

September 25, 2014

Annual Review
Academic Year 2014
Department of Medicine

The Department of Medicine's 2014 Academic Year was a year of extraordinary accomplishments amidst continuing challenges to increase the impact in all of our core missions. Despite challenges in the research funding environment and the increasing demands on health systems and providers, the department continued to excel relative to our peers and achieved substantial improvements in our performance relative to past years. Indeed, our research program achieved the highest funding level in our department's history. Our educational programs attracted outstanding trainees and achieved very strong reviews. Our financial and administrative performance was also very positive. The major areas of achievement are summarized below in gratitude and admiration for the faculty, trainees, and staff in our department.

Research:

The Department has internationally renowned research programs in a number of areas and is overseen by Barbara Corkey, Ph.D. Vice Chair for Research. Examples of strong programs include cardiovascular biology, pulmonary inflammation and immunology, endocrinology, arthritis, addiction-alcohol/substance abuse, genetics, obesity, diabetes, cancer biology, clinical epidemiology, computational biomedicine, preventive medicine, osteoarthritis, amyloidosis, scleroderma, auto-immune renal disease, tuberculosis, HIV/AIDS, and sickle cell disease.

The department's research faculty secured \$116.3 m in grant awards in AY 2014 - a remarkable **49% increase compared to AY 2013 and the highest award amount in the department's history!** The expansion of research funding in the department is partly attributable to the crediting of the Framingham Heart Study grant from NHLBI to the department, but primarily due to substantial gains in research funding across the breadth of the department. Although we have recruited a number of outstanding new research faculty over the past five years, the department's research faculty FTE has decreased by 12% over this period. The increase in total funding therefore reflects, on average, a striking increase in funding per funded investigator. Despite a very challenging funding environment, the department's research faculty cover 87% of their salary costs with outside funding – substantially higher than in most basic science departments.

The department has continued its goal of supporting our research faculty by awarding **thirteen pilot grants** in 2013-14 and **bridge funding** to six faculty members.

The DOM's established research cores continue to grow: Analytical Core, Metabolic Phenotyping Core, Animal phenotyping Core, Cell Imaging Core, Metabolomics Core, Biostatistics Core, and High Throughput Screening Core (HTS). In 2013-14, the **number of faculty using cores increased from 145 to 212 (46% increase)** and included

a substantial number of faculty from outside the Department of Medicine. Under the direction of Tom Balon, Ph.D., we continue to evaluate the impact and use of the cores to determine how best to meet the needs of our research community.

The Department of Medicine's **Research IT** group, under the direction of John Meyers, Ph.D., developed and deployed a novel high security, HIPAA-compliant environment for the storage of unstructured identifiable patient data in research settings. The high security tiered storage system has become a model for the entire University. **Over 1500 separate users now use at least one system in the department's central infrastructure. The server hosting capabilities are supporting 137 faculty members' existing or pilot grant supported research that require research-grade, high security HIPAA-compliant virtual data storage.**

Under the direction of Katya Ravid, Ph.D., the department's **Evans Center for Interdisciplinary Biomedical Research** continued to be very successful in supporting interdisciplinary research initiatives. A total of **175 faculty** and over **100 graduate students** and post-doctoral fellows participated in the Center's programs, including **28** faculty from basic science departments, **14** from the Dental School and School of Public Health, **25** from the Charles River Campus of BU, and **25** collaborators from outside BU. Four Affinity Research Collaboratives (ARCs) were supported in AY 2014: *Etiology and Pathogenesis of Oral Cancer*, *Computational Genomic Models of Environmental and Chemical Carcinogenicity*, *Nanotheranostic Platforms for Cancer and Vascular Disease*, and *Metabolic Diseases and Insulin Resistance: Studies in Patients Undergoing Bariatric Surgery*. The center is also involved with several new courses and Masters Programs (Biological Core Technologies and Principles of Nanomedicine). **Since inception in 2009, faculty in the ARCs have secured 59 grants and produced 270 publications.**

