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2/9/2025

#### Prostate Cancer: GET THE FACTS



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|-----------------|------------------------|
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# PROSTATE CANCER—2 WORDS, NOT A SENTENCE What We Are About

Our Group offers the complete spectrum of information on prevention and treatment. We provide a forum where you can get all your questions answered in one place by men that have lived through the experience. Prostate cancer is very personal. Our goal is to make you more aware of your options before you begin a treatment that has serious side effects that were not properly explained. Impotence, incontinence, and a high rate of recurrence are very common side effects and may be for life. Men who are newly diagnosed with PCa are often overwhelmed by the frightening magnitude of their condition. Networking with our members will help identify what options are best suited for your life style.

# Join the IPCSG TEAM

If you consider the IPCSG to be valuable in your cancer journey, realize that we need people to step up and HELP.

# From the Editor (22)

# In this issue:

For original articles see the blog at https://

ipcsg.blogspot.com/ . First, we have a summary of the very informative presentation given by Dr. Mundt and his colleagues from UCSD health on radiation oncology. We look forward to their presentations every year. They covered so much material that we only have room for one article of interest.

We had a meeting of the Board of Directors, with election of officers. Aaron Lamb was persuaded to serve as temporary president.

This month, we include an item of interest:

 Breakthrough Implant Shows Promise for Personalized Prostate Cancer Treatment—Based on Implant Shows Promise for Tumor-Specific Treatment in Prostate Cancer | MedPage Today - this micro—device allows tailoring of medications for maximum effectiveness in-situ

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- o The first prostate cancer patient was treated with radiation in 1909.
- o While radiation therapy has been around for a long time, recent advances have significantly improved precision, safety, and effectiveness.
  - 3. Types of Radiation Therapy
- o **External Beam Radiation Therapy (EBRT)**: Uses high-energy photon or proton beams directed at the prostate from outside the body.
- o Brachytherapy: Radioactive seeds or temporary radiation sources are implanted directly into the prostate.
- Salvage or Adjuvant Therapy: Radiation is sometimes used after surgery if the PSA begins to rise.
  4. Treatment Planning Process
- o **Consultation**: A doctor evaluates the patient's condition and discusses radiation options.
- o Simulation: A CT or MRI scan maps out the treatment plan.
- o **Treatment Planning**: Advanced computer software designs a customized radiation dose distribution to minimize side effects.
- o **Radiation Delivery**: The patient undergoes daily treatments for a set number of sessions, typically ranging from 5 to 28 fractions (sessions).
  - 5. Modern Radiation Techniques
- o **IMRT (Intensity-Modulated Radiation Therapy)**: Uses sophisticated planning to target the prostate while sparing nearby organs.
- o **IGRT (Image-Guided Radiation Therapy)**: Ensures accurate targeting by imaging the prostate in real-time before each treatment.
- **Hypofractionation**: A newer approach using fewer, higher-dose treatments to shorten the duration of therapy while maintaining effectiveness.

Dr. Mundt emphasized that modern radiation therapy allows for precise targeting, reducing damage to surrounding organs like the bladder and rectum while effectively treating the cancer.

Dr. Rose: Adaptive Radiation Therapy and Advances in Photon Treatment

Dr. Rose discussed the latest advancements in photon-based radiation therapy, particularly **adaptive radiation therapy**, a cutting-edge approach that adjusts the radiation plan daily based on internal anatomy changes.

# **Key Points:**

## I. Challenges of Traditional Radiation Therapy

- o The prostate's position can shift daily due to bladder and bowel changes, leading to variations in radiation delivery.
- o To account for this, radiation fields are often expanded, inadvertently increasing exposure to healthy tissues.

### 2. What is Adaptive Radiation Therapy?

- Unlike conventional methods that use a fixed treatment plan for the entire course of therapy, **adaptive radia**tion therapy recalculates the radiation plan daily based on real-time imaging.
- o This ensures the radiation is **always optimally focused on the prostate**, improving effectiveness and reducing side effects.

### 3. Benefits of Adaptive Radiation Therapy

o **Better Targeting**: Adjusting to changes in bladder and rectal filling ensures radiation is precisely delivered to the prostate.

