Understanding Precision Medicine
Attacking cancer cells where they are most vulnerable

Traditional chemotherapy drugs are designed to target rapidly dividing cells in the body. These drugs can eliminate cancer, but they can also harm healthy cells.

Drug therapies are evolving though — thanks, in part, to doctors with the Froedtert & the Medical College of Wisconsin Cancer Network.

Cancer drugs are increasingly able to target the specific characteristics that make cancer cells cancerous in an approach called precision medicine.

“The idea behind precision medicine is to identify a weakness in the cancer cell and design a treatment specifically targeting that vulnerability,” said Ben George, MD, medical oncologist and MCW faculty member. “We can maximize the effect on the tumor and minimize damage to the normal cells.”

Most precision drugs target one of the many genetic changes that cause a normal cell to become cancerous. Precision drugs also target proteins that have changed due to abnormalities.

“For example, some breast cancers express a protein called HER2/neu,” Dr. George said. “Patients with this tend to do worse than others. Now, an antibody drug conjugate called fam-trastuzumab deruxtecan-nxki (links chemotherapy to a targeted anti-cancer drug) precisely targets this protein, and outcomes can be very good.”

Expertise and Collaboration

The Rare Cancer and Precision Medicine Clinic brings together a team of doctors who have particular expertise in evaluating the molecular alterations associated with tumors. The team works in tandem with doctors from the Cancer Network’s disease-specific programs when patients with rare or advanced cancers need more options. These specialists apply precision medicine therapies as appropriate, along with more traditional treatment approaches individualized to each patient.

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As needed, patients are discussed in a molecular tumor board where a team of precision medicine experts, including genomicists, medical oncologists and molecular pathologists, makes recommendations.

“We look systematically at the plethora of genomic changes that may be present in a tumor,” Dr. George said. “We then discuss the best strategies for targeting those specific alterations.”

As academic researchers, team members are often able to give patients access to newer drugs and innovative therapies. The Cancer Network has the largest cancer clinical trials treatment program in Wisconsin.

“We have several precision medicine trials open,” Dr. George said. “Patients with molecular alterations who do not qualify for standard therapies may be candidates for additional options through these trials.”
Receiving a cancer diagnosis can be devastating. Hearing you have a rare cancer creates another level of anxiety. Razelle Kurzrock, MD, and her colleagues are treating people who have rare tumors with targeted approaches that may not be widely available — offering hope and options.

Q: What is a rare cancer?
Dr. Kurzrock: Rare cancers occur in fewer than 6 out of 100,000 people each year. There are several hundred rare cancers, and combined, they make up almost 25% of all cancers.

Q: What is the prognosis for a rare cancer?
Dr. Kurzrock: The prognosis varies by cancer type. In general, rare cancers share some common features. They often occur in younger people, and they are often more aggressive than other cancers. Overall, the prognosis for rare cancers is worse than the prognosis for other cancers, which can be due to their aggressive nature. They are also harder to treat simply due to their rarity. There may be limited or no FDA-approved treatments. It is challenging to conduct research for new treatments for rare tumors because there are fewer people to participate in clinical trials compared to trials for more common cancers. But rare cancers aren’t rare to us. We see a higher than average number of people with rare cancers, making more treatments and clinical trials for rare and advanced cancers possible within the Froedtert & the Medical College of Wisconsin Cancer Network.

Q: Why do rare cancers require specific expertise? Can it make a difference in outcomes?
Dr. Kurzrock: It is difficult to find doctors who have substantial experience in this realm. But within our disease-specific cancer programs, we have treated many patients for cancers that may not be familiar to most cancer doctors. Now, we have further concentrated our expertise in rare, ultra-rare and some advanced cancers in our new Rare Cancer and Precision Medicine Clinic. I, along with Hui-Zi Chen, MD, PhD, and Aditya Shreenivas, MD, MS, who are both medical oncologists, MCW faculty members and researchers, specialize in treating these challenging cancers. Genetic counselors, pharmacists, nurses, advanced practice nurses, clinical trial managers and coordinators complete a team devoted to helping our patients achieve their best possible outcomes.

