Prostate Cancer
A Multidisciplinary Approach to Diagnosis and Management

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With an emphasis on multidisciplinary collaboration and decision-making, this practical resource reflects the extraordinary advances in the treatment of prostate cancer during the past five years. Approximately thirty international, leading-edge investigators describe the most current evidence-based approaches to prostate cancer treatment. This book provides a comprehensive view of the entire spectrum of prostate cancer management from initial screening through novel and experimental treatments that have the potential for a major impact on practice.

The book first reviews fundamental issues including epidemiology, screening, risk reduction, diagnosis and pathologic characterization, staging, and imaging. This includes strategies for improving the accuracy of PSA screening and an update on controversies surrounding the ISUP Modified Gleason Score. The book covers novel molecular and genotype profiling in prostate cancer, including morphometric and systems pathology. Detailed information is provided on radiographic imaging for diagnosis and staging. The treatment sections of the book correspond to the staging of disease. The treatment of localized disease addresses the range of multidisciplinary management options including a discussion of prostate cancer’s impact on the quality of life. A detailed review of multimodal therapies (medical, surgical, and radiologic) addresses the treatment of localized advanced disease, and coverage of advanced metastatic prostate cancer reviews current management options including a range of promising novel and experimental agents. The book also discusses counseling the high-risk patient. Several chapters incorporate models of care delivery, patient navigation for multidisciplinary care, genomic and risk assessment, and comparative effects of research in treatment decision-making. The book is designed as a management text for all health care professionals who provide care for prostate cancer patients as well as patients, families, and advocates. Extensive references offer opportunities for additional study.

Key Features:

- Delineates a practical, concise approach to multidisciplinary management of prostate cancer
- Provides a wide range of perspectives and expertise
- Written and edited by an international, multidisciplinary team of prostate cancer specialists
- Focuses on such key issues as special populations, screening controversies, patient counseling, and quality of life
- Includes discussion of important emerging topics such as gene profiling and targeted therapies and comparative effectiveness data
Prostate Cancer
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To my parents, Zachary and Roslyn Dicker, who encouraged me to pursue my passion of science forty years ago.
Fred and Judith Hochstadter, who later in my life were supportive of my career in medicine, research and oncology.

Carolyn, Michal, Shimshon and Yehuda. Thank you, love you, you’re the best!!!!!!

Adam P. Dicker

To Pam, Ryan and Liam Kelly who continue to support my career in medical oncology—Thank you! With Love.

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Ed Trabulsi
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Series Foreword

In this fifth volume of the series, Current Multidisciplinary Oncology, devoted to prostate cancer, it brings me great pleasure to introduce practicing clinicians to a new resource that will aid in the multidisciplinary approach of solid tumors.

Drs. Adam Dicker, William Kelly, Nicholas Zaorsky, and Edouard Trabulsi have put together a cadre of highly respected thought leaders as contributors on the multidisciplinary approach to prostate cancer.

Over the past two decades, a myriad of advances in the diagnosis and treatment of prostate cancer have occurred. These advances include, but are not unlimited to, diagnostic molecular tools that may aid in predicting a response to certain treatment approaches and/or providing a guide of a prognostic outcome for certain patients.

Our distinguished co-editors have compiled more than 50 chapters on this disease, authored by an international contingent of leading-edge investigators, into well-defined sections.

Prostate cancer is one of the most common malignancies in the world affecting men and hence warrants intense efforts to find a cure. In recent years, investment of resources to help further understand the nature of this malignancy has increased.

It is clear that Drs. Dicker, Kelly, Zaorsky, and Trabulsi represent some of the best academic, forward-thinking oncologists to commit their careers to eradicating prostate cancer. Their collective vision and ability to assemble an outstanding group of investigators in the field have provided a very high-quality product that will be a useful resource to busy clinicians as well as those along various stages of the learning spectrum. I’m sure that you will enjoy this innovative and easy-to-read volume and as you look for guidance in the multidisciplinary approach of your patients with prostate cancer.

