

Partners In Practice

medical information for physicians by physicians

RADIATION MEDICINE



Precision treatment shaped around
each patient, every day.



Why Roswell Park

- + **National Cancer Institute-designated comprehensive cancer center** serving Western and Upstate New York.
- + **High-volume Gamma Knife program.**
- + **Disease-focused expertise**, multidisciplinary review and follow-up for complex cases.
- + **Quality assurance** that extends across planning, delivery, equipment performance and continuous improvement.

Roswell Park brings together subspecialized radiation oncologists, medical physicists, dosimetrists, radiation therapists and multidisciplinary disease teams to plan and deliver highly personalized care.

Advanced care with a clear purpose

ADAPT DAILY

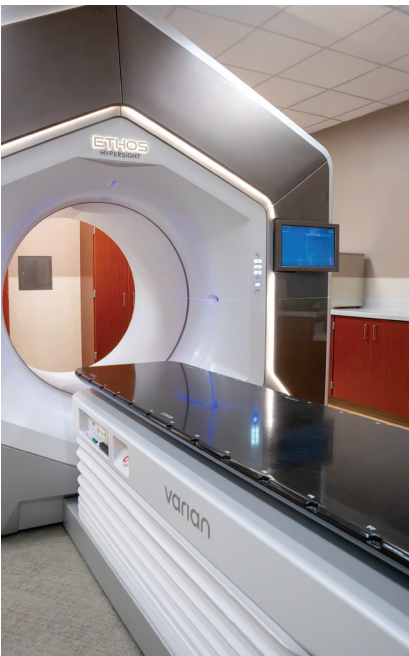
AI-powered adaptive radiotherapy accounts for changes in anatomy at the point of care.

TREAT PRECISELY

Gamma Knife, stereotactic treatment and image guidance focus dose where it is needed.

MAKE CARE EASIER

Tattoo-free positioning and shorter treatment schedules can reduce the burden of care.



It matters where patients receive radiation therapy

Radiation is part of care for many people with cancer. The value comes from matching the right technique, dose and schedule to the individual patient and the broader treatment plan.

Recommendations are developed by clinicians who specialize in the disease being treated and work directly with medical physics and the referring team. This integrated approach supports careful sequencing with surgery and systemic therapy, thoughtful management of prior radiation, and access to advanced options when a conventional pathway is not enough.

Our radiation medicine services

Image guided and adaptive

- + External beam radiotherapy
- + Daily image guidance
- + AI-assisted adaptive treatment
- + Surface-guided positioning

Stereotactic and radiosurgical

- + Gamma Knife radiosurgery
- + Stereotactic body radiotherapy
- + Highly conformal treatment for selected targets

Specialized approaches

- + Hypofractionation
- + Partial-breast irradiation
- + Intraoperative radiotherapy
- + Re-irradiation
- + Clinical trials

Technology that improves the **treatment experience**

Precision means minimizing burden **before, during and after** treatment.

Motion management and image guidance
Teams use imaging and monitoring to help ensure
accurate treatment delivery.



Tattoo-free, surface guided radiotherapy

Optical surface imaging can support accurate setup and continuously monitor a patient's position without permanent skin marks for eligible treatment courses. The approach is particularly meaningful for patients receiving breast radiotherapy, combining precision with a more personal, less visible treatment experience.



Barrigel® rectal spacer program

For selected patients receiving prostate radiotherapy, a rectal spacer creates temporary separation between the prostate and rectum. Increasing that distance can reduce radiation exposure to the rectum while preserving the intended treatment dose. Suitability is determined through clinical evaluation and treatment planning.

BENEFITS

FOR PATIENTS

- ✓ Greater comfort
- ✓ Fewer lasting treatment reminders
- ✓ Personalized to individual anatomy

FOR REFERRING CLINICIANS

- ✓ Clear eligibility review
- ✓ Coordinated scheduling
- ✓ Direct communication
- ✓ Technology aligned to treatment goals



A referral starts with a conversation

Call to discuss a case, clarify whether an advanced technique may be appropriate, or arrange an expedited review. Our team can coordinate imaging, multidisciplinary input and treatment planning while keeping the referring physician informed.

Gamma Knife radiosurgery

Over 25 years of experience and 12,000+ patients treated through integrated neuro-oncology care.

