

The Availability of Advanced Radiation Oncology Technology within the Veterans Health Administration Radiation Oncology Centers

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Radiation oncologists were surveyed to determine how accessible advanced radiation delivery modalities are within the VHA.

The VHA is the primary care provider for 20.4% of the more than 21.9 million military veterans.¹ Surveys report that over a lifetime, an estimated 28.4% of U.S. veterans will receive some measure of their health care from the VHA.² An estimated 40,000 new cancer cases are diagnosed each year from these veterans, resulting in a minimum of 175,000 veterans receiving cancer care in VHA facilities.³ The 39 VHA facilities currently with onsite radiation oncology practices annually provide radiation therapy to about 20,000 veterans (Figure 1).

Nationally, tumor control and toxicity outcomes have each improved over recent decades as advances have occurred in imaging, radiation treatment planning, and equipment for the delivery of radiotherapy.⁴ The VHA has kept pace with these technological advancements to the point where image-guided radiotherapy (IGRT), intensity-modulated radiotherapy (IMRT), and stereotac-

tic body radiotherapy (SBRT) are widely available at VHA centers. Additionally, all active VHA radiation oncology centers have earned accreditation from the American College of Radiology, while 3 new centers are in the process of gaining accreditation.

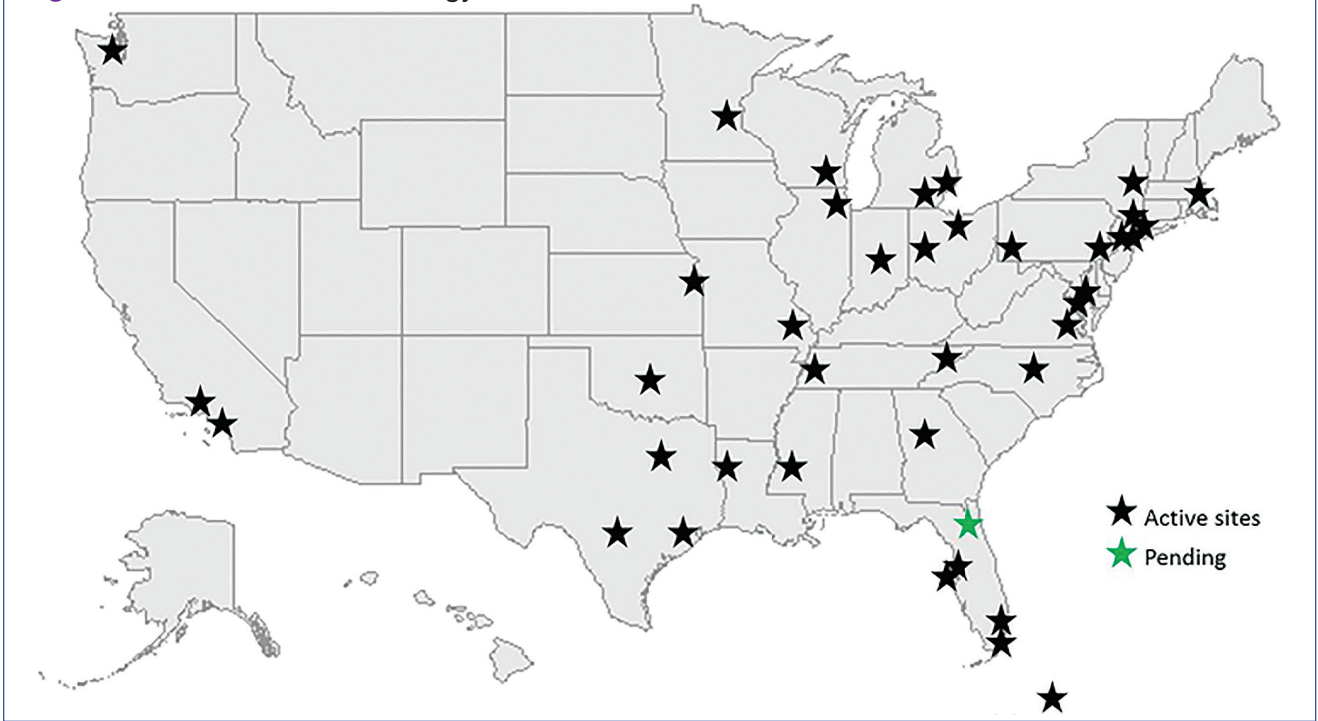
When technologies deemed to be medically necessary are not available onsite, these treatments are made available to veterans through referral to other VHA or non-VHA centers. Here, the authors present the results of a survey of VHA-based radiation oncologists to evaluate onsite availability of various radiation technologies.

