Prostate Cancer Canada Network – NEWMARKET

Volume 21, Issue 7 **March 15, 2016**

A support group that provides understanding, hope and information to prostate cancer patients and their families.

Peer-to-Peer Open Discussions

Where are you on your journey? Are you new to prostate cancer and looking for options? Do you have questions on what symptoms you might expect after treatment? Have you completed your treatment? No matter where you are, you may wish to attend our Peer-to-Peer session on March 17, 2016.

If you are just starting out, there may be someone in the group that has been through the treatment you are considering and may be able to provide some insight on their experience.

If you have completed your treatment, remember how you felt when you were starting out. We could certainly use your voice of experience to assist new members.

We are looking forward to a great open dialogue and an evening of fellowship.

Meeting Date: **Thursday, March 17, 2016**

Place: **Newmarket Seniors Meeting Place**
474 Davis Drive, Newmarket (Side Entrance)

Time: **6:30 pm to 9:00 pm**

Prostate Cancer Canada Network – Newmarket
Newmarket, ON

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A member of the Prostate Cancer Canada Network

Assisted by
Canadian Cancer Society, Holland River Unit
(905) 830-0447
Cancer Information Service: 1-888-939-3333

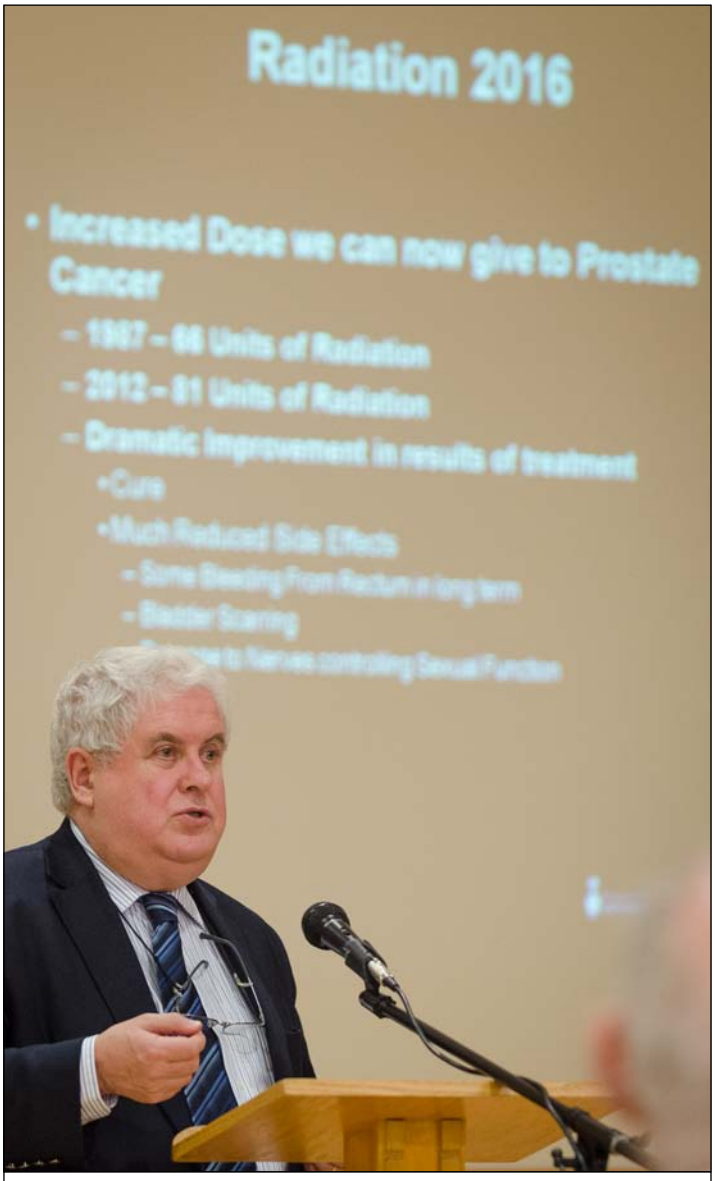
The Newmarket Prostate Cancer Support Group does not recommend products, treatment modalities, medications, or physicians. All information is, however, freely shared.

For February our guest speaker, Dr. Padraig Warde, MB ChB BAO, FRCPC, spoke to us about CyberKnife® technologies and the latest developments in radiation treatments.