Gamma Knife radiosurgery is a noninvasive outpatient treatment for selected tumors, vascular conditions and functional disorders in the brain. Multiple highly focused beams converge on the target, producing a steep dose falloff that limits exposure to surrounding brain tissue.

What the approach can offer

- + **FOCUSED.** Sharp dose gradients help protect healthy brain tissue.
- + **EFFICIENT.** Most treatment is delivered as an outpatient procedure.
- + **COORDINATED.** Seamlessly integrated with neurologic and oncology care.

Experience for complex decisions

- + The Leksell Gamma Knife Esprit platform supports contemporary precision radiosurgery workflows.
- + Multidisciplinary evaluation helps align radiosurgery with surgery, systemic therapy, imaging and surveillance.
- + Expertise in repeat radiosurgery and carefully selected re-irradiation scenarios.



GAMMA KNIFE REFERRAL GUIDE

Conditions and clinical considerations

Gamma Knife may be considered for highly focused intracranial treatment while sparing healthy tissue.

CONDITIONS TREATED

Tumors

- Brain metastases
- Selected meningiomas
- Gliomas
- Pituitary adenomas
- Craniopharyngiomas
- Hemangioblastomas

Vascular and nerve

- Arteriovenous malformations
- Acoustic neuroma
- Trigeminal neuralgia

Functional disorders

- Essential tremor
- Other carefully selected movement disorders

Potential advantages

- + No surgical incision and generally no general anesthesia.
- + Access to deep or surgically challenging targets in appropriate patients.
- + May complement surgery when complete excision is not possible or advisable.
- + Can be repeated for selected patients who develop additional lesions.
- + Treatment planning can be coordinated to minimize disruption of systemic therapy.

When to call

Contact the Radiation Medicine team when imaging shows a new or recurrent intracranial lesion, when prior radiation complicates decision-making, or when the best local treatment option is uncertain. A multidisciplinary review can help define candidacy and timing.



Adaptive radiotherapy adjusts to daily anatomic changes.

Tumors and nearby organs can change position, shape or size during a course of treatment. Adaptive workflows use on-board imaging and artificial intelligence-assisted contouring to evaluate those changes before treatment. The clinical team reviews the anatomy, determines whether adaptation adds value and approves the treatment plan before delivery.

A daily adaptive workflow

1. IMAGE	Acquire on-board imaging in treatment position.
2. ASSESS	Use AI-assisted segmentation and clinician review.
3. ADAPT	Re-optimize the plan when anatomy warrants a change.
4. TREAT	Complete required checks and deliver the approved plan.

Who may benefit

Adaptive radiotherapy may be considered when physiologic variation, organ filling, weight change or tumor response is likely to alter the relationship between the target and nearby normal tissues.

Potential sites include:

- + pelvis
- + abdomen
- + head & neck
- + brain

Selection depends on the clinical objective and whether adaptation is likely to improve the therapeutic plan.

Clinical oversight remains central

Artificial intelligence supports speed and consistency; it does not replace professional judgment. Radiation oncologists, physicists, dosimetrists and therapists review the information and complete the same safety-focused decision process required for every treatment.

SBRT and hypofractionation

Modern planning and image guidance enable effective treatment in fewer visits.



Stereotactic body radiotherapy

SBRT uses highly conformal planning, precise localization and motion management to deliver an ablative dose to selected extracranial targets over a limited number of treatments. Appropriate use depends on tumor size and location, prior therapy, nearby organs and the broader care plan.

Hypofractionated treatment

Hypofractionation delivers a larger dose per visit, reducing the total number of appointments. Roswell Park uses evidence-based shorter courses across selected disease sites, including accelerated and partial-breast approaches when appropriate.

- + **Fewer visits.** Shorter courses can reduce travel, time away from work and caregiver burden.
- + **High precision.** Image guidance and motion management support accurate delivery.
- + **Disease specific.** The schedule is selected around diagnosis, anatomy, evidence and patient priorities.

REFERRAL QUESTION:

Could my patient safely receive a shorter course?

Send us the diagnosis, staging information, imaging, prior radiation records and relevant operative or systemic therapy history for review.

Low dose radiation therapy for osteoarthritis

A noninvasive approach to reducing osteoarthritis pain and restoring function for selected patients.



