Transforming Cancer Care with Proton Therapy.
A significant advance in radiation therapy for patients with cancer.

Physician Priority Line: 888-987-7782

Seattle Cancer Care Alliance
Proton Therapy Center
Located on the campus of UW Medicine's Northwest Hospital & Medical Center
1570 N. 115th St., Seattle, WA 98133-8401
To learn more about the advantages of proton therapy, please call 877-897-7628 or visit www.SCCAprotontherapy.com.

Physician Priority Line: 888-987-7782
For a referral, please call the Proton Center’s Physician Referral Line at 888-987-7782. Our counselors are available Mon-Fri, 8:00 a.m. - 5:00 p.m. If you call after hours, we will call you back the next business day. You can also visit www.SCCAprotontherapy.com for more information, FAQ or to download the patient referral form.

Patients can be seen for initial evaluation at any of the UW Medicine Radiation Oncology Clinics:
- SCCA Proton Therapy Center (206-306-2800)
- UW Medical Center (206-598-4100)
- Seattle Cancer Care Alliance (206-288-7318)
- Northwest Hospital (206-368-5808)
- Harborview Medical Center (206-744-8067)

If you encounter any difficulty with referrals, please call 206-598-3597, call the on-call radiation oncology attending physician 206-598-6190, or contact Dr. Ramesh Rengan.

Our Medical Director
Ramesh Rengan, MD, PhD
Medical Director - SCCA Proton Therapy Center
Radiation Oncologist - UW Medicine
Associate Professor - Department of Radiation Oncology, University of Washington School of Medicine
Associate Member - Fred Hutchinson Cancer Research Center
Email: rengan@uw.edu Cell Phone: 206-890-7195
Precision radiation therapy for patients with cancer.

Proton therapy, a precise form of radiation for treating cancer, is available at Seattle Cancer Care Alliance (SCCA) Proton Therapy Center in Seattle, Washington, the only proton center in the Northwest. Proton therapy is effective in treating a variety of solid tumors, especially those located near critical organs. It provides an additional treatment option for patients and clinicians for a wide range of cancers, including:

- Brain tumors
- Prostate cancer
- Certain pediatric tumors
- Head and neck tumors
- Base of skull tumors
- Tumors near the spine and colon
- Orbital and eye tumors
- Breast cancer
- Lung cancer and chest tumors
- Pituitary gland tumors
- Thyroid gland tumors
- Sarcomas and other connective and soft tissue tumors
- Gastrointestinal tumors, including rectal, pancreatic, esophageal

The radiation oncologists who provide clinical care at SCCA Proton Therapy Center are all faculty of the University of Washington Department of Radiation Oncology. UW Medicine and Seattle Cancer Care Alliance are currently ranked fifth in the nation for adult cancer care by US News and World Report. They are leaders in the field who are known for clinical excellence. Our partners give us access to over 300 cancer specialists who work to ensure our patients’ receive the best care possible.

SCCA Proton Therapy Center is partnered with SCCA, Fred Hutch, UW Medicine and Seattle Children’s Hospital to bring proton therapy to the Pacific Northwest.
Proton therapy. An effective option that spares healthy tissue.

Proton therapy is a form of ionizing, high-energy radiation that uses the same mechanism to attack cancer cells as conventional radiation (photons). When external beam radiation is clinically indicated, proton therapy may be an effective option and sometimes preferable for treating many solid tumors.

The improved dose distribution of proton therapy allows us to conform the radiation to the tumor site, precisely targeting the tumor and reducing radiation exposure to healthy tissue. Because a smaller volume of healthy tissue is exposed to radiation, proton therapy can potentially reduce short- and long-term side effects and reduce the risk of developing a secondary cancer.

Proton therapy highlights:
• Reduced exposure of surrounding tissue to radiation
• Potential reduction in incidence of secondary tumors
• Allows for delivery of larger dose to the targeted area
• Proton therapy, similar to standard X-ray, can be incorporated into chemotherapy, immunotherapy, or surgical treatment plans for improved patient outcomes

Comparison of proton therapy and X-rays/IMRT in brain tumor treatment.

