In men, prostate cancer is the second-most deadly cancer accounting for more than 30,000 deaths a year in the United States. It is also very common, affecting 1 in 9 men, and decisions about treatment can sometimes be complex. Definitive treatment with surgery or radiation can bring side effects like incontinence and erectile dysfunction. On the other hand, while watchful waiting can often be a reasonable approach, there is always the chance that a cancer will progress.

For some men with lower-risk, localized types of prostate cancer, there is a middle-of-the-road option. With an approach called focal therapy, only those parts of the prostate that are cancerous are destroyed and other tissue is left unharmed. Focal therapy is minimally-invasive treatment that can be delivered via cold, heat, or electrical impulses. Patients go home the same day, using a urinary catheter for only a day or so, rather than coping with lasting incontinence that occurs after surgery. It can be repeated as needed, and definitive surgical or...
radiation treatment can also be subsequently performed, if necessary. In the meantime, nearby nerves and organs may be preserved, along with the patient’s quality of life.

"Not everyone needs treatment, and [of those who do], not everyone needs aggressive treatment," said Associate Professor of Urology Preston C. Sprenkle, MD, a pioneering advocate and practitioner of focal therapy.

Dr. Sprenkle likens this approach to treating warts: "We’re ‘burning it off,’ and it may come back. But we can treat it again.”

Also called focal ablation, focal therapy is possible in part due to recent advances in magnetic resonance imaging (MRI) that allow clinicians to pinpoint a prostate cancer’s size and location and to assess its grade.

Dr. Sprenkle regularly uses magnetic resonance (MR) guidance to perform prostate biopsies. He was among the nation’s first to do so when he arrived at Yale in 2012.

“We’ve become much more specific in our ability to predict which are high-grade lesions, which are not, and where they are,” Dr. Sprenkle explained of MRI. “MR-targeted biopsy helps about half the people who are diagnosed defer their treatment to some point in the future. Some will be able to avoid treatment altogether.”

“MRI is by far the best way to image the prostate,” noted Raj Ayyagari, MD, an interventional radiologist at Smilow Cancer Hospital with expertise in real-time MRI-guided procedures. “You can see all the structures very clearly—the prostate and the tumor that you want to treat, as well as the rectum, the bladder, and the nerves.”

That clear window makes MRI the perfect guide for focal therapy, and Dr. Sprenkle uses it to deliver cryotherapy that leaves noncancerous areas of the prostate intact.

Besides cryotherapy, which targets tissue with cold gases like argon, Dr. Sprenkle also offers a type of focal therapy called electroporation. Other ablation options use lasers, high-intensity focused ultrasound (HIFU), or photodynamic therapy, in which the prostate is sensitized with a drug, then subjected to a light beam.

Soon, Ds. Sprenkle and Ayyagari will start offering a new FDA-cleared option to treat localized prostate cancer: transurethral localized sonographic ablation (TULSA). Like other focal therapies, TULSA is minimally invasive, but offers additional benefits, including added protection of surrounding tissues.

TULSA takes place in an MRI scanner with the patient under anesthesia. A slender ultrasound probe is placed in the urethra, which lies within the prostate. Cooling probes protect the urethra and rectum from ultrasound energy. A digital targeting system then allows for precise targeted ultrasonic ablation of the prostate, its direction and temperature controlled via MRI.

Smilow Cancer Hospital will be one of just a handful of centers around the world to offer TULSA, and the only one in New England. In large international trials, TULSA was safe and well-tolerated. Three-year results found that ablation had been safe and precise, resulted in greatly lowered levels of prostate-specific antigen, and left men with stable urinary and bowel function as well as erectile function that recovered by the one-year mark. The procedure may also relieve lower urinary tract symptoms.

“TULSA is not the equivalent of surgery, by any means, but it appears to be better than any other focal therapy,” Dr. Ayyagari said. After TULSA, some men in the trials did eventually need salvage therapy, such as surgical prostatectomy.

That’s to be expected, according to Dr. Sprenkle. “Focal therapy is not as definitive as surgery—that’s our point,” he said. “We’re trying to minimize the toxicity” of prostate treatment, he added. He keeps close watch on his patients after focal therapy with periodic MRI-guided biopsies.

“We can always either do a repeat ablation or redo surgery or radiation if we need to in the future,” Dr. Sprenkle said. “We’re not really losing out on much by performing focal therapy, but we may potentially be curing these people of their disease.”