Who may be eligible

Adults age 50+

Have a history of at least **moderate osteoarthritis**

Have **failed a previous treatment**

PREVIOUS TREATMENTS INCLUDE:
physical therapy, oral or topical drug treatments such as non-steroidal anti-inflammatory agents, or intra-articular corticosteroid injections

SITES WE TREAT

We treat mainly sites in the appendicular skeleton, including upper and lower limbs and the connecting girdles, such as:

Shoulders

Elbows

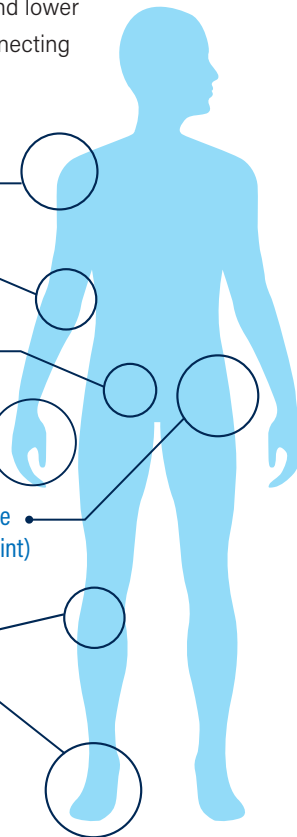
Sacroiliac joint

Hands

Hips (specifically the acetabulofemoral joint)

Knees

Feet



What patients should know

The radiation

dose is **VERY LOW**

at 3 Gy – just 5% of the typical dose used for cancer treatment

Short treatment regimen

6 treatments delivered

over **2-3 weeks**

Fast and painless

with each session taking

10 minutes or less

The treatment rationale

At low doses, radiation appears to modulate an overactive inflammatory response rather than destroy joint tissue. The goal is to reduce inflammatory signaling, pain and swelling. In a 2025 randomized study, 70% of patients receiving 3 Gy reported improvement in at least two of three measures at four months: pain, function and overall assessment.

Patient selection should include a discussion of expected benefit, alternatives and the small theoretical radiation risk. Future orthopedic surgery remains an option.



Safety is designed into the entire care pathway – from consultation and planning through treatment delivery, equipment performance and follow-up.

RO-VER quality initiative

The Radiation Oncology Vendor Event Repository, or RO-VER, organizes equipment and vendor service events so the department can identify patterns, monitor response and strengthen operational reliability. The initiative supports continuity of care by turning service data into practical quality improvement.

A connected quality system

CLINICAL REVIEW	Disease-focused planning, peer input and multidisciplinary discussion for complex cases.	Community connection Physician education, community outreach and coordinated access help patients understand when radiation may offer a meaningful option — including emerging applications beyond cancer care.
TECHNICAL ASSURANCE	Independent checks, equipment quality control and verification before and during treatment.	
CONTINUOUS LEARNING	Event review, trend monitoring and process improvement across the program.	

Multidisciplinary by design

Radiation Medicine works alongside surgical oncology, medical oncology, radiology, pathology and supportive care. This coordination is especially important when treatments must be sequenced, when prior therapy narrows the options or when a patient's goals require a tailored balance of disease control, function and quality of life.

A specialized team ready to collaborate

We welcome early case discussion when the radiation question is complex.



RADIATION ONCOLOGISTS

1. Dheerendra Prasad, MD, MCh, FACRO
Chair, Department of Radiation Medicine
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Refer or
consult



Call **716-845-RPMD (716-845-7763)**



to discuss a case, assess suitability for a specialized technique or refer a patient. Please include relevant imaging, pathology, staging, prior radiation records and the current treatment plan, if available.



Your patient may prefer to receive some of their cancer care closer to home at one of our Roswell Park Care Network practices. Visit **RoswellPark.org/CareNetwork** for a list of locations, providers and the services they offer.



Elm & Carlton Streets | Buffalo, NY 14263 | RoswellPark.org/RPMD | 716-845-RPMD (716-845-7763)

National Cancer Institute-Designated Comprehensive Cancer Center | National Comprehensive Cancer Network Member
Blue Distinction® Center for Cellular Immunotherapy - CAR-T | Blue Distinction® Center for Cancer Care | Blue Distinction® Center for Transplants