Swedish/Edmonds Cancer Program
2011 Annual Report
(2010 Data)
Cancer Committee Members 2011

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Cancer care at Swedish/Edmonds is evolving right before your eyes. As I enter my third year as chairman of the Cancer Control Committee for Swedish/Edmonds I am surrounded every day by positive changes that continually improve the experiences of our patients with cancer. Like the rest of the country, we are functioning in the world of health care as an industry with all of the economic, political and emotional upheaval that an industry of such importance engenders. In order to protect our vision and commitment to health-care excellence we have had to adapt quickly; as they say, “keep up or get out of the way.”

Our affiliation with Swedish Health Services in September 2010 has provided us with valuable resources (intellectual, financial and visionary) to aid us on this never-ending quest. The affiliation allows us to cut waste and provide a leaner, more efficient health-care system. Of course, an affiliation brings change and change can sometimes bring angst for patients, providers and staff. As a medical community we have worked hard to focus on the positives of change and to help the community we serve do the same.

This year Swedish/Edmonds will implement Epic, a fully electronic medical record and billing software system. This will enhance accessibility of patient records for the treating clinicians who in emergent medical situations often don’t have time to wait for the arrival of paper charts. Inter-physician communication will also be enhanced in the inpatient and outpatient settings. It is anticipated that billing accuracy and timeliness will also benefit.

Another clinical improvement this year has been the addition of the da Vinci® Surgical System. This surgical robot is utilized primarily for gynecologic and urologic procedures such as nephrectomy, cystectomy and hysterectomy, but has other potential uses as well. Studies have shown that use of a daVinci robot can shorten hospital stays and is associated with less blood loss, less pain and fewer surgical complications. Our surgeons are thrilled to be able to offer our patients this state-of-the-art surgical technique.

Under the auspices of the Campaign for Swedish, the Swedish/Edmonds Gala took place this past November. Over 500 people attended including many physicians, administrators, patients and concerned community members. Together, we raised more than $420,000 for the future of our medical community. This vote of confidence and sign of optimism is extremely moving for those of us who provide care at this campus. We know we have expectations to fulfill and are pleased to continue to meet them.

Perhaps the most visible upcoming change is the construction of our new comprehensive cancer center on the Swedish/Edmonds campus in 2013. This fully-modern facility will be two stories and will house our
medical oncologists, medical oncology chemotherapy infusion center and a fully equipped oncology pharmacy.

Treating clinicians have been involved in every step of planning, we are confident that there will be dramatic improvements to patient care from arrival to departure. We anticipate that this beautiful new center will open in the first half of 2013.

Some changes are externally driven. Our cancer program is accredited by The Commission on Cancer and in turn overseen by the American College of Surgeons. Accreditation is not easily obtained as standards are high. Our program undergoes an extensive on-site review process every three years while less formal reviews are conducted continuously via Internet. Our last on-site review was in October, 2010 and we passed with flying colors. However, updated standards have just been implemented for this and coming years. These standards are rigorous and continually help drive us toward more comprehensive services related to cancer.

A major change has been the expansion of the role of cancer liaison physician whose job is myriad, but includes a great deal of community interaction. I am happy to announce that Robert Takamiya, M.D. of our radiation oncology division has graciously accepted this challenging role. You can read his perspective in an accompanying article. A major focus in upcoming years will be the development of “survivorship plans” which will summarize diagnosis, treatments received, toxicities encountered, long-term follow-up plans and expectations for our patients.

I hope it is clear that this medical community is forward thinking, ambitious, compassionate and absolutely committed to the provision of superior cancer care. We have to wear many hats every day to make these visions a reality, but the trust and faith our patients and our community place in us keep us motivated. We are all pleased and excited by the growth and success of our program over the last several years.
I am honored to be named the Cancer Liaison Physician (CLP) of Swedish/Edmonds. The CLP is a physician member of the Cancer Control Committee who acts as a liaison for the Commission on Cancer (CoC) to implement changes within the cancer committee. The CLP’s goals are to improve quality of care, promote advocacy, and to partner with the American Cancer Society (ACS). In addition, we strive to improve patient outcomes through clinical trial enrollment and use of proper staging and treatment guidelines.

The CLP role underwent significant change at the summit meeting in 2009. Clarification and expansion of key areas were provided. It defined the following new goals for 2012:

- Monitoring and interpreting facilities performance using the National Cancer Database (NCDB) and reporting tools
- Analyze and report NCDB data for presentation to the cancer committee
- Work within the cancer committee to improve quality of care based on NCDB data
- Collaborate with the data registrar and ensure accurate reporting of institutional data to the NCDB
- Present reports to the cancer committee
- Lead efforts, initiatives and studies to improve quality and process of cancer care in the facility
- Report CoC activities, initiatives and priorities to the cancer committee
- Serve as a physician representative to ACS

I look forward to my new role and the challenges ahead. I am enthusiastic about enacting new programs through our cancer program at Swedish/Edmonds to improve the quality of care for our patients and community.
Swedish Cancer Institute at Swedish/Edmonds

Swedish Cancer Institute at Swedish/Edmonds remains committed to delivering the highest quality treatment using state-of-the-art equipment in a patient-centered care environment. Fully one-third of our patients receive treatment with intensity-modulated radiation therapy (IMRT), a technique which improves accuracy, minimizes toxicity, and increases radiation dose, thereby improving cure rates.

