentiality and professionalism of services since 1995, students do not consider the services as convenient or available as they prefer. There is 24x7 coverage, but the providers and sites of care vary depending upon the time of day. Students also sometimes seek or prefer care from a specialist or provider who is not part of the Student Health Service, and are frustrated when services are not covered by their insurance plan. In an effort to make services more convenient to our students, we are currently determining whether the Hospital Employee Health Service and the Student Health Service, which are in adjacent space, can jointly better meet the needs of students and employees. A decision on this matter should be made by the end of this academic year. We have also begun to counsel students in greater detail using peers whenever appropriate about their choices of health insurance plans. The health insurance issue has proven recalcitrant to resolution, in that our students constitute a relatively small unit for coverage amidst escalating costs for health insurance. We will continue to work to improve coverage and lower costs.

Additional areas for improvement relate to facilities or resources, and will be addressed in those sections.

VI. Resources

A. Finances

The College of Medicine is supported by a variety of revenue sources, including a state appropriation for medical education (4.5%), tuition (12%), endowment and investment income (6%), sponsored programs (36%), indirect cost recovery (7%), and an academic support payment

from Penn State Milton S. Hershey Medical Center (18%). Additionally, there is a state appropriation for the Central Pennsylvania Psychiatric Institute and the Penn State Childrens Hospital (6.5%), and income from auxillary and support departments (10%). All revenue sources are stable except for the academic support payment which has decreased during the past 2 years. This situation is not unique to our College and medical center, but our vulnerability lies in the fact that we get relatively little support from the Commonwealth of Pennsylvania for medical education (4.5% of our College budget vs. 19.3% for all public medical schools) and, as a relatively young medical school, we do not have a large endowment (\$188 million). It is likely that maintaining the academic support payment will be among our greatest challenges over the next five years.

In response to the reduced academic support payment, unrestricted funds in all College budgets have been reduced by 18.3% (over three years), tuition has been increased, and more resources have been provided by the University to support fund raising for the College as part of the University's Grand Destiny campaign. Since 1995, the state appropriation has remained flat in constant dollars, endowment has increased (53%), tuition has increased (36%), and sponsored program revenues have increased (73.9%). Tobacco settlement funds have been an unexpected increase in revenue to the College, and should be approximately \$5 million annually for research for at least the next four years. The tobacco settlement funds are provided in addition to the line item state appropriation to the College.

Despite the financial challenges, the College has a balanced budget and we have been able to achieve our objectives. We have not reduced or eliminated any educational programs, additional staff have been added to the Office of Medical Education, and student support services have been maintained. Although additional financial resources have been provided to the Library since 1995, we are working to identify additional support through philanthropy.

The need to generate revenue has distorted the balance of activities of our faculty, and this was particularly apparent during the three-year period of the Penn State Geisinger Health System. Part of the challenge to and commitment of the new administration has been to establish a balance among the missions of education, research, and patient care. We are moving toward mission-based management as a means to better understanding our funds flow and cross-subsidizations. Our faculty and staff are working harder than ever in order to meet our commitments to each of our missions as evidenced by increases in clinical volume indicators, extramural funding for research, and more time to support the curriculum and the educational program.

During the past decade, we have worked aggressively and boldly to position the clinical enterprise for success in the local market. At the time of the 1995 LCME visit, we were part of the Alliance 4 Health with several other local hospitals, but we determined this partnership would not provide the financial base needed to support the College of Medicine in future years. Hence, in 1997, we merged our clinical enterprise (hospital, satellite sites, and faculty practice plan) with the Geisinger Health System to form the Penn State Geisinger Health System throughout southcentral and northern Pennsylvania. The merger increased our revenue base to over \$1 billion per year and initially provided stable financial support to the College through an academic support formula (base plus gain-sharing). However, as the financial pressures