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Preface

Prostate cancer is the second most commonly diagnosed cancer among men globally, with more than 1.1 million new cases each year. In the United States, 233,000 men are expected to be diagnosed in 2014, and an American man’s lifetime risk of prostate cancer is 1 in 6. With the introduction of genomic diagnostics and novel therapeutics, the past 5 years have seen an explosion in the amount of new data and opportunities for clinical benefit to prostate cancer patients. This book, a volume in the series Current Multidisciplinary Oncology, is designed to provide a comprehensive view of the entire spectrum of multidisciplinary management of prostate cancer.

The chapters in this book are arranged in a logical progression from screening and prevention to diagnosis, treatment and surveillance, similar to other books in the series. Dr. Leonard Gomella, a urologist who was the first to advocate multidisciplinary care for prostate cancer patients over two decades ago, has contributed an introduction that provides a macro view of the field over the past 50 years and puts into perspective where the treatment of prostate cancer has been, what has been accomplished, and where future challenges remain. The subchapters comprising Chapter 2 cover the epidemiology of prostate cancer, with in-depth analysis of the global burden, incidence, mortality, risk factors, physical activity, smoking, antioxidants, and the impact of diet and obesity. The controversial area of screening is covered in depth, with Drs. Gerald Andriole et al and Dr. Otis Brawley providing opposing views. There are also discussions of improving the accuracy of PSA screening and an update on the International Society of Urological Pathology (ISUP) Modified Gleason Score and its controversies. Advances in molecular pathology using cancer genomics have now entered the clinical realm with at least three companies offering diagnostic genomic tests and are addressed in the subchapters comprising Chapter 5, covering novel molecular and genotype profiling in prostate cancer, including morphometric and systems pathology. The current uses of radiographic imaging for diagnosis and staging are also discussed including detailed information on MRI, ultrasound, and nuclear medicine.

The treatment sections of the book correspond to the staging of disease. For low-risk localized disease, the use of active surveillance—the concept of less is more—is covered in Chapter 7. Other chapters cover the surgical treatment of prostate cancer from different perspectives—radical prostatectomy, laparoscopic radical prostatectomy, robotic radical prostatectomy, and surgical training. Radiation therapy using external beam radiation therapy for the treatment of low risk adenocarcinoma of the prostate is covered in Chapter 10, with additional discussions of hypofractionated radiation therapy, stereotactic body radiation therapy, protons and brachytherapy, either low dose rate (LDR) or high dose rate (HDR). Also included is coverage of the general principles of ablative focal therapies, vascular-targeted photodynamic therapy, laser, irreversible electroporation, and hyperthermia, a field that has grown considerably. An appreciation that quality of life (QoL) is a critical component of any therapeutic option is addressed in separate chapters that evaluate QoL for surgery, androgen deprivation, external beam radiation therapy, and brachytherapy.

Full coverage of the options and optimal treatment of patients with metastatic disease including hormone sensitive and metastatic castrate resistant prostate cancer. The full array of treatment options for metastatic patients includes an understanding of hormone escape, the use of androgen synthesis blockade, immunotherapy and chemotherapy. As prostate cancer frequently metastasizes to the bone, special emphasis for these patients is given to provide awareness of pharmaceuticals to reduce skeletal-related events, a major advance and novel radiopharmaceutical that provides for the first time a survival advantage.

A number of chapters incorporate models of care delivery, patient navigation for the multidisciplinary care of prostate cancer patients, genomics and risk assessment and comparative effectiveness research in treatment decision-making.

This book reflects the editors Drs. Dicker, Kelly, Zaorsky, and Trabulsi who work together at Thomas Jefferson University in a truly multidisciplinary manner. The book is designed as a management text for all
health care professionals who provide care for prostate cancer patients including medical oncologists, radiation oncologists, surgeons, radiologists, pathologists, nurses and other allied health professionals, students, residents and fellows in training, prostate cancer researchers, as well as patients, families and advocates. The prostate cancer thought leaders who have contributed to this volume have offered their considerable expertise to provide the most current evidence-based approach, including extensive references, to provide a valuable tool designed to enhance evaluation and management of prostate cancer patients.
Acknowledgments