We offer the most advanced form of IMRT called image-guided radiation therapy (IGRT). Implanted fiducial markers allow visualization of the target area with each treatment, which in turn allows for smaller treatment fields and fewer side effects than standard IMRT. We continue to offer samarium and strontium therapy, an intravenous targeted radionuclide used for palliation of painful bone metastases. We also offer radioactive monoclonal antibody therapy in appropriate patients with lymphoma. Comprehensive services, including physics and dosimetry support, radiation oncology nursing, radiation therapists, social services, and nutritional counseling, are available to provide individualized and compassionate care to patients and their families.

We have a robust prostate brachytherapy program at Swedish/Edmonds. Utilizing the new urology operating suite, we have all-new high-end equipment. Prostate brachytherapy is the implantation of radioactive seeds to cure prostate cancer with a high degree of precision utilizing ultrasound guidance. Long-term data confirms cure rates equivalent to surgery, but without many of the surgery-related morbidities. Our association with the Seattle Prostate Institute was instrumental in building this program and offering it to our community.

Through participation in the weekly Tumor Board
Puget Sound Cancer Centers

Puget Sound Cancer Centers (PSCC), Edmonds, is a vibrant, state-of-the-art medical oncology practice on the grounds of the Swedish/Edmonds campus. Our five physicians are all board certified and their experience with cancer care ranges from 18 to over 30 years. Our physicians are committed to providing superior care in a personalized setting. To facilitate this goal we have built a strong staff of nurses, medical assistants and support staff. Our nurses maintain the highest level of chemotherapy administration certification (OCN). The remainder of our staff is continuously trained to help our patients navigate the increasingly complicated worlds of insurance coverage and health systems. We are proud to say that our staff is intuitively empathic, kind and generous. Our patients effusively speak of the nurturing environment they find at PSCC.

PSCC offers a full range of cancer care including chemotherapy, immunotherapy, radioimmunotherapy, biologic therapy and supportive care. An extensive array of clinical trials is available to our patients at all times. We work closely with our colleagues in the Radiation Oncology Department and with our surgeons, pathologist and radiologists. Each week the cancer-care community at Swedish/Edmonds meets with a lively tumor board where the majority of our newly diagnosed patients’ care plans are reviewed and refined. This collegial, interactive environment ensures that all options have been considered and evaluated before a final treatment plan is proposed to the patient and his/her family. Tumor boards are a hallmark of quality cancer care. In addition, our relationship with Swedish Health Services ensures that when needed, we have access to high technology treatments that may be restricted to large centers.

We are excited about the construction of a brand new cancer center, adjacent to our current facility, scheduled to open in the first half of 2013. This two-story, 16,000 square foot building will be ready for occupancy this summer and promises ongoing quality care in an enhanced environment, emphasizing patient comfort and systematic efficiency.

The quality of our program is endorsed by our Commission on Cancer certification (with commendation) and our Quality Observation Performance Institute (QOPI) certification (an award granted to fewer than 20 percent of cancer programs nationally). Despite these external accolades, we measure our success by the patients we treat. Our outcomes consistently compare favorably with national norms and our patients continue to refer loved ones for care. We remain grateful to the community and to our referring providers for the trust and confidence they place in PSCC each day. We promise to do all we can to continue to deserve that trust.
The Tumor Board and Breast Cancer Conferences are held weekly at Swedish/Edmonds. These conferences bring together physician representatives from diagnostic radiology, pathology, surgery, medical oncology and radiation oncology, as well as physicians from other specialties and allied health professionals to create a multidisciplinary group.

A case presentation at the cancer conference includes the patient’s medical history, clinical findings, diagnostic studies, reference to pathology results and tumor markers. Discussions include staging workups, treatment modalities and research data.

The Commission on Cancer (CoC) requires that a minimum of 10 percent of our annual analytic cases are presented and 75 percent must be prospective presentations. In 2010, the Swedish/Edmonds Tumor Board and Breast Cancer Conferences combined, presented 359 cases as seen in the chart below. More than 50 percent of analytic cases discussed have been prospective.

The COC also requires that the top five sites seen at Swedish/Edmonds be discussed at cancer conferences and this is demonstrated in the chart on page 9.

The goal of the Swedish/Edmonds cancer conference is to hold meaningful, multidisciplinary discussions to facilitate and provide outstanding quality of care for patients at Swedish/Edmonds. Our dedicated team of physicians achieve this goal by bringing their expertise and experience to the conferences each week.

