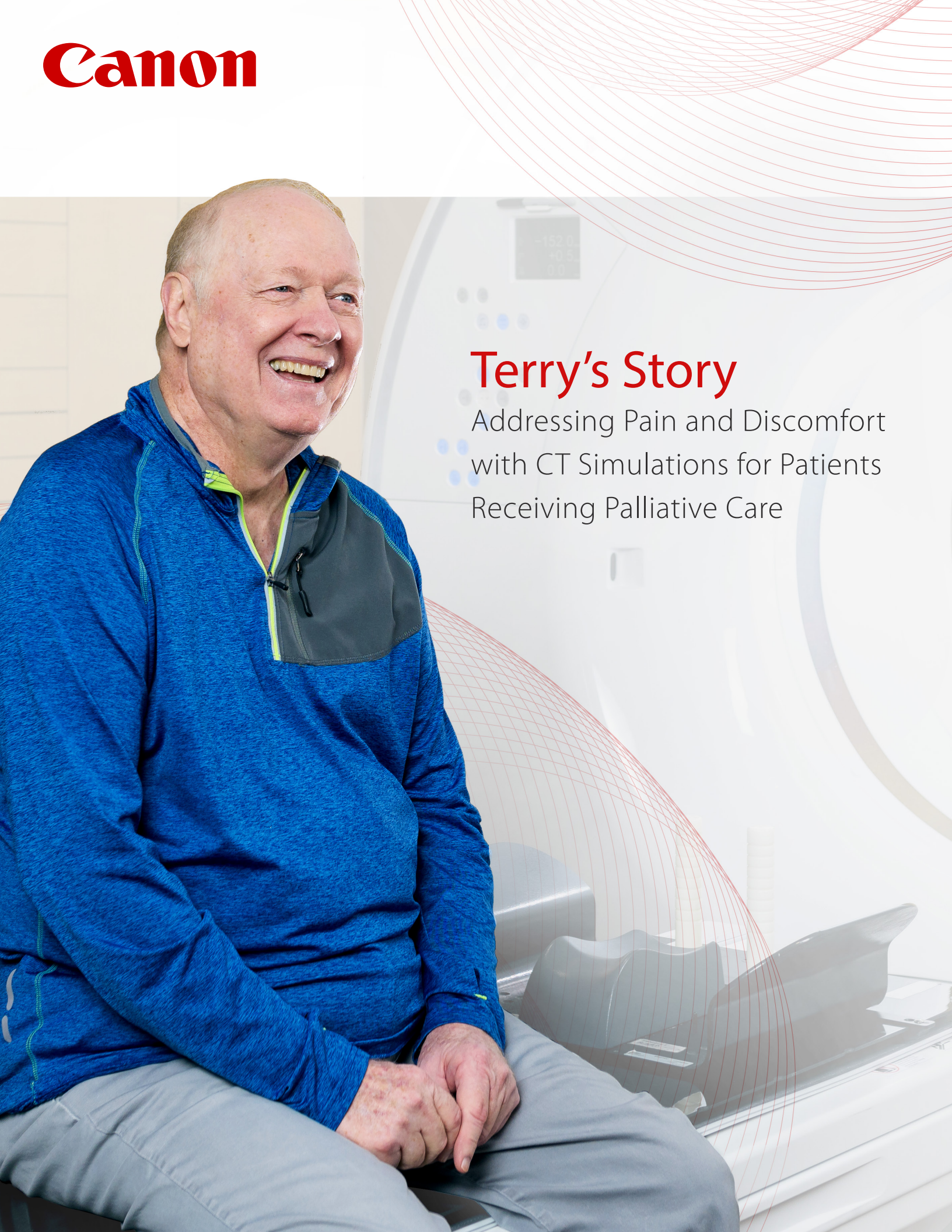