The editors would like to thank the leadership at Thomas Jefferson University (Health is all we do) who helped us combine a sophisticated patient-first, multidisciplinary care of genitourinary cancer patients with high-impact science. The editors are grateful to Dr. Charles Thomas, Jr. for his scholarly vision and encouragement, and Mr. Rich Winters and Ms. Lee Oglesby of Demos Medical Publishing for editorial guidance and timeliness. Finally, we are indebted to our patients and colleagues who contributed their time and knowledge toward this effort.
Epidemiology, Screening, and Diagnosis
Introduction: The Multidisciplinary Approach to Prostate Cancer

LEONARD G. GOMELLA

One only needs to scan the table of contents of this book to appreciate the inherently complex nature of counseling and treating a patient with prostate cancer today. As recently as the late 1970s if a patient was believed to have prostate cancer, a simple prostate biopsy, often performed transperineally, was the diagnostic procedure of choice. No blood test existed to help detect early disease. Treatment was only based on the clinical stage. This simple treatment approach was due to the limited options available. If the prostate cancer was localized, radiation or surgery was the monotherapy choice with only orchiectomy or estrogen therapy available for advanced disease.

Today there are many more factors to consider in the prostate cancer decision-making process. This starts with an informed decision around screening an asymptomatic man for prostate cancer. If prostate cancer is diagnosed, should it even be treated? Patients who are appropriate candidates for active surveillance (AS) need a detailed discussion concerning the risks and benefits of that relatively new approach. If a decision is made for active treatment (AT), many additional factors need to be considered. These include the cancer characteristics (grade, prostate-specific antigen [PSA], histologic characteristics, clinical stage), imaging results, overall health and age of the patient, the beliefs and desired outcomes of the patient, family, and provider, and a decision between all competing treatment options. The evergrowing array of surgical, minimally invasive, and radiation-based therapies all have advantages and disadvantages with the long-term implications of some of these newer therapies unknown. In a relatively short period of time, basic science discoveries, completed clinical trials, new technologies, clinical observations, and advances in drug development have forever changed the nature of diagnosing and managing all phases of the prostate cancer care continuum.

PROSTATE CANCER IN THE 20TH CENTURY

Until the 1980s, prostate cancer was a relatively ignored disease that seemed to only gain interest when it afflicted a family member or a close friend. Some of this was due to societal values that were about to change. In addition, the work by Huggins and Hodges in the 1940s that identified prostate cancer as being hormonally responsive had been the last major breakthrough in prostate cancer (1). The field of prostate cancer was about to enter the mainstream and move ahead. This came about due to the evolution of our collective impressions of cancer and thanks to a series of key scientific discoveries in the early 1980s. Dr. Patrick Walsh’s pioneering work on refining the radical prostatectomy, the discovery and development of PSA as a marker for prostate cancer, the expansion of prostate brachytherapy, the introduction of injectable luteinizing hormone–releasing hormone analogs, and the transrectal ultrasound-directed biopsy are some of the more prominent discoveries that began to change the face of prostate cancer.

About 20 years ago, I was fortunate to work with Philadelphia Inquirer science writer John Fried to produce the first book written for the lay public that specifically addressed the issue of prostate cancer. Recovering From Prostate Cancer, published by Harper Collins in 1993, led the way for dozens of other books that took prostate cancer from the back pages of men’s health publications to the prominence on their covers (2). Since our first publication that focused on the topic, the greatly expanded portfolio of prostate cancer books for the general public has been authored by prominent physicians and surgeons as well as celebrities and ordinary citizens.

Beyond the important scientific discoveries noted, there is more to the story of how prostate cancer came into the public eye. To gain perspective on how society’s perception of cancer in general and prostate cancer specifically changed by the 1990s, the following excerpt from Recovering From Prostate Cancer provides some insight:
There was a time when cancer was a taboo topic. When prominent people died of it, their obituaries invariably said that they had passed on “after a long illness.” As recently as twenty years ago, many doctors did not tell their cancer patients that they had the illness. When one family member was afflicted by the disease, the relatives talked of it in whispers.

