

# USING PROTON THERAPY TO PROTECT THE HEART

## OVERVIEW

Proton therapy is a powerful treatment tool for fighting a variety of cancers, and is available to patients at the Maryland Proton Treatment Center (MPTC).

Physicians at MPTC use the most sophisticated form of proton therapy, called pencil-beam scanning (PBS), or intensity-modulated proton therapy (IMPT), to precisely target tumors, while minimizing damage to surrounding healthy tissues and organs.



## PROTECTING THE HEART

When a patient's heart is exposed to even low-doses of radiation, they may become more likely to experience a cardiac complication such as heart failure, coronary heart disease, valvular disease and others in the future.

With proton therapy, highly targeted protons deliver radiation to the site of the tumor or target area and stop-- eliminating unnecessary exposure of surrounding organs to radiation. In situations where the tumor is close to the heart, such as left-sided breast cancer, lung cancer, esophageal cancer and some lymphomas, the heart and major blood vessels can be spared from even the lowest doses of radiation due to the unique properties of protons compared standard radiation. This has the potential to improve long term effects of radiation.

## OUR BREAST CANCER TEAM



### Elizabeth M. Nichols, MD

*Associate Professor and Clinical Director of Radiation Oncology, University of Maryland School of Medicine*

Dr. Nichols is experienced in the use of proton therapy for breast and gynecologic malignancies and leads research in the use of the GammaPod - a device developed at the University of Maryland for treating early stage breast cancers. She also has experience with re-irradiation and combining protons with chemotherapy and thermal therapy (hyperthermia).



### Mark V. Mishra, MD

*Associate Professor and Director of Radiation Oncology Clinical Research, University of Maryland School of Medicine*

Dr. Mishra specializes in the management of patients with central nervous system, genitourinary, and breast tumors. His research focus at the University of Maryland has centered on comparative and cost-effectiveness studies on new and complex radiation therapy technologies.

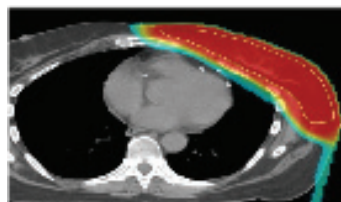


### Sarah McAvoy, MD

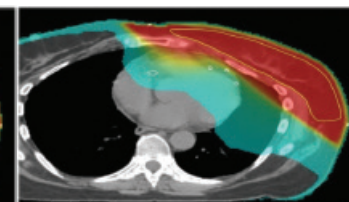
*Assistant Professor and Residency Program Director of Radiation Oncology, University of Maryland School of Medicine*

Dr. McAvoy brings several years of proton therapy training and experience while treating all sites of cancer, with a special interest in women's health. During her time at the MD Anderson Cancer Center, she received the Dr. Mary Fletcher Award for excellence in clinical care. She specializes in various radiation advanced technologies, including GammaPod and proton therapy.

Proton therapy



Photon therapy



Proton therapy allows for higher doses of radiation to be delivered to the tumor without damaging surrounding healthy tissues and organs, such as the heart.