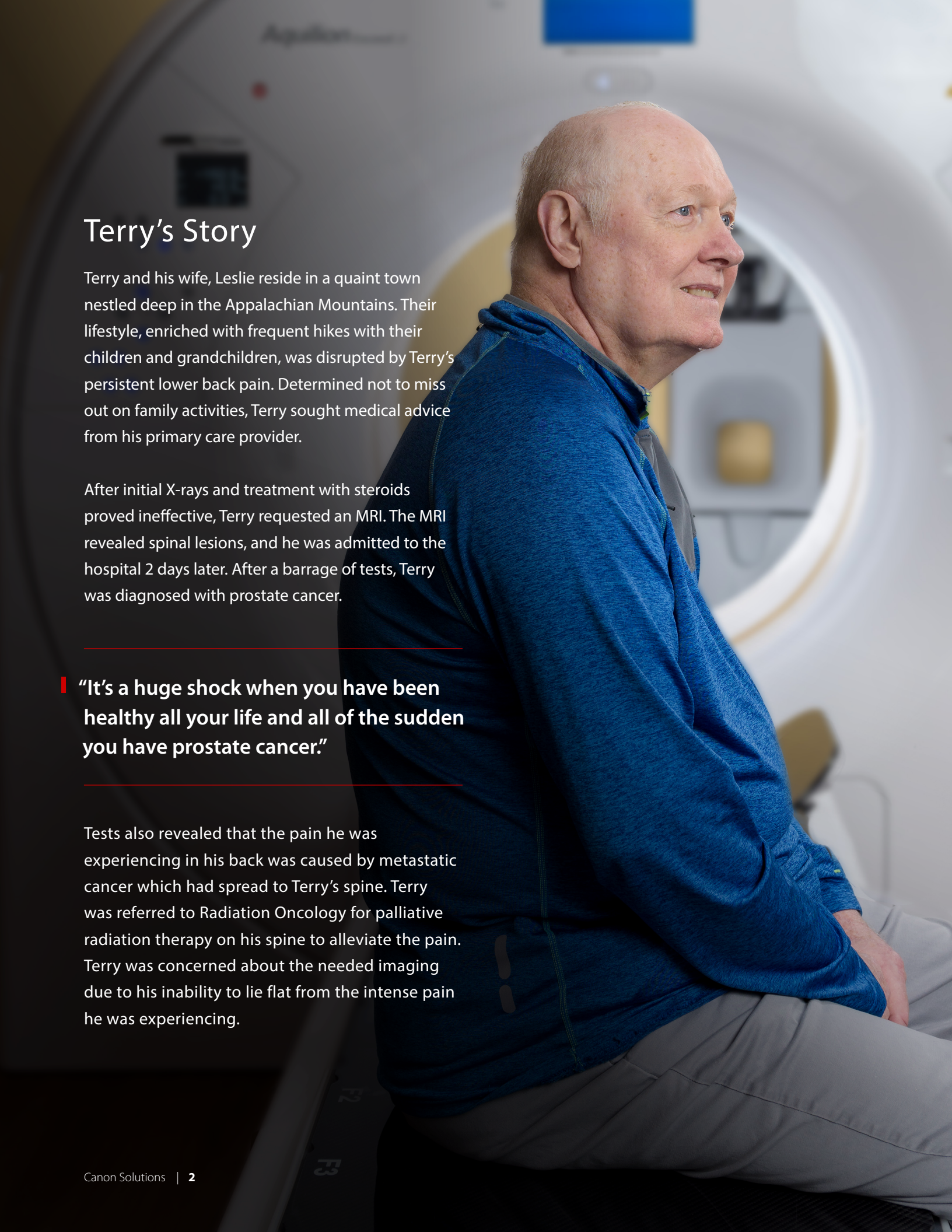


