WRNMMC Us TOO, Inc.
A PROSTATE CANCER SUPPORT GROUP
SPONSORED BY
WALTER REED NATIONAL MILITARY MEDICAL CENTER
NEWSLETTER

VOLUME 22	NUMBER 1	FEBRUARY 2013

♦ PARTIN TABLES REVISED ♦

Prostate cancer experts at Johns Hopkins have developed an updated version of the Partin Tables, a tool to help men diagnosed with prostate cancer and their doctors to better assess their chance of a surgical cure. The updated tool is published in the January 3, 2013, issue of the *British Journal of Urology International.*

The Partin Tables are a statistical model to show the probability that the cancer is confined to the prostate and therefore is likely to be cured with surgery. The model is based on a patient's prostate specific antigen (PSA) level, Gleason Score, and clinical stage - the extent to which a tumor can be felt during a digital exam.

Treatment decisions for prostate cancer are very complex and depend on a variety of factors, including whether the cancer is confined to the prostate or whether it has spread to the edge of the gland, seminal vesicles, lymph nodes or elsewhere in the body. Data for the Partin Tables, first published in 1993, have been based on the outcomes for more than 20,000 men who underwent prostate removal at Johns Hopkins over the past three decades. This represents the third update of the data.

Before the widespread adoption of PSA for early detection, many men were diagnosed with prostate cancer after their cancer had spread. Today, the vast majority of men are diagnosed when the cancer is still confined to the prostate, giving them a much better chance of a cure with a surgical removal of the prostate. These new Partin Tables show that certain categories of men who were previously not thought to have a good prognosis actually could be cured with surgery. For example, men with a biopsy Gleason Score of 8 and above previously were not thought to be good candidates for surgery because of the likelihood that the cancer had spread. The new data show a higher probability of a cure with surgery even if a man's Gleason score is 8. Scores of 9 and 10 are still considered high risk, indicating that the cancer likely has spread. The researchers also found that having a PSA level of 10 and above was a better cut-off for predicting the spread of disease compared to lower levels.

The updated Partin Tables should significantly improve the ability of physicians to counsel patients on the extent of their disease and help them make treatment decisions, such as whether surgery is warranted and, if so, whether lymph nodes also should be removed during surgery. If there is a high probability that the cancer has spread, treatment options include radiation, chemotherapy and hormonal therapy. **(Continued on page 8)**

♦ *INSIDE THIS ISSUE* ♦

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♦ FROM THE EDITOR'S DESK ♦

Has a friend or family member recently been diagnosed with prostate cancer? Do you belong to a prostate cancer support group? If so, tell them about this newsletter and encourage them to sign up for it. All they need do is contact me via email, giving their email addresses, and I will include them in the distribution.

♦ NOVEMBER, 2012, SPEAKER'S REMARKS ♦

Our November program featured Dr. Clesson E. Turner, WRNMMC's Department of Pediatrics and Fellow, American College of Medical Genetics. His topic was "Familial Cancer," wherein he presented basic genetic considerations regarding cancer, especially prostate cancer. A summary of his presentation begins on page 9.

♦ MEETING SCHEDULE FOR FEBRUARY 7, 2013 ♦

Our speaker for Thursday, February 7, 2013, is Dr. Rex A. Kiteley II, Commander, Medical Corps, United States Navy, and Head of Radiation Oncology for the National Capital Region whose topic is **"The Role of Radiation Therapy in the Treatment of Prostate Cancer."** Dr. Kiteley received his Bachelor of Science degree from the United States Naval Academy and his medical degree from of the Uniformed Services University of the Health Sciences. Dr. Kiteley completed a four year residency in Radiation Oncology at Wake Forest School of Medicine, following which he was assigned as a board certified radiation oncologist to the National Naval Medical Center, Bethesda, MD. He subsequently became the head of Radiation Oncology for the National Capital Region in charge of Radiation Oncology at the Walter Reed National Military Medical Center. Dr. Kiteley also served as a flight surgeon in Marine Corps F/A 18 Hornet squadrons in South Carolina and Japan. He also served in Kabul, Afghanistan, as the medical reconstruction and development officer for the NATO command. Join us at 7 PM, Thursday, February 7, 2013. Your family members and friends are always welcome.

SEE THE BACK PAGE OF THIS NEWSLETTER FOR IMPORTANT INFORMATION ABOUT THIS MEETING.

No Fewer Side Effects for Prostate Proton Therapy. An expensive prostate cancer radiation treatment known as proton beam therapy has just as many side effects as a more common and cheaper radiation method, according to a new study.

In terms of side effects, Yu, et al., Yale University School of Medicine, found that in the long term there was no difference in outcomes between proton radiation and IMRT.

Proton therapy advocates argue that protons blast radiation directly to the tumor and therefore avoid side effects. The more common "intensity-modulated" radiotherapy (IMRT) exposes some healthy tissue to radiation that researchers hypothesized would increase side effects and even additional cancers. After a year, however, the study found the same number of side effects among men who had had both treatments. Prostate cancer, the most common cancer in men, kills about 28,000 Americans each year. However, many men don't die of the disease, because many tumors grow very slowly. Treatments include chemotherapy, hormone therapy, surgery, and frequent surveillance - aka "watchful waiting."

Although researchers are at odds over which treatment - proton therapy or IMRT - is the better option for men who choose radiation, that hasn't stopped the growth of proton beam centers. There are ten such centers in the U.S., according to the National Association for Proton Therapy, with eight more under development or being built.

Each one can cost more than $125 million, and Medicare pays doctors about twice as much for proton therapy. For the study in the Journal of the National Cancer Institute, researchers tracked Medicare claims in 2008 and 2009 for treatment-related complications in nearly 28,000 men with prostate cancer for up to a year. Only two percent of the prostate cancer patients underwent proton therapy and the remainder had IMRT.

After six months, nearly 10 percent of IMRT-treated patients, and six percent of proton therapy patients, had side effects including incontinence, a burning sensation while urinating or difficulty getting an erection. However, the difference disappeared a year after treatment, when nearly one in five patients suffered side effects regardless of which radiation treatment they had.

Yu and colleagues found that proton therapy costs nearly twice as much: $32,428 per course of treatment, versus $18,575 for IMRT. That difference was consistent with that found in other studies. The researchers feel that the "ball is in the court" of the proton advocates in terms of proving significant differences in outcomes.

The study only looked at side effects, and did not compare the effectiveness of the treatments, which proton therapy advocates said was a significant weakness of the study. Critics of the study felt that the data did not support the conclusions reached by the researchers. Critics also felt that the study's length - a year - wasn't enough time to look at the full scope of side effects from either treatment. The study also failed to include side effects that didn't require a hospital visit, and couldn't say how long treatments lasted.