increased on the System, it became very clear that medical center faculty and staff were more deeply committed to the College of Medicine, and especially to its education and research missions, than were physicians and staff in other parts of the System. Hence, the merger failed and was dissolved on June 30, 2000. Since then, Penn State Milton S. Hershey Medical Center has embarked on a series of ambitious initiatives: (1) to improve access to care and our revenue cycle; (2) to identify and eliminate obstacles to clinical success; (3) to review all clinical programs with the intent to strengthen those which have the greatest potential for growth and financial success within the context of our missions, and to reduce or eliminate programs which have little or no potential for growth or financial success, and which are not essential to our mission; (4) to renegotiate more favorable contracts with third-party payors; (5) to reduce variability among physicians in the provision of care through clinical guidelines, DRG analyses, evidenced-based medicine, and best practices; and (6) to improve patient, staff and physician satisfaction through our World Class Care program, faculty and staff development programs, and reward and recognition programs. Hence, we are striving to be the health care provider of choice in central Pennsylvania and beyond.

The College has a five-year capital plan which is funded by general funds and from interest on reserves. This plan meets all of the projected educational needs of the College, including its ability to maintain the facility in very good condition.

B. General Facilities

In general, the facilities are clean, well-maintained, reasonably modern, and adequate to support the educational program.

There has been almost continuous addition to the physical facilities of the College of Medicine since its founding in 1966. The current gross square footage of the campus buildings is 2,953,053 of which 310,053 has been added since 1993.

We believe our strengths in this area include a nationally recognized animal care facility, the availability of 16 rooms specifically designed for Problem-Based Learning on the first floor of the Biomedical Research Building (BMR), the Simulation Development and Cognitive Sciences Laboratory on the 2nd floor of the BMR, and a specially equipped lecture hall for distance education (Lecture Hall D).

Students have judged our common areas (reception areas, lounges, coffee shop, cafeteria, indoor activity areas, and outdoor activity areas) as adequate in a recent survey, although convenient parking for campus residents is limited, and the student lounge needs to be better maintained.

The self-study identified a need for permanently mounted LCD projectors and computers in the three lecture halls not so equipped, and this has already been accomplished.

The self-study also identified the need to increase the teaching laboratory space (Multi-Disciplinary Labs, MDL). This need emerged from both student and faculty surveys. A plan for

addressing this need by moving the staff and their associated equipment out of adjoining space has been sent to the Physical Resources Team for consideration.

C. Faculty

Our faculty continue to be a major strength of the College of Medicine despite increasing demands on their time and increasing pressure to generate additional revenue through patient care or sponsored services, including research. Our faculty have distinguished themselves in each of our missions during periods of rapid and dramatic change, and remain the heart and soul of the College.

As part of the self-study, a survey of our faculty revealed a score 2.5 on a scale of 1 to 4 in response to the question “The faculty is organized to bring reasonable and appropriate faculty influence into the governance and policy-making process of the school.” We take this to mean there is a distribution of opinions one might expect to see among faculty at any institution, particularly one emerging from a failed merger. However, the new administration is committed to empower the faculty to be more active in governance and policy-making through the Faculty Organization and its committees, and the Unified Campus Teams structure. The Unified Campus Teams engage approximately 120 faculty and staff members weekly. We believe the opportunity for faculty to participate in governance and policy-making clearly exists – our faculty must seize the moment and become engaged.

The number and distribution of faculty are viewed as adequate by faculty and students. Full-time faculty size has increased from 455 to 587 since 1995, and this increase has been primarily in the clinical departments (360 to 457). There is continuing concern about the number of clinical investigators so we have added infrastructure in the form of a Clinical Trials Office, and secured a NIH K-30 training grant to develop and support more clinical investigators. ICC Co-Directors during Years 1 and 2 have been able to recruit faculty colleagues to serve on the ICC’s and as lecturers. Recruitment of faculty to serve as facilitators in PBL has been more challenging. We have responded to this challenge by centralizing the recruitment process in the Office of Medical Education, by increasing the flexibility of group meeting times to accommodate faculty schedules, and by recruiting retired and emeritus faculty to participate. These adjustments seem to be working. Students have expressed concerns about both the level of interest/enthusiasm and the preparation/development of faculty as facilitators in PBL. We have responded by developing a larger pool of experienced facilitators, providing facilitator development workshops 2 or 3 times each year, producing training videotapes for facilitators to review at convenient times, developing a facilitator mentoring program, soliciting the support of department chairs, and providing books and other educational materials on small group dynamics and facilitation skills in a special section of the Library and in the Office of Medical Education.

