Report of the Survey of the

NEW YORK UNIVERSITY SCHOOL OF MEDICINE

New York, New York

JANUARY 23-27, 2000

Prepared by an Ad Hoc Survey Team

for the

LIAISON COMMITTEE ON MEDICAL EDUCATION

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INTRODUCTION

A survey of the New York University School of Medicine was conducted on January 23-27, 2000, by an ad hoc team representing the Liaison Committee on Medical Education (LCME). Team members were:

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The team expresses its sincere appreciation to Dean Robert M. Glickman, his staff, faculty, and students for their many courtesies and accommodations during the site visit. Associate Dean Richard 1. Levin and his staff are due special recognition and commendation for their thoughtful visit arrangements and timely provision of information before and during the site visit. On-site logistical services provided by Ellen Wilkinson, Jack Cunningham, and Ted Coyle were unfailingly helpful, and transportation services during the inclement weather were extraordinary.

SUMMARY OF SURVEY TEAM FINDINGS

Institutional Strengths

The team identified the following particularly noteworthy achievements of the School of Medicine:

- Dean Glickman has demonstrated his commitment to reform of the educational program by investing substantial resources in the educational mission of the school.

-The school is moving aggressively in the development and use of information technology to enhance the quality of the educational program; for example in the domains of Internet-based content delivery and student evaluation.

- The students are bright and dedicated, with a documented commitment to scholarship as well as the practice of medicine.

- The medical school has an outstanding record of biomedical and clinical research that Creates a scholarly environment for student learning.

- Both the administration and faculty of the medical school have demonstrated noteworthy responsiveness to the concerns and needs of students, and are generous of their time and effort in supporting student-led endeavors.

- In recent years relationships between the medical school and the parent university have been strengthened to the mutual benefit of both.

- The school continues to benefit from a rich array of health care facilities and patient populations to meet the needs of its educational program.

Areas of Concern

Notwithstanding the accomplishments cited above, the survey team also noted the following areas of concern:

- Existing institutional objectives for the educational program do not serve as effective benchmarks for guiding curricular evolution or facilitating the assessment of educational program effectiveness.

The present system of clinical skills assessment, especially during the clerkship period, lacks sufficient rigor to assure that all students have acquired and can demonstrate the core clinical skills and behaviors needed in subsequent medical training.

- Career counseling does not address the perceived needs of a significant fraction of the student body.

- The school has failed to achieve self-defined goals for student and faculty diversity.

- The system of personal counseling does not fulfill accreditation requirements for confidentiality of mental health counseling.

- Student housing is inadequate.

- The school lacks faculty career pathways, clear standards for evaluating candidates for promotion and tenure, and consistent evaluation of faculty members' career development.

Transition Issues

The following items represent works in progress that merit follow-up to determine the final outcome:

- The recent separation of the medical school from the hospital system has shifted greater responsibility to the school for balancing its budget, which intensifies pressures to eliminate recurrent shortfalls in its operational budget. The talents of the school's new leadership will be challenged to achieve this goal.

- The school has embarked on a process to restructure its academic faculty practice plans that, if successful, will substantially change the institutional culture and provide an important financial resource. Follow-up is needed to monitor this endeavor.

- Current plans for curricular reform are laudable, and will require broad-based support to assure their successful implementation.

PRIOR ACCREDITATION SURVEY, MARCH 1993

The last full survey of the New York University School of Medicine occurred on March 1-4, 1993. The survey team identified a broad span of institutional strengths. Among the areas singled out as prominent achievements were:

- Effective and trusted leadership by the dean.
- Institutional commitment to education.
- Dedicated, high-quality students.
- Rich patient resources for clinical education.
- Institutional support for medical education and student services.
- Successful revitalization of the curriculum committee as the principal agent of educational program management.
- Forceful actions to address the concerns of minority students.
- University and Medical Center support for medical school initiatives.
- Substantial and productive research output.

These favorable findings were counterbalanced by a number of concerns noted by the survey team, including the following observations:

- Explicit learning objectives were lacking in many courses, and the evaluation of student achievement was confined almost exclusively to the knowledge domain. - Integration and coordination of the curriculum had not been achieved. - Faculty oversight of students' elective studies choices was deemed insufficient. - Unsatisfactory performance by students was not reflected in official transcripts, thus distorting the formal academic record of student performance.

- Selected student support areas, like financial aid, housing, and mail service, were ineffective.
- Student leadership voiced dissatisfaction with the diversity of the student body, and sought greater attention to harassment issues.
- The institution's ability to respond rapidly to the accelerating pace of change in the health care environment was questioned.
- Cramped library facilities (a problem noted also in the prior 1984 accreditation survey) were hampering efforts to introduce new pedagogical methods.

The high cost of living, especially housing, posed potential problems in student and faculty recruitment.

Department chairs did not undergo a structured, formal review process.

A few clinical departments had not filled vacant chair positions.

After due consideration of these findings, the LCME voted at its June 1993 meeting to continue the school's accreditation for a seven-year period, with a progress report addressing most of the concerns noted by the survey team to be provided by March 1, 1995.

PROGRESS REPORTS

The school responded to the LCME's concerns in a progress report dated March 1, 1995. It addressed curriculum renewal, management, and evaluation; evaluation and grading of students; student support services; oversight of elective courses; financial aid administration; student diversity and support for minority students; library and information services; and the expected impact of health care reform on institutional financing. The LCME accepted the report, and requested additional follow-up in a report to be submitted by March 1, 1997, describing continuing evolution of the educational program; progress 'in recruiting minority students; effectiveness of financial aid administration; and an update on the school's financial status and prospects.

In the interval between the two progress reports mentioned above, the school informed the LCME of its intention to merge with the Mount Sinai School of Medicine. After receiving this notification the LCME requested that the school provide an implementation timetable in order to plan dates for future accreditation reviews.

The progress report following up on pending LCME concerns was submitted on February 27, 1997. It covered changes in curricular governance and development of the "module curriculum;" ambulatory care and generalist initiatives; faculty development activities; minority student recruitment efforts; improvements in financial aid administration; and the school's financial status in relation to changes in health care structure and functioning. The LCME accepted the report, but requested additional clarification of the number of admissions of under-represented minority students in time for its next meeting. That information was duly provided, and the LCME accepted it at its June 1997 meeting.

Further correspondence between the school and the LCME centered on the proposed merger with Mount Sinai, with particular attention to clarification of the merger's scope, resolution of a legal challenge to the merger mounted by selected NYU faculty, and institutional accreditation of Mount Sinai from the appropriate regional accrediting body. Originally, NYU and Mount Sinai planned a full merger of the two medical schools, hospitals, and related enterprises. A Secretariat visit in July 1996 explored the proposed terms of the merger and its implications for the accreditation of the two institutions. The issue was rendered moot with the announcement in early 1997 that merger negotiations had terminated.

A more modest merger plan involving the clinical enterprises of the two institutions but not the schools themselves was then pursued, culminating in a formal agreement to that end in February 1998. The most cogent summary of these issues can be found in the July 31, 1998 letter and report from Interim Provost and Dean Noel Cohen to the LCME. That letter and report explained that the merger involved mainly the hospital and health care facilities, as resources in support of the academic missions of the schools, and with little impact expected on their respective educational programs. The report noted that the NYU faculty petition challenging the merger was denied by the state's Supreme Court. Finally, the report documented the agreement among NYU, Mount Sinai, and the Middle States Association of Schools and Colleges, whereby the institutional accreditation of Mount Sinai would be subsumed under that of NYU. The academic affiliation granting NYU degree-granting authority for both institutions preserved the autonomy of the educational programs at both schools.

On October 5, 1998, newly appointed Dean Robert Glickman informed the LCME of the school's leadership change, reorganization of the dean's office subsequent to the change, and preparations for the upcoming accreditation site visit. This report was accepted by the LCME at its October 1998 meeting.

THE MEDICAL EDUCATION DATABASE AND INSTITUTIONAL SELF-STUDY

The database was exceptionally well organized and complete, with only a very few items needing updating prior to the site visit. Access to the school's password-protected web site provided a helpful additional source of information about the organization and operation of its educational program. The self-study summary report was concise, lucid, and candid. The self-study findings mirrored most of the survey team's conclusions, albeit with differing priorities. A representative cross sample of nearly 300 members of the academic community participated in the self-study process. The leadership transition that took place early in the self-study process afforded a timely opportunity to use self-study as a vehicle to orient the new administration to the school's accomplishments, challenges, and prospects.

The student analysis was undertaken by the self-study Committee on Medical Students, composed mostly of medical students and augmented by a modest-sized group of administrators and faculty. The committee had wide access to components of the school's database and to the results of AAMC Matriculating Student and Graduating Student questionnaires dating back to the time of the last accreditation survey. These information sources were complemented by the results of an extensive 189 item questionnaire distributed to the student body in the winter and spring of 1999. The questionnaire drew a response rate of nearly 90%. The report resulting from analysis of these and other data sources provided a comprehensive characterization of the student body and the quality of student life.

While the student analysis proved remarkably helpful in understanding the issues that served as its focus, it was less informative about student opinion on particulars of the educational program. Additional insights into the student perspective on the educational program were obtained from the school's most recent Graduation Questionnaire, summaries of recent student evaluations of clerkships, and commentaries from students who met with the team during the visit.

HISTORY AND SETTING OF THE SCHOOL

The modern New York University School of Medicine traces its origin to the 1898 union of New York's University Medical College and the Bellevue Hospital Medical College. The University Medical College opened its doors in 1841. Seminal figures in American medicine like Valentine Mott and John

Revere served as founding members of the college's faculty, offering instruction at the Stuyvesant Institute on the west side of Broadway. The American Medical Association was founded at that location a few years later, and the college eventually settled in at East 26th Street, opposite Bellevue Hospital.

The Bellevue Hospital Medical College was organized in 1861. Early luminaries on its faculty included Austin Flint, Lewis Sayre, and Stephen Smith. From its inception in 1736, Bellevue Hospital had been recognized as one of the foremost general hospitals in the country. Its importance in clinical instruction was formalized by the creation of the medical college. Military surgery and medicine figured prominently in the early days of the college because of the outbreak of the Civil War. One of its earliest graduates was Walter Reed, who obtained his M.D. degree from the institution in 1869.

As the nineteenth century drew to a close, increasing financial pressures on hospital-based schools led many of them to look to universities for support. On March 18, 1897, the Council of New York University invited the Bellevue Hospital Medical College to join University Medical College. The newly minted college opened the following year as the University and Bellevue Hospital Medical College. In 1935 the institution changed its name to the New York University College of Medicine, and it adopted its present name in 1960.

Several major historical milestones mark the development of the medical school, including the following:

1866: The first outpatient clinic in the United States opens at NYU.

1872: Bellevue faculty member Stephen Smith founds the American Public Health Association.

1931: Albert Sabin, developer of a live-virus vaccine against polio, receives his M.D. degree from NYU.

1933: Groundbreaking studies by Dr. William S. Tillett of NYU set the stage for the development of streptokinase, used to combat heart attacks.

1939: Jonas Salk is awarded the M.D. degree from NYU.

1959: NYU faculty member Severo Ochoa receives the Nobel Prize in medicine for his study of biochemical genetics and nucleic acids.

1962: One of the country's first M.D./Ph.D. programs is established at NYU.

1980: NYU professor Saul Krugman develops the first vaccine against hepatitis B.

Currently the School of Medicine enrolls nearly 700 medical students. It boasts over 1300 fall-time faculty and more than 2000 part-time faculty members. It is located in mid-town Manhattan, on First Avenue between East 30th and East 34th Streets (see map in Appendix).

The parent New York University was founded in 183 1. Albert Gallatin, advisor to Thomas Jefferson and Secretary of the Treasury in the Jefferson administration, served as the first president of the university's governing council. This private university draws its students from all 50 states and 120 foreign countries. It includes 14 schools, colleges, and divisions at six major centers in Manhattan, as well as

branch campus programs in Westchester and Rockland counties. Enrollment in the undergraduate divisions ranges from as few as 100 to as many as 6000. The university offers over 2500 courses leading to more than 25 degrees

The table below compares selected data from the time of the last site visit to information provided for the
current accreditation survey.

($ in millions)

	Previous Survey	Current Survey
-Entering class size	160	167
Total enrollment	609	678
Residents & fellows	866	863
Full-time basic science faculty*	196	189
Full-time clinical faculty*	573	1203
Total revenues	$223.8	$421.5
Tuition and fees	$12.6	$17.4
State & parent university appropriations	$0.3	$0.3
Direct research/training grants	$118.1	$150.4
Indirect cost recovenes	$29.4	$43.9
Professional fee income	$28.1	$84.7
Gifts & endowment	$29.0	$58.6
-Revenue from clinical affiliates	$2.9	$49.4
Other revenues	$3.5	$17.0

*Pathology included as a clinical department.

I. OBJECTIVES

The school has engaged in a protracted internal discussion about the desirability of having explicit program-level learning objectives that describe what students must demonstrate as evidence of their accomplishment. After extensive deliberations about this issue, it has opted to forego such objectives in favor of an elaborated mission statement that includes a series of educational goals (see Appendix) declaring what the institution hopes to accomplish through its programs. Outcome measures cited by the school relate to those educational goals. They include the usual student performance measures (i.e., USMLE results, NRMP results, ratings of NYU graduates by residency program directors). The school also identifies distinctive interests of matriculating students (using data from the AAMC Matriculating Student Questionnaire) and analyzes the AAMC Graduation Questionnaire data for the corresponding cohorts to determine how well the program has satisfied such interests. Among the accomplishments that the school takes justifiable pride in are the superior performance of students on the USMLE, low attrition rates in medical school, success in the NRMP, and the proportion of graduates who eventually pursue academic careers. Data from the surveys of residency programs also indicate that NYU graduates exhibit the professional characteristics thought to be appropriate for future physicians.

The self-study report notes that explicit learning objectives have been promulgated at the level of courses and clerkships, and many (but not all) courses have adopted this strategy. Course leaders have also been asked to link their objectives to the educational goals mentioned above. Evidence from the most recent Graduation Questionnaire suggests that the use of objectives at this level has not yet translated fully into student understanding about expectations for learning. Almost 20% of the school's 1999 graduates

disagreed with the statement that "basic science course objectives were made clear to students" (versus eight percent nationally). Over 23% of the 1999 graduates disagreed with the statement that clerkship objectives were made clear (versus 13% nationally). Moreover, the percentage of 1999 graduates reporting uncertainty about objectives increased in both domains in comparison to 1998.