Advocates for proton therapy agree that the therapy isn't for everyone. Advocates said the treatment was best for young healthy patients, while critics agreed it is most useful for cancers in children or in sensitive areas where minimizing the radiation is critical. (Source: http://bit.ly/V6PkLT, Journal of the National Cancer Institute, online December 14, 2012 via Reuters Health)

FDA OKs Expanded Use of Prostate Cancer Drug. The approved use of the drug Zytiga has been expanded to include treatment of men with late-stage, hormone therapy-resistant prostate cancer before they undergo chemotherapy, the U.S. Food and Drug Administration announced recently. Zytiga was initially approved

in 2011 for treatment of prostate cancer patients whose disease had progressed after treatment with the chemotherapy drug docetaxel. The drug decreases production of the male sex hormone testosterone. In prostate cancer, testosterone stimulates prostate tumors to grow. Drugs or surgery are used to reduce testosterone production or to block the hormone's effects. However, some men have what's called "castration-resistant" or hormone therapy-resistant prostate cancer, which means that prostate cancer cells continue to grow even with low levels of testosterone.

The expanded approval is based on a study of 1,088 men with late-stage, hormone therapy-resistant prostate cancer who took either Zytiga (abiraterone acetate) or an inactive placebo in combination with another drug called prednisone. Median overall survival was just over 35 months for patients who took Zytiga and about 30 months for those who took the placebo, the FDA noted.

The most common side effects among patients taking Zytiga included fatigue, joint discomfort, swelling caused by fluid retention, hot flashes, diarrhea, vomiting, cough, high blood pressure, shortness of breath, urinary tract infection and bruising.

This expanded approval of Zytiga was made under the FDA's priority review program, which offers an accelerated six-month review for drugs that may offer major advances in treatment or provide a treatment when no adequate therapy exists. (Source: HealthDay News, December 10, 2012))

Flavenoids and Prostate Cancer. New research suggests that prostate cancer patients who, before their diagnosis, routinely consumed hefty helpings of the flavonoid compounds found in plant-based foods and drinks may be at lower risk for the most aggressive form of the disease. But the research has significant limitations, the study authors noted, so it's too soon to say that a plant-based diet protects against prostate cancer. Flavonoids are found in vegetables and fruits, as well as in tea, wine, juices and cocoa. Researchers have long theorized that these particular antioxidants may help reduce cancer risk by fighting inflammation, oxidation, cell death and tumor cell growth.

The new study did not assess the ability of flavonoids to prevent the onset of cancer as a whole. But the investigation, involving about 1,900 patients newly diagnosed with prostate cancer, found that those whose diets included the highest amount of flavonoids were 25 percent less likely to have been diagnosed with the fastest-moving and harshest form of the disease compared to those who had been taking in the fewest flavonoids.

The researchers compared men with low-aggressive disease to high aggressive disease. They opined that consuming more fruits and vegetables will improve the odds of not getting prostate cancer altogether, but their study design did not permit conclusive findings.

The new study also found that smokers and men younger than 65 appeared to receive the most protective benefit from fruit and vegetable consumption. The authors identified green and black tea, as well as orange and grapefruit juices, as the prime sources of flavonoids consumed by study participants. Strawberries, onions, cooked greens, kale and broccoli also were popular flavonoid-rich foods.

An observer stated that the study design makes it hard to read much into the findings. The findings of a flavonoid benefit would be more reliable if they had stemmed from a highly controlled study of risk levels among patients who were proactively placed on a specific dietary plan, and then tracked for the future onset of cancer. (Source: HealthDay News, October 17, 2012)

Eye Injury and Robotic Surgery. According to a new study, the number of eye injuries associated with robotic-assisted radical prostatectomy increased nearly tenfold in the United States between 2000 and 2009, although the risk was still small. During that time, the incidence rate of eye injuries rose from 0.07 percent to 0.42 percent, according to the review of more than 136,000 such procedures. Most of the injuries involved corneal abrasion, or scratching of the eye surface.

How does this happen? While undergoing robotic-assisted radical prostatectomy, patients are positioned head-down and are at risk for facial swelling, arm injuries, as well as corneal or other eye injuries. Possible causes of eye injuries during robotic-assisted radical prostatectomy include the long duration of surgery, patient positioning or something associated with the robot itself, said Sampat, et al., at the University of Chicago.

Robotic-assisted radical prostatectomy was used in less than 10 percent of prostate cancer surgeries in 2000, and increased to between 50 percent and 80 percent of all such operations in 2008. The researchers said that it is important for patients who are considering a robotic operation to discuss these concerns with their health care providers to consider the risks and benefits of all options. (Source: American Society of Anesthesiologists, news release, October 16, 2012, via HealthDay News, October 16, 2012)

Metabolic Syndrome and Prostate Cancer.

Men with metabolic syndrome -- a group of symptoms linked to heart disease and diabetes risk -- may also face a higher risk of dying from prostate cancer if diagnosed with the disease, according to a large new study. Metabolic syndrome includes high blood pressure, high blood sugar and high blood fat levels, as well as greater than normal body-mass index (BMI), a measurement of body fat based on height and weight.

The study authors noted that by following health recommendations on diet and exercise to prevent heart disease and diabetes, men can also lower their risk of death from this form of cancer.

Stattin, et al., Umea University, Sweden, examined data on more than 290,000 men enrolled in a long-term study on metabolic syndrome and cancer. Over the course of 12 years, nearly 6,700 of the men were diagnosed with prostate cancer. Of these men, about 1,000 died from the disease. Men with the highest body-mass index had a 36 percent higher risk of dying from prostate cancer. Those with high blood pressure had a 62 percent greater risk of death from the disease. And men with the highest combined score on all metabolic factors were more likely to die from prostate cancer, the study showed.

The researchers point out that metabolic syndrome does not increase men's risk for prostate cancer. Those diagnosed with the disease, however, are more likely to die from it if they also have metabolic syndrome. The researchers said their observations suggest that cardiovascular risk factors such as overweight and hypertension are involved in stimulating the progression of prostate cancer. Although the study found an association between metabolic syndrome and risk of death from prostate cancer, it did not prove a cause-and-effect relationship. (Source: *Cancer*, news release, October 22, 2012 via HealthDay News, October 22, 2012)

IMRT and Localized Prostate Cancer.

Intensity-modulated radiation therapy (IMRT) for localized prostate cancer yields fewer side effects than other radiation treatments. Men with localized prostate cancer who received intensity-modulated radiation therapy (IMRT) experienced fewer side effects than similar patients treated with two other forms of radiation therapy, according to a new study. Prostate cancer is the most common malignancy in men, accounting for more than 240,000 new diagnoses and 30,000 deaths each year. Advances in treatment technology have led to the development of newer, but more costly, treatments. For example, between 2000 and 2008, the use of IMRT rose from 0.15 percent to 95.9 percent in relation to the older technique of conformal radiation therapy (conformal RT).