The processes for appointment, evaluation, promotion, and tenure have changed since 1995, in part, due to the merger and unwinding of the merger with the Geisinger Health System, and, in part, to align more closely our processes with those of the University. This will result in more consistency across departments. Specifically, the composition of our College Promotions and Tenure Committee now fully reflects University Policy HR23 rather than the historical

adaptation which was in place in 1995. Eight members are nominated and elected by our faculty, and the Dean appoints three members and the Chair. Faculty have fully supported these changes. There is also now a requirement that all academic units implement the University's framework for annual evaluation of faculty performance (HR40). In the past, compliance with this process has varied among departments in the College. The recent survey of faculty indicates there is agreement that the criteria for promotion and tenure are explicit and consistent with the objectives of the institution. The greatest concern is that teaching performance is not given enough weight in the process, and this issue is being addressed by the Academic Team.

The factors which facilitate faculty recruitment include our location in an area of central Pennsylvania characterized by its low cost of living and high quality of life, funding and space, collegiality and quality of faculty, excellent physical facilities, and institutional support for academic endeavors.

The factors which hinder recruitment and retention include a recent history of institutional turmoil and uncertainty, overwork, insufficient reward for teaching, insufficient support staff, inadequate mentoring of junior faculty, questions about departmental or institutional leadership, and, for some, non-competitive compensation or start-up packages or insufficient space or facilities. Our task as a result of this self-study is to determine which of these factors we can and should address, and in what order. For instance, the issue of mentoring junior faculty has been discussed thoroughly by the Academic Team and by the Research Team, and has been incorporated into the charge to the new Office of Faculty Development under the auspices of the Vice Dean for Faculty and Administrative Affairs.

One of the strengths of this College is the collegiality of our faculty. We are one faculty under one roof. General factors which promote faculty interactions include joint appointments, centers of excellence, proximity, electronic communications, interdepartmental and interdisciplinary graduate programs, interdisciplinary courses and course committees in Year 1 and 2, and interdisciplinary clerkships and electives in years 3 and 4. Several specific programs such as the Dean's Feasibility Grant Program specifically require collaboration between basic and clinical science faculty members. In designing and implementing the new curriculum in Years 1 and 2, we purposely designated basic and clinical science ICC members and co-directors of each course. This has been viewed very positively by our faculty. The most common response from the faculty survey in terms of factors which inhibit or limit interactions was lack of time; but lack of incentives and recognition for teaching, lack of mentoring and faculty development opportunities, lack of support from administrative leaders, and territorialism were also identified by some faculty.

Faculty development to foster professional growth and scholarship was the first issue addressed by the Academic Team. The Academic Team developed a written proposal for an Office of Faculty Development under the auspices of the new Vice Dean for Faculty and Administrative Affairs, Dr. Kevin Grigsby. This office will initially conduct a needs assessment, and develop a specific implementation and business plan to include the following functional areas: (1) orientation of new faculty; (2) development of faculty skill sets, including education, teaching, grant and manuscript preparation, and administration; (3) guidance in preparation of an effective dossier, including use of the educator's portfolio; (4) support of individual mentoring;

and (5) leadership development. Margaret Goldman, Ph.D., has been named interim director of the office and will complete a needs assessment and detailed business plan during this academic year. The faculty survey indicates our faculty feel the pressure of time, and do not believe there is sufficient time for scholarly activity in this new environment, a theme which resonates nationally.

Our faculty do not think that excellence in teaching is as prominent a criterion for faculty advancement and reward as it ought to be. The Academic Team has taken on this issue and has developed a performance indicator for departments which includes having a system/written plan for peer review of teaching and individual faculty mentoring, utilizing a teaching portfolio, and counting the number of “master” teachers each year. It is anticipated this performance indicator will stimulate department leaders to improve department performance each year. The Academic Team is also developing a set of metrics and standards for documenting teaching and educational activities. The overall goal is to improve the quantity and quality of the database supporting each faculty member’s contributions to educational activities. This, in turn, will be used more prominently in the annual review of faculty performance, and in the faculty promotion and tenure process.