As a CoC Accredited Cancer Program, Swedish/Edmonds is required to present at least 10% of the annual caseload of analytic cases at cancer conference. Sixty percent of the annual caseload was presented in 2009 and 53% of the annual caseload was presented in 2010.
The chart above shows top five sites seen at Swedish/Edmonds have been presented and discussed at Cancer Conferences: 1-Breast, 2-Prostate, 3-Melanoma, 4-Lung, and 5-Lymphoma/Bone Marrow. Presentation of prostate cancers more than doubled in 2010 (8-->18), as did head and neck cancers (10-->24).
The Cancer Registry is one of the major components of our comprehensive cancer program at Swedish/Edmonds. The registry staff, under the supervision of the Cancer Control Committee, is responsible for maintaining state and national cancer reporting requirements, coordinating cancer conferences, and providing support for all cancer program activities required for accreditation by the American College of Surgeons Commission on Cancer. The registry has been collecting data on all cancer patients diagnosed and/or treated at Swedish/Edmonds since January 1, 1974. Data collected includes patient demographics; cancer identification, treatment and follow up. These data contribute to treatment planning, staging and the continuity of care for patients. Accurate and complete registry data are the underpinnings that permit Swedish/Edmonds to plan and optimize its cancer program. Since 1974, 14,918 cases have been collected in the registry.

In 2010, Swedish/Edmonds Cancer Registry reported 582 new cancer cases. The five most frequently reported cancers at Swedish/Edmonds in 2010 included breast, prostate, melanoma, lung/bronchus and leukemia/lymphoma/myeloma. In comparing the five most frequently reported cancers at Swedish/Edmonds with national rates, Swedish/Edmonds' incidence of breast cancer continues to be almost double that of national rates. The percentage of melanoma cases as compared to national rates is also remarkably higher. This is probably due to being a part of a community cancer program. It has been noted that melanoma cases may be under reported because they are diagnosed (and excised) in physician offices and hospital registries do not get access to that data. At Swedish/Edmonds we are working to bridge that gap between the hospital registry and the clinics closely associated with our facility.

Annual follow-up is an important function of the Tumor Registry and is beneficial in reminding attending physicians and patients that routine medical examinations are encouraged. This process may potentially bring lost patients back under medical supervision. Continued surveillance ensures early detection of a possible recurrence or a new primary malignancy. Follow-up also provides a valid measurement of outcome/survival.
Prostate cancer is the most commonly diagnosed cancer in men and the second leading cause of male cancer death. It is estimated that about 32,000 men die each year in the United States from prostate cancer. About 1 in 6 men will be diagnosed with prostate cancer during their life, and 1 in 30 will die from the disease. Men older than 65 years, those with a family history of prostate cancer (especially if a brother or father has been diagnosed), and those of African-American descent are at higher risk for prostate cancer. Because of improvements in the early detection and treatment of prostate cancer over the last 20 years, it is estimated that prostate cancer deaths have decreased about 30 percent.

In the past, prostate cancer was usually diagnosed because of symptoms such as pain, weight loss, weakness, bleeding, or kidney failure. About 70 percent of prostate cancers had spread locally or metastasized by the time the cancer was diagnosed, and many of these men died from their cancer. The advent of testing for prostate-specific antigen (PSA) around 1990 has allowed for the detection of prostate cancer earlier in its natural history. Currently, about 70 percent of men will have localized cancer and less than 5 percent metastatic cancer at diagnosis.

**Screening**

Many men choose to be screened for prostate cancer using the PSA blood test and digital rectal exam (DRE). PSA is a protein produced by normal prostate cells. It is an enzyme that participates in the dissolution of the
seminal fluid coagulum and plays an important role in fertility. The highest amounts of PSA are found in the seminal fluid; a small amount of PSA escapes the prostate, enters the blood, and is detected by the PSA test.

The three most common prostate diseases—prostatitis, benign prostatic hyperplasia (BPH), and prostate cancer—all may cause elevated PSA levels. A higher PSA level correlates with a higher risk for cancer.

PSA itself does not diagnose cancer, but is very useful to decide if prostate biopsies are appropriate. If a man’s PSA is high for his age or is rising at a greater than expected rate (high PSA velocity), a biopsy may be recommended. Biopsy is also recommended if the prostate exam is abnormal regardless of PSA level.

The Screening Controversy

Many prostate cancers grow very slowly. Consequently, many men with prostate cancer may die of something else before their prostate cancer causes any symptoms. However, prostate cancers that grow more rapidly can potentially impact a man’s survival and quality of life. Whether a man will die of something else or prostate cancer depends on the cancer’s aggressiveness, how early it is detected, how effectively it is treated, as well as the man’s age and his other medical problems. Most experts believe that in general, men over age 75, or even younger men with serious medical problems, have little to gain from a PSA test.