This "bottom-up" approach regarding educational objectives is difficult to reconcile with prevailing thinking that strong central leadership is needed to effect meaningful change in the curriculum, and indeed the present survey team had some difficulty in identifying a clearly defined blueprint for the future direction of the educational program. The absence of institutional objectives also deprives the curriculum managers of a valuable tool for tracking what students learn, when they learn it, and whether the learning is retained later on in the program. Although management of the curriculum has taken on an increasingly centralized focus, it appears to the site visitors that the school has missed an opportunity to fully empower its educational leadership as an agent for productive change by continuing to defer to course and clerkship directors for definition of the performance expectations of students.

II. GOVERNANCE

(See organization charts in the Appendix.)

The university's Board of Trustees consists of 50 members who appropriately represent the community's business and professional leadership. The NYU School of Medicine Foundation Board, a new 44 member, advisory and fundraising board for the school, was formally incorporated in 1999. The dean, who has wide-ranging authority as the school's chief executive officer, reports to the university president through the provost. He is an ex-officio member of the School of Medicine Foundation Board.

In 1998, the university disengaged from ownership of any of the teaching hospitals affiliated with the medical school. The previously owned institutions (the NYU Hospitals Center, comprising Tisch Hospital and the Rusk Institute of Rehabilitation Medicine), now function as contractual affiliates along with Bellevue Hospital and the VA Medical Center, all located along with the school on the NYU Medical Center campus. Mount Sinai-NYU Health, a health services organization, was created in 1998 and aligns the NYU Hospitals Center with the Mount Sinai Hospital. The dean has direct and effective working relationships with the leadership of these hospitals. As part of the agreement between NYU and Mount Sinai, charter revisions were approved that allow NYU to grant all academic degrees for the education programs at the Mount Sinai School of Medicine; the schools, however, are not merged nor do they share resources or program operations. NYU holds institutional accreditation from the Middle States Association, with its next survey scheduled for 2004.

III. ADMINISTRATION

A. Dean, School of Medicine

(See dean's resume in Appendix.)

The medical school has enjoyed great decanal stability. Robert M. Glickman, M.D., was appointed as the fourteenth dean of the school on September 1, 1998. He is an internist (gastroenterologist) whose appointment capped a distinguished academic career at the medical schools of Harvard and Columbia. Before taking the NYU post he served as the Blumgart Professor of Medicine and Chairman, Department

of Medicine, at the Beth Israel Hospital and Harvard Medical School. The dean has had substantial experience in academic and professional leadership, including experience with hospital and physician practice plan management. His management style is to utilize frequent meetings with an array of faculty, student and administrative councils and committees to achieve broad participation in governance, and develop consensus for plans and programs.

Among the most prominent institutional strengths that Dean Glickman recognizes are the school's faculty with its commitment to medical education and spirit of volunteerism, the medical students themselves, and the research enterprise. His concerns include the lack of well-developed faculty practice plans, poorly defined faculty career development pathways, imprecise criteria for faculty promotion and tenure, and a shortfall in research laboratory facilities.

The dean has adopted a transitional strategic plan that calls for the creation of an academic administration; recruitment of new department chairs to fill vacancies and provide new leadership; the construction of a $120 million research building; and the development of a set of federated faculty practice plans that will provide discretionary revenue in support of the school's academic mission, and facilitate interdisciplinary or team research activities. Long-range strategic planning has been deferred pending preliminary implementation of these initiatives. The vice-deans' group (see below) currently serves as a planning body. Development of a comprehensive strategic plan and planning process, in this period of major change in the school's leadership and clinical environment, will facilitate the dean's efforts to achieve his ambitious vision for the institution.

B. Organization of the Dean's Office

(See organization chart for dean's office in Appendix).

The dean has created a new administrative infrastructure for the school, by appointing eight vice-deans with responsibility for all major academic and management operations of the school. The vice-deans, the academic department chairs, and at least eight associate deans or center directors report directly to the dean. This combination of old and new administrative structures and functions may prove to be unwieldy. For example, a once powerful Steering Committee (selected chairs, deans, and senior faculty) may be redundant in the new administration. Evolution of the administration and governance systems probably will occur with time.

There appears to be good division of responsibility and accountability as well as communication within the administration. Faculty and chairs believe they have appropriate access to the dean and his support as well. Medical student classes admitted since Dean Glickman's appointment find accessibility of the dean's office and its responsiveness to problems satisfactory. The dean is working with a student committee to improve such interactions, and the new administrative structure is designed to improve matters such as the preparation of dean's letters for students.

C. Faculty Governance, Department Chairs, and Administrative Committees

(See lists of departments, centers, chairs, and major medical school committees in Appendix.)

A single set of university by-laws for the faculty covers the School of Medicine faculty. The by-laws are published in the University Faculty Handbook, extensively revised 'in 1999. The handbook has been distributed to all medical school faculty members and is published on the school's web site.

The major vehicle for faculty involvement in governance is the Faculty Council. This group has 42 members and meets regularly with the dean, who presents major school issues to this and other governance bodies for vetting. The Council has five standing subcommittees dealing with important matters ranging from student life to benefits and tenure. Shortly before Dean Glickman's appointment, the faculty became very dissatisfied with its role in the school's decision-making process. The event that triggered their discontent was the failure of the Trustees to consult with faculty regarding the proposed NYU - Mount Sinai merger. Dean Glickman is working actively to improve communication and relations with the faculty, and he is receiving good marks for this endeavor. Nevertheless, it appears that some faculty retain a distrust of Trustee objectives and fear the loss of their traditional teaching hospitals and autonomy.

The School has 30 standing committees, including department chair, faculty and student councils that address all aspects of policy, planning and operations. These committees for the most part are appointed by and make recommendations to the dean. Students are represented on committees dealing with student-related matters.

Department chair appointments are open-ended, and chairs serve at the pleasure of the dean. There is no mechanism in place for regular, formal review of the departments or their chairs. The chairs are required to submit annual department reports and budgets to the dean. As a rule, there appears to be considerable longevity in the tenure of both basic science and clinical department chairs. Presently vacant chairs in Medicine and Surgery are close to being filled.

IV. EDUCATIONAL PROGRAM FOR THE M.D. DEGREE

A. Duration, Design

(See scheme of curriculum in the Appendix.)

Ile curriculum spans a period of 148 weeks, and exhibits a generally traditional design. The program for the first two years is divided into five blocks (modules), with each block consisting of thematically related courses. The modular design is overlain by a clinical skills sequence that spans the first two years. Total contact time in the first two years sums to approximately 1,250 hours, about 200 less than the national average. Content integration is effected largely through the module system, with the content of some modules (for example, the courses in the Host Defense Block) more tightly linked than others. The database notes that 86% of the basic science courses are interdisciplinary, but the extent of interdisciplinary effort ranges widely.

The clinical curriculum extends for 37 weeks in each of the third and fourth years. Medicine and surgery each offer ten-week required clerkships during the third year. There is an eight-week clerkship in

pediatrics, while obstetrics/gynecology and psychiatry offer six-week clerkships. The third year is rounded out by four-week clerkships in neurology and ambulatory care. The only completely inpatient clerkship is medicine, with the percentage of ambulatory training in other clerkships ranging from ten percent (neurology) to 50% (pediatrics); the ambulatory care clerkship obviously takes place in exclusively outpatient settings. A fourth-year advanced medicine clerkship spans six weeks. Twenty-eight weeks of elective time are available in the final year.

Curricular modifications to be introduced as part of the "Curriculum 2001" initiative include a longitudinal experience ("The Physician, the Patient, and Society") that will supplant the existing clinical skills courses and run throughout the four years; and continuation of formal basic science training into the third and/or fourth years. The new curriculum will extend and augment existing themes of integration, rigorous clinical skills assessment, enhancement of communication skills, and the development of professionalism.

B. Management of the Curriculum and Evaluation of Program Effectiveness

(See composition of the curriculum committee and its subcommittees in the Appendix.)

There has been a concerted effort to improve central management of the curriculum since the last LCME survey. As a result, leadership, reform, and oversight of the curriculum are shared by the dean's office and the Curriculum Committee.

The dean's office reorganized its educational component in 1998-99 (see Appendix). The previous position of Associate Dean for Curriculum was redefined and titled Vice-Dean for Medical Education. Three new positions reporting to the Vice-Dean for Medical Education were established: the Associate Dean for Medical Education, the Associate Dean for Medical Education Program Development, and the Assistant Dean for Medical Education. A formal Office of Medical Education, developed under the vice-dean's authority, provides faculty assistance with course development, course evaluation, faculty development, and student assessment. Regular meetings of the dean's education and student affairs staff coordinate administrative issues.

The Curriculum Committee coordinates curricular reform initiatives and sets standards for curricular modification. Curricular reform has taken an evolutionary course over the last decade and the committee has striven to achieve more effective integration of basic science courses and a substantial emphasis on independent learning.

A good example of the faculty's coordinated efforts in curricular modification is found in the assessment and recommendations provided by the Task Force on Curriculum Policy in 1995. They addressed reform in three areas of the pre-clinical curriculum: the realignment of basic science courses into modules; a standard weekly schedule; and effective incorporation of computer applications. The results in these areas are described in the descriptions of the pre-clinical curriculum and of academic computing. The faculty recognizes the need to move now to improve the integration of pre-clinical and clinical curricula, and has initiated appropriate strategies to accomplish this under the rubric of the Task Force on Curriculum Policy 200 1.

The Curriculum Committee reviews all required clerkships and courses regularly using an array of outcome indicators for adherence to the school's broad curricular objectives. Oversight for defined

portions of the curriculum flows from the curriculum committee through module directors to course directors. Indicators include the USMLE exams (not required of students), course examinations, student evaluations of courses, and residency performance after graduation. Less consistently used measures include USMLE shelf exams and professional skills assessments. Feedback is regularly sought from students, both by questionnaire and by meetings with faculty during the respective courses.

Student performance measures in the knowledge domain are outstanding in comparison to national norms, as might be expected given the academic antecedents of NYU students. Students appear to be generally as satisfied with their education as their peers at other schools, although 1999 graduates expressed rather less enthusiasm on the AAMC Graduation Questionnaire than previous classes have done. That result captured the attention of the school but has not been substantiated by other data subsequently; the student analysis prepared for the site visit was much more positive in its outlook on the educational program.

C. Content and Review of Subjects Required for Accreditation

1. First-year Courses

Gross Anatomy is a 121 -hour course in the first term, with 14 hours of lecture; 52 hours of conferences, demonstrations, computer-assisted instruction sessions, radiology sessions, and small group problemsolving discussions (case studies); 46 hours of laboratory; and 9 hours of small group prosection. Groups of six students take part in dissection, discussion, and small group activities. Faculty from the Department of Cell Biology do most of the teaching, supplemented by contributions from members of clinical departments and library staff. The grade is derived from three written examinations (true/false questions and clinically oriented short answer questions based on images) and three laboratory examinations, consisting mostly of structure identification questions. Students are also evaluated for their knowledge and participation in discussions, a required short research paper and presentation,
and dissection. The mean 1998-99 USMLE Step I score in Gross Anatomy and Embryology was above
the national average.

The course director is a member of the curriculum committee and is responsive to course evaluation provided from students through four student-faculty luncheons and a questionnaire on content and teaching and from the Office of Medical Education. Contact hours have shrunken from 162 in 1993. The course provides an extensive on-line catalog of pictures, radiographic images, text, and review sessions and tests. It is popular with students, who report that the on-line content is extremely helpful. They also like the variety of other learning experiences, the clinical correlation, the organization and objectives, the laboratory experience, and the faculty involvement and quality of teaching. The course appears to achieve its objectives and is appropriately positioned in the curriculum.

Embryology is a relatively brief (23-hour) course taught in tandem with Gross Anatomy. It uses a mix of lectures and small-group discussion. Objectives of the course are to provide a foundation for understanding the formation of major organ systems and related congenital malformations, and to impart basic molecular pathways governing fetal development. Three exams that use a mix of essays and more structured test formats (e.g., multiple-choice and true/false questions) and a case study determine the grade. Students rate their overall satisfaction with the course slight over 4.0 on a seven-point scale, slightly lower than the contemporaneous Molecular Biology, Human Genetics, and Biochemistry course, and much lower than the extremely popular Gross Anatomy course. Weakest aspects of the course in

student reviews were educational atmosphere, feedback, and self-directed learning. The course leadership would like to reduce even further the use of lecture as a teaching method (presently less than half the contact hours).

Molecular Biology, Human Genetics, and Biochemistry is a 76-hour first-term course taught mostly in lecture format (58 hours). It represents a combination of formerly separate courses in each of the three subject areas indicated by its title. Principles of human genetics serve as a unifying theme and conceptual framework for explaining the molecular basis of disease. Although a comparatively small fraction of the course, the conference sessions provide a significant opportunity for integration of content and assessment of students' critical thinking ability and analytical skills. Grades are determined by three examinations that use short answer and essay questions. The leadership of this course has worked assiduously to address student criticisms of its predecessor courses, most notably emphasis on factual detail and memorization and lack of integration with other disciplines. Challenges that have arisen since the creation of this course include consistency of teaching efforts (the course draws on 31 faculty from six departments) and course materials; limited flexibility in the evaluation system due to the use of a small number of high-stakes exams; and development of more explicit course goals. Students are generally satisfied with the course and perform exceedingly well on the Biochemistry component of USMLE Step 1.

The Doctor and Patient. This 18-hour course is taught during the first term, using two hours of lecture and 16 hours of conferences and small group discussions. The course is considered to be the first segment of the first-year Behavioral Science course, which continues into the second term. The Departments of Medicine and Psychiatry jointly direct the course with contributions from several other departments. Students are provided with broad concepts of the physician/patient relationship and explore responses to illness, such as hope, denial, coping, and loss, and the role of life experiences, support systems, cultural heritage, and beliefs. Groups of four students are placed in clinical settings with a preceptor and interview patients on the basis of issues in the course curriculum. No grades are given, but faculty use the discussions and essays to determine whether students meet the course objectives.

Students rate the course very highly. Some samplings from student essays and preceptor comments indicated that the patient interviews were profound experiences for the students and the faculty. The course director reports that faculty express personal invigoration and renewal, and are grateful to be in the course. There is limited integration with the Skills and Science of Doctoring (Introduction to Clinical Medicine) and virtually none with concurrent basic science courses. Nevertheless, it appears to be well placed in the curriculum as preparation for the Psychopathology course and for an early introduction to patient contact.

