

# Prostate Cancer Canada Network – NEWMARKET

Volume 21, Issue 9

May 15, 2016

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

Topic for the May meeting...

## Nutritional Infusions to Treat Cancers

Dr. Vlade Gagovski will be discussing the types of nutritional infusions to treat cancers, insulin use in low-dose cancer treatment as well as the newest types of medications that are on the market.



Vlade Gagovski  
M D , LMCC

He is a medical doctor as well as a Licenciate of the Medical Council of Canada. Following his undergraduate work in Toronto, Ontario, he completed his medical education at The Medical Academy of Sofia, Bulgaria in 1983. His post-doctoral training included a general comprehensive internship in internal medicine at the St. Joseph's Health Centre in Toronto, Ontario which was followed with an internship at the Doctors Hospital in Toronto, both of which are University of Toronto Faculty of Medicine affiliated hospitals.

Dr. Gagovski is licensed by the College of Physicians and Surgeons of Ontario to practice as a General Practitioner and has been practicing Independently since 1987. In 2003 Dr. Gagovski became an associate of Dr. Jesse Stoff at Immune Therapies International. Within a few years Dr. Gagovski developed a special interest in the comprehensive treatment of solid tumor cancers. This interest broadened into developing treatments that would integrate and support more commonly used traditional treatments. He has been an associate of the Immune Recovery Foundation in Atlanta, Georgia, since 2004. Today he is the Lead Physician of our Toronto Clinic. Dr. Gagovski is a member of The College of Physicians and Surgeons of Ontario and The Ontario Medical Association.

**Meeting Date:** Thursday, May 19, 2016  
**Place:** Newmarket Seniors Meeting Place  
474 Davis Drive, Newmarket  
**Time:** 6:30 pm to 9:00 pm

Prostate Cancer Canada Network – Newmarket  
Newmarket, ON

<http://www.newmarketprostatecancer.com>  
[info@newmarketprostatecancer.com](mailto:info@newmarketprostatecancer.com)

A member of the



Assisted by

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

### Your Executives

Walt Klywak, <i>Chairman,</i> <i>Communications</i>	905-895-1975
Phil Mahon, <i>Secretary</i>	905-473-2688
Ivan Martin, <i>Treasurer</i>	905-775-7576
Dan Ho, <i>Photography, Layout Editor</i> <i>Membership</i>	416-953-8889
Mike McMaster, <i>Copy Editor</i>	905-235-7021

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

# The Future of Prostate Radiotherapy

by  
Mike McMaster, Copy Editor  
April 21, 2016



Photography by Daniel Ho

**Andrew Loblaw**  
BSc MD MSc FRCPC CIP

For the month of April, our guest speaker was Dr. Andrew Loblaw, Professor, Department of Radiation Oncology, Institute of Health Policy, Management and Evaluation, University of Toronto.

Dr. Loblaw is an Ontario Association of Radiation Oncology Clinician Scientist and a Scientist at the Sunnybrook Research Institute. He is the Co-Chair of the American Society of Clinical Oncology's Genitourinary Advisory Group and Co-Chair of the GU group for Cancer Care Ontario's Program in Evidence-Based Care. He has authored over 190 peer-reviewed papers and has been awarded grant funding of over \$17M.

This is what he had to say.

Thank you. Always a pleasure to be back, it's a pleasure and honour to be here. We are going to look at where we have been and where we are going with radiotherapy. The objectives are: to review historical outcomes for external beam radiotherapy for prostate cancer; to understand the biology of high dose per day radiotherapy; and to review current standards and future directions in prostate cancer treatment.

## What is the "Best" Treatment?

People often ask me: "What is the best treatment for prostate cancer?" If we are going to be serious about this we have to look at something that does a good job. We don't want a 50% solution but we don't want to make the treatment worse than the problem. We have to minimize side effects.

We measure that by looking at long term recurrence-free rates, long term quality of life and very low toxicity rates for the short and long term.

Sometimes people talk about prostate cancer treatment based on your risk. And sometimes people get confused about what prostate cancer risk category is. People often ask me about stage. And the answer is how advanced the cancer is when we see you. Is the cancer confined to the prostate? That gives rise to T categories: T1, T2, T3.

