Within Mount Sinai, we are working to identify the genomic causes of prostate cancer, pinpoint the most lethal cancers at the time of diagnosis, and bring new treatment protocols to patients, particularly those with advanced disease.

Our multidisciplinary approach to providing patients with outstanding care includes the work of our colleagues in The Charles Bronfman Institute for Personalized Medicine, the departments of Pathology and Radiology, The Tisch Cancer Institute, Icahn Institute for Genomics and Multiscale Biology, Conduits–The Institutes for Translational Sciences, and the Translational and Molecular Imaging Institute.

These collaborative efforts have enabled us to make strides in single-cell genomics and imaging, and helped us differentiate between indolent and aggressive cancers so we can provide robust surveillance, targeted biopsy, and effective focal therapy.

Through my own work in robotic prostatectomy, I have helped develop a traction-free and nonthermal approach to sparing nerves and preserving continence.

The medical field’s ability to treat even the most advanced genitourinary cancers using modern imaging and multimodality approaches, including radiation and drug therapies, has improved, as well. There are now six approved drugs for castrate-resistant metastatic prostate cancer, and trials at Mount Sinai and other major medical centers are assessing the effectiveness of immunotherapy for both bladder and kidney cancers.

This Chair’s Report highlights the recent research accomplishments of our faculty, details our efforts to better understand the needs of bladder cancer patients throughout the trajectory of their disease, and examines the cost effectiveness of the newest prostate cancer drugs, which is essential in helping patients manage the financial burdens imposed by their treatments. If we are to provide truly comprehensive care, we must address the challenges and quality-of-life issues that our patients face.
The Cost-Effectiveness of New Treatments for Advanced Prostate Cancer

Six therapeutic agents are currently available to treat metastatic castration-resistant prostate cancer (mCRPC), a state where the cancer typically spreads to the bones and other organs following hormone-ablative therapy. Each of these treatments—docetaxel (Taxotere®), sipuleucel-T (Provenge®), cabazitaxel (Jevtana®), abiraterone (Zytiga®), enzalutamide (Xtandi®), and radium-225 (Xofigo®), gives seriously ill patients hope where there was very little in the past. But, the economic burden of these treatments is significant. Experts predict that U.S. expenditures for prostate cancer are expected to rise to more than $15 billion in 2020.

Specialists from The Mount Sinai Hospital’s Department of Urology and The Tisch Cancer Center undertook a study to determine the cost effectiveness of these treatments. Simon J. Hall, MD, Associate Professor, Urology; Matthew Galsky, MD, Assistant Professor, Urology, Associate Professor, Medicine, Hematology and Medical Oncology; Alan Moskowitz, MD, Professor of Health Evidence and Policy; and resident Matthew Pollard, MD, presented their findings at the American Urological Association’s annual meeting in San Diego last spring.

They found that the average survival benefit associated with sequencing the therapies was 20.1 months. Total cost of the individual therapies, including leuprolide (a hormone that decreases testosterone levels) and denosumab (a bone-strengthening agent), was $417,962. Cost-effectiveness was defined by the ratio of the change in costs to incremental benefits—incremental cost-effectiveness ratio—(ICER). The ICERs for the drug paradigms ranged from $154,237 (sipuleucel-T (Provenge®)) to $271,460 (for the entire sequence), all beyond the societal willingness-to-pay threshold.

The Mount Sinai team used cost estimates and survival data to perform cost-effectiveness analyses of various combinations of a six-drug treatment paradigm comprising sipuleucel-T, abiraterone, docetaxel, enzalutamide, cabazitaxel, and radium-225. Cost and survival estimates for the protocols were based upon the estimated number and length of treatments for each therapy using dosing schedules or progression-free survival data from published clinical trials, billing records, and Medicare reimbursement values.

The cost-effectiveness totals were then compared to a societal willingness-to-pay threshold of $100,000 per life-year saved. (This was based on the rates that society is currently willing to pay for relatively high-cost medical interventions such as renal dialysis for end-stage renal disease and lung-volume reduction surgery.)

“With experience in utilizing these treatment options, it is possible that improved survival will be reported and market competition will reduce the costs,” says Dr. Pollard. “The treatment paradigm will continue to change, especially as new agents are approved. Importantly, a better understanding of the quality-of-life outcomes will help to guide judicious use of available treatments.”

Note: The team has indicated several limitations to the study. First, there is no data indicating the response rates and duration of responses when these therapies are used in sequence or in combination. Second, although sipuleucel-T has been scrutinized due to its high cost, its effect as an immune therapy may be more profound than the other drugs.

The Unmet Needs of Patients with Bladder Cancer

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At diagnosis, many patients reported insufficient information about the three types of urinary diversion treatments available to them and their impact on sexual function. In addition, the patients did not receive information about obtaining support for the emotional impact of a cancer diagnosis.

While the patients received training for using stoma appliances and catheters after surgery, Dr. Mohamed’s team found that little attention was paid to their psychological needs at that time. Instead, many patients relied upon family members or caregivers for support, and the Internet for information.

For as long as six years during the survivorship phase, patients reported depression and changes in sexual function, but did not seek professional assistance.

“Repeated screenings for emotional distress and appropriate referrals to prevent long-term anxiety and depression that may impede recovery are critical,” says Dr. Mohamed. “An effective support provision plan should follow changes in patients’ needs along the disease continuum.”

Currently, Dr. Mohamed is conducting a randomized controlled trial to examine the efficacy of an educational intervention that she designed to address the informational and supportive care needs of patients. She will be looking at whether needs vary by age, gender, and the type of treatment the patient receives.