

State Health Coordinating Council
Proposed 2020 State Medical Facilities Plan Public Hearing Comments
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Good afternoon, my name is Carnell Hampton, and I am the AVP of Medical Physics in the Levine Cancer Institute at Atrium Health. I have responsibility for Medical Physics and dosimetry services and oversight of quality and safety at 9 LCI radiation therapy centers in the Charlotte metropolitan area. Thank you for the opportunity to discuss our petition for a gamma knife in the western portion of North Carolina.

My professional qualifications relevant to this presentation are as follows: I am currently certified by the American Board of Radiology in Therapeutic Radiological Physics and have been since 2007. I hold a BS in Physics and Electrical Engineering Technology, a PhD in Biomedical Engineering and I completed residency training in Medical Physics at Washington University in St. Louis. I have 15 years of experience as a clinical medical physicist and spent the past almost 6 years serving in clinical leadership. I have been employed in both academic and community health care practices, with clinical experience with Stereotactic Radiosurgery in both settings. I am a member of and serve

on multiple national committees of the American Association of Physicists in Medicine – the professional society of physicists whose mission is: Advancing medicine through excellence in the science, education and professional practice of medical physics.

Stereotactic radiotherapy is high dose, tightly focused radiation therapy, usually delivered in a single session to treat tumors and other problems in the brain, neck, lungs, liver, spine and other parts of the body. Stereotactic radiotherapy is used instead of, or in conjunction with, traditional (i.e., open) surgery due to its extreme accuracy, efficiency and outstanding therapeutic response. Gamma Knife surgery is a form of Stereotactic Radiosurgery, or SRS , primarily used for treating brain disorders.

Its use for treatment of brain lesions has increased significantly over time due to a variety of factors including improvements in radiosurgery technologies, an increased incidence of brain cancer, and research demonstrating that radiosurgery is superior to traditional therapies such as whole brain radiation in preserving patients' quality of life. Furthermore, additional studies have demonstrated that SRS can be used instead of, or in combination with, other treatments including open surgery, to improve patient outcomes for an expanding array of

disorders ranging from movement disorders, to benign tumors to vascular malformations in the brain.

There is a significant need for radiosurgical services in our state, a need which is incompletely met by the current number of available, dedicated radiosurgery devices. The Gamma knife, which is a particular delivery device for radiosurgical treatment, has unique advantages over alternative therapies such as linear accelerator-based SRS and cyberknife. Those advantages include increased precision and thus safety, improved efficacy, and substantially increased efficiency.

Atrium radiotherapy centers are largely equipped with standard linear accelerators and do not have a dedicated stereotactic device in operation. Technical innovations in linear accelerator technology has made them versatile and efficient tools in the battle against cancer, advancing the quality of care by bringing once-highly specialized treatments like Stereotactic Body Radiotherapy (SBRT) to more centers and patients across a distributed radiotherapy market. Atrium Health uses a Cyberknife radiotherapy device at our LCI Cabarrus facility.

While once an ideal choice for a variety of stereotactic therapies, the device has been deprioritized in favor of linear accelerators which had a lower maintenance cost and were more versatile and suitable for some

types of stereotactic treatment. The Cyberknife has not been upgraded since early in its useful life and is now technologically and functionally obsolete, lacking advanced treatment planning algorithms or precise and efficient beam-shaping added devices. Atrium health clinicians utilizes a specialized linear accelerator at our LCI Morehead location for SRS – the Novalis Brainlab. While versatile, the Brainlab accelerator also requires add-on components to deliver more accurate treatment. Even with these added accoutrements, SRS delivered on the Brainlab is less accurate than that delivered on a GammaKnife. This device is used as a general purpose device and shares treatment slots with non-SRS therapies. And while advances in technology and clinical delivery modes such as volumetric modulated treatment for multi-metastasis hold promise for more efficient delivery on a multi-purpose, non-dedicated stereotactic delivery device like the Brainlab, there are currently few tools and little consensus on the quality assurance necessary to guide the safe delivery of precision SRS. Without additional advances in linear accelerator technology and quality assurance tools and procedures, the GammaKnife will remains a gold standard for efficient and precise treatment vs a standard linear accelerator. When the Gamma Knife (GK) is compared with linac systems, even dedicated ones, the published data suggests that mechanical accuracy data gives a slight edge for Gamma Knife versus a

CyberKnife, and a general purpose linear accelerator. Published studies also suggest an advantage for Gamma Knife in conformality to irregular shapes and less variation in the pattern of dose distribution. From the medical physicist's perspective, the Gamma Knife's advantages vs. other delivery devices, help reduce the uncertainty in a patient's treatment and any advantage that positions the clinician closer to that goal must be weighed seriously versus all other considerations.

North Carolina's per population allocation of gamma knives is among the lowest in the nation, suggesting we could, and likely should, support an additional device. Locally, which is to say in the western part of the state, and more specifically in the Charlotte metropolitan region, we have experienced a population explosion, and an associated increase in the pathologies relevant to gamma knife therapy, particularly brain tumors. Our own cancer program has expanded dramatically over the last several years. In 2018, 18,000 new patients were seen at the Levine Cancer Institute (LCI). We have experienced 80% volume growth over the last 5 years.

At LCI with the physicians and health professionals from Atrium Health, Carolina Neurosurgery and Spine Associates and Southeast Radiation Oncology uniquely collaborate in providing SRS for our patients and

cooperatively engage in cutting-edge radiosurgery research. Our current radiosurgery device, a non-dedicated linear accelerator (in other words, it's used for many purposes aside from SRS), has reached its functional limit in terms of the number of patients we can treat on an annual basis. Absent a more efficient and dedicated device, we will be unable to adequately serve the many patients in our large catchment area who rely on our comprehensive cancer services.

In summary, our state needs an additional gamma knife radiosurgical device to serve the many patients who would benefit from this important technology. Our citizens are specifically lacking adequate access to the accepted gold standard for cranial radiosurgical therapy. Atrium is uniquely positioned to provide gamma knife therapy, due to our large patient volumes, our comprehensive, multi-disciplinary expertise, and our demonstrated, and nationally recognized commitment to advancing the science of radiosurgical care.

We respectfully request your favorable review of our application. Thank you for your attention. I'd be happy to answer any questions.