The reason I bring this up is that some treatments are better for those in the high risk category. And generally for those in that category, we will combine treatments like hormone treatment coupled with radiation, or hormones, radiation and brachytherapy. For those patients in the lower risk categories usually one treatment is enough; brachytherapy by itself, or external beam by itself. So that is the general rule.

The second point on this is that in the intermediate category there are those that do very well and can be treated with one therapy and there are those that do not – they

behave more like those in the high risk category.

## Radiotherapy of the Past

We started with Conventional Radiotherapy, which means we don't know where the target is very well. So we took a "Dresden carpet bombing approach" to the treatment of prostate cancer – we know it's in there somewhere so we will just irradiate the entire pelvis. The accuracy of the treatment back then was about 2 cm, and if I fast forward a bit, we are now down to 2 mm – so we have become ten fold more accurate in the last fifteen years.

What is even more impressive, from a patient's point of view, is that the patient used to have to come for treatment 33 times. Then we went up to more, 38 or 39 times. We are now going the other way. Our new standard of care is now 20 treatments – just as effective as 39 or 40 but less inconvenient for the patient.

How did we do with treatments in the past? How impressive were our results? Pretty darned unimpressive: 50 percent of the patients were cured and 50 percent would have their cancer come back. That's not very good but that is where we started.

## Radiotherapy of the Present

Now let's fast forward to radiotherapy of today. What is it based on?

One is that prostate cancer has a weakness. It has trouble healing from a high dose of radiotherapy. With prostate cancer, I want to hit the cancer hard, and I want to hit it as few times as possible. And what is nice is that the new high precision machines allow us to do that safely and with very little side effects.

So, the Achilles' Heel of prostate cancer was found. Based on that principle, high dose per day radiotherapy is more effective than standard dose. They tested that hypothesis in the UK with 3,000 men across all risk categories. They compared the results of those that had the full 8 weeks of treatment (40 treatments) to those that had just twenty treatments and found that the cure rates were identical. That means that we can achieve the same outcome with half the treatments.



**Dr. Loblaw:** *"With prostate cancer, I want to hit the cancer hard, and I want to hit it as few times as possible."*

## Brachytherapy vs. EBRT

We have shown that we can make treatment more convenient but we didn't improve the cure rate. The next study shows that we can add dose and do a better job.

They took patients that had intermediate or high risk prostate cancer and gave them the standard 7.5 weeks of external beam treatment or they gave them a combination of Low Dose Rate (LDR) Brachytherapy and EBRT (External Beam Radiation Therapy). We compared the outcomes over a ten year period.

We like ten years because if you are free of prostate cancer after 10 years you are not going to die of prostate cancer – less than 1 percent. Five years is good, it's a great milestone, but at ten years if your PSA is low and stable, we got it. We can do the dance.

The conclusion was that, for patients with high risk disease, a combination of hormones, external radiation and brachytherapy is better than external beam radiation in terms of getting rid of the cancer. Similar results have been shown in other comparative studies around the world. Not everyone can have brachytherapy, but if you can, it is the best way of getting rid of the cancer. We are now writing the guidelines for Cancer Care Ontario (CCO) to make this the new standard of care.

The cost was an increase in the adverse effects on the urethra, but less than 20 percent (G3 GU, Grade 3 Genitourinary toxicity), and perhaps that's an acceptable price to pay. In the gastrointestinal domain there was no difference, so that was nice. We didn't see any difference in overall survival and we didn't see any evidence of the cancer spreading elsewhere in the body.

Dr. Gerard Morton, my colleague, one of the premier brachytherapy people in the world, is very popular for this protocol – High Dose Rate (HDR) Brachytherapy plus external beam radiation therapy (EBRT). And what is notable about Gerard's experience is the toxicity – G3 GU 0.8%. I think it has to do with HDR (vs. LDR) because it is a temporary implant we get to sculpt it more than the permanent seeds. Because once the seeds go in there, I can't move them, I can't adjust it, whereas with HDR, I only start the treatment when I'm perfectly happy with the plant.