Dr. Warde has been a radiation oncologist at the Princess Margaret Cancer Centre since 1987, where his academic practice focused on genitourinary cancer. Dr. Warde has also worked as an Associate Director and Deputy Head of the Radiation Medicine Program at Princess Margaret since 1999. Here, he led a comprehensive effort to improve processes within the program and advanced new roles for medical radiation therapists. His clinical and academic interests include prostate cancer, seminoma, bladder cancer, head and neck cancer and clinical trials.

This is what he had to say.

Radiation Therapy for Prostate Cancer: *CyberKnife?*



Photography by Daniel Ho

Dr. Padraig Warde
Radiation Oncologist, Princess Margaret Cancer Centre

by
Mike McMaster, Copy Editor
February 18, 2016

Opening Remarks

It is a pleasure to be here again. I was seconded up from Princess Margaret and spent two years here getting the Stronach Cancer Centre up and running. I am also the provincial head for radiation and it has been a great joy to watch the Southlake Regional Health Centre grow.

Southlake has just been approved for a new radiation machine so they are now moving to four treatment units. Within about two to three years they should have a total of about sixteen units, which will make them one of the largest radiation facilities in North America.

I think the connection with Princess Margaret and the movement of staff up and down has been a very fruitful association for all sides.

Radiation Therapy for Prostate Cancer: Why CyberKnife?

The topic I was given provoked me a little – it was talking about CyberKnife. We have two CyberKnifes in Ontario and I presided in my provincial role over the evaluation about whether we would get CyberKnife – and it is still under evaluation for purchasing in other centres.

Now, if you believe what you read on Accuray's

website, every machine should be a CyberKnife, at about $5 to $10 million each, rather than a conventional accelerator at about $2 to $3 million each.

I will try to explain why CyberKnife could be considered. But, as you will see, I think it has a role but I am not sure that the role is in prostate cancer.

Accuray CyberKnife

How Radiation Eradicates Cancer

Radiation damages the chromosomes of the cell, prevents the cell division and growth, and the key thing: it affects both the cancer cells and the normal cells. The key to success is to avoid treating the normal tissues and cells and hit the cancer cells hard!

Radiation will eradicate any tumour, if you give enough of it, but the trouble is that you cannot protect all of the normal tissues and people will pass away from all the damage that the radiation does – but it will eradicate the cancer. The key is to treat the cancer cells and not the normal tissues – or minimize the damage to the normal tissues.

It seems a basic point but it is the thing that underplays all radiation treatment. You hit the cancer, not hit the normal cells.

Improving Radiation Treatment Results in Prostate Cancer

When we look at improving the radiation results in prostate cancer what you want to do is increase the dose of radiation to the prostate while avoiding and protecting the normal tissues around it and in it. We tend to forget there is a very important normal tissue that runs through the prostate and that is the urethra which takes the urine out from the bladder out to the outside.

What has held us back in the past is our ability to know exactly where the prostate is when designing the treatment, and technically how to focus radiation on the prostate and avoid the normal tissue - and then under normal conditions to target the prostate precisely every day for eight weeks.

We often use radiation in conjunction with other treatments like hormone treatment - the radiation kills the cancer cells and the hormone treatment also kills the cancer cells

Treatment Planning Focus Radiation on Prostate and avoid normal tissue

Let's look at the evolution of treatment planning over the last 25 to 30 years – so we are in the 1990's. The trouble was that we knew the prostate was in there but exactly where it was we couldn't see because we could only see the bones. So we would have to treat a wide area to make sure we got all the cancer cells.

Up until the late 1990's, there was a limited amount of radiation we could give because we were damaging the surrounding tissues, in particular the rectum.

CT Scans & MRIs

Then CT scans came along and we were able to focus on the prostate and we could shield out some of the normal tissues more than we could before.

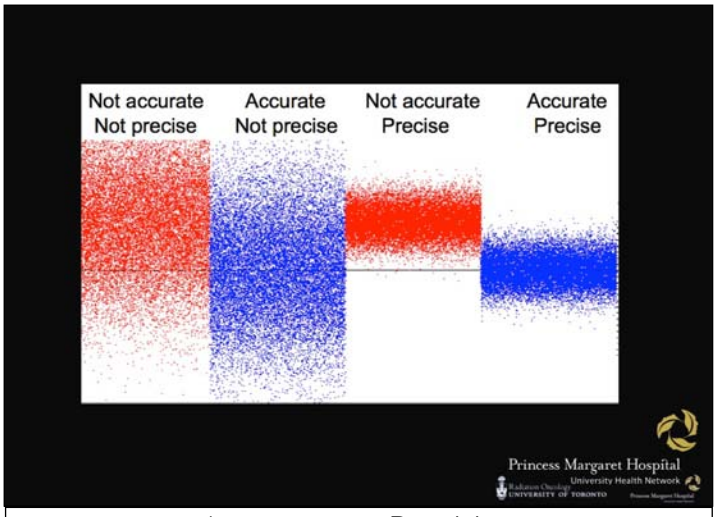
Then we began getting MRIs and we could actually see where in the prostate the tumour was. MRI is the way we are going to go in the future to look inside the prostate. We are still learning how best to use it.