METHODS

The VHA Palliative Radiotherapy Task Force constructed an online survey and sent it to the 82 radiation oncologists practicing at the 38 VHA radiation oncology centers that were active at the time. After emailing the survey,

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Figure 1. VHA Radiation Oncology Centers



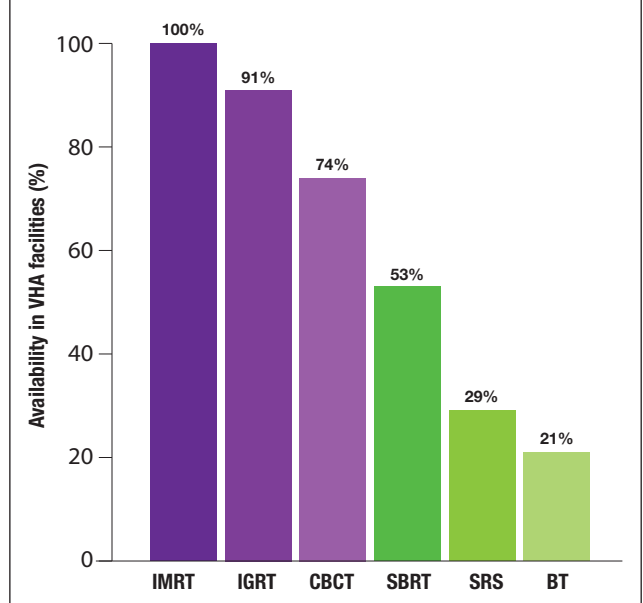
follow-up phone calls were made to maximize response rates. The survey was conducted during the months of May and June of 2014.

In this survey, all 82 VHA radiation oncologists were queried on the availability of advanced radiation delivery technologies including IGRT, IMRT, and SBRT at their facilities. The authors also surveyed for presence of brachytherapy (BT) programs, stereotactic radiosurgery (SRS), and cone-beam computed tomography (CBCT). Information was collected regarding the extent to which physicians can treat cases requiring SRS and/or SBRT onsite vs through referral to another facility for treatment. These data were gathered from a survey conducted in conjunction with a larger survey on the practice and patterns of care in the treatment of patients with brain metastases within the VHA.^{5,6} The data presented here apply to radiation therapy in general and are not limited to the treatment of brain metastases.

RESULTS

The overall response rate was 76% (62 of 82 radiation oncologists). At the time of the survey, 90% (34 of 38) of

Figure 2. Treatment Modalities



Abbreviations: BT, brachytherapy; CBCT, cone-beam computed tomography; IGRT, image-guided radiotherapy; IMRT, intensity-modulated radiotherapy; SBRT, stereotactic body radiotherapy; SRS, stereotactic radiosurgery.

Table 1. New Regional Configuration of VHA VISNs With Active Radiation Oncology Centers

<p>REGION 1: North Atlantic District VISN 1. Boston, MA VISN 2. Albany, Bronx, Brooklyn, Northport, NY; East Orange, NJ VISN 4. Pittsburg, Philadelphia, PA VISN 5. Washington DC; Baltimore, MD VISN 6. Durham, NC; Richmond, VA</p>
<p>REGION 2: Southeast District VISN 7. Atlanta, GA VISN 8. Bay Pines, Orlando, West Palm Beach, Miami, FL; Puerto Rico VISN 9. Memphis, Mountain Home, TN</p>
<p>REGION 3: Midwest District VISN 10. Dayton, Cleveland OH; Ann Arbor and Detroit, MI; Indianapolis, IN VISN 12. Chicago, IL; Milwaukee, WI VISN 15. Kansas City, St Louis, MO VISN 23. Minneapolis, MN</p>
<p>REGION 4: Continental District VISN 16. Shreveport, LA; Houston, TX VISN 17. Dallas, San Antonio, TX; Jackson, MS VISN 19. Oklahoma City, OK</p>
<p>REGION 5: Pacific District VISN 20. Seattle, WA VISN 22. Los Angeles, Long Beach, CA</p>

active VHA radiation oncology treatment facilities were represented. However as of May 2016, there are 40 active VHA radiation oncology centers.

Figure 2 describes the availability of various treatment delivery systems. The data demonstrated 100% availability of IMRT. Respondents reported onsite availability of IGRT at 91%, CBCT at 74%, and SBRT at 53%. Treatment technologies that were not as widely available at VHA facilities with inherent radiation oncology practices included SRS at 29% and BT at 21%.

For cases requiring SRS, 69% (40 of 58) of respondents who answered this question indicated that they refer patients to other VHA radiation oncology centers or VHA contracted private entities.

This report is limited by the following factors:

- A narrow scope of practices was surveyed. The sur-

Table 2. VHA Radiation Oncology Brachytherapy Programs

Site (VISN)	Low Dose	High Dose
Boston, MA (1)	Yes	No
Albany, NY (2)	Yes	No
Brooklyn, NY (2)	Yes	No
East Orange, NJ (2)	No	Yes
Richmond, VA (6)	Yes	No
Durham, NC (6)	Yes	No
Seattle, WA (20)	Yes	No

vey was solely sent to VHA physicians at 38 active VHA radiation oncology centers out of 144 VHA hospitals. Therefore the practices at VHA medical centers without active VHA radiation was not acquired with this survey.

