



*Patient Liz Herzog, and her physician team (left to right) Kiran Turaga, MD, MPH, Sam Pappas, MD, Paul Ritch, MD, and William Bradley, MD.*

# Turning Up the Heat on Cancer

Innovative “regional therapies” offer new hope for patients with advanced disease.

» *Last April, Liz Herzog of Sheboygan began waking up in the middle of the night with abdominal pain. “Each time it would keep me up for about an hour,” she said. Liz saw her doctor and underwent several tests. The diagnosis came back within days: cervical cancer.*

Seeking clarification on her treatment plan, Liz sought a second opinion at Froedtert & The Medical College of Wisconsin. There, physicians discovered something even more troubling — Liz’s cancer had spread throughout her abdomen.

In the past, very little could have been done for a patient with such extensive disease. But at the Froedtert & The Medical College of Wisconsin Clinical Cancer Center, Liz learned about an advanced procedure called HIPEC that combines surgery and chemotherapy to treat difficult cancers. It is one of several novel techniques known as “regional cancer therapies” that concentrate treatment where it’s needed most.

## Chemo Bath

According to Kiran Turaga, MD, MPH, Medical College of Wisconsin surgical oncologist, the idea of regional therapy is to isolate the part of the body affected by cancer and deliver a high dose of chemotherapy to that region alone. HIPEC, which stands for hyperthermic intraperitoneal chemotherapy, is an advanced regional therapy for cancers that have spread to the abdominal cavity.

“During a HIPEC surgery, we first remove as much tumor tissue as we can,” Dr. Turaga said. “Then, we circulate a chemotherapy solution inside the patient’s belly cavity. The dose is almost 10 times as high as what can be given through an IV.”

Bathing the abdominal organs in chemotherapy puts the agent in direct contact with microscopic cancer cells. In addition, the solution is heated to approximately 108 degrees.

“Heat has a cancer-killing effect. It also increases the potency of the drug and helps it penetrate tissues better,” said Sam Pappas, MD, Medical College of Wisconsin surgical oncologist.

Dr. Turaga said HIPEC is performed at a limited number of medical centers nationwide: “It is usually available only at academic medical centers, because it requires coordination of care among different specialists.” At Froedtert & The Medical College, the team includes surgical oncologists, medical and radiation oncologists, interventional radiologists, pathologists and specialized surgical nurses.

## “That Gave Us Pause”

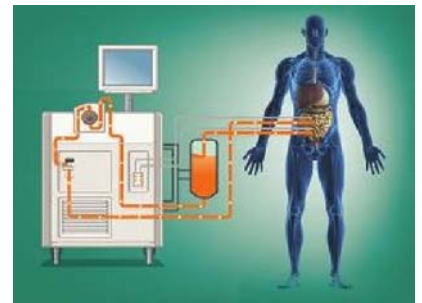
Liz Herzog came to Froedtert & The Medical College at the suggestion of a friend, an oncologist at a prestigious national cancer center. She met with Beth Erickson, MD, Medical College of Wisconsin radiation oncologist.

“I called on a Wednesday, and I got in on Friday,” Liz said. “Dr. Erickson looked at all my scans and said, “Yes, you have cancer in your cervix, but we really think there’s a lot more going on than that.”

“Liz had signet ring cell carcinoma, and that gave us pause,” Dr. Erickson said. This cell type rarely originates in the female organs and usually starts in another part of the body.

Additional scans revealed metastases in Liz’s abdominal cavity, including her ovary. Pathology studies suggested the cancer was gastrointestinal in origin, but a colon stricture prevented physicians from pursuing that lead with a diagnostic colonoscopy.

Finally, with Liz’s consent, William Bradley, MD, Medical College of Wisconsin gynecologic oncologist, performed surgery to remove her gynecologic tumors and make a definitive diagnosis. What he found changed the picture dramatically: Liz had stage 4 cancer of the appendix.



*Hyperthermic intraperitoneal chemotherapy (HIPEC), delivers heated chemotherapy to treat advanced abdominal cancers*



Kiran Turaga, MD, MPH

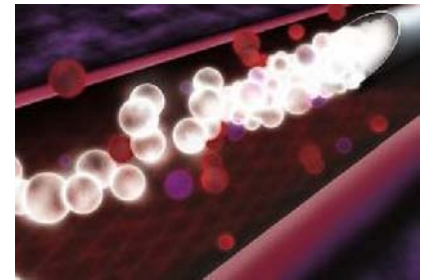
## State-of-the-Art Options

In addition to HIPEC, regional therapies are designed for cancers that have begun to metastasize (spread to other parts of the body). These patients often have advanced cancers, and novel treatments represent the most meaningful approach. For example, melanoma that has spread throughout a limb can now be treated with a regional therapy called isolated limb infusion. During this minimally invasive procedure, physicians infuse a heated chemotherapy solution into the limb for 30 minutes. “The response is phenomenal,” Dr. Turaga said. “You can see the tumor shrivel and die.”

Regional therapies are also available to treat challenging liver cancers. According to William Rilling, MD, Medical College of Wisconsin interventional radiologist, liver tumors that cannot be surgically removed can often be treated with chemoembolization. Using minimally invasive catheter tools, microscopic beads loaded with chemotherapy are deposited at the site of the cancer. “The beads release the drug in a controlled manner over a long period,” Dr. Rilling said.

A similar approach called radioembolization uses radioactive beads. Both procedures expose liver tumors to high-dose therapy while sparing surrounding healthy tissues.

According to Dr. Turaga, HIPEC can be an effective treatment for patients with a variety of cancers that have spread to the abdomen, including colorectal cancer, appendix cancer, mesotheliomas and several other tumors. When Liz Herzog received her diagnosis of metastatic appendiceal cancer, she learned that HIPEC was the most effective therapy available.



*Therasphere® uses microscopic radioactive glass beads to treat liver cancer. (Photo credit: MS Nordion)*

## The Big Day

Before her HIPEC procedure, Liz received several weeks of standard intravenous chemotherapy. The surgery took place Nov. 9, with Drs. Turaga and Pappas leading the operating room team.

When they opened her abdomen, the surgeons discovered much less cancer than they expected. “She had a very dramatic response to the chemotherapy,” Dr. Pappas said. “We saw very little disease.” Liz found out more later on: “A nurse told me the doctors were smiling from ear to ear about how well it had worked. She said they were just about dancing in the operating room.”

The HIPEC procedure is technically complex and can involve extensive tissue removal. For Liz, the surgery took about six hours, including 90 minutes of heated chemotherapy. “I had very little pain afterward,” Liz said. “I went home in six days.” Subsequent scans of her abdomen, pelvis and chest have shown no evidence of disease.

## Taking the Time to Understand

Although Dr. Turaga has extensive experience performing HIPEC and other regional therapies, he continues to be amazed at the results.

“Oncologists typically send patients to us because they have few options left,” he said. “It is so gratifying to see people respond to these therapies. We are able to offer hope where most people say there is no hope.”

Liz, who just turned 53, said her experience has taught her the importance of getting a second opinion. “When you find out you have cancer, you want to do something about it right away,” she said. “But the more people who look at your case before you get started, the better your chance of getting the most effective treatment.”

She appreciates her care team’s dedication. “From my first appointment, I felt I was in the right place. They were so thorough, and I knew they would take the time to come up with the best possible plan for me. I’m so thankful they took the time to understand.”



Beth Erickson, MD