Recently, the U.S. Preventive Services Task Force (USPSTF) recommended against the use of the PSA test for screening in men younger than 75 years age. The recommendation was based on the review of a limited number of scientific studies dealing with prostate cancer screening or treatment. In these studies there was only limited evidence for decrease in cancer mortality, and also a potential for harm done to individuals from the mental stress associated with possible cancer, or from side effects of prostate biopsy or cancer treatment. Since release, the USPSTF recommendation has been criticized for a number of reasons. Most urologists and oncologists continue to believe that properly interpreted PSA testing provides valuable information in the diagnosis, staging, and monitoring of prostate cancer.

The decision about whether to be screened is personal, but it should be based on an understanding of the potential risks and benefits of screening. Risks include discomfort, possible side effects if a biopsy is done, and the physical and mental implications of finding out you have a cancer that may not pose a threat to your life. Benefits include finding cancer at its earliest and most treatable stages.

Diagnosis and Evaluation

Prostate Biopsy: A prostate biopsy is usually performed using transrectal ultrasound (TRUS). An ultrasound probe about the thickness of a finger is inserted into the rectum. Local anesthetic is injected around the prostate. Tissue is then removed from the prostate using a small needle. Multiple samples are taken, usually 12 or more, from all areas of the prostate and specifically any area that feels abnormal or appears abnormal on ultrasound. The biopsy is usually performed as an office procedure. The degree of discomfort is similar to having a dental procedure like a filling.
**Tissue Evaluation:** The pathologist’s role in the treatment of prostate cancer begins with the diagnosis of the small needle biopsies of the prostate performed by the urologist. Occasionally, the pathologist will diagnose unsuspected cancer in larger prostate fragments that result from partial resection of a prostate that is causing obstruction of the bladder. Usually the diagnosis of benign or malignant findings on core biopsies is straightforward. Sometimes, however, the diagnosis requires special testing using antibodies developed against specific proteins within different cell types in the prostate. These antibodies are labeled with various dyes and the staining pattern helps determine a diagnosis. On occasions, a specific diagnosis of either benign or malignant cannot be made, with a diagnosis of “atypia” or “atypical glands” rendered on the biopsies. This may necessitate a repeat biopsy or set of biopsies within a few months of the original biopsies.

The pathologist also determines the tumor grade. Most pathologists use the Gleason system. A Gleason score ranging from two to 10 is assigned based on whether the cells look near normal or very abnormal. Gleason two, three, and four cancers are very uncommon. Gleason nine or 10 cancers are usually very aggressive.

When prostate cancer is treated with surgery, the pathologist will examine the prostate after removal to evaluate the degree of involvement of the prostate by cancer and whether the cancer has spread beyond the prostate itself. This helps the cancer treatment specialists determine what further therapy or follow-up is necessary. Sometimes, the pathologist is asked to evaluate needle biopsies of prostates in individuals who have undergone radiation therapy to the prostate, but with suspected recurrence of the prostate cancer despite radiation.

**Imaging Tests:** Imaging tests are used selectively after a diagnosis of prostate cancer if there are symptoms, high PSA, or other causes of suspicion for tumor spread. These may include CT imaging of the pelvis and abdomen, nuclear isotope bone scan, or MR scanning. PET scanning is not felt to be useful in prostate cancer. These tests, when indicated, contribute to “staging” the cancer.

**Tumor Stage:** Stage refers to the extent of the prostate involved with cancer and whether the cancer has spread. Most early prostate cancers are stage T1c (PSA elevated, prostate exam normal) or T2 (Prostate feels abnormal: T2a (<1/2 of one lobe involved); T2b (>1/2 lobe involved, but not both sides); T2c (tumor involves both lobes). Stage is a predictor of the likelihood of eventual tumor spread and helps clinicians decide how aggressive to be with treatment immediately after diagnosis to give the patient the best chance of avoiding symptomatic metastatic disease, but also unnecessary treatments.

**Treatment**

There are many different ways to treat prostate cancer and a newly diagnosed patient will likely consult more than one doctor before making a final decision. Physicians are not always in agreement as to the best way to proceed. For prostate cancer, it is advisable to talk to both your urologist and a radiation oncologist to hear about the benefits and risks of surgery, hormonal therapy and radiation in your particular case. If the prostate cancer has already spread at the time of diagnosis, a person will also need a medical oncologist to talk about chemotherapy. The most important thing is to discuss appropriate options and make a decision that suits each individual's lifestyle, beliefs and values. Usually, there is no need to make a decision quickly.

Several factors must be considered in deciding on the best management of prostate cancer. They include:

- **Overall health status, especially life expectancy.** When a man’s life expectancy is relatively long, localized prostate cancer can be a cause of symptoms or death. At an advanced patient age, or when life expectancy is relatively short, competing health problems reduce the chance that a man will experience disease progression or die from prostate cancer.
• The stage and grade of the cancer.
• PSA level and changes over time.
• One’s feelings and the doctors’ opinions about the need to treat the cancer.
• The chance that each type of treatment will cure the cancer (or help in some other way).
• Feelings about the side effects common with each treatment.