A photograph of a middle-aged man with a friendly smile, sitting on the bed of a CT scanner. He is wearing a blue zip-up jacket with grey and yellow accents and grey trousers. His hands are clasped in his lap. The background shows the interior of the CT scanner with a digital display showing '-152.0', '+0.5', and '0.0'. Red concentric circles are overlaid on the image, centered on the man, suggesting a field of view or simulation area.

Canon

Terry's Story

Addressing Pain and Discomfort
with CT Simulations for Patients
Receiving Palliative Care

A photograph of an older man with thinning hair, wearing a blue zip-up jacket and grey trousers, sitting inside an MRI machine. He is looking off to the side with a slight smile. The background shows the circular opening of the MRI scanner.

Terry's Story

Terry and his wife, Leslie reside in a quaint town nestled deep in the Appalachian Mountains. Their lifestyle, enriched with frequent hikes with their children and grandchildren, was disrupted by Terry's persistent lower back pain. Determined not to miss out on family activities, Terry sought medical advice from his primary care provider.

After initial X-rays and treatment with steroids proved ineffective, Terry requested an MRI. The MRI revealed spinal lesions, and he was admitted to the hospital 2 days later. After a barrage of tests, Terry was diagnosed with prostate cancer.

"It's a huge shock when you have been healthy all your life and all of the sudden you have prostate cancer."

Tests also revealed that the pain he was experiencing in his back was caused by metastatic cancer which had spread to Terry's spine. Terry was referred to Radiation Oncology for palliative radiation therapy on his spine to alleviate the pain. Terry was concerned about the needed imaging due to his inability to lie flat from the intense pain he was experiencing.

Patient Imaging Challenges in Radiation Oncology



In Radiation Oncology, palliative care is a strategy to relieve pain in metastatic disease. Palliative care accounts for approximately 50% of all radiation oncology patients¹ currently receiving treatments. For prostate cancer patients like Terry, about 40% will find themselves in need of palliative radiation therapy.² Furthermore, Terry's inability to lie flat for his scan is not uncommon for cancer patients who undergo imaging procedures. This challenge impacts both the patient experience and the ability to get treatment.

~40%

**of all prostate cancer patients will need to treat
an area of disease with palliative radiation therapy**

When patients are unable to be placed in the needed position, it poses significant challenges in acquiring and interpreting the patient images Radiation Therapy departments need for radiation therapy planning.

There are many patients like Terry who either struggle or cannot lay on their back to be scanned, particularly those with head-and-neck cancers, lung cancer, or spinal metastasis. Many other conditions make it difficult or impossible for patients to lie flat, such as obesity, heart problems, superior vena cava obstruction, and phrenic nerve injury, which result in respiratory difficulty when lying on their back. Additionally, patients with Parkinson's, or other conditions that have poor position stability also may have difficulty or be unable to complete the scan.^{3,4}

The Prevalence of Spinal Metastases in Cancer Patients

While there are may be many factors that can contribute to patients finding it difficult to lay on their back, the severe pain of spinal metastases plays a role for many patients seeking radiation therapy treatment for palliative care. In fact research evaluating cancer patients that have passed revealed 70% of these patients had metastatic disease, of which 40% of this disease was located in the spine.⁵

With so many cancer patients at risk for metastatic disease to the spine, this further highlights the need for solutions that support the ability for patients to tolerate their CT Simulation to get the care they need.

RANGE OF METASTATIC DISEASE TO THE SPINE FOR DIFFERENT CANCER TYPES ⁶	UP TO %
Prostate Cancer	90%
Breast	75%
Thyroid Cancer	65%
Lung Cancer	64%
Melanoma	45%
Bladder Cancer	40%
Kidney Cancer	25%
Colorectal Cancer	10%



Canon's Exceed LB is Designed for Radiation Oncology

At Canon, our scanners are built with the patient in mind, featuring design elements such as lower bed heights for easy access on and off the table, and the wide and comfortable table, allowing patients like Terry, who is frail, and in pain to safely get on and off the table. Additionally, a large open bore can fit most all devices needed for RT planning and the flared gantry design and a short tunnel, can minimize the anxiety often associated with claustrophobia.

The Exceed LB was designed specifically for Radiation Treatment planning with the largest bore in the industry at 90 cm, enabling the patient and any devices to be positioned with extraordinary precision. Canon's Exceed LB also features the industry's widest Field of View (70 cm) and extended Field of View (90 cm) to ensure all patients get the comprehensive radiation therapy planning they require for a more tailored and targeted approach without compromise in setup or planning.

| With our new Canon CT scanner, the large bore has made a very definite difference in scanning patients ... it makes it a lot safer and easier to get the patient through the scanner with the larger bore.