In that group we had intermediate and high risk patients - and how did the patients do? They did great – 94% chance that the cancer was cleared. Just out of interest, if you had surgery, anyone want to hazard a guess what the control rate would be? Fifty percent! Which doesn't mean surgery failed, it just means we need to add radiation to get those patients to this level. So now you get all the side effects of surgery and all the side effects of radiation.

If you didn't have hormones, is brachy still better? When we matched patients having brachytherapy, either HDR or LDR, and we compared it to the same type of patients having external beam, there was a massive difference. So we are seeing the difference in, not only the high risk category, but also in the intermediate and low risk categories.

The conclusion is, if you are going to have radiotherapy, and you can have brachytherapy, brachytherapy is the way to go. The take-home message is that brachytherapy improves our cure rates, decreases our side effects from the urinary point of view, and it may be technique-dependent LDR vs. HDR.

How is this playing out across the Province? Demand is beginning to rise because people understand that it works.

## Radiotherapy of the Future

What is the future of radiation treatment? We are going to talk about two technologies; one is SABR or Stereotactic Ablative Body Radiotherapy - high precision radiotherapy given from outside the body. The other one is brachytherapy. We will talk about the latest and greatest in brachytherapy.

## SABR

It has actually been ten years since we launched our first SABR (also known as SBRT) patient in Canada in 2006. What we did was take advantage of that (prostate cancer) Achilles' Heel we talked about. It was a bit of a leap of logic. What we were proposing was to give, not the 38 treatments which was the standard, but five treatments. And the total dose we were going to give was less than half of the normal treatment.

What did we find? Eighty-four guys were on this program over a year and a half, we found that 96% of the guys were cancer-free at five years.

## IGRT vs. SBRT vs. 2STAR Cost Comparison

We did a study with a group of patients where we did, not five, but two treatments (2STAR – Two Stereotactic Ablative Radiation Therapy treatments). There are two things that came out that are important. The first is this – it is more cost effective. The government gives a fixed amount of money for every guy you treat. The amount of money is \$3,700.

IGRT (Image-Guided Radiation Therapy) cost \$5,254 so there is a problem. But SBRT lessens the cost by two thirds to \$1,717. It is just as effective and with less side effects. And with 2STAR, we lower the costs even further to \$1,368. So we are headed in the right direction – more effective and more cost effective.

From the patients' point of view, you go from eight weeks on your calendar and an approximate cost of \$2,542 for transportation and parking for 39 visits, to five visits and a cost of \$326 – more than \$2,000 cheaper. For two visits, the patient costs are further reduced to \$130.

The take-home message for quality of life with the five treatment approach: we have very little impact on your quality of life, and that is what makes me really happy about this.

## SABR vs. HDR Boost

One of my colleagues asked me: "Well, how does SABR compare to HDR brachytherapy?" And I responded SABR was originally intended for those patients who can't have brachytherapy, it wasn't intended to compete.

But we decided to look at the data and compare the 5 fraction approach and HDR head to head. Not surprisingly, there was a little more urinary bother with the brachytherapy. We knew that about brachytherapy so that wasn't a surprise. Brachytherapy is harder on the urinary system and external beam is harder on the bowels.

So we were pleasantly surprised that there was no difference in bowels quality of life between the two treatments. But what really knocked us on our derrieres was that the sex life was way better with SABR compared to brachytherapy.

For SABR, 96% of the men who had little or no problems with their sex lives before the treatment had little or no problems after. For brachytherapy, it was 73% and for radical prostatectomy, it was below 50%.

How many men have been told that you can't have surgery after radiation? We now know that is not the case. It is more difficult to do but it is reasonably safe to do.

Back to the original question: which prostate cancer treatment is best? It appears that HDR brachytherapy is the most successful and SABR has results that more closely compare to brachytherapy in terms of its effectiveness rather than external beam.

Based on the results of the comparative effectiveness of the treatments, I believe what will happen over time is that the standard 39 fraction external beam treatment will disappear and there will be two radiotherapy options available – either brachytherapy or SABR.