With proton therapy (below left), more of the healthy tissue and critical organs are spared from radiation.

Comparison of proton therapy and X-rays/IMRT in prostate cancer treatment.

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Proton therapy. Precise dose delivery.

Conventional Radiation (Photons)
Conventional radiation gradually loses energy as it travels. This means the highest radiation dose occurs shortly after entering the body. For even the most penetrating conventional beams available, the depth at which the maximum dose of radiation is delivered ranges between 0.5 cm and 3.5 cm. Because tumors are often located deeper than this range, a higher dose is potentially deposited in the healthy tissue in front of the tumor.

Conventional radiation beams deposit a radiation dose from the point of entry into the body until exit. Therefore, all tissue located in front of and behind the tumor is exposed to radiation during conventional treatment with x-rays.

Proton Beam Radiation
Protons deposit their dose very differently than conventional radiation. Unlike photons, protons deliver their greatest dose just prior to stopping. This phenomenon is known as the Bragg Peak. The proton beam can be calibrated to stop within the tumor, thereby concentrating the destructive force of the beam within the cancer while simultaneously minimizing or eliminating the dose exposure to the surrounding tissue and critical structures.

Due to these favorable properties, protons have the potential to reduce side effects and improve patient outcomes.

A comparison of the dose distribution for proton and X-ray beams.
Proton therapy is being used primarily to treat solid tumors as well as some benign lesions and arteriovenous malformations. Most solid tumors that can be treated with conventional radiation can also be treated with proton therapy.

**Evaluating candidates.**

The following key criteria can be used to evaluate whether proton therapy would be appropriate for your patient:
- Solid, localized tumors
- Proximity to critical structures or vital organs
- Recurrent malignancy

**Is proton therapy right for your patient?**

The primary tumors treated with protons are listed on page one. In addition, promising results in treating other tumor sites are being reported.

As access to protons has increased with the development of new treatment centers, interest in proton research is growing rapidly. Hundreds of papers have been published and presented at major conferences in the United States and worldwide. A bibliography of select articles and presentations is available at SCCAprotontherapy.com.

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**Leaders in radiation oncology.**

The radiation oncologists at SCCA Proton Therapy Center will plan your patient’s course of therapy, manage their clinical care and conduct weekly check-ups to ensure the treatment is on track.

Our radiation oncologists have trained at some of the best cancer centers in the country, including UW Medicine, Dana-Farber/Harvard Cancer Center, MD Anderson Cancer Center, Penn Medicine’s Abramson Cancer Center, Stanford Cancer Institute, Georgetown Lombardi Comprehensive Cancer Center, Johns Hopkins Kimmel Cancer Center, and Memorial Sloan-Kettering Cancer Center. SCCA Proton Therapy Center works in a disease team model and with specialists in brain, head and neck, breast, lung, gastrointestinal, genitourinary, prostate and pediatric cancers, our physicians have the expertise to provide the highest level of medical care to patients.

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Always Investigating. Always Advancing.

The medical community continues to conduct research studies on proton therapy, SCCA Proton Therapy Center and other academic medical centers are supporting many ongoing randomized clinical trials to expand our knowledge of the most beneficial applications of proton therapy in treating cancer.

Since proton therapy was approved by the U.S. Food and Drug Administration to treat patients in 1988, the medical community has continued to conduct research on the use of protons in treating different types of cancer through clinical trials. Over the years, many patients have volunteered to take part in these clinical trials to help find improvements in fighting cancer with proton therapy. This team has made a commitment to participate in clinical trials to further our knowledge of the benefits of proton therapy.