Behavioral Science totals 30 hours (18 lecture and 12 small group) in the second term. The first-semester Doctor and Patient course precedes it. Both courses are sponsored by the Departments of Psychiatry and Medicine. It covers concepts of human biological and psychological development, sexuality, and current social issues. Sessions on medical ethics are included. Two clinical exercises in which students talk with elder adults and children about development issues have been added recently, and students write two narratives for each encounter. The final grade is based on two written examinations, usually multiple choice, on facts from the lectures and readings. A passing grade from the discussion leaders on preparation and participation is required. USMLE scores in behavioral sciences are above the national mean.

The course is assessed through the Office of Medical Education questionnaire, group meetings of students with the course director, and a questionnaire on small group experiences and preceptors. The course was substantially revamped in recent years, with a substantial reduction in lecture time and increase in small group discussions. The course director notes continuing difficulty in determining course content, given the enormous range of potential topics and integration with other first- and second-year courses, and the student evaluations indicate a need for more feedback and problem-solving experiences. The faculty have eschewed an on-line educational approach by philosophical choice, preferring direct contact and communication with students.

The course provides a "human" experience during the first year to balance the basic science focus, and logically leads to the psychopathology and psychopharmacology content in the second year. The school plans to implement a new course next year, The Physician, Patient, and Society, that will be a longitudinal continuation of the existing Doctor/Patient and Behavioral Sciences courses.

Cell Biology in Medicine is a fairly short (38-hour) course that forms part of the cell biology/physiology module in the middle block of the first year. Twenty hours are reserved for lecture, with nine for small group discussions and five for labs. Objectives focus on basic organization of the mammalian cell, including the processes that give rise to cellular organization and to the integration of cells into tissues. Clinical cases provide a scaffolding for understanding such processes. Evaluation of student performance is based on two multiple-choice examinations, a slide exam, and five quizzes. Facilitator judgment of student participation in small group discussions also contributes a small fraction to the grade. The principal problem noted in the database was a need for greater participation by clinical faculty. The course garners very high satisfaction ratings from students.

Cell Biology of Tissues & Organs (Histology). This course is taught over ten weeks in the middle of the year. The content appears to be traditional, focusing on the microscopic structure of tissues, organs, and systems. The course uses 23 hours for lecture, 45 hours for laboratory and small group discussion, and 8.5 hours for review sessions. The course is taught mostly by faculty from the Department of Cell Biology. They have reduced contact time by about 20% since 1993, through a comprehensive, well-organized web-based presentation of course materials, and additional transparency sets of tissues and organs that are available to students in the library. Four written exams, each including multiple choice and short answer questions and a transparency section, and two laboratory examinations on identification of tissues and organs are the basis of the final grade. Written and laboratory components are each weighted 50%. Tutorial assistance is provided for students having academic difficulty. USMLE Step I scores in Histology and Cell biology are excellent, among the highest scores for any subject area on the exam. The course is rated highly by students in most aspects, except in feedback and integration.

Previous attempts to integrate Histology with Molecular Biology, Human Genetics and Biochemistry (MGB) were largely unsuccessful, and the course now follows MGB. In the 1993 LCME review, the faculty expressed a wish to enhance the course by coordinating better with physiology to improve functional correlation and by developing a series of case-based discussion sessions. Some temporal coordination with physiology has been accomplished, and the faculty are testing the first integrated section this year. The case-based discussion sessions have not been developed, and the faculty see a need to instruct basic science faculty in clinical fundamentals as an obstacle. The course would benefit from more extensive collaboration with other, especially clinical, departments.

Physiology is given in the spring in parallel with the two cell biology courses, and addresses general physiology and seven organ systems. The course objectives are appropriate and include some emphasis on problem solving. Student contact hours number 82, with 70% in lecture format. Conference/small group discussions are led by junior or senior M.D./Ph.D. students with clinician faculty participation. The course directors try to have each lecture block delivered by a single faculty member, and two blocks (pulmonary and renal physiology) are given by visiting professors from Yale and the University of Virginia who are in residence for two weeks.

The final grade derives from four written exams (multiple choice and essay formats) that provide 92 percent of the course grade; the NBME shelf exam (10%); and performance in laboratory and small groups (eight percent), allowing the possibility of ten percent "extra credit." Evaluation of the course is requested of students at the end of each block, and additional evaluation comes from faculty and students taking the second year pathophysiology course. Students rate the course reasonably well.

The Skills and Science of Doctoring: Introduction to Clinical Medicine takes place in the second half of the first year, overlapping the cell biology/physiology and host defenses blocks. It occupies the middle of a sequence of clinical skills experiences that begin with the preceding Doctor and Patient course and continue with the Physical Diagnosis course that takes place during the second half of the second year. This course and Physical Diagnosis utilize a small group or preceptorship format. Student evaluation for both is formative and provided by a high concentration of faculty to students.

The Skills and Science of Doctoring is based on a rich set of objectives and is provided by a large clinical faculty that includes 106 preceptors. The course directors, Drs. Mack Lipkin Jr. and Bernard Dreyer, are recognized authorities in the nuances of the professional relationship between the doctor and the patient and provide sophisticated leadership for this course offering. A substantial portion of the course's 41 hours takes place in practitioners' offices. The activity is well regarded by students. Extensive student feedback is used to maintain course quality.

The **Host Defense Block** (HDB) completes the first year, and is designed to integrate the teaching of microbiology, immunology and parasitology. Its 135 total contact hours are divided among three nominally distinct courses corresponding to those subject areas. It was offered for the first time in the spring of 1999. HDB provides a basic core of information (Part 1: Fundamentals) for seven weeks followed by a one-week interdisciplinary exercise on vaccine development. It provides an intensive exposure to core concepts of microbiology, immunology and parasitology. The block is taught by discipline, with two or three lectures per day and two to three seminars per week.

Part II consists of a seminar and exercise on vaccine development. A unit consisting of selectives which students chose was eliminated because of insufficient time to teach the core material. In addition, the content for the course was reduced for the same reason and thus, students' major concerns with the course were addressed. The vaccine seminar is a problem-based exercise stressing vaccine strategies and development. Students are required to make a Power Point presentation defending their approach to vaccine development.

Students receive a pass-fail grade for the block. Assessment includes two examinations: a multiple choice at the end of Part I and a take-home essay exam covering the material in Part II.

The block brings together principles and knowledge of physiology, biochemistry, genetics and the principles of microbiology, immunology and parasitology. The pathogenesis of different infections as well as host responses are thoroughly discussed. One of the unforeseen benefits has been the close cooperation of faculty who previously had little contact. Course evaluations for 1998-99 showed great student satisfaction with parasitology, but much lower ratings for the other two components. The major problems noted in course critiques are the limited and compressed time available for the subject matter, and the lack of student grounding in pathology when the course is offered. USMLE performance in Microbiology and Immunology is well above the national average.

2. Second-year Courses

Epidemiology, Biostatistics and Preventive Medicine (EBPM). This course occupies 29.5 hours during the first semester and comprises five hours of lecture, 17 hours of conference/small group discussions, and the rest in recitation/review. The course draws on a variety of clinical departments for instruction. It is divided into biostatistics, analytic and descriptive epidemiology, clinical epidemiology, and preventive medicine. The objectives for each component are well described and define reasonable expectations for students. While the on-line course content is less extensive than in some basic science courses, the worksheets and problem-based questions seem to encourage thoughtful self-instruction and self-evaluation by students, as well as participation in the discussions. The final grade is derived from midterm and final written examinations and ten brief quizzes, weighted 45%, 45%, and 10% respectively. The mean 1998-99 USMLE Step I score in Preventive Medicine and Public Health was slightly above the national average.

The faculty has responded to previous concerns from the students about over-use of the conference format and self-study by restoring two or three lectures on the more difficult areas. "Me 1999-2000 course evaluations showed substantial improvement, although students still want less self-directed and more detailed computer-assisted learning. The course director is eager to continue fine-tuning this useful course. Faculty see the course as a bridge between the first-year curriculum and the Pathophysiology course in the second semester.

Neuroscience. This course is appropriately positioned in the first semester of the second year to deliver an integrated approach to neuroscience, although it must compete for student attention and effort with four other courses. Course objectives are appropriate and include knowledge of basic cellular neurophysiology and integrated neuroanatomy and function, and the application of basic knowledge to clinical problem solving. The course has 68 contact hours, with 39 hours of lecture and the rest allocated among conferences, small-group, and laboratory experiences.

Students are graded on the basis of three written exams and a practical exam that contribute 74 percent; practical laboratory exercises for 12 percent; and faculty preceptor evaluation of students in small groups for 14 percent. Course evaluation is provided at several points by the students, the course director attends all lectures and other sessions, and student performance on USMLE Step 1 is monitored. Students give the course generally good reviews.

Psychopathology is a first semester course with 78 contact hours, divided into 28 hours of lecture, 46 hours of conference/small groups sessions, and four hours of review sessions. The course philosophy supports a strong lecture series, reinforced by clinical interviewing where students see patients who exemplify the disorders. This course forms a continuum with the preceding Doctor/Patient and

Behavioral Sciences courses, and like them is taught by faculty primarily from Psychiatry and Medicine. Factual content includes categories of psychiatric diagnosis, the basis of DSM-IV diagnosis, the neurobiology of psychiatric disorders, and neuropharmacology. Students perform mental status exams and psychiatric interviews and write mental status evaluations. Clinical sites are limited, so each small group rotates through two of them. Two written, objective examinations (the final cumulative) are the basis for the grade. Many questions are vignettes or research findings that require diagnosis and reasoning. Preceptors who oversee the small group interview sessions assess each student's skills, attitudes, and behavior, though the assessment is not part of the grade.

The Psychopathology course is appropriately positioned in the curriculum**.** It continues from Behavioral Sciences in the first year and is good preparation for Physical Diagnosis in the second term. Though not closely integrated, it is closely related to Neurosciences, which runs concurrently, and is integrated with Pharmacology for the psychopharmacology segment.

The **General and Systemic Pathology** course is situated in both semesters of the second year. It includes faculty from the Departments of Pathology, Medicine, and Cell Biology. Its 180 hours are divided among lecture (97 hours), conference and small group (35 hours), laboratory (35 hours), and case-based problem-solving sessions (13 hours). The Pathology Course was an early adopter of computer-based materials and web-based technology.

The course has defined goals and objectives that are focused more on the process by which it is taught than actual outcomes. The director has provided leadership for some 10 years and has emphasized continual evaluation of the course. The quality of instruction and learning methods are regularly reviewed by the faculty using student feedback (written, personal, and focus group) and student performance, including USMLE results, student participation, and course examinations. The course leadership is attentive to efforts to improve the overall quality of instruction, and students appear generally satisfied with the experience.

The pathology portion of the curriculum is integrated with pharmacology and pathophysiology of medicine as a module. Considerable attention is given to such integration by way of intra- and interdepartmental faculty development. The Task Force on Curriculum Policy 2001 has focused heavily on such integration as an opportunity for further improvement.

Pathophysiology is a 139-hour course, with 55 hours of lecture, 81 hours of conference/small group discussions and three laboratory hours. It is given in the second semester, and aggressive efforts are in progress to integrate this course with pathology and pharmacology using an organ system-based approach. The course has stated objectives. Achievement of course objectives is based on five examinations that are organ system-based, with a multiple-choice case presentation format and given in conjunction with pathology, pharmacology or both; informal assessments of students by seminar leaders; and feedback to pathophysiology course directors from clinical clerkship directors, particularly in medicine. Grades are based on the five written exams, and USMLE performance exceeds the national average.

Course evaluation is based on standard medical school forms, interaction of course directors with students during biweekly lunches, feedback from faculty to section directors, feedback from section directors to the course director, and input from clerkship directors about student knowledge of pathophysiology. The course is planned and evaluated in conjunction with the concurrent pathology and

pharmacology courses- Faculty from the three areas get together for pre-block planning and occasionally for test-question writing. Some conceptual material has been redefined and lectures better focussed to capture the rapid advances in pathophysiology. Seminars have been reorganized to de-emphasize lecture and promote more student interaction. Essay questions were once used to achieve that goal, but variability in grading and lack of clinical faculty time made this approach difficult. A future goal is to devise a small group format for more than 2/3 of the course hours.

Pharmacology is a 40-hour course with 12 hours of lectures, 24 hours of conference/small group discussion, and four hours of workshops. In the conference format faculty members combine formal presentations with student interactions. Workshops use problem-solving sessions to strengthen student grasp of principles and concepts. The course was substantially restructured in 1995 to reduce the number of lectures and enhance integration with pathology and medicine. The course has been modified at least three times since 1995, initially receiving poor student evaluation scores, but these scores have improved more recently.

Course objectives are defined. It is stated that success in achieving these objectives is based on student feedback documented in standardized assessments performed by the Office of Medical Education. Assessment of course quality results from peer evaluation (the course director and another faculty member attends each lecture). Students provide written assessments after each module using both objective and subjective responses, and the course director meets regularly with the president and members of the student council to obtain feedback about the course.

Students are evaluated by four examinations that primarily use a multiple choice question format, some of which are problems and clinical vignettes. Students perform quite well on USMLE Step 1. The evolution of this course to achieve greater integration with other basic science courses should be considered a "work in progress." Course ratings have improved in recent years, but there is still room for improvement.

Physical Diagnosis takes up 46 hours in a small-group format, with two students per instructor. The objectives include the appropriate history-taking and physical diagnosis skills. There is sensitivity to students' anxiety and lack of confidence in these areas, and attention is given to progressive acquisition of both skills and accompanying confidence. The course leadership is aware of the inevitable variability of instruction among a large faculty and plans are afoot to provide appropriate faculty development to accommodate this variability. All student performance assessment is formative, culminating in a final practice exercise where a complete history and physical examination is directly observed and critiqued.

3. Third-year and Fourth-year Required Clerkships

The **Ambulatory Care** clerkship is a four-week experience where students spend four days per week at an assigned clinical site, and one day per week in small group sessions or independent study. This is one of six required courses offered by the Department of Medicine, all of them with common goals and objectives. It was established in 1996 and arose out of the ambulatory experiences within the Medicine clerkship. The clerkship is offered at Bellevue, Gouverneur, The Hospital for Joint Diseases, Lenox Hill, New York Downtown, NYU Health Center, North Shore University Hospital, and the VA. Students meet with an assigned faculty mentor several times a week.

The clerkship is designed to provide third-year and fourth-year students with a variety of clinical experiences and curricular content in ambulatory care. Faculty and students interact as students enhance their clinical skills and generate differential diagnoses. The learning objectives are the 16 "Basic Generalist Competencies." A syllabus is prepared for each student that includes directions on the use of the Palm Pilot, course objectives, and articles related to caring for primary care and ambulatory patients. An important part of this experience is the use of the Palm Pilot to record patient information. The course coordinator uses the data collected to assess compliance with the learning objectives, and to compare student educational experiences at the various clerkships. This information has allowed for mid-course changes. The student evaluations are quite positive.