In the 1970s cancer began to come out of the closet, no longer kept there by a lingering feeling that it was a “dirty” disease, something to be ashamed of. That emergence, though, was not a complete one. Cancers of the reproductive tract or of parts of the body associated with sex, even into the late seventies, were talked about only reluctantly. It was not until prominent women began to make it known that they had fought breast cancer that this touchy topic was found fit for talk shows and magazine articles. But Betty Ford, the former first lady, and others like her did not go public for the sake of seeking sympathy. They did it to help make women aware that breast cancer was a leading killer of women and that regular checkups, including mammograms, could help save lives.

Despite the example set by women, another major killer, prostate cancer, eluded public (and even private) discussion until the 1990s, this even though the male cancer takes a toll that is far behind the one breast cancer takes on women. One result of this reluctance to bring prostate cancer out into the open has been that research aimed at curing it has received relatively little financial support. Federal funding for breast-cancer research exceeded $70 million in 1989. Money for prostate cancer investigation came to a paltry $9.5 million. Another consequence of the hush-hush way in which prostate cancer has been approached is that many men still do not understand that once they reach fifty, they should have regular physical exams that include checkups for the presence of prostate cancer. Appallingly, some studies have shown that many doctors, because men are embarrassed by the prospect of submitting to the rectal exam that will give the physician access to the prostate gland, don’t press them to undergo the procedure.

But change is in the air. In May 1992, the news that Linus Pauling had prostate cancer made the front pages of many newspapers. In fact, by 1992 a host of other prominent men had also let it be known that they had prostate cancer: Robert Dole, the senator from Kansas; Frank Zappa, the musician; Robert Penn Warren, the nation’s first poet laureate; Joseph Papp, the eminent theater producer; and several United States Supreme Court justices, including John Paul Stevens, Harry A. Blackmun, William J. Brennan, and Lewis F. Powell (2).

A review of the table of contents of Recovering From Prostate Cancer reveals how much progress we have made in this cancer the last 20 years. The concept of screening asymptomatic men for prostate cancer using PSA and rectal exam was just beginning. The same year our book was published (1993), the American Cancer Society made its first recommendations on the use of PSA to detect prostate cancer (3). The digitally directed ("digital" referring to the index finger) prostate biopsy was still commonly used with transrectal ultrasound, something that all urologists were increasingly incorporating into daily practice. Only the most basic surgery and radiation comprised our armamentarium for localized disease. However, now injectable daily and monthly agents with or without oral androgen receptor blockers could be used for androgen ablation in metastatic disease. Chemotherapy was hit or miss and was not even considered a viable option except in the most extreme end-of-life situations. It was also around that time that the alarm bells began to sound as deaths from prostate cancer began to peak.

During the 1990s, intense debate raged in the medical community as to the superiority of one treatment modality over the other for localized prostate cancer. No one debated the use of hormonal ablation for cases of metastatic disease although there were minor skirmishes (early vs. late, monotherapy vs. combined androgen blockade) that are still with us today. However, for localized cancer, it was radical prostatectomy versus standard radiation (external beam or brachytherapy) with surgeons and radiation oncologists locked in a dogmatic battle (4). Often it was only patients not considered to be surgical candidates and those with significantly bulky locally advanced disease that surgeons would refer for radiation. Some of the earliest randomized clinical trials were just beginning to take shape in the early 1990s involving radiation oncology, the hormonal treatment of advanced disease, and the earliest attempts to study prostate cancer chemoprevention and screening.

- PROSTATE CANCER IN THE 21ST CENTURY

Fast forward to 2014; what was once fairly simply in the diagnosis and treatment of prostate cancer has become incredibly complex for both the patient and the practitioner as evidenced by the numerous topics covered in this book. In some respects, those of us who work in the field of prostate cancer have become victims of our own success. We have developed our screening techniques to the point where we are diagnosing more and more small and clinically unimportant cancers. This has contributed in part to the backlash against routine population-based screening for prostate cancer (5). The recent unprecedented development of new drugs, molecular diagnostics, and surgical and radiation advances are becoming commonplace in the treatment of prostate cancer. Newer tests such as genomic assays and specialized imaging have proven useful although the experiences are still very early and insurance coverage can be problematic.