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- o **Lower Toxicity**: Reduces exposure to nearby organs, particularly the rectum and bladder, lowering the risk of diarrhea and urinary irritation.
- o Higher Precision: Smaller margins mean less radiation "spillover" to normal tissues.

## 4. Real-World Cases and Results

- o Dr. Rose shared patient cases demonstrating how **adaptive therapy corrected for prostate shifts**, ensuring proper targeting while minimizing side effects.
- One patient experienced a significant reduction in bowel movements per day after switching to adaptive therapy, highlighting the impact of more precise radiation delivery.

## 5. Al and Automation in Adaptive Therapy

- o The technology relies heavily on **artificial intelligence (AI)** to rapidly adjust plans in real time.
- o Al-driven software recalculates treatment fields in **minutes**, making this approach practical for routine clinical use.

Dr. Rose concluded that adaptive radiation therapy represents **the next frontier in photon-based ra-diation**, offering superior precision and reduced toxicity for prostate cancer patients.

### Dr. MacEwan: Proton Therapy – Advantages and Current Developments

Dr. Macewan, an expert in proton therapy, discussed **the unique benefits of protons compared to photons** and recent advances in proton radiation techniques.

# **Key Points:**

## I. What is Proton Therapy?

- Proton therapy differs from traditional X-ray (photon) radiation in that protons **stop at a specific depth**, instead of passing through the body.
- o This ability to **"stop" radiation precisely at the tumor** significantly reduces radiation exposure to surrounding tissues, making it ideal for prostate cancer treatment.

## 2. Advantages of Proton Therapy

- o **Lower radiation exposure to surrounding organs**: Particularly the bladder, rectum, and bowels.
- o **Less impact on testosterone levels**: Unlike photon-based radiation, proton therapy does **not** cause significant testosterone suppression, preserving sexual function.
- o **Reduced risk of secondary cancers**: Due to lower radiation exposure to nearby organs.

## 3. Proton Therapy for Prostate Cancer

- o **Best candidates**: Patients with intermediate or high-risk prostate cancer, especially those requiring **radiation to pelvic lymph nodes**.
- o **Less bowel toxicity**: Proton therapy minimizes radiation dose to the **small bowel**, reducing the risk of diarrhea and digestive issues.

## 4. Proton vs. Photon Debate - Latest Research Findings

- o A **2024 clinical trial** compared proton and photon therapy for localized prostate cancer.
- The study found **no major difference in quality of life** between the two groups when only the prostate was treated.
- However, Dr. Macewan noted that **proton therapy may be more beneficial when pelvic lymph nodes need to be treated**, as it significantly reduces radiation exposure to surrounding bowel and bladder tissues.

## 5. Challenges and Accessibility of Proton Therapy

- o Cost & Availability: Proton therapy centers are expensive to build and operate, limiting access.
- o **Insurance Coverage**: While proton therapy is widely covered for pediatric patients, insurance approval for prostate cancer treatment can vary.

### 6. The Future of Proton Therapy

o More advanced proton techniques like pencil beam scanning allow for even more precise targeting, fur-

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ther reducing side effects.

 New proton centers are being developed, including Stanford (2025) and UCSF (2029), which will expand access on the West Coast.

Dr. Macewan concluded that proton therapy is particularly beneficial for **patients needing radiation to both the prostate and pelvic lymph nodes**, offering superior protection for surrounding organs.

## Q&A session:

## I. Post-Surgical Radiation and Pathology Findings

**Q:** When deciding on post-operative radiation, do you take pathology findings into account, such as positive margins or extracapsular extension?

## A (Dr. Rose):

- Historically, radiation was frequently started soon after surgery based purely on pathology results.
- Nowadays, the approach is more **cautious**—radiation is typically delayed **until PSA levels become detectable** to avoid unnecessary treatment.
- Pathology findings (e.g., positive margins, seminal vesicle involvement) still inform the radiation field design, but they no longer dictate an automatic need for immediate radiation.

## 2. Proton Therapy vs. Photon Therapy for Prostate Cancer

**Q:** How has proton therapy evolved compared to traditional photon radiation?

## A (Dr. Macewan):

- **Earlier treatments** lasted 8–9 weeks (around 45 sessions), requiring patients to relocate temporarily for therapy.
- **Current standard**: Proton therapy typically takes **28 sessions**, similar to modern photon therapy.
- Proton therapy is **more precise**, reducing bowel exposure and minimizing radiation-induced **diarrhea**—a common side effect of pelvic radiation.