This clerkship has a rigorous system of formative and summative assessment, including three student write-ups of patients, an OSCE given during the third day of the clerkship, and a videotaped patient interview that is critiqued by faculty. The OSCE and videotaped interview are used for formative assessment only. Grades are based mainly on clinical performance assessment by the student's mentor.

The **Medicine** clerkship is a well organized experience that is an integral part of a continuum of courses provided by the Department of Medicine. The continuum begins with the first-year Doctor and Patient and Skills and Science of Doctoring courses, followed by Physical Diagnosis and Pathophysiology in the second year. The clerkship is given in the third or fourth year for ten weeks in an entirely inpatient setting. A four-week Ambulatory Care clerkship provides formal outpatient teaching. The continuum concludes with an Advanced Medicine course.

In the medicine clerkship students spend five weeks at the Bellevue Hospital Center and five weeks at one of four other hospitals -- Tisch, the Department of Veterans' Affairs Medical Center, North Shore, or Lenox Hill. The objectives of the clerkship are incorporated into an extensive compendium of curriculum objectives for the whole four-year medicine continuum. Each objective includes clearly spelled out attributes with respect to the knowledge, skills, and attitudes that students are expected to acquire. Students are expected to do two new work-ups per week (except for North Shore, where one work-up per week is done) and three established patients are followed weekly. Feedback about students from ward attending physicians and chief residents are elicited at the beginning, mid-point, and end of the 10-week rotation.

Student performance evaluation methods include faculty/resident ratings (75% of the grade), and performance on the NBME subject exam (25%). The database acknowledges, and students who met with the survey team confirm, that direct observation of student histories and physical exams by faculty does not occur consistently. Such assessments are required in the ambulatory care clerkship. Feedback from attending physicians is best at Bellevue and least at North Shore Hospital. Students perform above the national average on the medicine component of USMLE Step 2. The clerkship is among the most highly rated clinical experiences of medical students.

Advanced Medicine is a required six-week experience in the fourth year that is essentially a sub-internship. Students act as interns, with responsibility for write-ups in patient's charts and oral presentations on daily rounds. They participate in meetings of the healthcare team and are given the opportunity to present at morning report.

The experience takes place at Bellevue, Tisch, and the VA hospital. The objectives focus on history taking and physical diagnosis, the ability to construct a differential diagnosis and treatment plan, as well

as knowledge of pathophysiologic principles. Mid-point assessment occurs, and feedback to the students is provided at a meeting of the teaching attending with the sub-intern. Final assessment is based entirely on faculty and resident evaluations. Course evaluation is based on feedback from students using the standardized clerkship evaluation form. Students rate the experience quite highly.

The combination of the medicine, ambulatory care, and advanced medicine clerkships provides an excellent opportunity over a 20-week period to provide students with a strong foundation for residency, particularly in the areas related to internal medicine.

Neurology is a four-week required clerkship where students are assigned to one of five affiliated hospitals. This inpatient experience is supplemented with an afternoon of outpatient clinic work per week. Clear and appropriate objectives are in place, the clerkship is well-organized under two clinician directors (one of whom co-chairs the school's curriculum committee), and it appears that the learning experience is comparable at all sites. Faculty and senior residents provide lectures (5-6/week), conferences (4-11 hours/week), and teaching rounds (9-14 hours/week with faculty and 5-10 with residents/week). In addition, each student has a faculty preceptor who tutors student presentations and clinical vignettes, observes a student neurological work-up, and reviews patient write-ups. Each week students work up one to three new patients and follow the same number of established patients.

The clerkship is evaluated and modified as a result of routine school evaluation procedures as well as through ongoing formal and informal student-faculty discussions. The course directors track NBME subject exam performance. All relevant clerkship material is on the clerkship's web site, and the Neurology Passport system uses Palm Pilots to record direct student observations and patient data. Student performance evaluation mechanisms include ward attending/resident observation (40% of the grade), preceptor assessment (30%), ambulatory attending/resident observation (20)%, and the NBME subject exam (10%). OSCEs are being developed in conjunction with a Macy Foundation grant. Areas of concern are a low inpatient census at the VA hospital, less faculty/resident observation of student patient work-ups than is desired, and the limited use of computer technology in learning and evaluations. The most recent student ratings accord it a five on a scale where seven is the best possible score.

The six-week **Obstetrics and Gynecology** clerkship strongly emphasizes a well-rounded exposure in ambulatory care, inpatient gynecology, and inpatient obstetrics. The scope of patients and the curriculum at all four sites are consistent with objectives developed by the Association of Professors of Gynecology and Obstetrics. Students evaluate patients in ambulatory obstetrics and gynecology, in Labor and Delivery, in the operating room, and in the emergency department. The clerkship director and the chair personally review the student experiences with the students during and at the end of each rotation to assess the clinical experience.

The clerkship uses facilities at Bellevue/Tisch, North Shore, NYU Downtown, and Lenox Hill. Each clerkship site director assigns patients to students, and students maintain patient logs to provide quantitative data regarding patient encounters. The short duration of the clerkship makes the experience variable for students, who may not be exposed to certain procedures or patient problems. Observation by faculty and residents, an NBME shelf exam, and student logs are all part of the evaluation of students. Direct observation of students performing examinations and taking histories by faculty continues to be a problem and occurs sporadically at best. However, all pelvic exams done by students have residents or faculty present and supervising. Dr. Michael Silverstein, the clerkship director, has done an excellent job

of reversing some of the past criticisms by students and has energized the experience for them. Student ratings of the clerkship have improved substantially over the last three years.

Pediatrics is divided into two four-week inpatient and ambulatory blocks respectively. The former occurs at Bellevue, Tisch, Brooklyn, Lenox Hill and North Shore facilities. Ambulatory learning is at all of those sites except Tisch. The department adopted the Committee on Medical Student Education in Pediatrics (COMSEP) curriculum at all affiliated sites in 1996. Accordingly, there is a formal set of expected clerkship outcomes with definitive learning objectives. All students maintain patient logs using electronic Palm Pilots. There is a commitment to balancing routine and tertiary referral patients in the student's experience.

The student's final clerkship grade is based 80% on faculty and resident observation, 10% on NBME subject exam, and 10% on oral exams. Clinical skills observation is characterized in the database as "unstructured," although all students are claimed to be observed by at least one faculty member. Variation across clerkship sites is monitored based on NBME scores, distribution of grades at each site, and review of patient logs. In addition, students complete a survey of 10 attitudinal variables and 14 variables related to satisfaction with teaching and patient care. Regular review is carried out on uniformity of the clerkship across sites, with particular emphasis on NBME scores as a critical measure of uniformity. A formative mid-clerkship evaluation is centered on a student self-assessment instrument. Students rated the ambulatory experiences more highly than the inpatient rounding experiences. Some of the critical comments are attributed to the heterogeneous teaching aptitude of house staff.

The six-week **Psychiatry** clerkship is offered in the third year. Students rotate at Bellevue (50%), Tisch (15 %), the VA (15 %), or Lenox Hill (20%) Hospitals. The clerkship includes a variety of teaching methods, including one hour of lecture, two hours of case conference, and five hours of faculty teaching rounds per week, and at all but the VA one and a half hours of resident rounds per week, work up two new patients and follow three established patients per week, and keep a patient log that is reviewed to ensure an adequate number and mix of patients. Student workups and presentations are reviewed by faculty and residents at all but the VA, where they are reviewed by residents only. In all these experiences, students have primary responsibility for evaluating and managing inpatients. Outpatient training takes place in the psychiatric emergency room and in psychiatric outpatient clinics at Bellevue, Tisch, and Lenox Hill. Students have four night call experiences during their rotation in the psychiatric emergency division.

The clerkship has clearly stated objectives, and student assessment appears to be tied to the objectives. Students receive considerable personal supervision and instruction. Twenty percent of the clerkship grade is based on the NBME subject exam, five percent on a final written exam and a quiz in psychopharmacology, 65% on faculty/resident rating of student skills, and the remainder on a written case report. Students are also required to write emergency room case reports and keep a patient log. The mean USMLE Step 2 score for 1998-1999 was slightly above the national mean.

The course director does an outstanding job of overseeing the entire psychiatry curriculum through the first three years and is deeply and personally involved at all sites during the psychiatry clerkship. The faculty consider the clerkship experience to be comparable across sites. Students have given the psychiatry clerkship increasingly high marks in overall satisfaction during the 1996-1999 period, placing it among their top three during 1998-1999. Lenox Hill was rated highest in overall satisfaction, with Bellevue and Tisch close behind. Feedback from attendings is ranked lowest at the VA site. The

rotation at North Shore was dropped because of poor student ratings. The course director is working on improving and bringing site consistency to the educational experience in consultation and outpatient psychiatry.

Surgery is a ten-week clerkship offered at Bellevue, Tisch, and the VA. A core rotation of five or six weeks on general surgical services is supplemented by one-week rotations on peripheral vascular, cardiothoracic, and transplantation surgery. All students also rotate through Bellevue's Trauma Service, and selectives in other surgical disciplines round out the experience. Lectures, conferences, and faculty or resident rounds occupy 20-25 hours per week. Students work up an average of five new patients weekly and follow thee to five established patients per week (slightly less at the VA). Patient logs and procedure logs are used and reviewed to ensure appropriateness of patient mix and adequacy of educational experiences.

Sixty percent of the clerkship grade is based on ratings by attending faculty and residents, with 20% of the grade determined by oral examination and 20% by NBME subject exam performance. Clinical performance is reviewed by faculty and house staff but not necessarily directly observed. The main problem with the experience, according to the database, is insufficient time; the clerkship would like an additional two weeks. In conversations with the survey team department leaders also noted that ambulatory learning experiences were more limited than they would like. Student ratings are generally satisfactory, about mid-range among all clerkships.

4. Electives

Twenty-eight weeks are available in the final curriculum period for electives. Students are allowed a maximum of 20 elective weeks and they take on an average, eight elective weeks. Several clinical departments and the Department of Cell Biology offer a wide variety of elective courses in the third and fourth years. In the 1998-99 class, 24% of students did electives only at NYUSM, down from 40% the previous year. The most popular elective choices were Diagnostic Radiology and Medical Imaging (71 students), Anesthesiology (39), Dermatology (38), Otolaryngology (38), Clinical Cardiology (29), Emergency Medicine (29), and Ophthalmology (28).

The process by which elective courses are managed appears well defined. The Registrar's Office publishes listings of electives and independent study projects. Listings for other institutions are available in the library. Students plan the electives they wish to take during their second year. Such choices are expected to be based on discussions with their advisors, though it is apparent that in many instances students do not use this option. The choice of electives is reviewed and assessed for quality and balance by the Associate Dean for Student Affairs and by the Associate Dean for Medical Education.

Students wishing to do electives at other LCME-approved schools have their choices screened and approved by the Associate Dean for Student Affairs and by the Director of the Office of Medical Education. If the extramural elective is not an official offering of an LCME-approved medical school, the student must submit to the proposed preceptor at that school a form that outlines students' responsibilities, daily activities, and hours per week elective time required. The proposed preceptor must return a signed form to the associate dean who must then approve the elective. For students travelling abroad, a Travel Release Form must be completed. After completion of an extramural elective, preceptors evaluate NYU students using standard NYU student evaluation forms and these are returned to the registrar and reviewed by the associate dean.

For students from other LCME-accredited schools taking electives at NYU, a formal application must be sent directly to the preceptor documenting that the student is in good standing, will complete core clerkships prior to the elective, and has personal health and malpractice insurance. Some departments also ask for a letter of recommendation from the student's school. Visiting students are placed in elective courses only after the elective lottery for NYU medical students is completed. For foreign medical students, applications are sent directly to the Office of Registration/Student Records and applicants are checked for standard visiting student requirements, fluency in English, malpractice and personal health insurance. The Office of Registration/Student Records keeps a listing of visiting students doing electives and this is reviewed monthly. After the elective, the preceptor fills an evaluation form on visiting students and returns it to the registrar's office, which sends this to the student's school.

D. Summary of the Educational Program

The school has developed a good mix of pedagogical methods and the curriculum is much better integrated than it was at the time of the last survey. The development of the module system has facilitated these achievements, albeit with varying degrees of success. Interestingly, the inventory of curriculum content noted in the database consists of course materials available on the web; whether that constitutes a database of retrieval information that can be used to identify omissions and unwanted redundancies is unclear. The use of web-based materials to make instructional content and evaluation material more accessible is a signal success of the program, and further and more innovative uses of information technology can and should be expected. Other expected developments resulting from the Curriculum 2001 initiative, such as more rigorous systems for clinical skills assessment and greater emphasis on communication skills and professionalism, augur well for the future of the educational program. The school is fortunate to have access to the wealth of clinical learning opportunities afforded by Bellevue Hospital and its other affiliates.

While the educational program is generally sound and the results reflected in outcome measures are impressive, there remain opportunities for improvement. Clinical education *in ambulatory settings remains modest in the majority of clerkships. Some important subject areas receive seemingly little attention, according to the information provided in the database (see Appendix); for example, there is little formal instruction in nutrition (three reported hours), geriatrics (eight hours), prevention and health maintenance (six hours), and women's health (four hours), and all of these areas are found wanting in the most recent Graduation Questionnaire as well. One wonders if such gaps in coverage would exist if more attention were given to the development of comprehensive (institutional) educational objectives.

E. Evaluation of Student Achievement; Due Process

(See USMLE results and promotions committee membership in the Appendix.)

Evaluation of student achievement is the responsibility of the course directors, the Medical Student Promotion Committee, the Associate Dean for Student Affairs, and the dean. The Pre-clinical Board, a subcommittee of the Medical Student Promotion Committee, comprises 23 faculty members and two ex officio members. The Clinical Board (the other subcommittee of the Medical Student Promotion Committee) consists of ten faculty members and three ex officio members. The boards meet quarterly to review student progress.

Course directors establish performance standards in consultation with the director of the respective curriculum modules. Students must pass each course to be recommended for promotion. Passage of the USMLE is not a requirement for promotion or graduation, nor are students required to take this exam; nevertheless, almost all students do take it. The promotion boards review performance of all students in academic difficulty and make specific remedial recommendations. They also make recommendations to the dean about whether students should be allowed to continue, take a leave of absence, or be dismissed. There are written procedures for remediation. Students can appeal an academic recommendation of the Boards to the dean. An Appeals Committee is appointed and there are specific procedures for conducting this appeal, with the dean making a final and binding decision sent to the student in writing.