The cost issues surrounding these advances in the management of prostate cancer are also often subject to debate.
and often criticism. Are we getting our money’s worth for prostate cancer care? Philipson et al. reviewed per capita spending in European countries for different cancers including prostate cancer over a 16-year period (6). They noted that U.S. cancer patients experienced greater survival gains than their European counterparts even after considering higher U.S. costs. The additional survival gain was highest for prostate cancer, estimated to be $627 billion, with the findings not driven solely by earlier diagnosis.

What is clear is that throughout the last 20 years, the death rate has declined and the quality of life of men with all stages of prostate cancer has dramatically improved. Much of the improvement can be readily attributed to the medical advances noted earlier. What may not be readily apparent is the new emphasis on improved communication and coordination of care of men with prostate cancer that appears to play a role in improving outcomes.

Medical oncology as a discipline has more to offer men with advanced prostate cancer than ever before with at least five new therapeutic agents specifically approved for metastatic castration-resistant prostate cancer since 2010 (7). Many of these new and pending prostate cancer therapies are based on sophisticated investigations by basic scientists who appreciate the clinical implications of their translational research efforts. So-called “Dream Teams” embody this forward thinking concept (8). Surgeons and radiation oncologists are working more closely together to present the best treatment options to men with localized disease, with each field increasingly recognizing the advantages and disadvantages of their specific modalities. The rigidly held beliefs of each specialty in the superiority of their modality have given way to numerous collaborative efforts. This coordination often combines the skills of each practitioner such as in the use of prostate brachytherapy or recommending adjuvant radiation therapy following radical prostatectomy. Joint investigations and publications focusing on important questions in prostate cancer have begun to appear, such as the American Urologic Association and American Society for Therapeutic Radiation Oncology soliciting the input from all specialties and publishing joint papers and issuing recommendations on the treatment of localized prostate cancer and on the use of postoperative radiation therapy (9, 10). Groups such as the National Comprehensive Cancer Network (NCCN) meet several times a year to update treatment guidelines of all stages of prostate cancer with multidisciplinary input into all recommendations (11). Combining therapies to improve prostate cancer outcomes is perhaps best illustrated by the numerous clinical trials that support the use of neoadjuvant and adjuvant androgen ablation in combination with external beam radiation therapy (12).

Now more than ever there is a significant need for urologic surgeons, medical oncologists, and radiation oncologists to join forces and provide coordinated counseling and care for men with all stages of prostate cancer. This multidisciplinary approach has its origins in the advances made in the diagnosis and treatment of prostate cancer that have evolved over the past quarter century.

**PROSTATE CANCER PATIENT DECISION MAKING**

Options for our patients to receive information about prostate cancer and most other medical conditions have been dramatically transformed in the 21st century. The physician as the sole source of information on a disease is a historic concept. Because of all the differing treatment options available for prostate cancer, patients can become overwhelmed when seeking information from resources such as the web. A Google search in April of 2014 yielded over 49 million page hits for prostate cancer, overwhelming for anyone, to say the least.

A recent Cochrane review evaluated a group of patients with a diversity of diseases who used a variety of decision aids such as pamphlets, videos, and web-based tools to assist with medical decision making (13). These tools were useful at improving knowledge of the treatment options. They also provided objective information on the benefits and harms and allowed patients to make choices consistent with personal values. Although these decision tools have value in areas such as prostate cancer, the unique needs of the individual patient must also be taken into consideration. Decision making for multimodality treatment plans in men with high-risk disease often requires the input of all specialists and consideration for clinical trials. Treatment regret can be minimized if patients are given the opportunity to openly discuss treatment options with different specialists (14).

Warren et al. studied information comprehensiveness on a variety of websites for breast and prostate cancer. Web-based information can provide useful cancer information online and enable patients to be more proactive regarding their information needs. However, multiple deficiencies were noted, and also that more comprehensive information needs to be provided on breast and prostate cancer websites in areas such as decision making (15). Another study indicated that although web-based information is useful, physicians remain a key information source for medical advice and the face-to-face interaction is critical (16). Taking all of these unique patient and disease factors together, prostate cancer therapeutic options appear to be best determined through close and coordinated face to face multidisciplinary collaboration.