The researchers compared 6,666 men who received IMRT with 6,310 who received conformal RT. The men treated using IMRT were 9 percent less likely to be diagnosed with gastrointestinal problems than those treated with conformal RT, 22 percent less likely to experience hip fracture, and 19 percent less likely to receive additional cancer therapy. However, the men treated with IMRT were 12 percent more likely to be diagnosed with erectile dysfunction. When the researchers compared 684 men treated with IMRT and 684 treated with proton therapy, patients treated with IMRT were 34 percent less likely to be diagnosed

with gastrointestinal problems, but were as likely to experience other side effects or undergo additional therapies as those treated with proton therapy.

The findings were based on analysis of the National Cancer Institute's Surveillance, Epidemiology, and End Results data from 16 regional cancer registries, linked to Medicare administrative and health care claims (the SEER–Medicare database) for 2000 through 2007. (Source: Sheets, et al., in the April 18, 2012, *Journal of the American Medical Association* 307(15), pp. 1611-1620)

Targeted Biopsies. A new, highly targeted form of biopsy could be an advance in prostate cancer care, according to researchers at UCLA, who report that prostate tumors can be diagnosed using "image-guided targeted biopsy" -- the direct sampling of tumors in tissue using both MRI and real-time ultrasound.

The UCLA team say this targeted form of biopsy is much more accurate than conventional "blind" biopsies that do not enable doctors to actually see the tumors. They suggested the new procedure may improve early detection of prostate cancer and result in fewer biopsies overall. The researchers say that early prostate cancer is difficult to image because of the limited contrast between normal and malignant tissues within the prostate. Conventional biopsies are basically performed blindly, because the doctor can't see what he aiming for. Now, with this new method there is the potential to see the prostate cancer and aim for it in a much more refined and rational manner.

Almost all of the one million prostate biopsies performed in the United States every year are performed after a man tests positive for elevated blood levels of prostate-specific antigen (PSA), which can indicate prostate cancer. One expert not connected to the new study said current biopsy methods have their pros and cons. He notes that currently, the diagnosis of prostate cancer occurs through a transrectal ultrasound guided prostate biopsy. It has the advantage that it can be performed with local anesthesia in a urologist's office in less than 10 minutes. The problem with this method is that approximately 75 percent of men have negative biopsies. Multiple biopsies may be taken to try to "find' the cancer, so the procedure is usually repeated at some point when the PSA test continues to rise. Insignificant cancers are detected as often as significant ones, and there is always the fear that a cancer was missed. Finally, there are risks of infection, pain and bleeding.

The UCLA team actively monitored 171 men with slow-growing prostate cancers or men who had received negative biopsies but maintained persistently high PSA levels, suggesting that a tumor might be present. The participants first had an MRI to visualize their prostates. That image was sent to a device, called Artemis, that fuses the MRI pictures with real-time, three-dimensional ultrasound. This fusion process allows a urologist to see lesions during the biopsy. Fifty-three percent of the men involved in the study had prostate cancer. The researchers also found that 38 percent of the cancers found using targeted biopsy were aggressive tumors that were more likely to spread and require treatment. The targeted prostate biopsy has the potential to improve the diagnosis of prostate cancer and may aid in the selection of patients for active surveillance and focal therapy, the study authors say. As for cost, the overall added cost of the MRI may be offset by the reduced number of biopsy procedures. (Source: University of California, Los Angeles, news release, December. 10, 2012. via HealthDay News)

The Long and Short of It! A small percentage of men in a prostate cancer study complained that their penises seemed shorter following treatment. Some said that it interfered with intimate relationships and caused them to regret the type of treatment they chose. The study by Nyugen, et al., Dana-Farber/Brigham and Women's Cancer Center, said that the complaints were more common in men treated with radical prostatectomy or male hormone-blocking drugs combined with radiation therapy. No men reported a perceived shortening of their penis following radiation therapy alone.

The study's findings are based on surveys completed by physicians of 948 men treated for

prostate cancer and who had suffered a recurrence of the disease.

Twenty-five men (2.63 percent of the group) complained of smaller penises after treatment – 3.73 percent for surgery, 2.67 percent for radiotherapy plus androgen deprivation therapy (ADT), and 0% for radiotherapy alone. Radiotherapy included both radiation administered by an external x-ray machine, and brachytherapy – the implantation of radioactive seeds directly into the prostate.

The study is reportedly the first to link men's perceptions of a reduction in penis size to lowered life satisfaction, problems in emotional relationships, and misgivings about the specific form of prostate cancer treatment they chose. The surveys of the men did not report on their sexual functioning. The researchers note that the potential side effect of a smaller penis is well-known among urologists, but it is almost never discussed with patients, so it can be very upsetting to some men when it occurs.

The researchers said that no direct measurements of penis size were taken either before or after treatment. Nor did the patients' physicians specifically ask about this side effect; the issue was brought up by patients in conversations with their doctors. For this and other reasons, the authors of the study suggest that the problem is likely more common than reported in the survey. The report's authors said physicians should discuss in advance the possibility with their patients so that they can make more-informed treatment choices.

The likelihood and magnitude of penis shortening as a consequence of treatment have not been well studied, said the researchers. However, one researcher said that previous studies have concluded that there is shortened penis length issue following prostatectomy. This is most common with non-nerve sparing surgery, as this may result in fibrosis and atrophy of erectile tissue due to damage to nerve and vascular structures. The present study did not find much difference on that score. (Source: Press release, Dana-Farber Cancer Institute, dated January 3, 2013, via EurekAlert)

Minimally Invasive Prostatectomy.

Minimally invasive prostatectomy in young men has fewer complications than standard prostatectomy, according to a recent study. Men between ages 18 and 64 who underwent surgery for localized prostate cancer between 2003 and 2007 were more likely to undergo minimally invasive radical prostatectomy (MIRP) than traditional retropubic radical prostatectomy (RRP), also known as "open surgery." MIRP involves laparoscopic surgery, either with or without robot assistance, requiring only small incisions. The study also found that MIRP had fewer complications, which appeared to have offset its higher hospitalization costs.