Grading is Pass/Fail for pre-clinical courses and letter grades for clinical courses; student performance is tracked in pre-clinical courses to determine eligibility for Alpha Omega Alpha. Clinical courses utilize both letter grades and narrative description. A failing grade is recorded as "No Credit." Students strongly support the Pass/Fail system in the pre-clinical courses, noting that a passing grade is not necessarily easy to achieve. This system fosters less competitiveness and more collaboration, encouraging support of less strongly performing students. However, the grading system in the clinical years is not viewed as particularly discriminating with respect to student performance. Nearly all students get "A" grades and any lower grade is regarded as unsatisfactory.

Consistency of student evaluation across multiple clerkship sites results from mandated policy requiring clerkship directors at the main site to assign a final grade, after consultation with site directors and faculty at those sites. The ambulatory care clerkship has had noteworthy success in its Palm Pilot project, where students use these hand-held devices to capture information immediately about patients that they have seen. The resulting data are used to generate reports and graphs that are distributed to clerkship leaders at each site, thus providing rapid feedback on consistency of student experiences with patients. The program will now be extended to include the pediatrics clerkship.

Formative evaluations appear to vary considerably across clerkships and sites. In addition, the degree of performance feedback to students appears to vary widely. Many students noted that they were never observed doing history and physical exams during their clinical clerkships, though the ambulatory care clerkship does employ a formative OSCE and a videotaped patient interview. It should be noted that the assessment subcommittee self-study report recommends establishment of formative and summative objective clinical evaluations, either within all courses or in comprehensive examination format once during and again at the end of the third year. Implementation of this recommendation would assure full compliance with LCME standards regarding formative evaluation and feedback and the assessment of clinical skills.

Standards and procedures for evaluation, advancement, and graduation of students, as well as for disciplinary action, are advertised in the student handbook given to matriculating students. These standards are also distributed to deans, department chairs and course directors, and are published on the school's web site. Student records are maintained in the Office of Registration. They include application materials, academic records, faculty comments on performance, counselors' comments or recommendations, and comments of the Dean of Student Affairs. These records are confidential, available to review by the students, and students have the night of appeal.

Written guidelines pertaining to medical students' conduct and discipline are governed by the university's "Rules for the Maintenance of Public Order, Statement of Policy on Student Conduct and Student

Disciplinary Procedures." These guidelines spell out procedures to file a complaint with the dean against any student at the School of Medicine. Such complaints can be filed by any member of the university's faculty, administrators, or staff, or any student at the university. Procedures for notification of the student against whom the complaint is made, interim suspension, if necessary, informal resolution of complaints, formation and proceedings of a disciplinary committee, reporting of the findings to the committee, sanctions, and the right of the student to appeal to the Dean are formalized. This process does include timely notice of the impending action, disclosure of evidence on which the action is based and an opportunity for students to respond.

F. Academic and Career Counseling

(See data on attrition and academic difficulty, and a sample Dean's Letter, in the Appendix.)

There are written procedures in place for academic counseling**.** A system exists for early notification and remediation actions for students in academic difficulty. Student performance is reviewed after each major exam, as well as in quarterly pre-clinical and clinical board meetings. The Associate Dean for Student Affairs is told of any students who are either failing or marginally passing. The associate dean meets with the students and offers a series of remedial steps including additional tutoring, referral to a learning skills specialist for assistance with study plans, psycho-educational evaluations, or brief counseling if there are personal issues. Student attrition is quite low in comparison to national norms.

At matriculation, students are assigned a faculty advisor. Faculty advisors are organized into colleges, each college having a director. When possible, students who matriculate with specialty interests are matched with faculty advisors of the same interests. During the spring of the second year students are expected to meet with their advisors, the Associate Dean for Student Affairs, or other faculty members about their clinical training program. In late spring of the third year, residency counseling begins with submission by students of their choices of residency programs and curriculum vitae to the Associate Dean for Medical Education. Departmental advisors selected from areas to match the students' interests are then assigned, and students are given the opportunity to meet with these advisors, as well as the Associate Dean for Medical Education. Recognizing that this process of residency application is often too late to provide students with adequate residency advice, a plan has been initiated to begin it earlier.

The dean's letter is prepared by the Associate Deans for Student Affairs and for Medical Education. Components include grades, verbatim comments taken from narrative description of student performance during core clerkships, participation in the Honors Program or an Independent Study Project, leadership roles, or community service. In 1999, 94.4% of the class participated in the National Resident Matching Program and 98% matched. The remaining unmatched students were matched within 24 hours.

Student satisfaction with the advisement system is lower than the national average and decreased in 1998 and 1999. Faculty advisors assigned to students in their first two years vary considerably in their availability and perceived helpfulness. Students acknowledge that shifting the process of residency application to the early Spring semester would better assist them with residency selection. Career guidance is seen as inadequate. An attempt to meet this concern has been initiated by the Associate Dean for Student Affairs and members of the student body, who have formed a Medcareers Committee consisting of administrators, faculty and students to improve career guidance at the school.

V. MEDICAL STUDENTS

A. Admissions

See the Appendix for composition of the Admissions Committee and data on student background and credentials.)

New York University's medical school is one of a handful of non-AMCAS schools in the country. Minimum admission requirements include six semester hours each of English, Inorganic Chemistry, Organic Chemistry, General Physics, and General Biology or Zoology. The school recommends but does not require college level course work in mathematics and in genetics/embryology. Students seriously interested in medicine are encouraged to learn Spanish, in light of the patient population served by the school. Intelligence, preparedness, motivation, and aptitude are noted as important factors in the selection process. Other requirements for admission include two individual letters of recommendation or one composite committee letter, and submission of official transcripts and MCAT scores. Requirements for admission are publicized in appropriate venues.

Complete applications are reviewed by a screening committee and ranked as a 1, 2, or 3 in terms of the applicant's academic antecedents and letter(s) of recommendation. Applicants rated I are invited to interview. Applications are reviewed by the Admissions Committee after the interview and placed into four categories: immediate acceptance, wait list, possible further consideration, and immediate rejection. Admission decisions are made on a rolling basis from mid-December through March 1, with wait-listed students filling unaccepted admission slots until class size is filled.

The Admissions Committee consists of approximately eighty members, most of them clinical faculty and with lesser representation from basic scientists and administrators. There are no student members of the committee. The dean has served as committee chair largely to familiarize himself with the type and quality of medical students, but intends to step down from that role. Three Executive Subcommittees are responsible for reviewing candidates for admission after the interview. One of these subcommittees also reviews all transfer applicants, while another reviews all disadvantaged, minority, and nontraditional applicants, while the third is responsible for Early Decision applicants.

About two-thirds of applications come from out of state, with over 3,600 applications received in 1999. Of that number, 420 received acceptances and 160 matriculated. Overall grade point average for the matriculants was 3.60, slightly above the national average, and MCAT scores were much higher than national norms. Females comprise a little over 40% of the entering class, and under-represented minorities total less than ten percent. The school has not achieved its internally established goals for minority enrollment (see below). Several programs exist to facilitate enrollment of minority and disadvantaged students. A modest combined baccalaureate-M.D. program exists but has suffered from declining interest and may be discontinued. The Medical Scientist Training Program offers the M.D. and Ph.D. degrees and is thriving, with 78 students currently enrolled.

The school has a cooperative agreement with the Sophie Davis Biomedical Program of the City University of New York to admit graduates of that program to advanced standing, and accepts five such students per year. Other candidates for transfer may be considered on a space-available basis, and in 1999 there were two such students, both of whom transferred into the third year from other LCME accredited schools.

B. Minority Affairs

In its transmittal letter following the 1993 survey, the LCME stated that "the rate of minority matriculation at NYUSM has been consistently lower than the national average enrollment rate. NYUSM consistently ranks in the bottom 20% of all US medical schools in the matriculation of minority students." The institution has taken a number of steps to respond to this concern since then. An Office of Minority Affairs and Student Services was created and an Associate Dean for Minority Affairs was appointed. The office includes an assistant director and an administrative assistant. Its charge was "to increase recruitment and retention of under-represented minorities to the school, as well as to address the continuum of issues from entry level to faculty appointment and retention". A scholarship of $600,000 per year was budgeted for minority students, and more recently the School received another three-year grant worth $110,000 from the New York State Department of Health**.**

Efforts to broaden the pipeline of under-represented minority students include the Salk School of the Sciences Program. The program is said to have broad medical school participation including members of the medical faculty. Currently 185 6th to 8th grade students participate, but the goal is to reach 600-650 students in the sixth to twelfth grades. The High School Fellowship Program is designed to attract bright high school students from disadvantaged backgrounds to medical and science careers. The program runs full-time during summer and once a week during the academic year. The program admits 45 students and has an applicant pool of over 230. The Office of Minority Affairs also designs and sponsors a workshop for all students during orientation week that seeks to enhance the cultural sensitivity of students.

Despite the above efforts, the number of under-represented minority students remains small, especially considering the percentage of under-reported minorities in the New York population. In a total student body of 676, there are 37 African-Americans, six Puerto Ricans, and 12 other Hispanics. The larger number of African-American students enrolled in the third and fourth years (compared to years one and two) reflects the admission to advanced standing of under-represented minority students from the Sophie Davis program of the City University of New York.

The number of under-represented minority faculty members is also slight. Less than two percent of African-American faculty and three percent of Hispanic faculty are tenured. Of those eligible for tenure, two percent are African-American and less than three percent are Hispanic. Similar figures apply to faculty not on the tenure track. There is a single Native American faculty member listed in the whole faculty. The disparity in minority representation among students and faculty compared to the surrounding population, particularly the patient population served by the school, is depressing.

Concerns of representatives of the Black and Latino Student Association (BALSA) were included as part of the student report. In addition to the school's poor record on recruitment of minority medical students, the BALSA group also noted the low number of faculty that were under-represented minorities, and insufficient instruction in health problems specific to minority populations. BALSA representatives also felt that students admitted through the Sophie Davis program were not sufficiently integrated into the NYU medical school population.

To its credit, the school has identified minority recruitment and retention as a major concern, shared across the spectrum of administration, faculty, and students. Although efforts to date have proved modest in expanding the numbers of minority medical students and faculty, there has been success in at least one school-related endeavor. The Sackler Program seeks to attract talented college students to biomedical fields. Since 1995, this program has been run by Dr. Joel D. Oppenheim, Associate Dean for Graduate

Studies. He has pursued an aggressive recruitment strategy resulting in a marked increase in the number of minority applicants to the Ph.D. and M.D./Ph.D. programs. The program received commendation from the NIH and has been used as a model for NIH summer programs.

C. Financial Aid

Tuition and fees at NYU (see financial aid data in Appendix) are slightly below the national median for private schools, and mean indebtedness of indebted graduates is well below the national median for private schools. Annual tuition increases have been less than three percent in recent years. Loans and scholarships are available in sufficient quantity to meet all student need, with scholarships accounting for roughly one-third of all financial support. Financial considerations have had no visible impact on student recruitment. The default rate on title IV student loans is low (two percent) and less than 1/3 of graduating students amass debt loads over $100,000. The financial aid office serves only medical students, and provides preadmission counseling**,** advice about specific financial aid programs, debt management and deferment counseling, and exit interviews. The office has a voice in tuition determination. Students are generally satisfied with financial aid services and debt counseling, although sentiment was expressed in the student analysis for broader dissemination of scholarship information.

D. Student Health Services; Personal Counseling

Student health care is available in a designated facility in the Tisch Hospital, with weekday office hours between 9:OOAM and 4:OOPM during which a nurse clinician is available. General internists are available one hour a day four days a week, and on call. Gynecologic care is available from a female gynecologist who is available for one hour two days a week. The health service tracks immunization schedules for all students and provides standard protocols for students regarding needle sticks and other injuries. Students are generally satisfied with the available services, rating it somewhat higher than their national counterparts on the AAMC Graduation Questionnaire.

Appropriate referrals are made for specialty services or for hospitalization in the New York University Medical Center. Health insurance is mandatory as a required student fee. The administration has been responsive to student input regarding the planned relocation of the new student health clinic to an accessible location.

An experienced senior psychiatrist has directed the student mental health service for some 20 years. Students are made aware of the availability of counseling and treatment as part of their initial medical school orientation. In addition, the primary care physicians and nurse practitioners in the student health clinic have sensitivity to mental health issues as they care for students with undifferentiated complaints. Referrals for mental health services go through the student mental health service director, who also provides short-term treatment in some instances. He participates in the third-year psychiatry clerkship. The associate dean for student affairs also provides psychological treatment in some instances. Students expressed concern that the providers of psychiatric treatment were members of the dean's staff and the psychiatry teaching faculty. While the providers and their services are valued and meet student needs, some concern was expressed that the potential for (inadvertently) compromising the confidentiality of personal counseling is heightened by this arrangement and may be dampening full utilization of the services. The survey team concurs.

E. Student Input

(See the student analysis in the Appendix.)

Student preparation for the accreditation visit was exhaustive and thorough, as noted earlier in this report. Students at NYU are, on the whole, quite complimentary of the educational program and the quality of student services. Their principal concerns, voiced in conversations with site visitors as well as the student analysis, concern the limited diversity of the student body and faculty, availability of appropriate educational and study space, crowded and sometimes low-quality student housing, and weaknesses in academic and career counseling. Students appear to be broadly satisfied with their participation in institutional activities as well as with availability of and access to the administration and faculty. The educational program is highly regarded, and the only significant concerns about the grading system were perceptions of subjectivity and grade inflation in clerkship evaluations. Student services received far more plaudits than criticisms. In summary, students are justifiably proud of this institution, but are not hesitant to speak out on issues of concern to them.

VI. RESOURCES FOR THE EDUCATIONAL PROGRAM

A. Finances

(See financial statements in the Appendix, as well as a comparison of current financial data with that of the prior survey in the earlier section on History and Setting of the School.)

Revenue Sources ($ in Millions)

Source	Fiscal Year 1998-99	% of Total 1998-99 Revenues	% of Total Revenues for all Private Schools*
Tuition & fees	$17.4	4.1%	5.1%
Government/university support	0.3	0.1%	1.4%
Grants & contracts (direct)	150.4	35.7%	25.1%
Indirect cost recoveries	43.9	10.4%	7.9%
Practice plan	84.7	20.1%	34.9%
Hospitals/clinical affiliates	49.4	11.7%	16.5%
Gifts & endowment	58.6	13.9%	5.5%
Other	17.0	4.0%	3.7%
Total revenues	$421.5		
Total expenditures	$433.3		

*Most recent (fiscal year 1997-98) data.