Clinical Program:

Quality and Safety:

BMC is meeting its goal **Observed/Expected inpatient mortality** of 0.84 or below, achieving the highest ranking on this important quality measure among academic medical centers in Boston. In view of the large size of the Medical Service, the Department of Medicine has been an important driver of this improved performance. Under the direction of Karin Sloan, M.D., Director of Patient Safety and Quality, the department has instituted changes in resident supervision, expanded the hospitalist program, led efforts to reduce the time for appropriate antibiotic use in hospital acquired sepsis, and instituted several new protocols designed to standardize care in the MICU.

A wide range of clinical quality measures were implemented in each specialty of the department under the direction of the Director of Clinical Quality and Section Quality Directors. The performance of the department in patient satisfaction relative to peers continues to be below expectations and will be an area of intensified effort in AY 15.

A longitudinal **curriculum in Quality Improvement and Patient Safety** over three years has been instituted for all residents in the department's residency training program. In addition, a QI/PS Pathway has been implemented for residents with a particular interest in this area.

Clinical Operations:

Under the direction of Alice Jacobs, M.D. Vice Chair for Clinical Affairs, the clinical activity in the department was remarkably strong in AY 14. Faculty **wRVU's increased by 2.6% and ambulatory visits increased by 5.5% relative to AY 13**. Discharges from the inpatient medical service were flat relative to AY 13, but were 3% above budget. The average length of stay increased by 8.5% to 5.24 days. **Access** for new patients across the department's ambulatory practice within 14 days increased from **63% to 70% in AY 14**. Most measures of revenue cycle management also improved in AY 2014: clinical collections increased by 6.1%, reimbursement per wRVU increased slightly, and both charge denials and the gross collection rate improved in AY 14.

Improvement in the practice infrastructure is a compelling need in several areas of the department's clinical practice. In AY 14, clinical pharmacists assumed a more active role in the selected specialty clinics to improve medication management. Pilot projects were instituted in the department's specialty inpatient services to evaluate strategies to improve the discharge process and ultimately to reduce avoidable readmissions.

The department's primary care practice achieved **Level III Medical Home certification** and had an extraordinarily successful year in both faculty retention and recruitment of outstanding faculty. The practice has incorporated principles of team based care, population health management, integration of behavioral health, chronic disease management, and initiatives to improve both provider and patient satisfaction.

Education

Medical Student Education:

During the 2014 academic year, the DOM has continued to adapt to an evolving and challenging educational landscape to provide high quality education across the BUSM curriculum. Despite budgetary constraints, the increasing demands of providing high quality patient care, and the downsizing of inpatient services, the department continues to make major contributions to the educational mission.

Major areas of DOM involvement in student education are in several areas of the pre-clinical education, especially the DRx second year course, Medicine 1 (third year inpatient) and Medicine 2 (fourth year ambulatory) clerkships, Geriatrics clerkship, Sub-internship and Advanced Acting Internship, and 4th year electives in the subspecialties of the department.

As the census of inpatients at BMC declined over the past two years, student learning in Medicine 1 has expanded to MetroWest Medical Center in Framingham, Roger Williams Medical Center, Providence, RI and Jordan Hospital, Plymouth. These affiliations complement longstanding sites- BMC and West Roxbury VA Hospital. The experience of the students at the community affiliates will be intensively monitored in the coming years to insure proper supervision and a rich learning environment across all sites.

The clerkship consistently has scored at or above the national mean on the AAMC Graduate Student Questionnaire but declined slightly in AY 14. The evaluations from students of the core clerkships are extremely strong in the areas of teaching and clinical experience, and less favorable regarding the grading policies.

The structure of the Advanced Acting Internship team was altered in AY 14 to create a **smaller team with more individual attention for the students** from the attending and resident. The reviews of this new team structure have been extremely favorable.