The researchers examined data on 10,699 non-elderly men who underwent either MIRP or RRP between 2003 and 2007. They found a sharp increase in the proportion of patients treated with MIRP, increasing from 5.7 percent in 2003 to 50.3 percent in 2007. They tried to identify factors associated with each type of procedure, and compared outcomes (complication rates, length of hospital stay, hospitalization costs, and total costs within 3 and 6 months of surgery). They found that men who underwent MIRP had a significantly lower rate of complications (23.0 vs. 30.4 percent). However, men who underwent MIRP also had higher mean hospitalization costs—despite shorter mean hospital stays. Men with 1 or 2 coexisting illnesses were 12 percent and 73 percent less likely, respectively, to undergo MIRP than men with no coexisting conditions. The researchers recommend additional research to explore whether the increased use of MIRP reflects overtreatment of prostate cancer in younger men. (Source: "Comparative effectiveness, cost, and utilization of radical prostatectomy among young men within managed care insurance plans," by Ya-Chen Tina Shih, Ph.D., John F. Ward, M.D., Curtis A. Pettaway, M.D., and others in the March 2012 Value in Health 15(2), pp. 367-375)

Military Service and Urinary Incontinence.
Military service was linked with moderate to severe urinary incontinence in U.S. men, even after consideration of other known risk factors, in new research presented in Atlanta at the 107th Annual Scientific Meeting of the American Urological Association. The reason why military exposure would be linked to urinary incontinence is not known, according to the researchers. The

researchers said there were no known specific details, such as the branch of service, deployment status, exposure during service, but they felt that more research is needed to link specific types of combat or branch of service to urinary symptoms.

The researchers reviewed survey data on 5,297 men age 20 and older who were stratified into three age groups: less than 55, between 55 and 69, and 70 years and older. Military exposure was assessed with the question: "Did you ever serve in the Armed Forces of the United States?"

Compared to men with no military exposure, those who had served in the military had higher rates of any urinary incontinence (18.8% vs 10.4%;) and moderate to severe urinary incontinence (8.4% vs 2.8%). Men in the youngest age group were three times more likely to have moderate to severe urinary incontinence if they had served in the military, compared with their peers who had no military service. However, there were no significant differences in the odds of urinary incontinence for the middle age group and the oldest group.

The researchers hope to generate awareness that urinary incontinence and other urinary symptoms are common among men, especially relatively younger men who have served in the US armed forces. Treatments are available for urinary symptoms, and they want to do more research on the type of military exposure that may be contributing to this finding. (Source: Reuters Health Information, May 29, 2012)

Watchful Waiting and Quality of Life. Compared with immediate radical prostatectomy, watchful waiting, also known as active surveillance, is likely to reduce disease-specific survival only very modestly among men diagnosed with low-risk prostate cancer while potentially leading to significant benefits in terms of quality of life (QOL). Etzioni, et al., Fred Hutchinson Cancer Research Center, Seattle, developed a simulation model to estimate prostate cancer mortality among men who undergo active surveillance compared with those who undergo immediate radical prostatectomy. Active surveillance is a viable option for men diagnosed with low-risk prostate cancer, but this approach has little data to recommend it due to the length of time required to measure its effect on prostate cancer mortality.

Based on a hypothetical cohort of men aged 40 to 90 years with low-risk prostate cancer, a Gleason score no higher than 6, and a prostate-specific antigen (PSA) level of no more than 10 ng/mL, the model projected that 2.8% of men on active surveillance would die of their disease in 20 years, compared with 1.6% of men undergoing immediate radical prostatectomy. The average projected increase in life expectancy associated with immediate radical prostatectomy was 1.8 months. The model projected that on average, men on active surveillance would remain free of treatment for an additional 6.4 years relative to men who underwent immediate treatment.

The researchers concluded that very few men with low-risk disease die from prostate cancer regardless of treatment, and the difference between treatments appears to be very modest. They acknowledge that while the 6-year treatment-free interval means men who choose active surveillance will not have to endure treatment side effects during that time, such as impotence or incontinence, it is not clear whether that benefit is overshadowed by anxiety or the need for repeat biopsies. (Source: *Clin Cancer Res*. 2012;18[19]:5471-5478). October 22, 2012

Partin Tables: Continued from page 1)

The updated Partin Tables should significantly improve the ability of physicians to counsel patients on the extent of their disease and help them make treatment decisions, such as whether surgery is warranted and, if so, whether lymph nodes also should be removed during surgery. If there is a high probability that the cancer has spread, treatment options include radiation, chemotherapy and hormonal therapy.

To access the updated Partin Tables, go to http://urology.jhu.edu/prostate/partintables.php.
By inputting the PSA, the Gleason Score and the clinical stage results, and clicking on “find results,” an individual can see the percentage chance that the cancer is confined to the prostate, has migrated to the edge of the gland, has invaded the seminal vesicles or has spread to the lymph nodes. (Source: Press release, Johns

Hopkins Medicine, January 3, 2013)

" FAMILIAL CANCER "
by
LTC Clesson Turner, MD
Assistant Chief of Genetics
WRNMMC

(Summary of a presentation to the WRNMMC Prostate Cancer Support Group, November 1, 2012)

Introduction

(At the outset, Dr. Turner displayed a series of slides depicting selected DNA concepts.)

Tonight I want to talk to you about genetics. Genetics can be a difficult concept and my goal tonight is to make it less confusing. I want you to understand certain basic genetic concepts, particularly as they pertain to prostate cancer. The slides I just showed are helpful in that they allow us to understand the scientific concepts. So the concepts are important, but the scientific language is not as important for our purposes tonight.

DNA

The first one is the concept of DNA and what DNA is. Simply put, DNA is the set of instructions for how our body does everything that it is supposed to do. Think of it as group of recipes strung together that tells your body how to make certain chemicals so that it can do certain things. For example, some of those chemicals are responsible for digesting your food. Others are responsible for controlling the growth of the cells in our bodies. So all of our cells are controlled by DNA and we are going to talk about what happens when DNA sometimes does not do everything that it is supposed to do, i.e., how those changes in DNA can sometimes be passed down in predisposed people to develop into cancer.

DNA stands for deoxyribonucleic acid. DNA is to my mind a very amazing molecule. It is a group of sugar molecules that forms the backbone that holds another series of chemicals next to each other in a ladder-like effect. Our whole set of DNA has about three billion of those chemicals and that whole set is in every single cell of our bodies. Cells are groups of tissues organized in such a way that they comprise certain body members, e.g., our prostates, our brains, and our eyes. They perform many different functions, but they are all controlled by the same set of DNA. As I mentioned, there are about three billion of them. How big is that number? If you counted and read each of those chemicals one at a time, one per second, it would take you 95 years to count three billion of them. So it is a huge number! And it is possible for one of those three billion chemicals to change and predispose people to develop cancer. That is the concept I want to emphasize tonight.

Each one of our cells has DNA and the DNA is organized into something called chromosomes. Our chromosomes are just DNA and proteins. Proteins are chemicals made from DNA and they help pack those three billion bits of information down so they can fit into every cell of our bodies. As noted, your body is made up of several trillion of these tiny cells, each cell containing a complete set of DNA. If you could manipulate the DNA to stretch it out, it would be about six feet long for just one cell! But it is all packed down very tightly by this protein into these chromosomes.