D. Library and Information Services

Despite financial constraints at the College level, the print and non-print resources of the library have improved since 1995. Major components of this improvement include: (1) substantial increase in monograph expenditures (230%); (2) significant expansion of electronic full-text journals (from none to nearly 2,000); (3) addition of several electronic references; and (4) addition of several electronic databases. We have worked very hard to improve the library’s holdings while simultaneously expanding patron access to web-based sources of materials, and have implemented several strategies to accomplish this goal.

The library is centrally located on campus and convenient to most patrons. However, we have worked aggressively to deliver library services directly to each user’s desktop, thereby decreasing reliance on the physical library for many routine purposes. Hours of operation have increased slightly since 1995 and appear to be adequate and appropriate for our patrons, as well as slightly more than those of the “average” health sciences library. Assistance is readily available on weekdays between 8 a.m. and 5 p.m., but more limited during evenings and weekends consistent with reduced demand. Students view study space as adequate, but would like more individual and small group study space within the library. By design, small group study space on the first floor of the BMR building supplements individual study space in the library. Audiovisual equipment is adequate and meets the demand. The computer resources have been significantly upgraded and expanded since 1995 – more public workstations throughout the institution, an expanded suite of software, uniform configuration of public workstations, two computer classrooms for instruction, networking of lecture halls and auditorium, and installation of LCD projectors/computers in each lecture hall. Nevertheless, our students still view these resources as less than adequate which may represent the consequences of devoting most of our information technology (IT) resources to restoring the infrastructure during and after the unwinding of the Penn State Geisinger Health Services. As these resource

issues are sorted out and the IT strategic plan is implemented, we anticipate meeting student expectations more suitably. We already have improved printing capabilities in the library computer center, added peripheral devices (e.g. zip drives, scanners) and workstations for public use, and significantly upgraded several of the public workstations. We still must provide better access to our enterprise network from off-site locations and student housing, increase IT personnel support available to students, and increase web-based materials to support student learning. Penn State's new courseware, ANGEL, is being investigated as a partial solution to the latter issue.

The current IT strategic plan includes additional support for student computing. Similarly, the filling of our vacant Educational Services Librarian position has allowed additional library attention to student information management needs, and this program has renewed energy.

The library is an integral part of a larger organizational unit – Academic Information – which supports a broad set of information management activities for education, research, and patient care. Library staff participate in student and faculty education through a variety of information management education and training offerings. The Medical Student Informatics Committee has taken a comprehensive approach to enhance the integration of information management training and education throughout the four years of undergraduate medical education with full support of CUMED Oversight. This represents the first of several planned vertical threads to weave a more coherent, integrated 4-year curriculum.

The College's use of computer-assisted instruction is limited at this time. Approximately 10 courses/clerkships use monitored, threaded discussions, and several courses offer interactive case simulations or self-assessment quizzes. Most students participate in the Simulation Development and Cognitive Sciences Laboratory one or more times during their four years, and several instructors use the web to present lecture materials. Computer-assisted instruction as an integral part of course instruction is more limited and has evolved through the decentralized efforts of individual faculty with very modest central support. The self-study has identified a need to develop and articulate an institutional plan concerning the role of computer-assisted instruction in the education of our students, and then to identify and assign appropriate resources to support the plan. This must be coupled with appropriate reward and recognition for faculty who pursue this as scholarly activity.

The self-study emphasized the need to provide better and easier access to our enterprise data network from off-site locations and student housing. The Information Resources and Technology Team has proposed alternatives for accomplishing this. During the past five years, we have significantly strengthened our collaboration with the University Libraries system, which includes our current migration to the same library information system. Nancy Eaton, Dean of University Libraries, is very supportive of this direction and will assist us in recruiting a new Library Director.