On January 1, 1998, the NYU School of Medicine was legally and administratively separated from the NYU Hospitals Center. Prior to this date the School of Medicine, Tisch Hospital and The Rusk Institute of Rehabilitation Medicine were organized as an administrative unit of New York University. All assets were owned by NYU. As a result of the 1998 agreement, Tisch Hospital and the Rusk Institute separately incorporated as a not-for-profit hospital corporation, assuming the hospital operations and liabilities formerly held by NYU. In July 1998, NYU Hospitals merged with Mount Sinai to form the Mount Sinai NYU Health system, a Health Services Organization (HSO). Fostering the academic mission is one of the seven major goals of this system.

Compared to other private schools in the U.S., NYU derives a comparatively greater proportion of its revenues from research and gift/endowment income, and less from clinical sources. Revised figures for major sources of revenues for the period ending 8/31/99 are included in the Appendix. This FAS reconciliation to the LCME report shows total FAS revenues of almost $408 million and total expenditures of $419 million, with an excess of expenditures over revenues amounting to $11.435 million, slightly lower than the difference reported in the LCME Annual Financial Questionnaire. In previous years, negative balances were adjusted internally through the combined hospital/school budget. As a result of the separation of the clinical enterprise from the medical school, the negative cash balances have become the responsibility of the school and the parent university.

Over the next five years, the school expects to correct its operating deficit. This will be done through reduction of expenses, expansion of existing programs, and development of new clinical and research opportunities. Capital for this will come largely through development efforts and investment of clinical partners.

A major financial concern has been the contract with Bellevue Hospital**.** It is estimated that nearly half of the current deficit is related to this contract. Income from the agreement was reduced to $45 million in 1998 and does not cover the cost of services provided. As a result, the school has aggressively negotiated a new affiliation agreement that substantially reduces these losses and improves the cash flow and net balances, more fairly compensating it for teaching and other services. The Tisch affiliation will provide the School with S30 million over the first 18 months, and another $25.4 million over the following four years. Over and above this, the HSO will pay the school $8 million annually for physician administration, supervision and teaching services.

In addition, the school has begun to implement a series of initiatives to enhance revenue and reduce expenses. These efforts include a major initiative to enhance research funding and expand the clinical practice. Some units have achieved the targeted seven percent reduction in expenses, but many units have had great difficulty in meeting this goal. Implementation of these initiatives is expected to achieve a positive cash flow for FY 2001.

Recruitment of new chairs in the Departments of Radiation Oncology, Medicine, Ophthalmology, Surgery, Radiology, and the Cancer Center is expected to greatly increase practice plan revenues, in conjunction with a projected consolidation of faculty practice plans. A new vice dean for clinical affairs has been appointed to help spearhead this effort. Also proposed is an increase in the dean's tax to five percent, which will enhance flexibility of resource allocation for the school.

With the formation of the University Physicians Network (UPN), an IPA, there is single signatory authority -for managed care contracting. UPN has joined with the HSO to form an MSO, and the MSO has contracted to date for 22 managed care contracts. This is expected to improve the financial performance of the practice plan. In addition, the merger of NYU Hospitals and Mt Sinai is expected to increase market share and enhance teaching opportunities for students.

A growth agenda for research is central to this economic plan. Multidisciplinary collaboration between basic and clinical sciences will be emphasized and new chairs are expected to enhance this effort. In addition, the school plans to recruit 77 new research faculty, and a new research facility is on the drawing boards. Funding for this effort will come largely through development efforts and university

support to help initial capitalization. A substantial portion of the $370 million needed has already been committed.

The operating losses incurred have not led to deterioration in research efforts, educational programs, or recruitment of students to the school. Although changes in physician reimbursement have affected many physician practices, there is a sufficiently large pool of volunteer faculty so that student teaching has not suffered.

Although there is a reasonable expectation that the school's financial plan will correct the operating deficits, there are many variables involved and careful attention to results will be critical. In particular, as the practice plan consolidation and clinical expansion occurs, community-physician relationships may be stressed. This merits special attention because of the high degree of commitment to teaching on the part of community physicians. Further, in the event that development efforts fall short or the contract with Bellevue is substantially less favorable than expected, the entire plan may need to be revisited. Increasing financial pressures could jeopardize the educational programs. While this scenario is unlikely, the school's financial prospects are sufficiently uncertain to warrant careful observation.

B. General Facilities

(See the summary of general facilities in the Appendix.)

Facilities generally range from adequate to excellent in supporting the educational, clinical, and scholarly missions of the institution, which has demonstrated its commitment to meeting these needs and planning for future needs. Renovations and additions since the last LCME review addressed some major concerns. The need for more research and clinical teaching space was relieved by construction of the Skirball Institute for Biomolecular Medicine, opened in 1994, which provides superb new research space (120,000 sq. ft.) and features seminar and conference rooms used for both clinical and basic science teaching. A new building for translational research is high on the dean's agenda. Research space is currently adequate to provide an environment that is conducive to high faculty and student research productivity. The school and the HSO are trying to acquire land and funds for a new clinical facility that will include additional teaching space to relieve the present space shortage in Tisch Hospital.

The need for more small-group and laboratory teaching space was addressed by the renovation of the Coles Medical Science Laboratory Building, creating the Dr. Martin L. Kahn Teaching and Learning Center on the second and third floors. The space accommodates the whole class in flexible, small-group, state-of-the-art facilities for laboratory, conference, and computer-assisted learning. Lecture halls have been modernized. Student study space was expanded in Alumni Hall, which now accommodates 57 students. The library has 35 additional seats for study, and the school plans to build a new library with further expanded study space in the future. The school considers creation of additional research space and expansion of library facilities as urgent needs if it is to maintain its academic reputation, and the site visitors concur.

NYU policy stipulates provision of housing at a reasonable rate for all students who request it -- and it does so. Approximately 80% of the student body live in Rubin and Greenberg Halls and the lower floors of the Skirball Tower. However, students often share single rooms, suites, or studios under crowded conditions, and sit at the bottom of the food chain in competing with residents, fellows, staff, and young faculty for housing. Since the last LCME visit some improvements have been made in Rubin Hall, but it

remains a rather dismal facility quite out of keeping with the quality of other facilities under the school's authority. The school is exploring land acquisition and funding for new housing units for post-doctoral fellows, thus freeing housing that can be renovated for medical students.

C. Faculty

(See the Appendix for tables of basic science and clinical faculty, and faculty salary information.)

NYU has a large medical faculty by any measure, with 1,392 full-time faculty (189 in basic science departments excluding Pathology, and 1,203 in the clinical departments). There are 2,827 part-time faculty concentrated mostly in clinical departments. There has been modest growth in full-time basic science faculty since the previous survey visit, but the clinical full-time faculty number has greatly expanded from 573 in 1992-93. An expanded network of affiliated hospitals is reported as the prime cause of full-time faculty expansion. Faculty numbers appear adequate to support the education, research and clinical service missions of the school.

Individuals appointed to the tenure track are classified as full-time faculty regardless of the source or size of their compensation. All other faculty appointments are classified as part-time (the school does not use the term "voluntary"). Career tracks are not provided for full-time clinical faculty members, but appointments may carry an unmodified title or be modified with the term "clinical." When used as an academic rank prefix (e.g., Clinical Professor of Pediatrics) it indicates a position without tenure implications. When used as a departmental prefix (e.g., Professor of Clinical Pediatrics) it indicates a full-time position on the tenure track. The latter has led to faculty perception of a two-class system of full-time appointments. The tenure probationary period for medical school faculty appointed at the rank of assistant professor is ten years, and must be followed by promotion to associate professor to gain tenure. Explicit written standards for promotion and tenure do not exist. Appropriate processes for evaluating candidates for promotion and/or tenure are utilized. The number of tenure track appointments is not limited. The Faculty Handbook in defining tenure states that it should carry "a sufficient degree of economic security," but a specific financial obligation to tenure is not identified. University-wide faculty policies, including conflict of interest and policy and process for the termination of tenure for cause, are published in the 1999 NYU Faculty Handbook.

There is sufficient faculty input into governance through participation on the school's Faculty Council and an array of standing faculty committees, as well as through general faculty meetings (five such meetings were held in 1998-99). Both teaching and research activities serve as mechanisms to promote interaction between basic science and clinical faculty members.

School-wide faculty development activities in teaching skills are provided by the Office of Medical Education, and in research grantsmanship by the Office of Grants Administration and Research Services. Individual departments often provide additional programs to assess and enhance faculty skills in medical student teaching and evaluation. The Office of Medical Education has started to offer workshops for residents to improve their student teaching and evaluation skills in clerkships. The school has an award from the Macy Foundation to strengthen physician communication skills via an integrated student and resident curriculum and faculty development.

Five years ago the Faculty Council and dean appointed a Women's Issues Committee charged with compiling and tracking data on rank, advancement, and compensation of female faculty. A Women in

Medicine and Science Committee has been in place for a number of years, and it fosters career development through a number of internal and external activities. Several students who met with the survey team commented on the lack of diversity among the faculty and noted it as an impediment to increasing diversity in the student body. The self-study acknowledges a need to strengthen efforts to recruit more female and under-represented minority faculty, and to assure equity in career advancement for those groups.

D. Library and Computer/Information Resources

(See Library Resources and Computers and Information Technology in the Appendix.)

The Ehrman Medical Library is explicitly charged to support the medical school and hospital. It also administers the Environmental Medicine library at Sterling Forest, the NYU Downtown Hospital Library, the library of the Hospital for Joint Diseases/Orthopaedic Institute, and the library of the NYU College of Dentistry. There is a five-person leadership team including a director, three associate directors, and an associate director for the College of Dentistry library. In addition, the library staff of 46.5 FTEs includes 13.5 librarians, four managers and administrators, 20 support staff and 8 FTE student assistants. Aggressive management of the library inventory of texts and journals has made room for high-use items. The library also makes heavy use of interlibrary loans. The 1998-1999 budget for its collection was $1,156,201, but was reduced by school-wide budget cuts of seven percent in 1999-2000 to $982,198.

Of necessity, the library is heavily committed to the employment of digital technology. Examples include extensive use of interactive service delivery and the library's own Intranet. Moreover, library users have access to over 1,500 electronic journals, 75 electronic textbooks, 30 commercially developed educational products and web sites, and 55 databases. This effective use of information technology notwithstanding, limitations of the physical plant continue to be a problem, particularly with regard to study space. While the library's total space has not increased since the 1993 survey, the effective study-seating capacity has more than doubled. Recently, development of new study space in the medical center has helped to decompress some of the space pressures on the library.

The focus of the professional staff has been on providing the best professional service within the limitations of available space. Helpful data *in this regard include the following 1997-98 rankings relative to national comparisons: fifth of 133 in reference questions answered, eleventh of 136 in gate count, and 117th of 136 in square footage. These measurements result in a gate count to square feet ratio of 27.54:1 compared to a national average of 7: 1. While the evolution toward virtual function has been remarkable, and in spite of renovations to improve study space, total space problems noted by the 1993 survey remain, particularly in the context of increasing on-site traffic over the same period. There is, however, guarded promise for decompression of these needs in the near future. A new 60,000 square foot health sciences center library, open to all members of the academic medical community as well as the public, is contemplated for new space. The lease is currently being negotiated with New York City.

There has been considerable interest in computer-assisted instruction (CAI) that goes back to the 1987 establishment of the Hippocrates Project, a multimedia development unit of the dean's office. The Hippocrates Project was expanded into the Academic Computing Division in 1997. This division now includes, in addition to leadership, 13 full-time staff. Examples of administrative computing include computerized grading with tailored statistical reports for course directors, computerized course surveys, advisory support, and monitoring of standardization of experiences across clerkships. The latter is in

early stages with Ambulatory Care and Pediatrics as initial programs. Grant support has been forthcoming to support some of these projects. A subcommittee of the school's Curriculum Task Force Committee has undertaken a comprehensive review of computer-assisted learning throughout the medical school curriculum. In addition, the most recent organizational development has been the establishment of an IT Leadership Group which grew out of the LCME self-study process. The IT Leadership Group's task is to produce a vision for information technology and a strategic plan. Based on its work the school has initiated a search for a Chief Information officer.

All students are required to own a computer. The school makes loans available to those students needing financial assistance for their purchase.

The LCME self-study task group has developed an ambitious set of recommendations for expansion and improvement of the use of information technology in the educational setting. The investment and commitment reflected by the long-standing work in this area suggests that these recommendations are realistic and to a large extent achievable, given the human and financial resources that are available. Moreover, a pragmatic approach to evaluation of the outcomes and value of such initiatives appears to be a priority of the faculty, further strengthening such a conclusion.

E. Clinical Teaching Facilities

(See descriptions of clinical facilities in the Appendix.)

There is a broad range of clinical facilities that provide a wide spectrum of clinical educational experiences. The NYU Medical Center includes the School of Medicine, Post-Graduate Medical School, Tisch Hospital, and the Rusk Institute of Rehabilitation Medicine. Major clinical affiliates of the school include Bellevue Hospital Center, the Veterans' Affairs Medical Center, Hospital for Joint Diseases/Orthopaedic Institute, Gouverneur Treatment and Diagnostic Center, Lenox Hill Hospital, NYU Downtown Hospital, and North Shore University Hospital.

Several recommendations have resulted from the self-study, including an increase in small group teaching space at Bellevue and Tisch, and better computer access, library facilities and audiovisual capabilities at Tisch; these recommendations are being or have been addressed. Ancillary and support services have increased significantly at each site. Students have been relieved of non-educational work. In short, the rich array of clinical health care facilities and patient populations to meet the needs of the educational program continue to be an institutional strength in the survey team's judgment.

Clinical affiliates visited by the survey team include the following:

Bellevue Hospital Center, located near the school, has modernized much of the 785-bed facility. Students are assigned to clerkships in all major disciplines. Space and facilities for student teaching are at a premium, and efforts are underway to improve this. The average daily census of over 90% assures that there is a rich and diverse teaching patient population. Students have access to all patients. This is largely a resident-driven system with increasing faculty oversight and supervision. The hospital library has access to databases for literature searches and has had limited hours which are expanding as the University assumes oversight. Student notes in patient charts reviewed by the survey team showed evidence of appropriate review and countersignature by resident physicians.