**THE MULTIDISCIPLINARY APPROACH TO PROSTATE CANCER**

How do we define “multidisciplinary prostate cancer care”? In its simplest form, it encompasses collaborative patient care by a team of different specialists where all
treatment options are discussed and individualized for each patient. One definition of a true multidisciplinary care model is described as encompassing “collaborative patient care by a team of individuals where all diagnostic and treatment options are discussed and tailored for each patient. Although the team composition may vary by disease site and institution, independent contributors may include representatives from medical oncology, radiation oncology, surgery/surgical oncology, pathology, diagnostic imaging, palliative care, nursing, nutrition, and social work” (17). Although this is a generally applicable definition in the field of oncology, the existing models of prostate cancer multidisciplinary clinic (MDC) care can be different. In its purest and possibly most effective form, a true multidisciplinary clinical setting involves real-time interaction between the various medical specialists, the patient, and the patient’s family. Other models do exist such as the agreement to follow defined clinical care pathways or a discussion of cases at tumor boards. There is a paucity of literature studying these other models at present.

There is increasing interest in both academic and community cancer programs to develop some version of a patient-centric genitourinary (GU) or prostate cancer MDC. The specific design of each multidisciplinary prostate clinic in the United States can vary greatly as there are no specific guidelines or recommendations for such activity. The centers that have published on their GU MDC suggest that simultaneous provider and patient encounters in a real-time clinic setting are a common feature (18, 19).

An important concept in the GU MDC approach to prostate cancer involves the education of patients and involving them in “shared decision making.” The U.S. Institute of Medicine has noted that this shared decision making is at the heart of patient-centered care and is “responsive to individual patient preferences, needs and values” (20). The traditional medical “paternalistic” approach to patient care with physicians making the treatment decision that they thought was best is no longer considered to be the standard of care. In the field of prostate cancer, the overwhelming number of treatment options makes shared decision making a core value in providing the best patient care possible.

■ EXPERIENCE WITH THE MULTIDISCIPLINARY APPROACH TO PROSTATE CANCER

A variety of groups have reported on the MDC approach to prostate cancer care. The majority have focused on the decision-making process for those with newly diagnosed localized disease, often the most controversial aspect of management. In 1996, we established a GU MDC at the Kimmel Cancer Center of Thomas Jefferson University in Philadelphia. We believe that this is the longest continually operating MDC at any National Cancer Institute-designated cancer center in the United States. Since we originally described the structure and operation of the clinic, there have been only minor modifications to its operational structure (18, 21). Having all specialists present during the visit (urologic surgery, radiation oncology, and medical oncology) with pathology and radiology support remains a core feature. Although all GU tumor types are seen in the weekly clinic, the majority of patients (historically more than 80%) have prostate cancer, and we recently reported our 15-year experience focusing on prostate cancer (18). Other groups such as the Prostate Cancer Programme of Milans Istituto Nazionale dei Tumori have adapted and validated our model of multidisciplinary care (22).

The current operational structure of our Kimmel Cancer Center GU MDC is shown in Figure 1.1. The only major change we have made over the last 15 years was in 2008 when we moved to a preclinic conference instead of a postclinic conference. This important preclinic conference includes second-opinion pathologic review, imaging review (if necessary), and a brief case presentation and discussion. General treatment recommendations based on available data are made, and potential confounders are identified. This preclinic conference also offers the opportunity to identify patients who might be eligible for clinical trial participation.

In the clinical patient care area, social service support is on site. Genetic counselors, integrative medicine, and nutritional and pain management are made available to our patients at the Kimmel Cancer Center outside of the GU MDC**. Support groups and the opportunity to participate in the “Buddy System,” matching demographically similar patients, are also encouraged as part of the program and coordinated by our on-site social worker. A critical element is a dedicated patient navigator who conducts a telephone interview before the appointment is scheduled, gathers all necessary information including pathology slides if available, and pre-assigns the providers whom the patient will see based on their clinical needs. It cannot be stressed enough that the assignment of a dedicated MDC navigator is essential for this type of program to optimize patient care and the time constraints of the providers. All stages of disease are evaluated by appropriate specialists as needed. Although the majority of patients remain with us for their longitudinal care, second opinions are also provided. Treatment recommendations are shared with the patient and the referring physician. In cases where the treatment pathway is not clear, follow-up visits and testing might be scheduled. Finally, patients are

** Effective September 2014 a genetic counselor is available during each MDC session.
often given several treatment options to consider, most often related to localized prostate cancer. We believe that an objective review of the risks and benefits of these multiple options provides the patients with as unbiased an opinion as possible.