E. Clinical Teaching Facilities

The clinical resources available to the medical school are quite strong as viewed by both our faculty and our students, and have been relatively stable since 1995. We have five major affiliated institutions (Cleveland Clinic Foundation, Lebanon Veterans Affairs Medical Center, Lehigh Valley Hospital, Reading Hospital and Medical Center, and York Hospital) in addition to Penn State Milton S. Hershey Medical Center. More than 350 ambulatory care preceptors are available throughout Pennsylvania. We ended our affiliation with Pinnacle Health System (Harrisburg Hospital and Polyclinic Medical Center) and established a new relationship with the Geisinger Health System as part of the merger in 1997. We considered this neutral to slightly positive in terms of the educational program, in that proximity was relinquished for access to a larger number of faculty and preceptors throughout a much larger geographic area in Pennsylvania. However, following the unwinding of the merger in 2000, we no longer have an affiliation agreement with the Geisinger Health System and have re-established a limited affiliation agreement with the Pinnacle Health System which does not yet involve student clerkships. We are implementing sound methods, including site specific student evaluations, to assess performance of all sites.

The College has a formal written agreement with each hospital/clinic used for teaching, and these agreements specify the role of a Joint Coordinating Committee to address and resolve issues, including educational issues, of concern to either party. These Joint Coordinating Committees generally meet by visit or teleconference two to four times annually. Each facility has an identified overall coordinator for medical student education as well as clerkship coordinators for each required clerkship. Clerkship coordinators work very effectively together to ensure a comparable educational experience for our students. At two of the more fully engaged facilities, there is an on-site Associate Dean (Lehigh Valley Hospital) and Assistant Dean (York Hospital) to ensure coordination and implementation of educational programs.

At Penn State Milton S. Hershey Medical Center, including our off-site practices, we are one faculty under one roof, and hence the teaching staff and the faculty are largely one in the same. At sites away from Hershey, the relationships are not as tight, but almost all teaching staff also have clinical faculty appointments in the College. These appointments are reviewed regularly for evidence of active and satisfactory performance in our educational programs.

We currently have sufficient numbers of ambulatory sites and community-based faculty to meet the needs of our curriculum. We have over 350 community preceptors in Pennsylvania, and an affiliation agreement with the Pennsylvania Area Health Education Center (AHEC) to serve as the cooperating Academic Health Center (AHC) for both the Northwest AHEC and the Southcentral AHEC. The AHEC provides considerable infrastructure support to the College by recruiting and training preceptors, placing students with preceptors, assessing preceptors' performance, and retaining the best teaching sites/preceptors. There is, however, increasing competition for ambulatory sites, particularly the best ones, from other allopathic and osteopathic medical schools as well as from nurse practitioner, advanced practice nursing, and physician assistant programs. We have developed a Physician and Practice Site Profile to assess each

preceptor and site on a regular basis. This has helped us to recognize and retain the better sites as well as to improve or eliminate the weaker sites. We do have an active program for preceptor training and evaluation implemented jointly with the AHEC. Overall, we are satisfied with the number, location, and quality of our preceptors and sites, but recognize we will have to work hard to keep them.

VII. Graduate Education in the Basic Sciences

The College of Medicine offers the PhD in ten graduate programs. Four PhD programs are departmental (Anatomy, Biochemistry and Molecular Biology, Microbiology and Immunology, and Pharmacology), two are interdepartmental (Cell and Molecular Biology, and Neurosciences), and four are intercollege (Bioengineering, Genetics, Integrated Biosciences, and Physiology). Faculty of the College also participate in three programs based at University Park (Acoustics, Kinesiology, and Nutrition). The College also offers special Master's Degree programs in Laboratory Animal Medicine for veterinarians, and in Health Evaluation Sciences. We also participate in a joint MBA/PhD for Pharmacology graduate students with Penn State Harrisburg, and have an NIH-sponsored Medical Scientist Training Grant (MSTP) to support our MD/PhD program. Hence, since 1995 we have added four PhD programs in Integrated Biosciences as participants in the University's Life Sciences Consortium, and a Master of Health Evaluation Sciences for clinicians and health outcomes oriented investigators. We have developed the joint MBA/PhD in Pharmacology, revitalized the intercollege Genetics program, and secured NIH funding for our MD/PhD program.