—**Algis Sidrys MD**

Radiation Oncologist, Vanderbilt Integrated Providers, LLC

Fortunately, the hospital where Terry is receiving care, has Canon's Exceed LB, where he could benefit from the large bore size and extended CT Field of View. Due to the size of the opening on the Exceed Large Bore CT, the therapist was able to position him for the planning CT with a large wedge allowing him to be imaged without lying flat. Terry was able to complete the scan so the treatment plan could be developed, and he could begin treatment.

| Canon's Exceed LB

90 cm

Largest bore in the industry

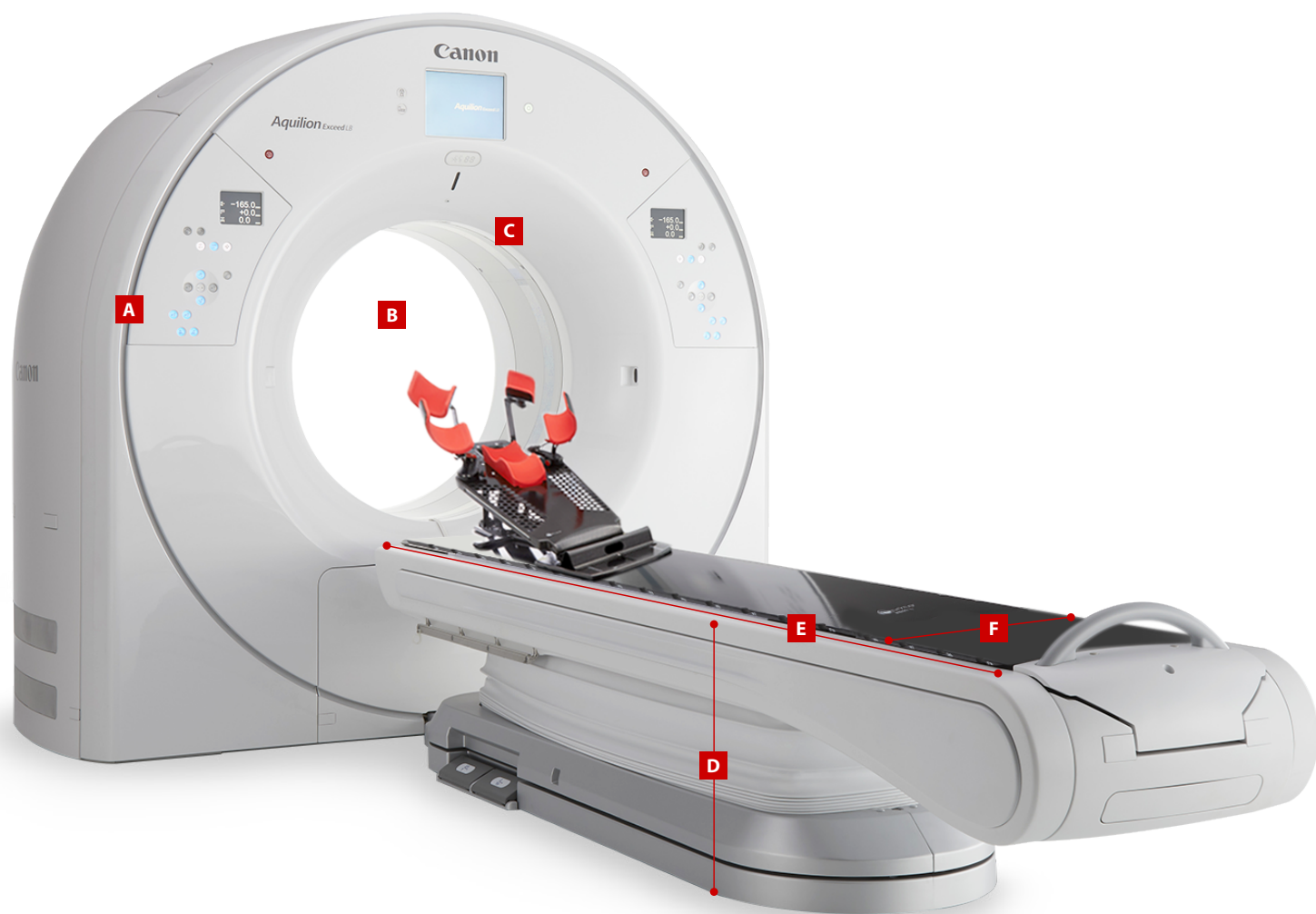
70 cm

Widest Scan Field of View in the industry

90 cm

Widest Extended Field of View in the industry

| Patient Focused Design Enhancements on the Exceed Large Bore



A Position the patient 8.5 cm to the right or left from the gantry or control room. Allows operator to iso-center the area of interest. No more dragging patient by the sheet.