Gouverneur Diagnostic and Treatment Center is the largest ambulatory health care facility in New York City, with approximately 300,000 visits annually. A facility of the NYC Health and Hospitals Corporation, it has recently been consolidated with Bellevue Hospital**.** It provides primary care services in Medicine, Pediatrics, and Obstetrics and Gynecology. It also provides special care programs including HIVAIDS, diabetes, and asthma. The Center affords the setting for a portion of the four-week ambulatory care clerkship, and has served as a site for faculty development for a number of strategies related to teaching in the ambulatory setting. In addition to good clinical facilities with ample examination rooms, facilities for educational programs include video interviewing, computer linkages to the medical school library, educational software, a library, and conference rooms.

Tisch Hospital Center for many years has been the private, non-profit university hospital for the medical school. Previously owned by the University, Tisch and the Rusk Institute became separately incorporated as the NYU Hospitals Center in January of 1998, and in July 1998 became part of Mount Sinai-NYU Health System. NYU clinical department chairs serve as service chiefs at Tisch and have responsibility for all research, education and clinical care in their discipline areas. Tisch has 726 active beds, approximately 3 1,000 annual admissions with an occupancy rate of 88 percent, and approximately 25,000 emergency room visits per year. It serves as a teaching site for required clerkships in medicine, surgery, obstetrics/gynecology, and neurology. All of the usual amenities for students are available, but the school's self-study notes a need for more small group/conference rooms, increased access to computer and library facilities, and improvement in audiovisual capabilities.

The **Veterans Administration Medical Center** is a 201 -bed facility that has been affiliated with the medical school since 1973. It is used for student education in all clerkships except pediatrics and obstetrics/gynecology. The hospital has over 5,000 admissions per year and more than 300,000 outpatient visits. It provides a full range of facilities for medical students, including a library, computer terminals, teaching and study areas, call rooms, and food service.

VII. GRADUATE EDUCATION IN THE BASIC SCIENCES

(See data on graduate students in basic science departments in the Appendix.)

Graduate programs in basic sciences are under the administration of the Sackler Institute of Graduate Biomedical Sciences, a division of the NYU Graduate School of Arts and Sciences. The Institute has a Graduate Advisory Committee that oversees governance and educational and administrative matters. Each year the Graduate Advisory Committee conducts a self-study of the Institute's programs. A change from the last LCME review is that the graduate programs are no longer departmentally based. Students enter through a department or program but may choose any area and advisor in the Institute after one year.

The Institute offers the Ph.D. degree and, via the Medical Scientist Training Program, the M.D./Ph.D. The master's degree is conferred on all students after they complete the preliminary examinations, usually after two years. Data for this year show 218 students enrolled in the Ph.D. program, 140 Ph.D. candidates, and 55 M.D./Ph.D. candidates, with 17 Master's and 33 Ph.D. degrees awarded. First-year students are funded by the school; later, students are funded by other mechanisms.

The Institute has shown a remarkable increase over the last ten years in recruiting minority students as well as all applicants to its programs -- a 250% increase in total applicants for the Ph.D. program, a

1000% increase in minority applicants, and a 200% increase for M.D./Ph.D. program. One highly effective effort has been the Sackler Summer Program for attracting talented college students into biomedical fields. Of the students who participated during 1990-1998, three-fourths applied to a medical school or Sackler program, over half were accepted, and a third matriculated.

The graduate program has a positive effect on medical education. Through the program, a large number of seminars are available to medical students. Graduate students take only a few of the medical school's basic science courses and do not teach in medical school courses. However, graduate students play an important role by tutoring medical students who are having academic difficulties and by interacting with them in laboratory projects. Resources and teaching effort in the graduate program do not compete with medical education.

VIII. GRADUATE MEDICAL EDUCATION

(See table of residents and fellows in the Appendix.)

Since 1995, the school has participated in a Graduate Medical Education Consortium with its clinical affiliates. The medical school-sponsored programs that constitute this Consortium include the Bellevue, Tisch and Rusk Institute, NYU Downtown, Hospital for Joint Diseases, Lenox Hill, and Brooklyn Hospital Center programs. The institutional agreement for graduate medical education is with the School of Medicine. A standing Committee on Graduate Medical Education meets quarterly and recently has focused heavily on planning to accommodate workforce issues.

Acknowledging the imbalance in residency training that tilts toward specialists, the committee nevertheless recommended that Tisch Hospital withdraw from the Greater New York HCFA Demonstration Project to reduce residency numbers. However, the Consortium, along with the VA, have in fact reduced 83 positions from a base of 980 positions. In addition to these positions, another 30 positions have been targeted for reduction.

There is a commitment to teaching residents how to teach that is dependent on departmental leadership for its implementation. The efforts are tracked centrally more than they are coordinated.

IX. CONTINUING MEDICAL EDUCATION

(See information on Continuing Medical Education in the Appendix.)

The New York University Post-Graduate Medical School is the primary vehicle for continuing medical education. It adheres to ACCME standards and is fully accredited by that body. Programs are broadly targeted for primary care and specialty physicians, and utilize traditional and new technologies. Dr Robert Soberman, Associate Dean for Postgraduate Programs oversees this function. Two areas serve as the present focus of the school's CME efforts: course directors have assessed needs and will seek to identify corresponding learning needs of participants, and a more active approach to providing CME via modem technological tools will be pursued. There is little coordination or integration of CME with medical student education, except for modest student participation in CME offerings during clerkships.

X. RESEARCH

(See summary of research support in the Appendix**.)**

The medical school at NYU is research-intensive, and in 1998-99 held $115.2 million in research grants and contracts ($77.2 million in direct costs) of which $93.7 million were federal awards. The school also had $5.7 million in training awards, with $3.8 million of that amount from federal support. The school has access to approximately 335,000 feet of research space including laboratories in the teaching hospitals. Necessary infrastructure elements (animal program, grants management, core facilities) are in place and generally of high quality. Periodic faculty development programs on various aspects of grantsmanship are provided by the Office of Grants Administration and Research Services. The school has standing committees on medical ethics and conflict of interest. There are appropriate, widely
distributed policies and procedures for conflict of interest and misconduct in scientific research, and trainees receive well-organized formal instruction in research ethics.

The majority of research is departmentally directed and based, but there are six NIH-funded, independent and interdisciplinary research centers that together make a major contribution to the school's research enterprise. They are the General Clinical Research Center located in Bellevue Hospital; the Nelson Institute of Environmental Medicine in suburban New York; the Center for AIDS Research; the Alzheimer Disease Center; the Kaplan Comprehensive Cancer Center; and the Skirball Institute of Biomolecular Medicine. An Office of Industrial Liaison has been created to promote collaboration between academic research and industry and to facilitate technology transfer.

NYU's research reputation and resources are a factor in student selection of the school. NYU students rank considerably above the national average in terms of participation in research activities (79% of class), authorship of research reports (58 % of class), and pursuit of research and academic careers (NYU ranked fourth nationally in number of graduates holding medical school faculty positions). Students are encouraged to elect research activities, and three formal research programs are offered. These include the Medical Scientist Training Program, with 80 MD/Ph.D. candidates presently enrolled; an Honors Program with a required thesis that supports student research in a basic science laboratory during summer breaks and elective time (approximately 40 entrants each year); and the Independent Study Program, where students work with a preceptor during the third and fourth years to explore a subject in detail (10- 15 students a year complete a thesis in this program).

XI. MEDICAL SCHOOL DEPARTMENTS

A. Principal Basic Science Departments (See summary listing of basic science departments in the Appendix.)

Basic Science Faculty Numbers and Percent Time Teaching Medical Students

Department	Total Faculty	Full-Time	Tenured	% Time Teaching Medical Students
Biochemistry	19	16	11	20
Cell Biology	39	37	15	22
Environmental Medicine	88	45	19	5
Medical & Molecular Parasitology	16	14	5	20
Microbiology	40	24	6	20
Pharmacology	24	19	7	15
Physiology & Neuroscience	23	19	12	20

Basic Science Department Expenditures, (Fiscal Year), by Funding Source*
($ in Millions)

Department	Research and Training	Medical School Sources	Total Expenditures+
Biochemistry	2.28	1.47	3.79/0.237
Cell Biology	2.30	3.65	6.27/0.169
Environmental Medicine	8.51	1.75	10.94/ 0.243
Medical & Molecular Parasitology	2.40	1.04	3.63/0.259
Microbiology	2.85	1.45	4.78/0-199
Pharmacology	2.91	1.55	4.51/0.237
Physiology & Neuroscience	3.12	1.82	5.20/0.274

*Data on expenditures from 1998-99 LCME Part I A Questionnaire.
+Total expenditures for the department followed by total expenditures per full-time faculty member.

Biochemistry is one of the smaller basic science departments with 19 members, 16 of them full-time and I I tenured. Its chair was recruited to the position in 1980 after having served in the Radiobiology Department at Yale. About two-thirds of the department's annual budget of $3.8 million is derived from research and training. Departmental funding is characterized as tight, but there is no evidence yet that

financial pressures are distorting the departmental mission. Research occupies 60% of faculty members' time, with 29 papers published in refereed journals during 1998-99. There is no formal mentoring program in place for junior faculty, but the department expects to adopt a program modeled on that used by the Skirball Institute. Enrollment in the graduate programs of the department is stable. The principal resource problem noted in the database is aging and outdated equipment in departmental core facilities for research.

Medical student teaching occupies 20% of faculty time, mainly in first-year courses. The department asserts that present faculty have "reached their limit" in time allotted to teaching, and any further demands in this arena will detract from funded research activities. Students give the major course run through this department (Molecular Biology, Human Genetics, and Biochemistry) satisfactory ratings.

Cell Biology is one of the larger basic science departments, with 37 full-time faculty members, 15 of them tenured. Its chair, who has held the position for 29 years, is strongly committed to medical education and rewarding faculty for their accomplishments in teaching. Data from the LCME Annual Financial questionnaire indicate total funding of approximately $6.3 million. Medical school support for faculty salaries amounts to $3.65 million, with slightly more than one-fourth of that amount charged to grants and contracts. This relatively low percentage indicates ' substantial university support for research and teaching, despite some pressure on faculty to generate a larger percentage of their salaries from grants. The newly renovated Coles laboratory and teaching building provides excellent and flexible space for small-group teaching, anatomy labs, and histology labs, all equipped with state-of-the-art audiovisual and computer equipment. The department is well positioned for space and continued successful recruiting, though more shared small group-teaching facilities may be needed in the future.

About 60% of faculty time is devoted to research, with a wide range of topical specialization. Besides successes in extramural funding, faculty accomplishments also include invitations to speak at institutions and at national and international meetings; service on editorial boards; publication of 132 papers in refereed journals in the most recent reported year; and active participation in professional organizations and academies.

The department is responsible for four medical school courses (gross anatomy, histology, embryology, and cell biology in medicine). It also offers two electives in gross anatomy, though no students took these courses in the last academic year. The percentage of time dedicated to medical student teaching (22%) is only slightly greater than that in most other basic science departments. Medical students are satisfied with all of the courses taught primarily by Cell Biology faculty, and rate Gross Anatomy and Histology particularly highly. The faculty have demonstrated a dedication to teaching through the development of an extensive and varied on-line curriculum for the departmental courses. Students participate in small-group discussions and some independent learning, and the Gross Anatomy/Embryology block has been particularly successful in clinical correlation of the subject matter.

Environmental Medicine is the largest basic science department, with 45 full-time and 43 part-time faculty members; 19 of them are tenured. The chair, also a Professor of Pharmacology, has held his position for seven years and directs the Nelson Institute of Environmental Medicine. The faculty teach one required medical student course (Epidemiology, Biostatistics & Preventive Medicine), accounting for about 5% of their time. Teaching of allied health students and graduate students and fellows accounts for another 10%.

Departmental faculty devote about 60% of their time to research and are heavily funded, with almost 85% of the department's $11 million 1998-99 expenditures supported through research and training grants. The department has five research program areas, including environmental carcinogenesis, molecular and genetic toxicology, systemic toxicology, human exposure and health effects, and epidemiology and biostatistics. Besides funding, the success of the faculty in scholarship is demonstrated by their publications and their service on NIH study sections, editorial boards, and prestigious national committees, as officers and members in professional societies, and as invited speakers to institutions and meetings around the world.

According to the database, the department needs additional space for research and animal housing in both of its locations. Faculty are well-equipped for research, and recently the Sterling Forest campus purchased chip technology. Faculty who work at the Sterling Forest site are attracted to the quieter location and the more extensive space.

Microbiology has 24 full-time faculty and 16 part-time faculty; most have Ph.D. degrees, but four hold M.D.'s, and one has both. Only six department members have tenure. The chair was appointed in 1990. The majority (65%) of faculty time is committed to research. There were 50 papers published in refereed journals in 1998-99. About 30% of faculty time is committed to teaching, two-thirds of it specifically to medical student education. All full-time faculty teach and participate in the planning and evaluation of the educational offerings. Four of the faculty represent the core teaching group and do the majority of the teaching. There is no structured mentoring program in the department to assist junior faculty with career development, but the department is considering the adoption of a mentoring system similar to that in place at the Skirball Institute of Biomolecular Medicine.

The department receives about a third of its funding from the school. This partially covers salaries and teaching costs. Research generates the remainder of the department's $4.8 million budget. The department has a total of 16,645 square feet of space, of which 11,617 is for research labs. Extensive renovations have been completed to improve research facilities.

The goals and objectives of the department are to conduct research and teaching in microbiology, molecular genetics, and regulation of gene expression. A learning environment stressing the integration of the disciplines of microbiology, immunology and parasitology is sought. The department has averaged 25-35 applicants annually to its doctoral program, and graduates about four or five students each year. Approximately 20% of its graduate students are M.D./Ph.D. students. To enhance applications from qualified U.S. applicants, the department has conducted summer research programs for college sophomores and juniors, actively recruited minority students, and engaged in aggressive local recruitment. of college students.

Medical and Molecular Parasitology comprises 14 full-time faculty and two part-time members; five of them are tenured, and six hold either the M.D. or combined M.D./Ph.D. degrees. It has the only female chair in the medical school, and she has occupied that position since 1984. Twenty percent of faculty time is spent in medical student teaching. Thirteen candidates for the Ph.D. were accepted between 1994 and 1998. Junior faculty members are eased into increasing responsibilities for medical student teaching, and mentoring activities for career development appear to be generally informal.

The department is primarily supported by extramural grant funds. NIH and other federal sources like NSF fund most research. Of the $3.6 million expended in 1998-99, $2.4 million was from grants and

contracts. Only a small percentage of faculty salaries come from departmental funds. A major emphasis of the research in the department is the characterization of the immunological nature of resistance to malaria.