Everybody has 46 chromosomes. We get half from our mother and half from our father. They are numbered based on size from chromosome 1 up through chromosome 22. Then there are your X and Y chromosomes. A female has two X chromosomes and the male has an X chromosome and a Y chromosome. The Y chromosome is much, much smaller than the X chromosome, so it does not have as much information in it, but it is what makes you a man.

Everyone also has two copies of chromosome 1 through chromosome 22. We get one from our mother's egg and one from our father's sperm.

Spread out along those chromosomes are genes. Genes are a set of those chemicals in that ladder that we talked about earlier. Genes are read by other chemicals in our bodies that tell our bodies how to do such things as to digest our food. The genes that we know about make up only about one percent of those three billion chemicals that we mentioned. We are still learning what the rest of that DNA does. It is estimated that everybody has about 20,000 of those genes spread out in those 46 chromosomes. Genetics is a relatively new field of medicine. It has only existed since the 1950s. It wasn't until 2001 that we were able to read all three billion of those chemicals. So we are very much in our infancy.

Mutations

Genes are so important because they produce chemicals that make things happen in our bodies. Sometimes a change (mutation) may occur in one of those chemicals, producing a product that does not work. Technically, any change in the normal DNA sequence, even a change that does not affect protein structure or function, is a mutation. The term mutation, however, is commonly used to refer to DNA sequence changes that do affect protein function. A disease-associated mutation is a change in the DNA sequence that alters or destroys the function of a protein, causing or predisposing individuals to disease. All this can be confusing because a mutation may actually improve the function rather than reduce it! But that is not always a good thing, either, as we will see later.

Look at this slide of DNA. This is just a picture of the chromosome. The white part here is the backbone that we were talking about and these colored parts are those three billion chemicals that stick together. It shows how the chromosomes are packed in our cells. Then this gene codes for a protein. The protein is the functional unit that does something in your body.

In medicine, we talk about the relative risk of developing a disease. If we took the entire population of men in the world and averaged out the risk of developing prostate cancer, we would set the risk at value of one. A genetic change may make the risk slightly higher. For example, if it makes the risk ten percent higher, then the risk is1.1. or it may make it lower. More about this later.

There also is something called a polymorphism. Polymorphism is a genetic change that does not necessarily cause a change in the function of the protein, but it occurs in more than one percent of the population. Genetic change occurs in everyone. Most of these genetic changes don't cause much in the way of problems, but sometimes they do. Sometimes these polymorphisms may alter the function of your protein, just a little bit, making it work less well. Polymorphisms are used frequently by geneticists to track the inheritance patterns of certain diseases, which allows the identification of chromosomal regions that contain disease-associated genes (using a process called linkage analysis) and the identification of specific genes within these candidate regions.

Some genetic polymorphisms have been associated with differences in the metabolism of drugs. Pharmacogenetics hopes to analyze these differences to make target medications for certain diseases or reduce variability in drug response.

Types of Mutations

Let's talk about two different types of mutations. First, you can have a mutation that is passed down from your parents. It was in either all the cells of your parent's bodies or just in their egg or their sperm. That genetic change, if it is passed down to a child, occurs in every cell of the body. At conception, we started out as one microscopic cell when that egg and that sperm fused together. In time, we mature into adult persons and we have lots of cells. That means that each cell has had to divide multiple hundreds of thousands of times during our lifetimes. When that happens, new DNA is produced that has to read all 3 billion of those chemicals and reproduce them. It doesn't always work perfectly. Sometimes one of those chemicals can get changed and be different from the parent cell. So the germline refers to changes that occur in the egg or the sperm and are passed down from your parents.

Somatic mutations are genetic changes that occur later on in life as our cells divide as we age. Somatic mutations, by definition, occur in somatic (body) cells and, therefore, are not in-

herited. These mutations are acquired during an individual's lifetime as a result of the effects of carcinogens and other mutagens. The majority of human cancers result from accumulated somatic mutations.

A tumor is not always cancer. It is defined as an abnormal growth, but it does not necessarily mean cancer. Tumors occur because of a series of genetic changes. All cancers arise from gene mutations, most of which accumulate throughout an individual's life span, though some may be inherited. As noted earlier, germline mutations are present in the ova or sperm (germ cells) of the parents, and thus are propagated in every cell in the developing offspring. Individuals who carry cancer-predisposing germline mutations are born with those particular mutations in every cell. Therefore, the chances that additional genetic damage in a given cell will give rise to a tumor clone are greatly increased. This process is thought to explain why cancers occur at an earlier age and in multiple sites in individuals who carry germline mutations in cancer susceptibility genes.

One of the problems is that there are many genes that influence how a cell grows. We know that some of those genes increase your risk of developing cancer if a change occurs in them. Probably the ones that are understood the most are the breast cancer 1 and 2 susceptibility genes, BRCA1 and BRAC2. Although they are called breast cancer susceptibility genes, they don't just lead to breast cancer if you have a change in them. If you have a change in these genes, you can develop breast cancer or even prostate cancer. So there are many genes that may lead to the same disease.

All tumors are clonal, which means that they originate from a single cell. Each cell, when it divides, generates two identical new cells. If a cell acquires a mutation, it passes that mutation to its daughter cells during cell division. Cells with certain types of mutations tend to proliferate more than normal cells, providing additional targets for new mutations. Subsequent mutations in a daughter cell will be transferred to all the cells it generates through cell division. If one cell acquires enough mutations to become cancerous, it will form a tumor in which all of the cells have been derived from a single transformed cell.

Penetrance

The next concept that you should understand is termed penetrance, that is, if you have a genetic change, do you develop disease from that genetic change? You can have a genetic change and yet not have disease. If you have a genetic change that predisposes you to developing cancer, it does not mean you have cancer. It means that your risk of developing cancer is elevated. Some people have a sense of fatalism about genetics. For example, there is a hereditary predisposition to developing colon cancer. If you have a genetic change for developing cancer, your risk over your entire lifetime in getting colon cancer is high, but it is not 100 percent.

Nongenetic factors, such as exposure to carcinogens, also may affect penetrance. For example, cigarette smoking greatly increases the risk of developing several types of cancers. However, not all smokers actually develop cancer, suggesting the existence of some sort of interaction between carcinogens in cigarette smoke and the person's genetic makeup.

Hormones and reproductive factors may also influence the penetrance of certain diseases. For example, breast and ovarian cancer are more likely to occur in women who have early menarche, late menopause, and a first child after age 30 years (or no children at all). These risk factors are believed to act by influencing a woman's exposure to estrogen and progesterone during her lifetime and by the effects of cell differentiation in the breast that occur during pregnancy.