Active Surveillance/Watchful Waiting

The great difference between the incidence of prostate cancer and the death rate from prostate cancer indicates that some men may not benefit from treatment of localized prostate cancer. Autopsy studies have shown that 60 percent to 70 percent of older men have some areas of cancer within the prostate. This can be compared with the 15 percent to 20 percent of men diagnosed with prostate cancer during their lifetime and with the 3 percent lifetime risk of death from prostate cancer. Men who decide not to undergo immediate treatment may instead choose a program of “watchful waiting” or “active surveillance”. By avoiding any immediate therapy, they avoid the side effects of surgery, radiation, or hormones. Active surveillance has two goals: (1) to identify and treat men with localized cancers that are likely to progress and (2) to reduce treatment-related complications for men with cancers that are not likely to progress.

Who is a suitable candidate for active surveillance? Patients with lower risk tumors (low Gleason score, PSA level, and clinical stage) could be candidates for this treatment strategy. Several studies have shown that patients with lower grade, localized prostate cancer have a low risk for clinical progression within the first 5-10 years after diagnosis. Therefore, this treatment strategy may be best suited for men with a shorter life expectancy. Generally, patients with high-grade tumors have a relatively poor prognosis and are not suitable for active surveillance.

Active surveillance should include periodic digital
rectal exam and PSA testing and possibly periodic repeat prostate biopsy to assess for progression of tumor grade and/or volume. The ideal schedule for these has not been defined. Also, it is not really clear what change in clinical status should trigger starting active treatment. In addition, the patient must understand that there is a risk his cancer may progress during monitoring and no longer be curable. The patient must also accept some responsibility for compliance with scheduled follow-up visits; this is a notorious problem with all cancer surveillance.

Surgery

Surgery is a common form of treatment for men with prostate cancer. Surgery attempts to cure prostate cancer by removing the entire prostate. An attempt at a surgical cure for prostate cancer is usually done with early stage prostate cancers, but sometimes surgery will be used to relieve symptoms in advanced stage prostate cancers. Surgery for prostate cancer is generally felt to be equivalent to radiation in terms of survival, especially in early stage, low to intermediate grade cancers. The decision to have surgery versus radiation is often made on the basis of the patient's age and health status; the two different approaches have different side effect profiles depending on the patient's age.

Surgical removal of the prostate for cancer is termed radical prostatectomy. Radical prostatectomy means that the entire prostate gland is removed and separated from the bladder, urethra, and rectum. Radical prostatectomy may be performed using a retropubic or perineal incision or by using a laparoscopic camera. Depending on tumor characteristics and the patient's sexual function, either nerve-sparing (to preserve erectile function) or non-nerve-sparing prostatectomy is performed. Removal of pelvic lymph nodes can be performed concurrently with radical prostatectomy and is generally reserved for patients with higher risk of lymph node involvement.

The newest surgical approach is robotic-assisted laparoscopic radical prostatectomy using the da Vinci® Surgical System which was introduced in the U.S. in 2003.

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*Survival data provided in this chart by the American College of Surgeons, Commission on Cancer, National Cancer Data Base (NCDB). 2004 data is the most current survival data in the NCDB. Includes data from 1411 National Cancer Programs. Total prostate cases in NCDB for 2003 - 2004 is 190,296.
The surgeon sits at a panel near the operating table and controls robotic arms to do the operation through several small incisions in the patient’s abdomen. Robotic-assisted surgery using the da Vinci robot has become very popular and it is estimated that currently about 75 percent of prostate cancer surgeries in the United States are performed robotically. This approach seems to decrease surgical blood loss and postoperative discomfort. Swedish/Edmonds is equipped with a da Vinci robot.

Generally, healthy patients undergoing radical prostatectomy will be hospitalized for one to three days after surgery. Patients with significant medical illnesses or post-surgical complications may require a longer period of hospitalization. Patients are discharged from the hospital with a urinary catheter for one to two weeks to temporarily drain the bladder.

Radical prostatectomy is a very safe surgery with few life threatening complications; however, there is a significant risk for other side effects. Both urinary incontinence (leakage of urine) and impotence (inability to achieve and maintain an erection) are commonly associated with this procedure. The risk for having either of these side effects increases with age; this is why younger men are often recommended to have surgery while older men are recommended to have radiation. The skill of your surgeon influences your chances of having these side effects after radical prostatectomy. Sometimes, particularly with lower grade and smaller cancers, a nerve sparing prostatectomy can be performed. Nerve sparing prostatectomy can decrease the chances of impotence after the procedure. However, there is always a risk and not every patient is a candidate for a nerve sparing prostatectomy. With surgery, urinary incontinence and impotence are often most severe right after the operation and get better with time. There are things that your doctors can recommend to help you with either of these problems.