## 3. Adaptive Radiation Therapy & Proton Therapy

**Q:** Can proton therapy be adapted daily like adaptive photon therapy?

## A (Dr. Macewan):

- **Photon-based adaptive therapy** (e.g., at UCSD) allows daily radiation plan adjustments based on real-time imaging.
- **Proton therapy is less adaptable** due to the complexity of re-planning the radiation beam each day. Instead:
- o If positioning is **off**, patients may **not be treated that day** until adjustments are made.
- Strategies include **gas removal** from the rectum (if necessary) or using **robotic positioning tables** to realign the patient.

## 4. Radiation for Bone Metastases (CyberKnife vs. Proton Therapy)

**Q:** For a patient with painful bone metastases, is **CyberKnife (photon-based SBRT) or proton therapy bet-ter**?

## A (Dr. Rose):

- **CyberKnife** is a **brand name** for stereotactic body radiation therapy (SBRT), a high-dose, highly targeted photon treatment.
- Proton therapy is generally not used for bone metastases because:
- o Protons work best for **solid tumors** in well-defined locations (like the prostate).
- o SBRT (CyberKnife) is more efficient and widely used for **bone pain relief**.

### 5. Long-Term Side Effects of Radiation Therapy

Q: What are the long-term effects of radiation therapy (10–15 years later)?

## A (Dr. Macewan & Dr. Rose):

- Late toxicities (long-term side effects) are uncommon but possible.
- For post-surgical radiation patients:
- o Urinary strictures (narrowing of the urethra) are more likely due to scarring from both surgery and radia-

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tion.

- o Radiation can **weaken bladder function** over time.
- o For patients who did not have surgery:
- o The prostate remains intact, reducing risks of urinary dysfunction.
- 0 Newer radiation techniques (IMRT, proton therapy) minimize late toxicities.
- 6. Focal Therapy: Can Radiation Treat Only Part of the Prostate?
- Q: Instead of treating the entire prostate, can radiation be focalized like in breast cancer?

## A (Dr. Rose):

- Challenges with focal therapy:
- o Prostate cancer is often **multifocal** (spread throughout the gland), making partial treatment risky.
- o Unlike breast cancer, where tumors are often well-defined, prostate tumors can be **microscopically scat**tered.
- o Current strategy:
- o Radiation oncologists treat the whole prostate but **boost** radiation to MRI-identified tumor hotspots.
- o Focal therapy is being researched, but most experts still recommend whole-gland treatment.
- 7. Fiducial Markers: Are They Still Required?

Q: Do patients still need fiducial markers (small gold markers) implanted in the prostate before radiation?

## A (Dr. Macewan & Dr. Rose):

- **Old standard**: Fiducials were used to help align radiation beams accurately.
- New approach: Modern real-time imaging (MRI, CT-guided IGRT) makes fiducial markers optional for most patients.
- Exceptions:
- o Some patients still receive fiducials, especially if they are undergoing CyberKnife or SBRT.
- Markers are sometimes used alongside SpaceOAR (a gel spacer placed between the rectum and prostate).

## 8. PSA Screening & Medicare Coverage Issues

Q: Has Medicare started denying PSA tests for prostate cancer screening?

A: Traditional Medicare covers PSA tests, but some Medicare Advantage plans restrict access. Patients should check specific insurance policies, as some require prior authorization or limit testing frequency.

### 9. Distinguishing Between Lung Cancer and Prostate Metastasis

**Q:** A prostate cancer patient develops a **lung nodule**—how can doctors tell if it's lung cancer or a prostate metastasis?

A (Dr. Rose):

- First steps:
- o **PSA test**: If PSA is low, the nodule is **less likely to be prostate cancer**.
- o **PSMA PET scan**: This imaging test can detect prostate cancer spread and **light up** prostate-related tumors.
- o **Biopsy**: The **only definitive way** to distinguish between primary lung cancer and metastatic prostate cancer.
- Insurance coverage issues (PSA tests, proton therapy approvals) continue to be a challenge.

This **Q&A** session provided valuable insights into patient concerns and cutting-edge developments in radiation therapy for prostate cancer. Let me know if you need more details!