**Current Ongoing Clinical Trials**

<table>
<thead>
<tr>
<th>Study Title</th>
<th>Principal Investigator</th>
<th>Conditions</th>
<th>Study #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation Tracking Project: A Prospective Chart Review of Patients Treated With Proton Therapy</td>
<td>George Laramore, MD, PhD (Local Contact)</td>
<td>Solid Tumors</td>
<td>NCT0125574</td>
</tr>
<tr>
<td>Pulmonary Functional Imaging for Radiation Treatment Planning for Lung Cancer</td>
<td>Jing Zeng, MD</td>
<td>Lung Cancer</td>
<td>NCT0198213</td>
</tr>
<tr>
<td>Definitive Re-Irradiation With Proton Beam Radiotherapy for Patients With Recurrent Thoracic Cancers</td>
<td>Jing Zeng, MD</td>
<td>Lung Cancer</td>
<td>NCT02204761</td>
</tr>
<tr>
<td>Randomized Phase II Trial of Concurrent Bevacizumab and Re-Irradiation Bevacizumab Alone as Treatment for Recurrent Glioblastoma</td>
<td>George Laramore, MD, PhD (Local Contact)</td>
<td>CNS: Recurrent Glioblastoma</td>
<td>NCT01730950</td>
</tr>
<tr>
<td>Proton Therapy vs. IMRT for Low or Intermediate Risk Prostate Cancer</td>
<td>Jing Zeng, MD</td>
<td>Prostate Cancer</td>
<td>NCT01617161</td>
</tr>
<tr>
<td>Dose-Intensive Chemotherapy in Combination With Chemoprotected Autologous Stem Cells In Treating Patients With Malignant Gliomas</td>
<td>Hans-Peter Klum, MD</td>
<td>Adult Gliosarcoma</td>
<td>NCT00696699</td>
</tr>
<tr>
<td>Comparing Proton Therapy To Proton Therapy To Treat Patients With Lung Cancer</td>
<td>Rameesh Penga, MD</td>
<td>Lung Cancer</td>
<td>NCT01993810</td>
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The above represents current trials that are being held at SCCA Proton Therapy Center. The chart on page seven lists completed studies that demonstrate the clinical rationale for consideration of protons by cancer type. For a detailed set of studies and references please visit www.SCCAPriontherapy.com.

**Clinical Rationale for Consideration of Proton Therapy**

**Cancer Type** | **Clinical Rationale for Consideration of Protons** | **References**

**Base-of-Skull, Spine** | Proton therapy “wraps” the radiation dose distribution around the spinal cord, keeping dose levels within tolerance while treating the tumor to a considerably higher dose than can be delivered by standard X-ray radiotherapy. | nishi HP; et al. Int. J. Radiat. Oncol. Biol. Phys. 2007;67(2):513-520.


**Non-small-cell Lung Cancer** | Radiation induced damage to surrounding normal tissue is a significant cause of morbidity and mortality with X-ray treatment of lung cancer. Protons have shown to allow safe--escalation of dose to tumor with reduced dose to heart and lung, a critical determinant of survival, compared to X-rays to patients with inoperable lung cancer. | Chung, J.; et al., Cancer; 2011; 117(20): 4707-4713. Ghosh S; et al., Eur. J. Cardiothorac. Surg. 2003;24(8):1002-1007.


SCCA Proton Therapy Center delivers personalized, comprehensive patient care, using the most advanced technology available. Our goal is to help patients live healthy and fulfilling lives.

Everyone at the Center is committed to creating a warm, healing environment. Care for our patients is provided by a dedicated team that includes a radiation oncologist, a nurse, medical physicists, dosimetrists and radiation therapists. We also have an extended team working behind the scenes to ensure exceptional patient care.

The Center can treat up to 1,200 patients a year, with these state-of-the-art facilities and equipment:

- Four treatment rooms: two inclined beam rooms, a fixed beam room, and a 360-degree gantry room
- Pencil Beam Scanning
- Image guidance technology in treatment rooms to provide accurate treatment positioning
- A robotic patient-positioning system to optimize accuracy and workflow of patient treatment
- Electronic medical record system for physicians and the Care Team

Exceptional patient care. A healing environment. Seamless, integrated cancer care. SCCA Proton Therapy Center’s compassionate, multidisciplinary approach to cancer treatment ensures that patients receive continuous, integrated care and support. Our partner, Seattle Cancer Care Alliance, also provides innovative, post-treatment wellness programs to guide patients and their families through recovery.