Graduate student matriculants and total numbers of graduate students have both increased since 1995 (40% and 56.6% respectively). Grade point averages and GRE scores have remained constant indicating a suitable pool of qualified applicants. The self-study has identified the need to review the quality of individual graduate courses and graduate programs, and the Academic Team is developing appropriate performance indicators and processes for doing so. Generally, the availability of faculty is good with a graduate faculty to student ratio of 165 to 188 (MD/PhD students included), or nearly 1 to 1. Availability of research space has been adequate since the addition of the BMR building in 1993, however, there is concern among some faculty and the Physical Resources Team that some space is underutilized. The Physical Resources Team has developed metrics for allocating and reallocating research space based upon investigator needs and funding. The research mission is critical to the medical school so that cutting edge investigators are stimulating medical students through both the formal and informal curricula. All medical students must complete a Medical Student Research Project in order to meet the requirements for the MD degree, so having a large cadre of successful basic and clinical investigators is critical to the success of our students. Finally, the success of our MSTP and MD/PhD programs are also critically dependent on the success of our research programs.

There is a strong and sincere commitment to the education of medical students at all levels of the faculty within the basic sciences departments and graduate faculty. This commitment is expressed in serving on Interdisciplinary Course Committees, as ICC Co-Directors, on CUMED Oversight and its subcommittees, on the Curriculum Evaluation Committee, as facilitators and lectures, and as evaluators. All this has occurred despite

increasing pressures to generate grant funding, and to mentor more graduate students and postdoctoral trainees. The collegiality and cooperation between basic sciences faculty and clinical sciences faculty in supporting both the medical student and the graduate student educational programs is a remarkable strength of the College, and deserves appropriate accolades.

Graduate students in some programs participate in formal teaching of medical students in laboratory courses and, occasionally, as PBL facilitators. Graduate students also function as tutors for selected students when the need arises, and as informal mentors for some students during the Medical Student Research Project. As part of the self-assessment, we learned that graduate students would like more assistance and instruction in teaching skills, and more opportunities to practice such skills while a student. The Academic Team will address this issue in conjunction with the Research Team and the graduate program directors.

The MD/PhD program deserves special mention. Since the last LCME visit, we have successfully secured NIH support through a Medical Scientist Training Program grant, and have expanded the program from 16 to 31 students. Our target is to have 42 students (6 students per year for 7 years each) at steady state. We are pleased with the success of the program, but do not have long term outcome data yet.

VIII. Graduate Medical Education

Penn State Milton S. Hershey Medical Center sponsors 37 residency and fellowship programs all of which are accredited by the ACGME; none are on probation. The most recent Institutional Review in February, 2001, resulted in a favorable decision by the ACMGE.

Residents and clinical fellows are major contributors to education of medical students, particularly during their clinical experiences and rotations. An informal survey of several chief residents indicated residents spend at least an hour each day directly teaching students. Residents provide much of the supervision for common diagnostic and therapeutic procedures performed by medical students, and serve as important positive or, in some cases, negative role models. The Departments of Medicine and Pediatrics have implemented formal annual workshops specifically designed to assist residents with teaching, feedback, and evaluation functions. The Office of Graduate Medical Education has developed a list of resources and resource persons, including faculty who administer and teach in the Medicine and Pediatrics workshops, which is provided to all residency program directors for use in their educational program. All of our core clerkships with inpatient components are at sites with residency programs. The Family and Community Medicine clerkship and the Primary Care clerkship are primarily ambulatory-based and students are under the direct supervision of faculty preceptors.

The clinical resources available for the education of medical students and residents are rich, diverse, and broadly representative of medical practice. Students and residents are quite satisfied with these resources and enjoy having a choice of different sites and preceptors. The self-study did not identify any issues which need to be addressed. However, as other allopathic

and osteopathic medical schools in Pennsylvania increase ambulatory experiences for students, competition for the best preceptors will increase.

We do not anticipate any major changes in our graduate medical education programs which will affect medical student education. However, as we develop methods to assess the core competencies of our residents and fellows in keeping with ACGME standards, we anticipate some of these methods will be applicable to medical students as well. The numbers of programs and of residents are expected to remain stable, although the distribution of residents among programs may change if endorsed by the Graduate Medical Education Committee. The sites for educating medical students and residents will remain stable, although opportunities are being explored with Pinnacle Health System in nearby Harrisburg in anticipation of our slightly larger class of 125 students entering Year 3 in Summer, 2002.