The incomplete penetrance associated with many hereditary cancer syndromes has important implications for genetic testing. For most hereditary cancers, identification of a cancer-predisposing mutation is only useful in estimating the risk of developing cancer. With the exception of a few syndromes that are completely penetrant, genetic testing cannot determine whether or not cancer will actually occur in a particular mutation carrier.

Penetrance is usually age-related, meaning that the trait is normally not expressed in most carriers at birth, but is expressed with increasing frequency as the carriers get older. Nobody is born with prostate cancer. You develop it at some point in your lifetime.

It is not yet possible to predict which carriers of a particular disease predisposition will actually develop the disease. However, certain factors are known to increase or decrease the penetrance of an altered cancer susceptibility allele. For example, certain other genes, called modifier genes, are believed to affect the expression of some alleles. A modifier gene may either increase or decrease the penetrance of a germline mutation. Penetrance can also be affected by mutations in DNA damage response genes, whose normal function is to recognize and repair genetic damage. If this repair process malfunctions, mutations may accumulate in other genes, increasing the likelihood that a given cell will progress to cancer.

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Autosomal Dominant Inheritance

The next concept is something called autosomal dominant inheritance. So autosomal dominant inheritance, is as I said, you have two copies of every gene, sometimes to develop disease you need both copies of the gene to be changed, other times you only need one of the two copies changed. In the case of dominant, you only need one copy of the gene changed, not both. The reason that is important is that when you have children you randomly pass on one of those copies of your genes. So it is 50/50 random chance for each child if you have a change in the cancer predisposition gene, it is a 50/50 chance whether they get the changed gene or the unchanged gene. Most cancer predisposition syndrome are dominant, meaning you only need one change to being predisposed to developing cancer.

But most cancer susceptibility genes are incompletely penetrant. Penetrance means if you have the change will you or will you not develop disease. Not everybody who has the change develops disease. The other problem depends on the type of cancer. This pedigree here shows these affected individuals with the filled in circles and squares and these people that are carriers right here. They have not developed cancer, they may in their lifetime, or they may not. Some cancers are common enough that even if a family has a predisposition to developing a cancer, somebody else that did not inherit that genetic change may still develop that same cancer. Prostate cancer is very common. So if you have a genetic predisposition running in your family to develop prostate cancer, and you get genetic testing and you learn that you did not inherit that genetic change that is in your family, it does not mean that you cannot get prostate cancer for some other reason.

There are two types of genes that are related to cancer predisposition. There are genes that suppress development of tumors, and then there are genes that when changed predispose us to developing tumors. They are termed tumor suppressor genes and oncogenes respectively. Tumor suppressor genes are genes that sort of stop your cells from growing uncontrolled. Cells are only supposed to live so long and then they die off and get replaced by new cells. Sometimes tumor suppressors are the genes that control dying off as one example. If those tumor suppressors are lost, not working as well, then they can't cause that cell to die off and get replaced by new ones, so they can grow uncontrolled. In the case of tumor suppressor genes, they can prevent cancer. If you think of them like a set of brakes on a car, you have to lose both of those tumor suppressors in general before they allow that uncontrolled growth. If you lose one copy, usually the second copy of the gene is adequate to prevent that cell from growing uncontrolled, except as your cells divide something may happen that causes you to lose that second copy and then that cell can grow uncontrolled.

So this first change could be something that happens as part of the normal cell division or it can be something that is inherited or passed on. If it is inherited or passed on and it is in every cell of your body, then the likelihood is that you have more cells with a higher likelihood of that second change happening.

Oncogenes are little bit different. Oncogenes are cells that normally regulate your cell growth

but when they get a genetic change, they work better than they are supposed to. They may turn on cell growth and then that uncontrolled cell growth can be problematic.. Unfortunately cancer makes it really confusing because cancer is not just one single genetic change. It is a series of genetic changes that happen. Colon cancer is the one that has been worked out the best. You have normal lining of your intestinal cells, all those normal cells that are in there. You have a genetic change in this gene called APC that causes those cells to grow a little bit uncontrolled but not cancer. If you get another genetic change then that uncontrolled growth here becomes an adenoma which is not cancer, but what we always term as precancer. If it gets left alone it will develop into cancer at some point. But you need a couple of other changes to occur over time before it develops into a cancer. Then there are probably further changes that are required before that cancer spreads to other parts of the body.

Our goal would be to prevent all of this from happening, but if this had to happen we want to catch it early. So that is why understanding the genetics and understanding these pathways is helpful, because if you can catch it earlier, you can treat it at an earlier stage.

All cancers can be considered genetic because they arise from genetic alterations or mutations. Multiple mutations within the same cell are required for the multi-step development of cancer. Only a small proportion of cancers is hereditary; the rest are sporadic and are associated with somatic mutations acquired during an individual's lifetime. Those who carry germline mutations in cancer-susceptibility genes are born one step closer to tumorigenesis and are predisposed to developing cancer at an early age and in multiple sites.

US Human Genome Project

The US Human Genome Project, begun in 1990, is a 15-year effort coordinated by the US Department of Energy and the National Institutes of Health. In 2000, the Human Genome Project and Celera Genetics jointly announced the completion of the initial draft of the human genome. The goal of this collaborative research program is to identify and sequence all of the 20,000 genes in human DNA. To date, at least two dozen cancer susceptibility genes have been identified and sequenced, and these discoveries have begun to yield predictive tests to determine who is susceptible to some hereditary cancers. In the future, knowledge gained from the Human Genome Project and other research efforts is expected to provide revolutionary new ways to diagnose and treat cancer and, ultimately, to prevent the disease. Two emerging applications of large-scale genetic analysis to human cancer are pharmacogenetics and gene expression array analysis.

Genetics and Prostate Cancer

Now let's discuss what we know about prostate cancer genetics. Unfortunately, we don't understand it all that well. This is partly due to the fact that prostate cancer is very common. By the time men reach the age of 80, one in seven will have had clinically-diagnosed prostate cancer. And this does not include men who have clinically-undiagnosed disease. Studies have identified several risk factors for developing prostate cancer. The first of these factors is increased age. Clearly, prostate cancer is a disease of older men, with less than 1% of all prostate cancer diagnosed in men younger than 40 years. The second risk factor is ethnicity. Black men have a higher incidence of the disease, as well as a higher mortality, compared with white American men. The disease is comparatively rare in Asian populations. Third, a family history of prostate cancer is a risk factor. Finally, there is the dietary factor. Evidence suggests that the noted international variations in prostate cancer incidence are associated with per capita fat intake. Also, recent research suggests that low levels of plasma selenium are associated with increased risk of prostate cancer. Having said, that I hasten to add that the role of diet in prostate cancer incidence remains controversial. Additional studies are needed to clarify whether diet modifications can decrease prostate cancer risk.