Seattle Cancer Care Alliance was formed in 1998 and is a partnership between Fred Hutch, Seattle Children’s Hospital and UW Medicine. The vision is to lead the world in translating scientific discovery into the prevention, treatment and cure of cancer. SCCA was rated as the #5 Best Hospital for Adult Cancer in the U.S. by U.S. News and World Report. All of the radiation oncologists who provide clinical care at SCCA Proton Therapy Center are faculty of the University of Washington Department of Radiation Oncology. These physicians are leaders in their field and known for clinical excellence as well as research in cancer care.

Patients receiving treatment may need additional medical care in conjunction with proton therapy. The patient may obtain additional medical services through SCCA, which offers a full spectrum of cancer care resources, including cancer screenings, diagnostic services, chemotherapy, surgery, radiation therapy, and clinical trials.

Children receiving proton therapy will get special care and support from our partner, Seattle Children’s Hospital, one of the nation’s top pediatric cancer programs. Radiation oncologists, along with a team of experts from Seattle Children’s Hospital, will work together to coordinate the treatment plan for the child.

Onsite support resources. Cancer treatment can be a difficult time for a patient and their family. The staff at SCCA Proton Therapy Center is dedicated to helping patients through that journey. The Patient Services Team at the Center provides patients and and their loved ones with additional support, such as connecting them with other patients and helping them find housing and other services.

The Center has an onsite oncology social worker who can both assist patients with finding available support services and help patients and their families through the emotional side of cancer. In addition to our onsite social worker, we have a child life expert who specializes in assisting pediatric patients through their treatment.

Concierge Services
During a patient’s treatment our Concierge Team provides resources and services to make their stay as stress-free as possible.
About the SCCA Proton Therapy Center

Seattle Cancer Care Alliance (SCCA) Proton Therapy Center is a cancer treatment facility that uses precisely targeted radiation to treat cancer while preserving surrounding healthy tissue. Proton therapy is an advanced form of treatment that allows doctors to focus radiation directly into the tumor, reducing the potential for side effects. Protons are beneficial in treating a broad range of tumors, including those of the brain, central nervous system, gastrointestinal tract, head and neck, breast, lung, and prostate, as well as sarcomas and certain pediatric cancers. SCCA Proton Therapy Center unites top cancer experts from UW Medicine and Seattle Children’s. The Center is located on UW Medicine’s Northwest Hospital campus and is the only proton therapy center in a seven-state region. For more information, visit SCCAprotontherapy.com or follow the SCCA Proton Therapy Center on Twitter @SCCAProtons and on Facebook @SCCAProtonTherapyCenter.

About Seattle Cancer Care Alliance

SCCA is a cancer treatment center that unites doctors from Fred Hutch, UW Medicine and Seattle Children’s. Their goal, every day, is to turn cancer patients into cancer survivors. Their purpose is to lead the world in the prevention and treatment of cancer. SCCA has six clinical sites: outpatient clinics on the Fred Hutch campus and at Evergreen Health; a pediatric inpatient unit at Seattle Children’s; an adult inpatient unit at UW Medical Center; and a radiation oncology clinic and proton therapy center on the campus of Northwest Hospital. For more information about SCCA, visit seattlecca.org.

About UW Medicine

UW Medicine’s mission is to improve the health of the public by advancing medical knowledge, providing outstanding primary and specialty care to the people of the region, and preparing tomorrow’s physicians, scientists and other health professionals. UW Medicine owns or operates Harborview Medical Center, Northwest Hospital & Medical Center, Valley Medical Center, University of Washington Medical Center, a network of nine UW Neighborhood Clinics that provide primary care and secondary care, the physician practice UW Physicians, the UW School of Medicine and Airlift Northwest. UW faculty includes 3 living Nobel Prize winners (5 in our history), 35 Institute of Medicine members, 32 National Academy of Sciences members and 13 Howard Hughes Medical Institute investigators. For more information about UW Medicine visit uwmedicine.org.
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