# **Overall Conclusion**

This IPCSG meeting featured **cutting-edge advancements** in radiation therapy, including **adaptive photon therapy** and **proton therapy**, highlighting how these technologies improve precision, reduce side effects, and enhance patient outcomes. The presentations emphasized the importance of **tailored treatment approaches** based on each patient's specific needs and cancer stage.

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# Items of Interest

# **Breakthrough Implant Shows Promise for Personalized Prostate** Cancer Treatment

Based on Implant Shows Promise for Tumor-Specific Treatment in Prostate Cancer | MedPage Today Senior Editor, MedPage Today and the source article. Stone BV, et al "Novel intraprostatic magnetic resonance-guided implantation of multidrug-eluting microdevice for testing of systemic therapy agents in situ: Proof of concept in intermediate-risk and high-risk prostate cancer" J Urol 2025; DOI: 10.1097/JU.000000000004269.

New device enables real-time tumor response testing, paving the way for precision oncology

A revolutionary implantable microdevice (IMD) is showing promise in transforming prostate cancer treatment by allowing real-time assessment of tumor-specific drug responses, according to a recent study published in *The Journal of Urology*. The study, led by researchers from the Medical University of South Carolina and Harvard Medical School, marks a significant advancement in precision oncology for high-risk prostate cancer patients.

The IMD, a biocompatible device about the size of a grain of rice, contains 20 drug reservoirs that release microdoses of different cancer therapies into distinct regions of a tumor. This innovative approach allows doctors to evaluate how a patient's tumor responds to multiple drugs simultaneously before committing to systemic treatment. The goal is to tailor therapy based on the tumor's unique biology, potentially improving treatment outcomes while minimizing unnecessary side effects.

## A New Era for Prostate Cancer Treatment

In the study, 14 men with intermediate- or high-risk localized prostate cancer had the IMD implanted using MRI-guided, minimally invasive methods. The device was retrieved during robot-assisted prostatectomy two days later. Researchers analyzed tumor tissue surrounding the IMD, revealing significant variability in drug responses within and between patients.

"Given the heterogeneity of prostate cancer, predicting which systemic treatments will work best for an individual patient has been a major challenge," said lead author Dr. Benjamin V. Stone. "Our study demonstrates that the IMD can safely and effectively provide real-time data on tumor responses, offering a potential game-changer in personalized oncology."

## Potential for Non-Surgical Use

While all patients in this trial underwent prostatectomy, researchers are now investigating whether the device can be retrieved percutaneously, eliminating the need for surgery. If successful, the IMD could be used in patients undergoing radiation therapy or other non-surgical treatments, further broadening its impact.

The study builds on previous research using a similar device in non-small cell lung cancer. However, this marks the first time the technology has been successfully applied in prostate cancer.

## Challenges and Next Steps

While the findings are promising, the study had a small sample size, and further research is needed to refine IMD retrieval methods and optimize drug exposure timing. Investigators are also exploring the potential of testing non-FDA-approved therapies within tumors, offering a new avenue for accelerating drug development.

Experts in the field have lauded the study for its potential to reshape prostate cancer treatment. "As we move toward precision medicine, technologies like the IMD could revolutionize how we select therapies for patients, reducing trial-and-error treatment approaches," said Dr. Madison K. Krischak from the University of Michigan in an accompanying commentary.

With prostate cancer cases rising in the U.S. and treatment responses varying widely, the IMD represents a beacon of hope for a more targeted, effective approach to combating the disease. If further validated, this technology could significantly impact not only prostate cancer care but also the broader field of oncology.

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## **Clinical Impact**

The clinical impact of this implantable microdevice (IMD) approach on localized prostate cancer care could be profound, offering several advantages:

## I. Personalized Treatment Selection

The IMD enables real-time assessment of how a patient's tumor responds to multiple drugs. This allows clinicians to tailor systemic therapies based on individual tumor biology, reducing reliance on a trial-and-error approach.

## 2. More Effective and Targeted Therapy

By identifying the most effective drugs for each patient, the IMD could improve treatment outcomes. Patients may receive therapies with the highest likelihood of success while avoiding ineffective or unnecessary treatments.

## 3. Reduced Toxicity and Side Effects

Since only the most effective drugs are selected, patients may experience fewer side effects from ineffective therapies. The ability to use microdoses within the tumor reduces systemic toxicity.