Hereditary Susceptibility to Prostate Cancer

Back to family risk. A man's risk of prostate cancer varies according to his family history. Studies have demonstrated that having a family history of a first-degree relative (e.g., father or brother) with prostate cancer results in a two-

fold increase to 18% in the risk of the disease compared with the general population, for which the risk is about 9% by age 79 years. And the risk can vary with the number of affected relatives and their ages at diagnosis.

There is a number of specific genes that have been implicated in that progression from normal prostate tissue to prostate cancer. These specific genes are under study in the hope that by understanding their function we will be able to intervene with appropriate treatment or even prevent the onset of the disease.

The majority of prostate cancers do not have an easily recognized hereditary component and are considered sporadic, i.e., not genetically related. However, many individuals with apparently sporadic prostate cancer may have underlying inherited susceptibility that cannot be ascertained from available family history. Approximately 20% of all prostate cancer is considered "familial," that is, patients have at least one relative with prostate cancer, but no specific inherited etiology can be identified. Studies in male twins indicate that up to 40% of prostate cancer may have a hereditary component. Such "familial clustering" may result from interactions of multiple genes and environmental factors or weakly penetrant mutations in single cancer susceptibility genes. Nongenetic factors, such as shared exposure to environmental carcinogens, may also contribute to familial clustering.

However, if you look at prostate cancers overall, how many of them are hereditary, how many of them do we know what the genetic change is that is related to the development of the prostate cancer? It is only about 5 percent of prostate cancers, a very small number. Put another way, that autosomal inheritance where you get a gene change passed down from mom or dad is only about five percent. However if you are in that five percent, your risk of developing prostate cancer over your lifetime may be as high as 90 percent. We know that an additional twenty percent are familial, meaning that we have a very strong suspicion that there is an inherited genetic factor that predisposed that family to developing prostate cancer. We are just not good enough at identifying this. Then there is the other 75 percent of prostate cancer is that is termed sporadic. Unfortunately, because prostate cancer is very common and the family history is also very common, not all prostate cancer is caused by an inherited genetic change. All cancer is due to genetic change, but the minority of them are inherited from the mother or father.

(Dr. Turner presented a slide listing some specific candidate genes under study for their potential roles in familial prostate cancer.)

Association of Prostate Cancer and Breast Cancer

Results of epidemiological studies of prostate and breast cancer suggest that a clustering of both of these cancers occurs in some families. Although the prostate cancer susceptibility genes have not yet been clarified, the breast cancer-related genes *BRCA1* and *BRCA2* may play a role in prostate cancer risk. Additional studies have suggested that the risk of occurrence of prostate cancer in men carrying a *BRCA1* mutation may be only slightly elevated, whereas the rate for prostate cancer associated with a *BRCA2* mutation may be as high as 7. Also of note, men carrying a *BRCA2* mutation seem to be more likely to develop prostate cancer at an early age (younger than 65 years). Despite these significant increases in prostate cancer risk, it is unlikely that *BRCA1* and *BRCA2* account for a large percentage of familial prostate cancer. Data regarding the *BRCA2* gene suggest that *BRCA2* mutations account for only 2% of early-onset prostate cancer and 5% of familial prostate cancer.

Androgens are essential for prostate development, growth, and maintenance. Research has firmly established an association between androgen levels (testosterone) and prostate cancer risk. Therefore, it is not surprising that genes involved in the androgen pathway may be associated with prostate cancer risk. We don't know how these changes in this androgen gene affect your risk of developing prostate cancer, but scientists are actively studying it.

So What to Do?

Because of our incomplete understanding of genes that predispose to prostate cancer, genetic counseling for high-risk families remains difficult. Genetic testing is not available for most families with familial prostate cancer, with the

exception of those that have histories suggestive of a *BRCA1* or *BRCA2* mutation. However, families with significant histories of prostate cancer should be encouraged to participate in studies related to familial prostate cancer. In addition, the American Cancer Society suggests that men with a family history of prostate cancer should consider surveillance with the prostate specific antigen (PSA) test and digital rectal examination prior to the age of 50 years. At present, however, these strategies are based solely on expert opinion; there is as yet no evidence of a reduction in mortality related to familial prostate cancer as a consequence of screening. Transrectal ultrasound and other imaging and novel serum screening modalities are also being investigated.

When we identify a gene that may be associated with disease, it takes a very long time for that advance to become useful in clinical practice for diagnosis and treatment. We hope that that changes soon.

QUESTIONS AND ANSWERS

Question. I had three daughters and one son with no family history of cancer. Then one daughter died of breast cancer shortly after she was diagnosed. Next, I was diagnosed with prostate cancer, but it was not genetic. It was associated with Agent Orange exposure during my service in Vietnam. My sister had two daughters and one son. Just recently her older daughter died from breast cancer. Would a genetic consultation been helpful in this case?

Answer. The benefit of the consultation for genetic risk varies. The benefit is more likely in the scenario you describe because a very detailed family history is likely to be available for

detailed testing and analysis. It could result in a recommendation for risk reduction surgery. This is pretty heavy stuff! It could mean a recommendation for bilateral mastectomy and removal of the ovaries in a woman before the age of 40! (A woman in this situation has a very high risk of ovarian cancer, that's why the ovaries are also recommended for removal.) Having your ovaries removed and having a bilateral mastectomy is a very daunting recommendation. It is not based the typical 20-minute doctor's appointment! Furthermore, and apart from the technical evaluation, there is considerable emotion that surrounds the recommendation and the treatment decision. The geneticist's role is to present the patients with a recommendation to help them have some degree of control in dealing with their disease.

Question. I am the oldest of four brothers and we all have prostate cancer. My concern is for my son who is 35, and for his son (my grandson). Given this familial experience, shouldn't the surveillance at age 50 be altered or modified for them.

Answer. I think there is a likelihood that it may be. It would be reasonable for your son to discuss his family history with his primary care doctor and talk about his screening options. As for your grandchildren in the future, who knows what science will produce in the next 20 or 30 years.

Question. My son is in the military. Does the military have an age at which they provide screening for prostate cancer?

Answer. The military was doing PSA screenings for men on demand, but I believe they have gotten away from that. Check with your primary care physician or urologist at a convenient military healthcare facility. Your family history is very remarkable (four brothers with prostate cancer). Being in the military provides good access to reliable health care, so I recommend that your son have that screening conversation with a physician. A genetic risk assessment may be in order. If a man has a BRAC 2 mutation, his risk of prostate cancer is four to seven times that of the general population. This is one of the situations where genetic testing can be helpful. If you know there is a genetic change in the family, you can test other family members for just that change.