Residency Training Program:

The residency program recently established at least six tracks for residency training designed to enhance the rigor in focused areas: *Urban Health, Global Health, Clinician Educator, HIV, Patient Safety and Quality, and Preventive Medicine*. The response of the residents to these new tracks has been overwhelmingly positive. A grant from HRSA secured by Drs. Berz and Liebschutz and approval by ABIM will allow the department to create a **four year combined internal medicine/preventive medicine residency program** starting in AY 16.

The selectivity of the residency program continues to materially increase. The number of applicants needed to fill the residency slots has **decreased by 23% over the past three years** despite a much stronger applicant pool. The performance of the residents on the standardized In Training Examination also reflects the stronger pool and the excellent training experience. For example, the **intern class mean scores in AY 14 were at the 87th percentile relative to the national benchmarks** and the **PGY2 residents performed at the 73rd percentile**.

Diversity of Fellows and House Staff:

Despite the remarkable diversity of our patient population and aggressive recruitment efforts, the department's residents and fellows lag in the number of under-represented minorities. We have single digit percentage URM's in the residency and fellowships over the past several years including AY 2014. This low number of URM's in our training programs is a great disappointment and the subject of renewed efforts to diversify our trainees.

Graduate Programs:

The department oversees three graduate programs: *Nutrition and Metabolism, Molecular*

and Translational Medicine, and Genetics. The programs had **69 Ph.D. students and 14 Masters degree students enrolled in AY 14.**

Faculty Development and Diversity

The department maintained an active and evolving array of programs in faculty development and diversity led by Emelia Benjamin, M.D., Vice Chair for Faculty Development and Robina Bhasin, M.Ed., Director of Faculty Development. The **Faculty Development & Diversity Seminar Series** provided professional development for faculty across the Department of Medicine and BU Medical Campus through 13 monthly seminars that included presentations by DOM faculty members on topics such as education, diversity, leadership, and mentoring, among others. The **Academy for Faculty Advancement**, BUMC's structured longitudinal career development program for early career faculty successfully completed its third year with 18 faculty participants (8 from the DOM). The **Academy for Collaborative Innovation & Transformation (ACIT)**, BUMC's mid-career faculty development program, was developed through a grant from the American Council on Education/Sloan Foundation, to meet the needs of mid-career faculty. The program began in late AY 2014 and has 16 faculty participants, 5 of whom are from the DOM. **Chief Residents' Mentoring Program** provided interactive workshops for Chief Residents two times a month from July through May. The sessions focused on topics such as team building, difficult conversations, academic writing, avoiding burnout and planning an academic career. **A Grant Writing Workshop** was also offered over 8 sessions and enrolled 12 faculty from the department. Dr. Benjamin and Ms. Bhasin reviewed the CV's of over 40 faculty to provide career guidance as well as instituted a formal process for **career consultancies** to provide faculty with career advice from an array of senior faculty and peers.

Faculty Development Grants are available to DOM faculty members who seek opportunities to enhance their professional development beyond what BU can offer. Eighteen grants to faculty were funded in AY 2014. In addition, two Pilot grants in medical education were awarded in AY 2014.

Departmental Administration

The department recruited Maureen OSullivan as Director of Finance for the department in AY 2014. The department's financial performance in AY 14 was much stronger than anticipated with a **\$1.8 m positive variance to budget and positive net revenue**. The department's financial management also met the institutional and external audit standards. The department recruited Elizabeth Wilson as Director of Research Administration late in AY 2014 to consolidate and improve grants management and financial performance of our research portfolio.

In summary, the Department of Medicine had a remarkably successful year in AY 14. As we look to the future, we are mindful of both the privileges and obligations of our profession. Society will continue to require more value in each of our core missions. As throughout our 100 year history, the creativity, resiliency, and resourcefulness of the members of this department will empower us to meet this challenge.

Respectfully submitted,

David Coleman, M.D.
Chair, Department of Medicine