Pictured left: The da Vinci Surgical System at Swedish/Edmonds. Surgeons at the hospital began performing robotically-assisted surgeries to treat cancer in November 2011. The first daVinci surgery was a prostatectomy to treat prostate cancer.
Cryosurgery

Cryosurgery is a somewhat experimental approach to treating prostate cancer whereby probes with liquid nitrogen are implanted into the prostate and then the tissue is frozen. This freezing kills the cancer cells and can be repeated if needed. However, current data has shown that cryosurgery is not as effective as radiation and surgery for treating prostate cancer. Cryosurgery also has a variety of side effects including urinary incontinence and impotence. At this time, cryotherapy is most often used to treat cancer which recurs in the prostate following radiation.

High Intensity Focused Ultrasound (HIFU)

HIFU uses high-power ultrasound energy which is focused and aimed at the prostate. This produces heating of the tissue and cell destruction. HIFU is not currently approved for use in the United States. HIFU has been heavily promoted, mainly by manufacturers of the equipment. Although several early articles gave optimistic reports about cancer control, more recent reports have not been as positive. The ultimate role of this modality has not been defined.

Hormonal Therapy

Both normal prostate tissue and prostate cancers depend on male sex hormones, called androgens, to grow and replicate. Testosterone is an androgen very important to the prostate gland. Men make androgens in their testicles. One of the ways to treat prostate cancer is to remove androgens from the body, thus making the cancer shrink and then grow more slowly. There are a few different ways to remove androgens: removal of the testicles (called an orchietomy), medication that blocks the production of androgens (called LHRH agonists) and medication that blocks androgen receptors (called anti-androgens). Estrogens can also be given, but produce undesirable complications. Different methods of deceasing androgens are often used in the same patient. Using LHRH agonists with anti-androgens can achieve what is known as a total androgen blockade. Hormone therapy can also be used in conjunction with other treatments, especially in the case of advanced stage prostate cancer being treated with radiation therapy. In that case, hormonal therapy is often given before the radiation and this is known as neoadjuvant hormonal therapy. The tumor shrinks before radiation allowing for more effective radiation. Another use for hormones is in patients who have metastatic disease. After a while, all prostate cancers will become resistant to hormonal therapy. However, this often takes many years and hormonal therapy can buy a lot of time in patients with extensive disease or patients who choose not to undergo surgery or radiation.

There are a number of side effects associated with hormonal therapy. Hormonal therapy will almost universally cause impotence and the loss of sex drive. It can also cause breast enlargement, hot flashes, and muscle and bone loss (osteoporosis). There are some things your doctors can prescribe to help with bone loss and hot flashes, but little can be done about loss of libido and impotence.

Radiation Therapy

Radiation treatment plays an important role in both definitive (primary) and adjuvant (after surgery) treatment of prostate cancer. A multi-disciplinary specialty board review (in which urologists, radiation oncologists, medical oncologists, pathologists and diagnostic radiologists participate) is helpful in personalizing treatment decisions based upon patient and cancer characteristics. The National Comprehensive Cancer Network has defined prostate cancer risk groups, which in conjunction with pathology studies, help clinicians understand the extent of cancer and therefore prescribe appropriate treatment. Radiation options include external beam radiation or radioactive seed implantation. Hormonal therapy is sometimes used in conjunction
Radiation therapy for prostate cancer has a storied background in Seattle at the Swedish Cancer Institute (SCI). In the mid 1980s, our group pioneered a treatment of prostate cancer called permanent radioactive seed brachytherapy using transrectal ultrasound guidance. “Brachy” is Greek for “close to or within” and involves the precise placement of radioactive sources into the cancer itself. Key advances include the use of real-time transrectal ultrasound and the use of a grid template device for transperineal source placement. The group went on to form the Seattle Prostate Institute, a world-renowned leader in prostate cancer treatment. Our educational department includes training programs for residents and practicing physicians. We use brachytherapy in conjunction with external beam radiation and hormonal therapy as a way to effectively treat localized prostate cancer without the surgical morbidity associated with removal of the prostate gland.

The seed implant is typically a one-hour procedure performed in the operating room. A pre-procedure ultrasound planning study is required to map and plan the radioactive implant. Radioactive seeds are configured within carrier needles based on this information which is tailored to the patient’s anatomy. The radioactive sources are inserted by the radiation oncologist and urologist under anesthesia. Because of the minimally invasive nature of the procedure, it is done on an outpatient basis. Another advantage is minimal blood loss since no incisions are required; needles are used for placement of the radioactive seeds. Side effects are temporary urinary obstruction and irritable gastrointestinal symptoms. Long-term quality of life is very good. The long-term PSA control rates are identical to that of a surgical series.