Individualized shields and beams

We have moved from an era of very standard shields and beams to an era where we could tailor it (to the individual) and actually start bringing in beams from

different angles. We are still treating tissue around the prostate but it is much, much better.

The huge thing that has also helped us is the Cone Beam CAT scan so we can determine that the prostate is in the correct position every day. When I was in medical school, we were taught that the prostate was stationary, it didn't move. But, after a while, we found that it did move – a little front to back and a little up



Courtesy of Dr. Padraig Warde

Accuracy vs. Precision

and down. So, if you don't know where it is every day it is hard to hit it precisely. Radiation only works if you hit the cancer – it is a simple basic issue.

What we do now every day is make sure that the prostate and the bladder are in the correct position and hit the tumours and miss the bowel and the rectum. We do a CAT scan everyday so we can precisely target the tumour.

Because of these developments, in 2016, we have been able to increase the dose of radiation by 25% compared to 1987 resulting in a dramatic improvement in the results of treatment including cure and much reduced side effects like bleeding from the rectum, bladder scarring and damage to the nerves controlling sexual function.

You can't avoid something that you can't see, but if our MRIs continue to improve at the rate they have, we can be even more precise and damage less surrounding tissue, particularly the nerves affecting sexual function.

Avoiding Soft Tissue Structures

The concept now is that the prostate moves so we use Image Guided Radiation Therapy (IGRT) to determine that the prostate and the surrounding normal tissues are where they should be. If not, we move the beam or we move you so that we can be sure that the target is right on. For the radiation treatment to be most effective the bladder must be full and the bowel empty at the time of treatment.

When I started in practice we were accurate to around 15mm, we are now down to 2 to 3 mm. That has really improved our results and lowered the side effects. But, like everything else, we want to get better.

Prostate Cancer Treated with CyberKnife

There are two CyberKnifes in Ontario - one is in Hamilton, the other is in Ottawa. With our standard approach, beams come in from certain angles in certain ways. With CyberKnife it comes in at many different angles. Three gold seeds are placed in the prostate so the robotic system can focus on the area you want to treat.

It is a complex treatment; it can take from an hour to an hour and a half on the treatment bed. It usually is given in five treatments usually over a two-week period.

CyberKnife Claim to Fame

The CyberKnife claim to fame is two things: it treats much less normal tissue – it is highly focused and dead on. The other claim to fame is because it is able to do that so accurately you can get it in five treatments.

One of the first questions I did ask was: Why five treatments? Why not six or eight? Five treatments was chosen because that is the maximum number of treatments that insurance companies in the United States would pay for so they got good at five treatments.

The CyberKnife has a place. It is remarkably good technology particularly for treatment around the spine because when you are out by a millimetre down there you are suddenly paralysed for the rest of your life.

The lung is another area where CyberKnife can be used because the lung doesn't particularly like radiation and if you can be dead accurate in there that would be very helpful.

Conclusion: CyberKnife and the Prostate

The reason that I have a particular concern in the long term with the use of CyberKnife in prostate is that

this is the only area of the body that we are trying to treat with CyberKnife that has normal structure going through it. I can treat all of the prostate but that means I treat all of the urethra as well to a very high dose.

Now, to date - I will be fair - the results so far have been OK, but the long term results are unknown. The long term damage to the urethra often won't manifest itself until 5, 10 or 15 years after treatment. Specifically, the concern is a fistula where the urine from the bladder comes out the rectum – which is not a complete disaster. But, what is a disaster is when the bugs that are in the rectum get into the bladder.

Photography by Daniel Ho

Dr. Padraig Warde
Radiation Oncologist, Princess Margaret Cancer Centre

The other thing is that with normal radiation we can now get in safely the doses of radiation required. The extra risks with the CyberKnife make it less of an advance than the company would have you believe – that is because we can achieve the same results with our conventional treatments.