The department is assigned over 16,000 square feet of space, including 11,349 square feet for research. The department has recently increased its administrative space and space for students and fellows**.**

Pharmacology is one of the oldest departments in the nation, established in 1902. It has a total of 24 faculty members, 19 full-time and five part-time. The chair has occupied that position since 1989. He has also been the Director of the Skirball Institute of Biomolecular Medicine since 1998, but is expected to relinquish this post soon. Total departmental revenue is approximately $4.5 million, of which about $1.55 million are funds from the school and about $2.9 million are in grants and contracts. Current space is considered adequate, but there is need for more space to continue to recruit outstanding candidates.

Faculty spend about 30% of their time teaching (15% medical students and 15% other), 55% for research, and 15% for administration. The department has an excellent research record, indicated by their 60 peer-reviewed publications in 1998-99, ten books and book chapters, and $2.9 million in research and training expenditures. Faculty are members of several professional organizations and peer editorial boards. Their main research interests include growth and differentiation, development and pathology of the nervous system", and "abnormal functions of several key hormones. Students are able to participate in laboratory research programs and projects through the institution's Honors Program.

The department has an active graduate program with 16 Ph.D. students and six M.D/Ph.D. students**.** There are 17 postdoctoral fellows. The pharmacology course has been reorganized recently under the leadership of a new course director. It now utilizes an organ-based approach, administered in concert with the pathophysiology and pathology courses. Student satisfaction rating decreased initially with course restructuring but has since improved.

Physiology and Neuroscience has 19 full-time (12 tenured) and 4 part-time faculty members. The chair is a distinguished neuroscientist and member of the National Academy of Science who has held the position for 24 years. The great majority of faculty expertise and scholarship is in the area of neuroscience, and department members have achieved substantial national recognition. In 1998-99 the faculty published 107 journal papers and completed 29 books or book chapters. A new graduate program in neuroscience was initiated in 1997, and currently there are 8 graduate students and 6 postdoctoral fellows in departmental graduate programs. Faculty members spend approximately 35 percent of their time teaching, with 20% of their time specifically devoted to teaching medical students. Both junior and senior faculty members participate in medical student teaching. There is an informal system of feedback from course directors, other departmental faculty, and students to enhance teaching and evaluation skills.

The department's expenditure budget in 1998-99 was $5.2 million, including $3.1 million in research grant expenditures; the department received $5.2 million in total research awards (including indirect cost returns), virtually all from federal sources. Approximately 15,000 net square feet of space is allocated to the department, including approximately 10,000 net square feet in research labs. The department expresses concern that growth and development may be hindered by a shortage of laboratory and office space, but the teaching facilities are judged to be sufficient.

B. Major Clinical Departments with Core Courses and Clerkships (See summary listing of clinical departments in the Appendix.)

Clinical Faculty Numbers and Percent Time Teaching Medical Students

Department	Total Faculty	Full-Time	Tenured	% Time Teaching Medical Students
Medicine	1058	277	67	14
Neurology	137	55	14	10
Obstetrics & Gynecology	254	95	22	10
Pathology	131	89	28	15
Pediatrics	301	115	21	20
Psychiatry	890	109	28	6
Surgery	230	128	32	14

Clinical Department Expenditures, {Fiscal Year), by Funding Source*
($ in Millions)

Department	Practice Plan	Grants & Contracts	Departmental Sources	Medical School Sources	Total Expenditures+
Medicine	7.43	26.11	6.51	2.12	42.45/ 0.153
Neurology	1.47	6.62	1.90	1.06	11.10/ 0.202
Obstetrics & Gynecology	19.07	3.19	0.89	1.69	24.96/ 0.263
Pathology	2.09	14.16	0.53	2.55	19.39/ 0.218
Pediatrics	5.27	10.55	3.47	1.67	21.08/ 0.183
Psychiatry	1.00	15.90	6.13	1.83	24.85/ 0.228
Surgery	0.00	3.41	4.03	0.58	8.52/0.067

*Data on expenditures from 1998-99 LCME Part IA Questionnaire.
+Total expenditures for the department followed by total expenditures per full-time faculty member.

The **Department of Medicine** has traditionally played a central role in teaching students that spans all four years of the medical school curriculum. This is the largest department in the school, with 277 fulltime and 781 part-time faculty. Dr. Saul Farber retained the post of departmental chair even while serving as dean over several years. He is stepping down as chair after a long and distinguished career at the school, and a new chair has been recruited and will assume leadership in the spring of 2000.

Funding is reported as adequate. The department's most recent budget of approximately $42.5 million derived mainly from grants and contracts ($26 million), with practice plan income generating another $7.4 million. Additional funds for the department include a Macy Foundation grant of $2.1 million for the Division of Primary Care Internal Medicine (this is a three-school consortium grant), as well as funds generated through CME courses and philanthropic gifts. There is considerable variability in the funding support provided full-time and part-time faculty.

The department has an outstanding research record, with $26 million in grants and contracts, 387 publications in peer review journals, and 105 books and book chapters. Research space is described as being at a premium, with well-funded divisions such as cardiology, infectious diseases and immunology, and rheumatology describing their space as adequate, whereas other divisions are somewhat more limited. Several faculty members are nationally recognized for their leadership or membership in professional organizations, on editorial boards of peer review journals, and in National Institute of Health (NIH) study sections and VA Merit Review Boards.

According to the database, faculty effort is divided across teaching (23% total, including 14% for medical students and nine percent for residents, fellows, and others); research (33%); clinical service (39%); and administration (five percent). Although faculty are stated to have a strong commitment to teaching, it is acknowledged that increasing time is being required to generate clinical revenue, which may compromise their teaching commitment.

Teaching is viewed as an obligation of all full-time and part-time faculty, and this ethic appears central to the culture of the department. It is noteworthy that both the Vice-Dean and Associate Dean for Medical Education are faculty members in the Department of Medicine. The faculty plays an active role in designing and teaching courses that span the full four years of the curriculum. The medicine and ambulatory care clerkships offered under departmental aegis are consistently among the highest rated clinical experiences of students. Space for teaching and small-group learning is stated as being in need of improvement, and based on discussions and observations during the survey visit it is evident that teaching and small-group learning space are not optimal. The post graduate program includes a fully accredited residency program with a total of 122 residents, 75 clinical fellows, and 14 postdoctoral. fellows (working in research laboratories). In addition to grand rounds, the department sponsors a number of CME courses.

Neurology has 55 full-time (14 tenured) and 82 part-time faculty dispersed among seven hospital divisions (four hospitals used for residency training and five for medical student clerks) and in eight subspecialty sections. The chair has held his position for nine years and was formerly a professor of neurology at Harvard and the Massachusetts General Hospital. Research occupies approximately 7.5% of faculty time, and department members published 104 journal articles and 16 book chapters in the most recent reported year. Faculty members spend 25 percent of their time teaching residents and fellows, and 10% teaching medical students. The fully accredited residency program filled seven of eight first-year slots and 22 of 23 total positions in 1998-99. There is a core teaching faculty in the department, with feedback on teaching skills provided in oral and written form by students and residents. Senior faculty and the department chair conduct an informal mentoring program for Junior faculty members.

In 1998-99, the department's expenditure budget was $11.1 million, including $6.6 million in research grant expenditures and $3.0 million in clinical funds. Department space totals approximately 6,500 net square feet, 2,400 of it in research labs. Faculty recruitment is under way to fill clinical lacunae; for example, in acute care neurology. Another departmental need is for neurological intensive care facilities, not now available for the clinical service. Teaching space and audiovisual support at Tisch and Bellevue hospitals are characterized in the database as deficiencies. Recent recruitment, and a plan for faculty expansion, is taxing office space and there is no laboratory space for additional basic research programs.

Obstetrics and Gynecology is a thriving department with 95 full-time and 159 part time faculty members. Fifteen hold Ph.D. degrees, and seven have both an M.D. and Ph.D. Twenty-two faculty members have tenure. The chair, Dr. Charles Lockwood, was appointed in 1995. In 1998-99, total expenditures for the department were $25 million, derived mainly from practice plan revenues ($19 million) and grants and contracts ($3.2 million). The faculty group practice has four core subspecialty units and all four have had increases in patient volumes, practice revenues and research productivity. The *in vitro* fertilization program has been growing and currently generated $15 million for the department.

The goals of the department are: a financially successful practice plan to enhance programmatic development; state of the art care; development of a women's health unit conducting classical and molecular research; and the development of the Center for Reproductive studies. Scholarly activity has increased markedly in recent years, with the number of refereed publications per year increasing from less than 20 in 1994 to 36 in the most recent year.

The faculty commits approximately 55% of its time to clinical activities, 30% to teaching (10% to medical student teaching), and 10% to research. Senior investigators in the department act as the core of a mentoring system to provide guidance to junior faculty in the selection of projects and development of research activities. Department members who rank in the upper fifth percentile of the teaching faculty are available as mentors for other faculty who desire assistance in enhancing their teaching skills. The department has a total of 25 residents and 4 fellows and has filled all residency positions for the five-year period reported in the database. In the last two years, the residency program has matched from its top 10 to 20 choices.

Although resources in general are adequate for the department, there is a need for an additional 5,000 square feet for research labs and 3.000 square feet for administrative space. This has been committed by the administration. The chair has done an excellent job of revitalizing the department through new program development and commitment to education.

Pathology has 89 full-time and 42 part-time faculty members. Its chair has held that post since. 1974. There is a good balance of faculty activities, with 25% of faculty time devoted to education, 40% to research, and 30% to service. The department ranks fifth nationally among departments of pathology with regard to NIH funding, which is over $15 million annually. It can boast of 136 papers published in refereed journals during 1998. The department conducts a substantial residency program (28 positions) and admits four to five graduate students annually to its graduate studies program in Molecular Oncology and Immunology; a total of 26 graduate students are currently enrolled. A training grant provides support for nine pre-doctoral students and a like number of post-doctoral fellows.

Medical student teaching is led by a core of some half-dozen faculty who provide course design, oversight and faculty development, while an additional 30 faculty make substantial contributions. Another 30 faculty provide 1 or 2 lectures. Help in developing and enhancing teaching skills comes mainly from the Office of Medical Education.

Nearly 3/4 of the department's operating budget derives from grants and contract, with practice plan revenues and medical school support supplying most of the remainder. Senior faculty are the key players in assisting junior faculty develop their careers, through an informal system of support that is becoming increasingly highly structured. Principal concerns of the department expressed in the database revolve

around adequacy of physical facilities in the Medical School Building and clinical facilities for diagnostic pathology at Tisch Hospital.

Pediatrics has enjoyed stable leadership over recent years, with its chair having served in that capacity since 1989. There are 115 full-time and 186 part-time faculty. There is a good balance among education, research, and patient care, with a strong commitment to the academic focus of the department. While there is increasing pressure to be productive clinically to maintain the department's financial health, the self-evaluation of the department estimates clinical service at 10% of the faculty's time commitment, with research at 20% and education of students and trainees at 50%. The department chair questioned these proportions during the site survey, suggesting that teaching made a smaller contribution and clinical care and research made larger contributions to faculty time.

There is a strong commitment to research indicated by $10.5 million in grants and contract funding, and 140 peer-reviewed scientific publications in 1998. The department enjoys a long-standing reputation for its research focus on infectious diseases, reflecting the leadership of its present and previous chairs. However, the research portfolio has broadened to reflect the leadership of the division chiefs.

Overall department expenditures for 1998-99 totaled $21 million, with half of the revenues derived from grants and contracts. Practice plan income contributed roughly 25% of the department's budget and is the largest financial growth area according to the database. A thriving residency program has consistently filled all available positions over the last five years. A departmental Faculty Promotions Advisory Group oversees annual reviews that are a major component of career development activities. The clerkship director also holds the title of Director of Medical Education and is responsible for providing feedback on teaching skills to faculty and house staff. Structured workshops for enhancing faculty teaching skills were implemented in the Fall of 1996. Space problems are the predominant concern noted in the departmental database.

Psychiatry. Second only to Medicine in total size among the clinical departments, the Department of Psychiatry has 890 faculty members, 109 of them full-time. Twenty-eight are tenured. The department reports that six percent of faculty time is devoted to medical education, 52.4% to research, and 7.2% to clinical service. Departmental expenditures reflect those proportions, with nearly $16 million of the total annual budget of $25 million expended on grants and contracts, and $1 million on the practice plan. The chair has held his position for 24 years. He reports that the department budget is based heavily on soft money but is adequate; he indicated that the department will be looking into additional clinical activities to enhance its budget.

Departmental faculty published 241 papers, 5 books, and 15 chapters in the most recent reported year. Members serve on editorial boards, national committees, and specialty examining boards. The major research programs are centered around affective, organic, and schizophrenic disorders, aging, dementia, electrophysiology, neurochemistry and endorphins, violence in psychiatric disorders, neuroimaging, and attention deficit and other disorders. Faculty have offices and labs in most of the affiliated clinical sites and space is considered adequate for research and clinical teaching at Bellevue and the VA Hospitals. At Tisch Hospital, office and teaching space is short.

The department sponsors three undergraduate courses (Doctor/Patient, Behavioral Science, and Psychopathology) as well as the psychiatry clerkship. The head of the department's education division, who directs all of these activities and is deeply involved in each, is commended for their high quality.

The very strong dependence of the department on volunteer faculty raises a concern that the pressures of managed care will cause some of these faculty to decrease their effort in the education program, particularly in small group teaching. It also appears to contribute to a sharp division between clinician-teachers and researcher-teachers that bolsters the department's view that "triple threats are a fantasy." Residents are used extensively for teaching medical students in all three courses and in the clerkship. The department has a teaching elective for residents, and also a plan in which the residency director and medical student education director collaborate in supervising and teaching psychiatric residents how to work with medical students.

Surgery counts on the contributions of 230 faculty members, 128 of them full-time and 32 tenured. An interim chair has served since 1998; recruitment of a new chair is imminent. Most of the department's $8.5 annual budget is supported either through departmental sources or grants & contracts. There are no major financial pressures at the moment. Clinical service occupies 50% of faculty time, while research accounts for 15%. Major research concentrations include cancer studies and angiogenesis. Departmental faculty published over 100 papers and 30 books or book chapters in 1998-99.

Medical student teaching represents 14% of faculty effort. The surgery clerkship gets generally good ratings from students. Residency programs are fully accredited and have been filled or nearly filled in recent years. Departmental issues noted in discussions with the survey team included a desire to increase research, augment staff at Bellevue and the VA, and address a perceived shortage of critical care surgeons.