External beam radiation therapy is a technology-rich field. It can be delivered by itself as definitive therapy or in conjunction with a radioactive seed implant. CT scan based planning provides important anatomic information allowing intelligent delivery of radiation dose. Intensity-modulation radiation therapy, or IMRT, is a computer-based approach of delivering radiation in a very conformal manner. In other words, radiation doses can be controlled and shaped to treat our targets while limiting dose to nearby organs. Image-guided radiation therapy solves the problem of organ motion. The prostate gland sits between the bladder and rectum, two storage organs which can be more full or empty at any point in time. Imaging studies verified that the prostate can shift up to 1 cm in any direction. The solution is a technology that allows us to see and target the prostate before each treatment. Together IMRT and IGRT have demonstrated safe delivery of higher doses and improved protection of bystander structures, equating to higher cure rates and lower side effects for our patients.

Swedish Cancer Institute offers the latest technology around IGRT and IMRT. The latest generation of IMRT, called volume modulated arc therapy (VMAT) gives even better dose conformity with shorter treatment times (few minutes). Image guidance with a gold seed fiducial system provides daily tracking of the prostate gland. The radiation oncology physicians and staff at SCI are part of a robust research program that has extensively published data. We are lecturers for an IMRT-IGRT course where we educate other physicians who are adopting this technology. We are pushing the envelope with new treatment modalities. A member of
our team is the principal investigator in the treatment of prostate cancer with the Cyberknife radiosurgical device, an advanced robotic radiation delivery system. In summary, the radiation oncology team at SCI-Edmonds has the most advanced technology and the professional expertise to give our patients the best chance at beating prostate cancer.

**Recurrent Disease**

Despite best efforts, prostate cancer may recur, though thanks to early detection efforts and improvements in surgical and radiation therapy techniques, local recurrence in the pelvis is much less common than it once was. Most prostate cancer recurrence is metastatic to bones.

Painful or critical sites of bony disease may be radiated, but the initial systemic treatment of metastatic prostate cancer is hormonal therapy, perhaps better called anti-testosterone therapy. Normal prostatic tissue and the cancer that derives from it, have external proteins, receptors, to which testosterone can bind and send signals to the cells. In prostate cancer that signaling includes growth. Efforts that limit testosterone access to this receptor can slow the growth of the cancer and cause it to shrink. This concept is also discussed above. Androgen deprivation can be accomplished with castration (physical or chemical with LHRH agonists) and/or antiandrogen (blocking) drugs.

When these therapies have failed, castration resistant prostate cancer (CRPC) can be divided into two categories, those with symptomatic metastases and those that are asymptomatic. One of the conundrums of prostate cancer therapy is the asymptomatic CRPC patient. Giving chemotherapy to these patients introduces toxicity without demonstrated survival benefit, and yet it is emotionally very difficult for patients to “do nothing” and watch their PSA rise.

Ketoconazole is a hormonal agent that has often been used in both the asymptomatic and symptomatic setting. Its impact on prostate cancer has purportedly been through its ability to inhibit adrenal function which normally includes some (albeit small volume) testosterone production. In relatively small numbers of CRPC patients continuing to receive their LHRH agonist, it can resurrect a hormonal response. Ketoconazole is not specific in its effects on the adrenal gland and can also inhibit corticosteroid production in the adrenals and therefore must be given with steroid replacement therapy. It is not without toxicities and elderly patients in particular have a difficult time tolerating the accompanying fatigue.

Recently approved, specifically for the asymptomatic CRPC patient, is Sipuleucel-T (Provenge). Perhaps best know for its $90,000 price tag, it is a personalized dendritic cell vaccine that (though it fails to elicit a PSA response or improve an abnormal bone scan) improved overall survival by 4.1 months in a double-blind randomized trial. There are a lot of questions to be answered about this therapy. Will booster infusions further stimulate innate immunity against the cancer? Will combination therapies with other immune modulating agents improve efficacy? Will it have efficacy in an adjuvant (non-metastatic) setting?

Selected symptomatic CRPC patients benefit from chemotherapy. Mitoxantrone/prednisone was the first chemotherapy regimen approved for CRPC. It has been demonstrated to lower PSA levels and improve symptoms, but has not demonstrated a survival advantage compared to best supportive care. Docetaxel/prednisone was the first chemotherapy regimen to demonstrate a survival advantage: a two-month survival advantage over mitoxantrone/prednisone. Docetaxel treated patients were also 25 percent more likely to be alive a three years.

Within the past year, two new drugs have been approved to treat CRPC. Carbazitaxel (Jevtana) was approved as a second-line chemotherapy in combination with prednisone after demonstrating a two and a half month survival advantage over mitoxantrone/prednisone in patients who had previously been treated with
docetaxel/prednisone. This new taxane molecule is being compared to the old taxane in head to head, first-line therapy.

The newest FDA approved prostate cancer drug is abiraterone (Zytiga). This hormonal agent is similar to ketoconazole in that it inhibits testosterone production, however it is 10 times more potent and it is a specific androgen biosynthesis inhibitor, such that it inhibits residual testosterone production from both adrenal glands and the testicles. Perhaps more critically, it has recently been demonstrated that prostate cancer cells may become castrate resistant by producing their own testosterone, and abireterone also inhibits this intracellular testosterone production.