In 2010, we reported for the first time in prostate cancer that patient survival outcomes for high-risk men are improved by our GU MDC approach (18). When reviewing survival data in men with locally advanced disease, the enhanced outcome was most pronounced for T3 prostate cancer with a statistically significant improvement in 5-year survival of almost 90% compared to Surveillance, Epidemiology and End Results (SEER) with a 78% survival probability (18). As expected, in localized T2 disease, our 5-year survival data approached 100% based on SEER benchmarks. Consistent with other contemporary reports, we noted a dramatic increase in robotically assisted radical prostatectomy with a relative decrease in the utilization of brachytherapy.
International interest in the multidisciplinary approach to cancer care in general has increased. Numerous centers in the United States, Europe, and other nations have reported on their design and implementation of the MDC approach to cancer care including prostate cancer (23). The European School of Oncology has discussed the design, implementation, and certification of Prostate Cancer Units based on the positive experience of specialists involved with European Breast Cancer multidisciplinary care (24). These Prostate Cancer Units are more commonly referred to as Genitourinary Cancer or Prostate Cancer Multidisciplinary Clinics in the United States. This MDC model has been successfully implemented in Europe for breast care. A network of certified multidisciplinary breast cancer units was established based on a 2003 policy enacted by the European Parliament (25). The German Oncology Society (Deutsche Krebsgesellschaft) has created a network of Prostate Cancer Units that manages prostate cancer in a multidisciplinary manner in their country (24). Other organizations in the United States, United Kingdom, Asia, and Australia have had discussions to promote and establish multidisciplinary programs as a tenet of routine cancer care for most disease sites including prostate cancer (17).

Magnani et al. reviewed their 6-year experience with their multidisciplinary prostate cancer clinic in Italy (22). Their experience has proved successful for both physicians and patients. The team agrees on basic treatment strategies. More complex cases are managed by a multidisciplinary team. Their unit also incorporates a dedicated psychologist, which is uncommon in GU MDC in the United States.

As new information becomes available and guidelines are updated, these patient-centric programs must be flexible not only in their structure but also in their recommendations. In March 2010, a GU MDC was created at William Beaumont Hospital in Michigan to provide patients with a comprehensive multidisciplinary evaluation and consensus treatment recommendations in a single visit. The authors noted that their GU MDC improved the quality of care for patients as demonstrated by improved adherence to NCCN guidelines, and a broadening of treatment choices made available (26).

Researchers at the Duke Prostate Center in Durham, North Carolina, have reviewed their utilization trends for the first 5 years of their multidisciplinary prostate cancer clinic (27). The factors predictive of pursuing treatment at the Duke Prostate Center included high-risk disease and specific physician referral. The factors predictive of not receiving care at their unit included a distance traveled of greater than 100 miles. These data suggest that having a multidisciplinary prostate cancer at a remote location may not allow patients to take full advantage of the treatment expertise offered in this specialized setting.

One other unique contribution that MDC can make is in the area of active surveillance (AS). It appears that decision counseling and adherence to this approach is enhanced by this type of MDC structure. Available data suggest that low-risk patients who are seen at an MDC for prostate cancer appear to select AS in a greater proportion (28). The Prostate Cancer Programme of Milan’s Istituto Nazionale dei Tumori data on AS shows significant growth in choosing this option in low-risk patients. Their AS roles increased from 40% to greater than 70% between 2006 and 2010 (22). Since AS is also a focus of a clinical trial at their Prostate Cancer Programme, demonstrating enhanced recruitment to trials is another advantage to this MDC model of care.