We are now comparing, around the world, SABR, the five treatment approach, with the standard external beam protocol of 39 treatments. The study is called PACE.

There are 14 centres across the country that offer SABR and if you would like a list go to:

<http://www.prostatecure.ca>

That is the charity I started five years ago in partnership with Ride for Dad. I don't know if you have a local Ride for Dad chapter here – it is motorcycles, cars, snowmobiles, watercraft – and they raise a lot of money across the country to support cancer research.

## Image-Guided Radiotherapy

Where are we going in the future? Image-Guided Radiotherapy: When I am doing brachytherapy we use an ultrasound to guide us. Ultrasound is a very good technique for showing us the edges of the prostate but horrible for showing us the inside of the prostate. MRI allows us to see inside the prostate. It's like turning the lights on in a room. We can actually see the tumour nodules.

We are now using MRI to help us guide the radiation treatment better. We do this because the cancer on the prostate is most likely to come back where we saw the tumours on the MRI so it makes sense to fire a few more bullets in that area.

In a couple of months at Sunnybrook we are going to

have the world's first real-time MR guided brachy suite. That is going to allow us to image and deliver your treatment in a single visit. What is really interesting about this is that I can watch the cancer cells die in real-time using the MRI machine.

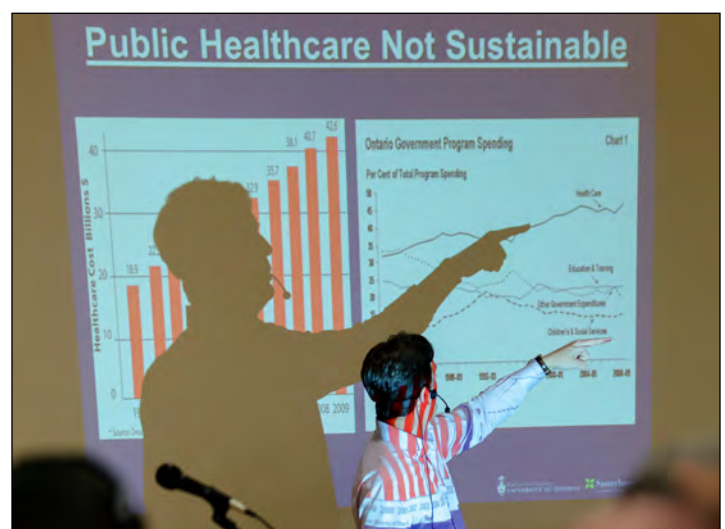
## The Importance of Biology

Two guys go out for a walk on the beach in Florida – both fair skinned. One guy comes back with a bad burn and the other guy does not – why? Genetically, one guy is more sensitive to radiation than the other. It's the same thing when radiation is given for medical purposes.

We can now figure out by a blood test which men will react to radiation worse than others. And we can determine which tumours respond to radiation better than others. We can figure this out before treatment and so determine which treatment is going to be best for you. So instead of a one-size-fits-all approach we can determine what is best for you as an individual.

What do we worry about with cancer? We worry about it going from one place to another place. Prostate cancer in the prostate doesn't kill anybody, it's when it goes to the lung, or the liver, or the bones that is when it becomes a problem. We have been able to create radio-resistant cell lines where the cancer cannot cross beyond a membrane (of these cells) - so if the cancer comes back after radiotherapy it is more likely to come back in the prostate and not elsewhere in the body. That means we can treat the cancer again before it has left the barn.