- This survey only addresses availability of these newer treatment technologies, not their actual use, in treating cancers predominant within the VHA.
- Literature comparison in this report is based on current use of these technologies for some of the reports cited, rather than availability as this report reflects. As such, direct comparisons could be misleading.

DISCUSSION

Although the total number of veterans has been decreasing in recent years, the number of veterans enrolling into VHA-related programs has been increasing and is expected to expand increase further in years to come.^{1,2} It is important for radiation oncologists to keep pace with new technologies to ensure their patients have access to the best possible treatments.

Advances in radiation oncology have allowed radiotherapy to evolve from the 2-dimensional treatments of the 1950s to the 1980s, to more targeted treatments that employ advanced imaging and complex planning. Modern techniques for delivery of radiotherapy are better at confining radiation dose to the tumor volume while minimizing the irradiation of normal structures. The use of cumbersome blocks, wedges, and tissue compensators has given way to treatment with internal collimation

Table 3. SBRT Programs by Newly Proposed Designated Regions (VISN)

Region 1	Region 2	Region 3	Region 4	Region 5
Boston, MA (1)	Miami, FL (8)	Ann Arbor, MI (10)	Houston, TX (16) (Robotic assisted radiotherapy)	Long Beach, CA (20)
East Orange, NJ (2)	Bay Pines, FL (8)	Indianapolis, IN (10)	Jackson, MS (17)	Los Angles, CA (21)
Brooklyn, NY (2)		Milwaukee, WI (12)	Oklahoma City, OK (19)	
Pittsburgh, PA (4)		Chicago, IL (12)		
Richmond, VA (6)		Kansas City, MO (15)		
Durham, NC (6)				

Abreviation: SBRT, stereotactic body radiotherapy.

techniques such as IMRT, SBRT, and SRS. These techniques rely heavily on image guidance for tumor targeting. Four-dimensional planning and treatment allow radiation oncologists to track tumor and normal tissue motion, thereby increasing the accuracy and precision of radiation treatments.

As is true in the community, IMRT and IGRT are widely available within the VHA. According to a survey by Simpson and colleagues evaluating the use of IGRT in the U.S., 93% of radiation oncologists use IGRT.⁷ Similarly, the survey presented here demonstrates that 91% of VHA radiation oncologists report availability of IGRT at their centers. All VHA radiation oncologists surveyed report access to IMRT.

Shen's recent report evaluating radiotherapy patterns of practice from 2002 to 2010 examined volume of payments for treatment delivery by codes for office-based IMRT.⁸ These authors noted an increase in the usage of IMRT as a percentage of external beam radiotherapy from 2002 to 2010 of 0% to 70%, respectively. They further noted during this period that IGRT use, based on total payments for treatment delivery, increased from 2.1% to 11.1%.

The reported use of onsite SBRT among VHA physicians is slightly less than that of community physicians. A survey study by Pan and colleagues demonstrated that 63.9% of U.S. radiation oncologists use SBRT, while in the survey study presented here, 53% of VHA radiation oncologists reported availability of onsite SBRT.⁹ Of note, the lack of availability of onsite SBRT at VHA centers does not preclude treatment with SBRT when medically

necessary. These cases can be referred to other VHA or community centers with the requisite accreditation credentials. Because of the increasing use of SBRT and related technologies in the treatment of some cancers, an improved availability of SBRT in the future within the VHA will allow for some centers to participate in the Veterans Affairs Lung Cancer Surgery or Stereotactic Radiotherapy (VALOR) trial, which was approved for open recruitment in 2015.

Although BT and SRS are not as widely available within the VHA as other evaluated technologies such as IGRT and IMRT, their availability mirrors a similar limited availability in the community.¹⁰⁻¹² When necessary these services also can be provided for veterans through referral to other VHA or non-VHA centers.

The benefit of charged particle radiotherapy, such as proton beam radiotherapy, is limited to specific cancers.¹³ This technology is not widely available in the community or within the VHA. Because of a VHA policy currently in place permitting non-VHA care when needed, veterans who require treatment with charged particle radiotherapy are referred to accredited non-VHA radiation oncology centers when indicated.

CONCLUSION

In this survey, 92% of the VHA radiation oncology centers are accredited by the American College of Radiology. Further, VHA radiation oncologists respondents reported availability of treatment technologies in line with responses of physicians from community based surveys. The majority of VHA radiation oncologists

report access to IMRT, IGRT, CBCT, and SBRT. While BT and SRS are not available onsite at the majority of the 40 VHA radiation oncology centers, this mirrors limited availability and use of these technologies in the community as well. ●

Author disclosures

The authors report no actual or potential conflicts of interest with regard to this article.

Disclaimer

The opinions expressed herein are those of the authors and do not necessarily reflect those of Federal Practitioner, Frontline Medical Communications Inc., the U.S. Government, or any of its agencies.

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