B Scan field-of-view (SFoV) of 70 cm and optional edge-to-edge extended FOV (e-FoV) of 90 cm to better image larger patients or patients with a wedge.

C Canon's 90 cm bore is the largest in the industry can fit almost any positioning device.

D 33 cm low bed height allows for frail patients to more easily get on and off the bed.

E TG66 Compliant Table with the ability to accommodate up to 694 lb patients.

F 47 cm wide bed allows patients feel more stable and supports immobilization devices.

Terry's Positioning Scan with the Exceed LB



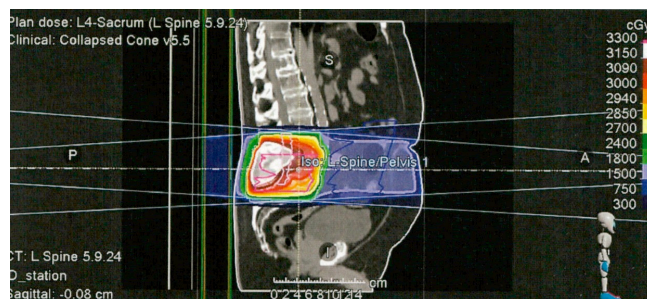
“They asked if I needed a cloth (over my eyes) and I said no, this scanner isn’t too close to my face, so I’m not claustrophobic, I’ll just close my eyes.”

Terry, although still frail, could now lie down for his next Radiation Therapy treatment planning scan. Due to his claustrophobia, he had previously requested a cloth to be placed over his eyes, but when Terry got settled on the Exceed LB, he realized the bore was so big, that he was fine without it.

Terry's Treatment Plan



The image on the top shows the RT planning for the first painful lesion on Terry's spine. Due to his pain, he had to be scanned semi-upright in order to receive treatment. This was possible because Cookeville Regional Medical Center chose the Canon's Exceed LB CT scanner with the largest bore in the industry.



The image on the bottom shows a scan one month later when he had additional treatment to another painful lesion. Because of the success of his initial treatment, Terry was able to be treated supine, which creates a more reproducible setup.

Images acquired on Canon's Exceed LB. Treatment plans created using RayStation Treatment Planning System by RaySearch Laboratories.

Treatment Results and Outlook on Life

Although Terry is still in treatment, radiation therapy has successfully mitigated Terry's pain. At a recent doctor's visit, he was asked if he was still in pain and Terry was surprised to realize that he hadn't taken any medication that day. Terry's response was so successful that he could manage the pain now with over-the-counter treatments that, according to Terry, were working so well that "within an hour of taking them I could have danced in my house, I felt that good."

This was a tremendous relief for Terry's wife, Leslie, as she recalled how concerned the doctor was when all of this began but now that concern has all but vanished.



While he's been going through treatment, Terry has missed watching his grandkids compete in sports. However, with his treatment ending soon, Terry and Leslie are excited to get back to watching ballgames and hiking in the mountains.

■ Terry completed the second round of Radiation Therapy

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Health Equity

Because of hospital closures in Tennessee, Terry and Leslie must travel to Cookeville Regional Medical Center for healthcare, which means an hour's drive each way for treatment.

Terry and his family live in the 13-county Upper Cumberland Region of Tennessee, an emerging healthcare desert, home to approximately 350,000 residents. This vast rural area struggles with distinctive healthcare challenges, which have intensified due to a recent hospital closure.

Tennessee leads the nation in per capita hospital closures, with many of them located in rural areas. This alarming statistic leaves countless rural residents grappling with formidable barriers to accessing essential healthcare services.

For more information on how Canon is supporting Health Equity, please see:

[Health Equity Elevating Care in a Rural Community](#)

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