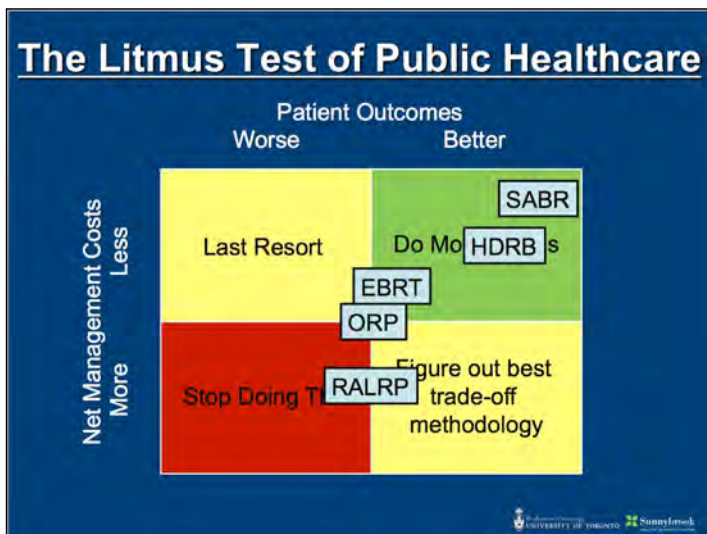
## Public Healthcare Not Sustainable



All these new drugs that do tremendous things cost tremendous amounts of money. We are already over-spending in public healthcare. In 1999 in Ontario we spent \$19 billion; in 2009 we spent \$42.6 billion. Currently we

spend over \$50B per year. The government is concerned about the escalating cost of public healthcare.

## The Litmus Test of Public Healthcare



As the public funds are gobbled up by one ministry – healthcare – it comes at a cost to the others like education and roads and social services; the things that we are proud of as Canadians to support each other with. So there has to be a limit.

In healthcare you can boil it down to a very simple direction: we know we need to make healthcare more effective and cheaper. So as long as we embrace things that are more effective and cost less then we are going in the right direction.

If something is less effective and more expensive then we should stop doing those things – if we have a choice.

## Comparative RT Costs

Treatment	Cost		
	1 phase	2 phase	2 phase long
HDR	\$ 1,919	\$4,246	\$5,322
LDR	\$ 1,408		
EBRT 39f	\$ 5,435	\$5,675	
EBRT 33f	\$ 4,793	\$4,913	
EBRT 20f	\$ 3,082	\$3,322	
SABR 25f	\$ 4,685		
SABR 5f	\$ 1,749		
SABR 2f	\$ 1,389		

Treatments where DRO loses \$

If you look at the different radiotherapy recipes we went through and calculated down to the dime how much each

one of these programs cost. Remember how much my department got paid? It was \$3700 per patient. Only LDR brachytherapy, SABR and SABR 2STAR come in below the \$3700 threshold.

So we should stop delivering the therapies that are more expensive because we have already determined that some of the other lower-cost therapies are just as effective.

If you were to plot all the different treatment options available for prostate cancer on a grid and used radical prostatectomy as the gold standard (centre of grid) you can see that robotic surgery is going in the wrong direction. It costs twice as much to do a robotic prostatectomy than a standard one and it does not improve the outcome.

HDR brachytherapy and SABR are way more effective and way cheaper – so we should do more of those.

## Summary Recommendations

	AS	BT	RP	EBRT	SBRT	PADT
Low risk	P	O	O	O	O	N
Low-Int risk	G6 only	P <sup>1</sup>	O	O <sup>1</sup>	T <sup>1</sup>	N
High-Int risk	N	P <sup>2</sup>	O	O <sup>2</sup>	T <sup>2</sup>	N
High risk	N	P <sup>2</sup>	O	O <sup>2</sup>	T <sup>2</sup>	N
N1	N	N	T <sup>2</sup>	O <sup>2</sup>	T <sup>2</sup>	O
M1	N	N	T <sup>2,3</sup>	N	T <sup>2,3</sup>	P <sup>3</sup>

<sup>1</sup> Consider ADT; <sup>2</sup> Recommend ADT; <sup>3</sup> Consider docetaxel/ADT if high volume

P – preferred treatment option  
O – option if preferred declined  
T – clinical trial only  
N – not recommended

## Summary

If you can have brachytherapy, it's very effective, it's very convenient, especially now that we are down to one, single MRI-guided HDR brachytherapy treatment and that's it. I think that that is the future.

For SABR, we are now down to two fractions and next year at Sunnybrook, we are installing a machine that will combine an MRI and a radiation machine together. We have basically taken an MRI, cut it in half, and put a radiation machine in the middle of it.