In Canada, CyberKnife is unlikely to be a standard treatment approach for prostate cancer: High Dose Rate Brachytherapy plus "regular" external beam radiation is more likely to be the approach of choice. With HDR Brachytherapy we insert little catheters – little tubes – and precisely target the tumour with radiation. The beauty of that is we can see where the urethra is and avoid it.

CyberKnife is a technology in evolution - it is not currently something Southlake will buy. The research centres in Ottawa and in Hamilton at McMaster made a conscious decision, for the good of the province, to investigate so they can report back to us in a few years on their findings and whether or not it is a technology we wish to pursue in Ontario.

Questions And Answers

Q: With CyberKnife do the beams damage the cells on the way in?

A: It does, but if you have 180 beams focused on one spot the collateral damage caused by one beam is small - 1/180th of the dose.

Q: Is it a constant fight to get procedures approved by OHIP?

A: No, they have been exceedingly fair to us in terms of purchasing radiation equipment. We are the envy of every other province in Canada. All the government asks is: does this work? And we advise them whether or not it's appropriate.

Now, there is only a certain amount of money to go around. There is a new technology coming – the Proton machine – so if you think that $3 to $4 million for a standard radiation machine is expensive – the Proton machine is $300 million. It's highly precise, another two layers of precision over CyberKnife.

You need it for children. If you are operating on a brain tumour and can deliver the radiation that precisely, we can avoid collateral damage to the brain.

Q: At Princess Margaret, do you use the MRI for everyone receiving prostate radiation treatment?

A: We do it when we think it is necessary. We don't do

an MRI on every patient. The planning of the beams has to be based on the CAT scan. The MRI gives you lovely pictures but it doesn't give you the density of the tissue. And that density of the tissue is necessary to know exactly how much radiation to deliver.

Q: If the tumour is close to the urethra, can you still treat it?
A: Yes, the urethra will tolerate radiation reasonably well, it's just that you don't want to be putting in very, very high doses close to it. It's like most things in life it's all risk/benefit – you are trying very hard to avoid a lot of side effects, but you want to cure the cancer, so you are doing a balancing act all the way – and you balance it with the patient and their personal preferences.

Q: Why is age 70 the threshold point for surgery?
A: There is no age. There is no simple answer to that. It's not just chronological age, it's more a matter of the individual's general state of health. But in general, as you age, you just don't have the muscle tone to recover fully to prevent leaking. In general, a 55 or 60 year old would expect a better outcome than a 70 year old.

The other thing that enters my mind is that radiation isn't good for you – otherwise we'd all have some. Radiation induces cancers later – we know that from Hiroshima. So, if you are a 50-year-old man and you don't absolutely need it and have a life expectancy of another 30 to 40 years, I have a concern. It doesn't mean that you are definitely going to get a cancer, it just raises the risk.

You mentioned earlier about seminoma – a lot of my career has been devoted to stopping giving radiation to young men with testicular cancer who don't need it – there is a 36% chance they will develop another cancer by the age of 75.

But, if you need radiation, you get it. Like I said before, you have to be alive to get late stage side effects.

~ ~ ~ Notes from The Chair ~ ~ ~

What a great presentation from Dr. Warde! This month our meeting will be held on St. Patrick's Day so hope to see everyone wearing a bit o' the green in St. Paddy's honour!!

This month we are offering a peer-to-peer session with an open discussion for any members who may wish to ask questions or comment on their journeys. We look forward to these meetings as they allow more fellowship and allow us to get into discussions specifically relevant to whatever topic you wish to present.

Prostate cancer is a couples disease so spouses are welcome and depending on the numbers, they may either join in the main discussion or have their own breakout group.

We are hoping to include comments, critique, etc. from you, the members, in the newsletter. This adds to the worthiness of our newsletter and helps us tailor the newsletters and meetings to be more meaningful to everyone. We encourage your input.

In honour of St. Patrick, the Irish Saint, I thought you might enjoy the following:

Paddy was driving down the street in a sweat because he had an important meeting and couldn't find a parking place. Looking up to heaven he said, "Lord take pity on me. If you find me a parking place, I will go to Mass every Sunday for the rest of me life and give up me Irish Whiskey!"

Miraculously, a parking place appeared.

Paddy looked up again and said, "Never mind, I found one."

Reminder

June 16, 2016 is our 20th anniversary celebration BBQ and get-together. Don't forget to mark your calendar. We will be requesting an RSVP response closer to the date.

Walt Klywak
Chairman