In a phase two trial of abiraterone/prednisone in patients with metastatic CRPC who had received prior docetaxel therapy, 43 percent had a greater than 50 percent reduction in PSA. Patients who had also received ketoconazole still achieved a greater than 50 percent PSA reduction 30 percent of the time. In a subsequent placebo controlled trial in docetaxel treated patients (prior ketoconazole therapy was excluded), abiraterone improved overall survival by four months with very limited toxicities. No abiraterone studies have been reported in patients who have asymptomatic CRPC or who have not received prior chemotherapy, but it is apparent that this drug may prove best adapted to an earlier role in treatment.

There are a number of promising drugs for CRPC that are awaiting FDA approval or are in phase three clinical trials. Radium 223 (Alpharadin) is a radioisotope with a natural affinity for bone metastases and as an alpha radiation emitter has a fairly short distance of emission. This combination allows for maximal antitumor effect with decreased bone marrow toxicity compared with beta emitters such as Strontium 89 or Samarium 153. In a phase three, placebo controlled trial of symptomatic CRPC patients it had both palliative and survival benefits with improvement in overall survival of three months.

An exciting drug in clinical trials is MDV3100 a selective androgen receptor inhibitor in the mode of currently available flutamide and bicalutamide, but it has a much higher affinity and unlike its predecessors it shows no ability to stimulate the testosterone receptor. In phase two trials, 62 percent of chemotherapy naïve CRPC patients and 51 percent of post-chemotherapy CRPC patients had a greater than 50 percent reduction of PSA. Duration of response was 10.5 months in the post-chemotherapy patient and had not been reached after 28 months of therapy in those that were chemo-therapy naïve.
Recently approved for malignant melanoma, ipilimumab, an immunomodulator that inhibits down regulation of the T-cell mediated immune response against tumor (in effect, a stimulant of the immune system against cancer) is in phase three trials in CRPC and has anecdotally demonstrated impressive radiographic and PSA complete responses of extended duration. Other agents in clinical trials include other new chemotherapy and hormonal agents, but also vaccines, radiolabeled antibodies, tyrosine kinase inhibitors, and even an antisense heat shock protein with promising early results.

Once considered a cancer research wasteland, the last 18 months of CRPC clinical research has been unprecedented with three new drug approvals bringing the arsenal of drugs demonstrating survival benefit to five. Numerous phase three trials are on going and some of them will lead to approval. Rapid advancement in cancer care always leads to challenging combinations and sequencing challenges, but it is a welcome change.

In Summary

Hopefully, it is now clear that prostate cancer is a disease that is highly variable between patients both in its natural history and treatment options. There are few black and white answers and a newly diagnosed prostate cancer patient deserves expert advice to help navigate the gray in the treatment of his disease. At Swedish/Edmonds we have highly skilled and experienced urologists, radiation oncologists, medical oncologists, pathologists and diagnostic radiologists who meet weekly in a multidisciplinary arena to formulate the most complete set of treatment options for all our patients. We appreciate your trust and partnership, the support of our community and the leadership of the Swedish administration in delivering the kind of care we would like our own family members to receive.
Community Services

Diagnostic Services
- Radiology
- MRI/CT Scanner
- Mammography/Ultrasound
- Laboratory/Pathology
- Sentinel Lymph Node Biopsy
- PET/CT Scanning (Swedish/Edmonds)

Treatment Planning
- Weekly Tumor Board
- Weekly Care Conference
- Weekly Breast Cancer Conference

Survivorship Programs
- Look Good Feel Better Classes
- Reach to Recovery
- ABC - After Breast Cancer Education Class
- Breast Cancer Support Group Referral
- Cancer Support Group Referral
- I Can Cope (Free Online Classes)
- Free Wigs/Fittings

Treatment
- Oncology Surgery
- Chemotherapy (Puget Sound Cancer Centers)
- Radiation Therapy (Swedish Cancer Institute at Swedish/Edmonds)
- Inpatient Services
- Outpatient Services
- Pain Management
- Physical Therapy
- Occupational Therapy
- Lymphedema

Supportive and Continuing Care Services
- Clinical Nutrition
- Spiritual Care
- Social Services
- Speech
- Respiratory
- Cardiology
- Neurology
- Coordination with Home Health & Hospice
- Bereavement Program
- American Cancer Society Resource Center Including the Road to Recovery and Patient Lodging Programs

Free Community Programs

Want to Quit Smoking Program
Helpful guidelines for quitting as well as information on the use of tools like nicotine patches and gum.

Bereavement Support Group
Includes support groups, luncheons, service of remembrance and a lending library as opportunities for assistance in the grief process. Staffed by professional bereavement coordinator, hospital chaplains and trained volunteers.