## 4. Improved Outcomes for High-Risk Patients

Many high-risk prostate cancer patients likely harbor micrometastatic disease at diagnosis. Early identification of responsive therapies could improve long-term survival by initiating the right systemic treatment sooner.

## 5. Potential for Non-Surgical Use

Researchers are investigating whether the IMD can be retrieved without surgery. If successful, this approach could be applied to patients undergoing radiation therapy or active surveillance, broadening its applicability beyond surgical candidates.

## 6. Acceleration of Drug Development

The IMD could be used to test new and emerging therapies directly within tumors, expediting drug development and approval.

## 7. Enhanced Understanding of Tumor Heterogeneity

The IMD provides insight into both intertumor and intratumor variability in drug response. This could lead to more refined treatment strategies and combination therapies tailored to tumor genetics and micro-environments.

If validated in larger clinical trials, this approach could fundamentally change prostate cancer management, making precision oncology a reality in routine clinical care. Would you like to discuss any specific aspect in more detail?

# Q&A

A man considering initial treatment for prostate cancer can ask the following questions based on the findings of the implantable microdevice (IMD) study, along with potential answers he might receive from his physician:

1. How can this new implantable microdevice help personalize my treatment?

### **Expected Answer:**

The IMD is designed to test multiple drugs directly within a prostate tumor, helping determine which treatments may be most effective for you. While it's still in early research stages, it offers a promising way to tailor therapy based on your tumor's unique response rather than relying on standard treatments that may not work for every-one.

# 2. Is the IMD available for use outside of clinical trials?

## **Expected Answer:**

Currently, the IMD is being studied in clinical trials and is not yet widely available for routine clinical use. However, ongoing research aims to develop methods for its broader application, including potential non-surgical use.

## 3. Would I be a candidate for this technology?

### **Expected Answer:**

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Eligibility would depend on factors such as the stage and aggressiveness of your cancer. Right now, this technology has been studied in patients undergoing prostatectomy. If you are interested, we can explore available clinical trials where this approach is being tested.

# 4. How does this approach compare to traditional treatment selection methods?

### **Expected Answer:**

Currently, treatment selection is based on factors like PSA levels, biopsy results, and imaging. The IMD would add a new layer of precision by testing your tumor's actual response to drugs before starting treatment, potentially improving outcomes.

5. Can this technology be used for patients opting for radiation or active surveillance instead of surgery?

## **Expected Answer:**

Right now, the IMD has primarily been used in patients undergoing prostatectomy. However, researchers are exploring ways to retrieve the device non-surgically, which could make it an option for men receiving radiation or considering active surveillance.

# 6. Could this technology help me avoid unnecessary treatment or side effects?

## **Expected Answer:**

Yes, if proven effective, the IMD could help identify drugs that are most likely to work for you while avoiding ineffective treatments, reducing unnecessary exposure to toxic therapies.

## 7. What other precision medicine options are available for prostate cancer?

## **Expected Answer:**

Besides the IMD, genetic and molecular testing of your tumor (biomarkers like BRCA mutations) can help determine if targeted therapies or immunotherapy might be beneficial for you.

# On the Lighter Side



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### NETWORKING

Please help us in our outreach efforts. Our speakers bureau is available to speak to organizations of which you might be a member. Contact me at <u>Newsletter@ipcsg.org</u> to coordinate.

Member John Tassi is the webmaster of our website and welcomes any suggestions to make our website simple and easy to navigate. Check out the Personal Experiences page and send us your story. Go to: <u>https://ipcsg.org/personal-experience</u>

Our brochure provides the group philosophy and explains our goals. Copies may be obtained by mail or email on request. Please pass them along to friends and contacts.

#### FINANCES

We want to thank those of you who have made <u>special donations</u> to IPCSG. Remember that your gifts are <u>tax deductible</u> because we are a 501(c)(3) non-profit organization.

We again are reminding our members and friends to consider giving a large financial contribution to the IPCSG. This can include estate giving as well as giving in memory of a loved one. You can also have a distribution from your IRA made to our account. We need your support. We will, in turn, make contributions from our group to Prostate Cancer researchers and other groups as appropriate for a non-profit organization. Our group ID number is 54-2141691. <u>Corporate donors are welcome!</u>



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