IX. Continuing Medical Education

The Continuing Medical Education (CME) program is an integral part of the College of Medicine's education and outreach mission. The program has grown in scope and character since 1995 in both internal and external programming. We have provided leadership in forming the Consortium for Academic CME (CACME), an innovative and unique partnering of four academic health centers in Pennsylvania (Jefferson, Temple, Pittsburgh, and Penn State) for ACCME accreditation purposes. CACME was surveyed in July, 2000, and received a six-year accreditation with commendations in several areas. Internally, we provided over 1,000 grand rounds sessions to over 13,000 participants this past year. Externally, almost 20,000 physicians participated in 369 programs during 2000/2001 (up from 5,000 physicians in 1993-94), and our hospital network has grown from 5 to 12 between 1995 and 2001. More than half of our faculty teach in these programs, and 90% of the external program physician enrollees are community physicians. Hence, the College's CME program has had a positive impact on our faculty by challenging them to keep current and to teach others, and on our community physicians as evidenced by high ratings of programs and increasing enrollments.

Continuing education activities support and extend the mission and objectives of the institution by developing programs designed to meet the needs of practicing health care professionals and investigators we serve.

The continuing medical education effort affects the education of medical students in several ways. First, faculty are stimulated to remain current in their areas of interest and expertise, and are challenged through questions to consider carefully what they believe and how they will apply knowledge, skills, or attitudes to a particular situation. These same faculty then share their knowledge, skills, attitudes, and insights with our students. Second, a large number of the internal programs are attended by medical students at no charge while on required or elective clerkship rotations. Third, CME is an integral part of the Pennsylvania AHEC which serves students and community physicians in seven regions of the state. Fourth, faculty and staff engaged in the CME program actively participate in institutional discussions on adult learning theory and the application of its principles to PBL, life-long learning, and curriculum

development. Hence, the department and its activities are an integral part of the fabric of the institution serving several stakeholder groups, including medical students.

X. Research

The research mission of the College is to foster and support excellence in the basic biomedical and behavioral sciences, clinical investigation and trials, epidemiology and health services research, and technology transfer to promote better health and improve the diagnosis, treatment, cure, and prevention of disease.

Since the last LCME visit, sponsored funding has increased from \$40.3 million (1993-94) to \$70.1 million (2000-2001). The number of awards has increased from 341 per year to 463 per year, and the number of principal investigators has increased from 189 to 253. During 2000-2001, approximately \$47.5 million (67.8%) of the sponsored funding was from federal agencies, including \$40.6 million from NIH. Commercial sponsors provided \$10 million, foundations provided \$9.6 million, and state agencies \$3.0 million. Programmatic areas which received over \$2 million during 2000-2001 include: cancer (\$13.5 million), cardiovascular (\$7.8 million), resource/technology (\$7.6 million), AIDS/immunology/infectious diseases (\$6.6 million), education (\$6.5 million), lung/respiratory (\$6.2 million), diabetes/metabolism (\$5.4 million), neuroscience (\$4.2 million), arthritis/bone/skin (\$2.8 million), and genetics (\$2.8 million).

Institutional infrastructure supporting research has also increased since 1995 with the addition of multiple initiatives: the Cancer Center Institute; recruitment of a Vice Dean for Research Affairs; a Clinical Trials Office; a Human Subjects Protection Office and a revamped institutional review board; an expanded Office of Research Affairs; and a Section of Technology Development and Research Resources (transgenic core facility, macromolecular core facility, cell science/flow cytometry core laboratory, molecular genetics core laboratory, and technology development office). In addition, the College of Medicine participates actively in the four new University consortia: life sciences; children, youth and families; environmental health; and materials sciences. Resources are adequate at present, but the challenge of continuing to meet the needs of our faculty is ever-present.

As part of the self-study and our strategic planning process, we have committed to aggressively develop a comprehensive cancer program, including seeking designation as such by the National Cancer Institute. We have also committed to aggressively develop fundamental research capabilities in genomics, proteomics, and bioinformatics. We also plan to maintain our excellence and leadership in existing successful research areas, and to partner with University Park or other Penn State campuses in research areas of shared interest or complementary competencies.