Genetic fatalism is a problem because people think that if they have a BRCA mutation that they will develop cancer, but there is not a 100 percent correlation. Genetic change does not equate to disease. Having a BRCA1 or 2 mutation does not mean that you have breast cancer or prostate cancer. You don't! Instead, you have a higher risk for developing disease - everybody has some risk.

Question. Is this genetic consultation considered to be general preventive healthcare?

Answer. It is within the military healthcare system. But the availability of genetic professionals tends to be very limited. For example, there are four geneticists in the active duty Army, and until recently, most of them were deployed. But you don't have to see a geneticist; you can see a genetic counselor trained in the latest procedures. Here as WRNMMC, we have a nurse practitioner who is trained in genetic evaluation. She does mostly breast cancer consultations. We are planning to improve the program by hiring a genetic counselor in the near future. For the present, WRNMMC has myself and an Air Force geneticist who is here on a part-time basis. But remember, you don't have to see a geneticist within the military healthcare system. There are a fair number of them here in the DC area. Your primary care doctor or your oncologist can help you get a referral within the local private healthcare system. For example, both the Lombardi Cancer Center at Georgetown and Johns Hopkins have genetics staffs and both institutions accept Tricare. I myself am a pediatrician and a geneticist. Probably half my practice involves adults, and about half of that group of adults is concerned with cancer, including prostate cancer.

Question: Can lifestyle changes counteract any detected mutations?

Answer: Yes, but only in the potential sense for the time being. Our first goal is to eventually have the ability to individualize the risk calculation for use in genetic counseling. But, again, we are not anywhere close to that goal.

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♦ WRAMC US TOO COUNSELORS ♦ (As of January 17, 2013)

(THESE PERSONS ARE WILLING TO SHARE THEIR EXPERIENCES WITH YOU. FEEL FREE TO CALL THEM.)

SURGERY

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Jack Beaver	Falls Church, VA	(703) 533-0274	
Gil Cohen	Baltimore, MD	(410) 367-9141	
Richard Dorwaldt	San Antonio, TX	(210) 310-3250	(Robotic Surgery)
Michael Gelb	Hyattsville, MD	(240) 475-2825	(Robotic Surgery)
Robert Gerard	Carlisle, PA	(717) 243-3331	
Ray Glass	Rockville, MD	(301) 460-4208	
Monroe Hatch	Clifton, VA	(703) 323-1038	
Tom Hansen	Bellevue, WA	(425) 883-4808	(Robotic Surgery)
Bill Johnston	Berryville, VA	(540) 955-4169	
Dennis Kern	San Francisco, CA	(415) 876-0524	
Steve Laabs	Fayetteville, PA	(717) 352-8028	(Laparoscopic Surgery)
Don McFadyen	Pinehurst, NC	(910) 235-4633	
Sergio Nino	Dale City, VA	(703) 590-7452	
Ed Postell	Collegeville, PA	(610) 420-6765	(Robotic Surgery)
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Artie Shelton, MD	Olney, MD	(301) 523-4312	
Jay Tisserand	Carlisle, PA	(717) 243-3950	
Don Williford	Laurel, MD	(301) 317-6212	

PROSTATE CANCER AND SEXUAL FUNCTION

James Padgett	Silver Spring, MD	(301) 622-0869	

RADIATION

Leroy Beimel	Glen Burnie, MD	(410) 761-4476	(External Beam Radiation)
Bob Bubel	Grand Junction, CO	(970) 263-4974	(Proton Beam Radiation)
Harvey Kramer	Silver Spring, MD	(301) 585-8080	(Brachytherapy)
Bill Melton	Rockville, MD	(301) 460-4677	(External Beam Radiation)
Joseph Rosenberg	Kensington, MD	(301) 495-9821	(Brachytherapy)
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John Waller	Yorktown, VA	(757) 865-8732	(Brachytherapy)
Barry Walrath	McLean, VA	(703) 442-9577	(Brachytherapy)

INCONTINENCE

Ray Walsh	Annandale, VA	(703) 425-1474	

WATCHFUL WAITING

Tom Baxter	Haymarket, VA	(703) 753-8583	

SPOUSE SUPPORT

Kay Gottesman	North Bethesda, MD	(301) 530-5504	

OTHER THERAPIES/MULTIPLE THERAPIES

Howard Bubel	Fairfax, VA	(703) 280-5765	(Cryosurgery, Hormonal, Sexual Function)
Arthur E. Clough	Kerryville, TX	(210) 896-8826	(Surgery and Radiation)
Pete Collins	Mechanicsburg, PA	(717) 766-6464	(Surgery, Radiation, Hormonal)
S.L. Guille	Sumerduck, VA	(540) 439-8066	(Surgery, Radiation, Hormonal)
Richard Leber	Chapel Hill, NC	(919) 942-3181	(Surgery, Radiation, Hormonal)
Charles Preble	Annandale, VA	(703) 560-8852	(Cryosurgery, Hormonal, Intermittent Hormonal)
Emerson Price	Absecon, NJ	(609) 652-7315	(Hormonal, Radiation, Cryosurgery)
S.L. Ross	Alexandria, VA	(703) 360-3310	(Brachytherapy, Radiation, Hormonal)
Jon Schmeiser	Aiea, HI	(571)243-8198	(Chemotherapy)
Ken Simmons	Alexandria, VA	(703) 823-9378	(Radiation and Hormonal)
Ray Walsh	Annandale, VA	(703) 425-1474	(Surgery and Hormonal)

♦ MEETING ANNOUNCEMENT ♦

THURSDAY, FEBRUARY 7, 2013
7 PM

RIVER CONFERENCE ROOM
AMERICA BUILDING (3D FLOOR)
WALTER REED NATIONAL MILITARY MEDICAL CENTER

♦ SPEAKER ♦

DR. REX A. KITELEY II

DEPARTMENT OF RADIATION ONCOLOGY

WALTER REED NATIONAL MILITARY MEDICAL CENTER, BETHESDA

♦ TOPIC ♦

"THE ROLE OF RADIATION THERAPY IN THE TREATMENT OF PROSTATE CANCER"

We meet at the River Conference Room (3d floor) at the Walter Reed National Military Medical Center located at 8901 Wisconsin Avenue, Bethesda, MD 20889. This is the same location as our monthly meetings.

Gate/Parking: If you enter the base through South Gate (Gate 2) off Rockville Pike/Wisconsin Ave, take the first right (Palmer Road South). On your left you will see the Emergency Room. Continue to follow signs to the America Building and the America parking garage.

Security: A military ID is required to get on base. Persons without a military-related ID card who are attending the meeting are required to register in advance in order to gain entry. To register, contact the CPDR front desk at 301-319-2900 **no later than noon on Wednesday, October to arrange for entry**. Have a photo ID card ready when arriving at the gate.