We have used our Kimmel Cancer Center GU MDC to develop a decision counseling program for AS (29). Men with previously identified low-risk prostate cancer who present to our GU MDC are met by a research assistant, who consents participants and administers a baseline survey. A nurse then meets each participant to conduct a decision counseling session. In the session, the nurse and participant review information on treatment options of AS versus AT. The nurse elicits the participant’s pro and con decision factors that influence treatment preference, determines specific and relative decision factor weights, and enters these data into an online Decision Counseling Program available at www.jefferson.edu/university/jmc/departments/medical_oncology/divisions/population_science/center_for_health_decisions/decision_counseling .html. From baseline to endpoint, participants were better informed, felt less decisional conflict about treatment decision making, and moved from being undecided about AS versus AT to favoring AS.

U.S. population–based studies of prostate cancer localized disease suggest that oncology specialist visits relate strongly to prostate cancer treatment choices (30). These studies also suggest that that specialists tend to prefer and recommend the modality they themselves deliver. It is recognized that there is a paucity of comparative studies demonstrating superiority of one standard treatment modality, surgery, or radiation over another in regard to localized prostate cancer. The inherent physician bias may be minimized in such an MDC environment with improved patient satisfaction rates (28). The potential benefits of providing prostate cancer patient care in the GU MDC setting are summarized in Table 1.1.

A major challenge in establishing such a clinic is securing a genuine commitment from all parties to the success of the operation. This includes commitments of the institution, support staff, medical specialists, nurses, social workers, and other health care professionals who must share in the core principles of the center. The Kimmel Cancer Center GU MDC has had the commitment necessary for success with our ability to demonstrate many benefits: high levels of patient satisfaction, enhanced learning.
opportunities, and perhaps most important, a defined oncologic outcome benefit to many high-risk men. To quote Dr. Magnani, “the multidisciplinary approach needs to be adaptable to meet new needs and improve quality,” which should be a take-home message for those currently operating or considering starting a multidisciplinary program (22). It should be noted that clinicians who work in this environment do lose some autonomy. Clinicians appear to recognize the value of the MDC in terms of effective communication with patients but may feel that other aspects of relationship building are hindered in a multidisciplinary setting. Organizational and teamwork issues need to be addressed to optimize the implementation of a multidisciplinary approach and can be easily overcome by a commitment of all parties (31).

**CONCLUSIONS**

Significant progress has been made in the diagnosis and management of prostate cancer over what might be considered a relatively short period of time. However, significant challenges remain. A top priority is to define the optimum prostate cancer screening paradigm. Chemoprevention strategies and their randomized trials have been uniformly disappointing, some from an outcome standpoint and others from an agent approval standpoint. How to best prevent prostate cancer will need to be seriously reconsidered based on the past investment of multiple long-term trials that raised more questions than answers (32). AS and AT decision making will become more sophisticated courtesy of improved biomarkers. AS as a “treatment” option needs to be increased in acceptance as an appropriate standard of care by both patients and providers including those in primary care. Primary care providers are very influential in prostate cancer–related decision making from screening to treatment options and should be informed of the dramatic changes in the field. Treatments for localized disease must better address the side-effect profiles now that many are demonstrating improved long-term cancer control. Novel strategies to convert high-risk prostate cancer from a life-threatening disease state to a manageable chronic disease state will require a more in-depth understanding of the biology of the disease. As with all scientific and technical advances, costs will continue to increase and will need to be balanced in terms of their relative effectiveness.

The extent of treatment options in prostate cancer can be overwhelming to the patient and his family. Decision making can be further complicated by the potential for poor outcomes and treatment regret due to not being adequately informed about the various options available. It is here that the MDC approach to prostate cancer can have a major impact. Cooperation of all stakeholders including patients, providers, researchers, industrial partners, insurers, and governmental agencies must work together in the spirit of multidisciplinary care to reduce the burden of prostate cancer for our current patients and future generations.

**REFERENCES**


29. Petrich A, Quinn AM, Leader A, et al. Decision counseling about active surveillance and active treatment for early stage low risk prostate cancer patients. 35th Annual Meeting of the Society for Medical Decision Making; October 23, 2013; Baltimore, MD.