During 2000-2001, the success rate of applications to NIH and other components of PHS was 27.9% for new applications (25.5% national benchmark), and 66.7% for competing renewals (49.5% national benchmark). We rank 64th among 123 schools in NIH awards (FY 2000), and 12th among 40 medical schools which have opened or expanded to four-year programs since 1960.

There is no question that a strong research base and superb faculty investigators broaden and deepen the educational experiences of our students. This is especially true since we require each student to complete a hypothesis-driven Medical Student Research Project as a requirement for graduation. Although viewed as an unnecessary hurdle by some students, 90% of our alumni indicated in a recent survey we should continue to require a research project in order to graduate. We were heartened by this response.

XI. Medical School Departments

A. Basic Science Departments

There are now nine basic science departments, an increase of one since 1995 (Health Evaluation Sciences), and full-time faculty size has increased from 95 to 130. Three departments have interim chairs (Pharmacology, Neuroscience and Anatomy, and Humanities) and one department has a new chair since 1995 (Health Evaluation Sciences). Health Evaluation Sciences became a department in 1997, and is unique among all of our departments in being a joint venture and sharing faculty between the College of Medicine and Lehigh Valley Health System.

Total expenditures have increased from \$20,300,100 to \$32,304,714 and expenditures from grants and contracts have increased from \$10,097,678 to \$18,591,226. Total academic space has decreased from 168,932 sq. ft. to 138,150 sq. ft., and research lab space has increased from 81,305 sq. ft. to 91,616 sq. ft. Hence, it is quite clear that our basic sciences faculty have continued to be very competitive in securing extramural research funding, although there is opportunity for improving the research base in several departments.

Basic science faculty spend approximately 21% of time in teaching activities, 14% in administrative and service activities, and 65% conducting research.

The basic sciences faculty is broadly represented as journal editors, members of editorial boards and research study sections, leaders in regional and national organizations, and elected members of prestigious scientific organizations.

B. Clinical Science Departments

Clinical departments have continued to grow since 1995. One new department, Emergency Medicine, was added in 2000, and Dermatology will become a department in 2002. Five of the 12 clinical departments have interim chairs, and 5 of the current chairs are new since 1995. The turnover has been relatively high, but has been mitigated by strong interim leadership, and provides an opportunity for the new senior leadership team to recruit chairs with a shared vision and shared values as we enter the College's "Next Generation."

Since 1995, full-time faculty size has increased from 360 to 457, residents and fellows have decreased from 394 to 386, total academic space has decreased from 226,964 sq. ft. to 218,422 sq. ft., and research lab space has decreased from 82,720 sq. ft. to 81,633 sq. ft.

This growth has been accompanied by increased total expenditures from \$100 million to \$148 million, increased expenditures from grants and contracts from \$11 million to \$23 million, and increased clinical earnings from \$67 million to \$103 million.

Our clinical faculty continue to function as a single, federated practice plan which is fully integrated within the Medical Center, and this has proven effective in the managed care environment.

The clinical faculty is broadly represented at the national level as journal editors, members of editorial boards and research study sections, leaders in regional and national organizations, and elected members or fellows of prestigious organizations. Two are members of the Institute of Medicine.

Clinical faculty spend approximately 15% of their time teaching, divided (often concurrently) among medical students, residents, fellows, and other health care providers; and approximately 14% in research activities, 10% in administrative and service activities, and 61% providing clinical services.

There appears to be significant opportunity to increase the research base in several departments (Anesthesia, Emergency Medicine, Medicine, Obstetrics and Gynecology, Ophthalmology, Pediatrics, Psychiatry, and Radiology).

A summary of highlights for each department is part of the self-study document.

January 16, 2002

- [Appendix A](#) - Unified Campus Teams
- [Appendix B](#) - Organization of the Medical Curriculum
- [Appendix C](#) - Basic Science Departments
- [Appendix D](#) - Clinical Science Departments
- [Appendix E](#) - Committee Membership
- [Appendix F](#) - Alphabetical Listing of Committee Members