We will be able to put a man into that machine, image his prostate and come up with a plan and deliver a single treatment without touching the patient. It will be like an Easy-Bake oven for men. Ding – you're done!

I am really excited because we have been able to make some really big changes and we have both been able to

benefit. The healthcare system has benefited and, more importantly, you guys have benefited from this.

By knowing where the cancer is and where it isn't we can do a better job of getting rid of it and do so more conveniently - less money out of your wallets, less side-effects and we can treat more patients.

It takes a village to raise a child but it takes a whole city to make one of these prostate programs real and I am deeply indebted to those people who saw you everyday for treatment. I think they do an outstanding job in terms of making things comfortable and relating to people. I am very proud to work beside them and with them. So I want to thank them publicly for that.

Thank you for your time and attention.

## Questions & Answers

***Q: Under what circumstances would someone be unable to receive HDR brachytherapy?***

A: If you can have brachytherapy it is one of the best treatments: so who can't have brachytherapy? If you have a very big prostate (60cc or higher) or if you have bad urinary function – if you are up a lot in the night – or if you have weak stream most of the time, it's generally a no go. Also, if you have a bad ticker or a breathing problem where it is not safe to give you a general anaesthetic then it's not a

good thing because we do all our brachytherapy under general anaesthetic.

And lastly, if you have had a TURP (Trans-Urethral Resection of the Prostate) – a reaming out of the prostate and opening of the urethra – generally speaking we don't do brachytherapy for those patients because of the risk of incontinence, the leakage risk is too high.

And, if the cancer has spread elsewhere in the body, there is no sense in burning down the barn. That is the traditional approach, but we are re-evaluating that because there may be value in irradiating the prostate and the places in the body to where it has metastasized. Right now we consider that investigational.

***Q: Is low dose rate brachytherapy no longer being offered at Sunnybrook or Princess Margaret Hospital?***

A: The take-home message is we still do LDR brachytherapy but we do much more high dose rate. The main reason is not everyone should have brachytherapy as a standalone treatment. If the cancer is high or intermediate risk, I want to come at it with a one-two punch, like HDR and external beam. Some doctors feel the side-effects of LDR are worse than HDR because the body does not have an opportunity to recover because of the constant bombardment of radiation over a year. There may be lingering side effects.



## ~ ~ ~ Notes from The Chair ~ ~ ~

It is nice to see spring has arrived, but it would be nice if it packed a bit more heat. I am sure by the time we get a heat wave or two this summer we will be thankful for these cooler nights which make sleeping easier.

Last month's presentation by Dr. Loblaw was certainly informative and hopefully provided anyone weighing their options with good information. The treatment options available today are constantly improving and reducing the side effects. This month we will be hearing from Dr. Gagovski from the Cancer Immunotherapy Centre in Toronto. Dr. Gagovski will be discussing the use of nutritional infusions, insulin and low dose chemotherapy as an integrative option to treating cancers. Should you wish to learn more about Dr. Gagovski and his clinic prior to the meeting, their website is

<http://cancerimmunotherapycentres.com/index.php>.

As always, the Newmarket Prostate Cancer Support Group does not recommend products, treatment, modalities, medications or physicians. We are merely a vehicle to bring you information on various topics from qualified medical professionals. It is your responsibility to decide the treatment option best suited to your comfort level based on your research and discussions with your medical resources.

This month we will be finalizing the details for our 20th anniversary celebration on June 16. To date, we have received RSVP's from 35 members and spouses planning to attend. We would like to add to that number. We are hoping to see some of the original members of the support group and would like to hear from previous members of the executive as well. It would be nice to have a large turn out to show Derek Lawrence how grateful we are that he took the giant step 20 years ago to start the Newmarket Prostate Cancer Support Group. I believe the group is as relevant today as it was 20 years ago. Whether you are a regular member at our meetings or a one-and-done, you are more than welcome to attend the anniversary celebration.

If you have not responded to our previous email RSVP request yet, we are extending the deadline to June 3.

Hope to see you there.

*Walt Klywak*

Chairman