Q: What is a precision medicine approach for rare cancers?
Dr. Kurzrock: In 2001, Human Genome Project researchers deciphered the chemical makeup of the human genetic code, making precision medicine possible. Cracking the code forged positive inroads in treating cancers that were untreatable years ago. When you have cancer, there are mistakes in the human genetic code. An analysis called genetic sequencing helps us find mistakes in your genes. Then, we base treatments — which may include combinations of gene-targeted drugs, immunotherapy and clinical trials — on the genetic and immune signature of your cancer. This approach is precise, effective and personalized, ensuring almost everyone can get a treatment customized to their specific tumor.

Q: What is your best advice for someone facing a rare cancer diagnosis?
Dr. Kurzrock: Ask your cancer doctor if they have ever treated a patient with your type of rare cancer. Explore your options. We have specialists and programs to diagnose and treat specific types of cancer, and we collaborate as needed to deliver the right care for people with rare cancers. Patients may be seen in one of our disease-specific programs. Others are connected directly to the Rare Cancer and Precision Medicine Clinic because it is the right approach for them.

Learn more: froedtert.com/rare-cancer

More Than 93% of Our Patients Say They Would Recommend Us
For the fifth consecutive year, the Froedtert & the Medical College of Wisconsin Cancer Network has been recognized among the top 5% of health care organizations in Press Ganey’s national database. Our Cancer Network is recognized for its consistently high standards in patient experience.
Improving Quality of Life for Women With Metastatic Breast Cancer

According to the National Cancer Institute, the number of women living with metastatic breast cancer has doubled in the last decade. Advances in treatment have increased survival, but there is a caveat to these encouraging statistics: Survivors often experience prolonged symptoms that affect their quality of life. Weight gain, fatigue and loss of muscle mass and strength can result in significant distress and physical limitations.

A new, multisite national study available through the Froedtert & the Medical College of Wisconsin Cancer Network is testing a lifestyle program to help women living with metastatic breast cancer feel better. Every Day Counts, a 16-week research program, involves diet changes, physical activity and strength training.

“We want to do everything we can to help these women with lifestyle changes,” said Melinda Stolley, PhD, associate director of cancer prevention and control and co-principal investigator of the study. “Can interventions like this improve quality of life, and more importantly, why? These are the questions we want to answer.”

The study builds on a 12-week pilot program that featured moderate intensity physical activity and a plant-based diet that reduced red meat consumption. “The study resulted in robust improvements in quality of life, and the women felt stronger and less fatigued,” Stolley said.

The new study aims to recruit 176 women within the Froedtert & MCW Cancer Network in cooperation with Loyola University in Chicago. Women may self-refer. Candidates start with a medical assessment to ensure they can participate safely. The study team records height, weight, and strength and endurance measures. Women will also have their blood drawn for before-and-after comparisons of factors like inflammation and insulin resistance.

Once enrolled, women are randomly assigned to the lifestyle group or a control group that follows a home/organization program providing an equal level of personal attention. After 16 weeks, the control group can cross over to the lifestyle program.

Lifestyle elements, based on American Cancer Society guidelines, include:

- Exercise to increase moderate activity and endurance, tailored to participants’ preferences, five times a week; strength training two to three times a week
- Personalized coaching sessions
- Cooking classes and diet plans to reduce red meat consumption and increase intake of fruits, vegetables and whole grains.

“We are meeting women where they are,” Stolley said. “The program fits with the lives women are already leading.”

To learn more: Call 414-955-8819 or visit froedtert.com/research.

Precision Medicine

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More Cures Ahead

The number of patients who can benefit from precision medicine is growing. Already, precision medicine treatments are offered through many cancer programs in our Cancer Network. For example, advanced melanoma is an aggressive type of skin cancer that previously had limited treatment options. Now, doctors can extend survival for patients with this disease using targeted therapy and immunotherapy, both precision medicine treatments.

“We are beginning to recognize that precision medicine strategies can be applied with dramatic impact not only to patients with advanced or rare cancers, but also to those with early-stage tumors,” Dr. George said.

According to Dr. George, advances in artificial intelligence and large-scale genomic testing will lead to an explosion of options for treating cancer with precision medicine.

“As our computational capabilities become more sophisticated, our ability to understand the vulnerabilities of a tumor will improve exponentially,” Dr. George said. “That will open up endless therapeutic possibilities. Ultimately, we will be able to deliver more effective treatments — even for people who had limited options before.”

Learn more: froedtert.com/precision-medicine
Mapping a Path for People With a New Cancer Diagnosis

Navigating medical care as a patient newly diagnosed with cancer can be complicated and challenging. New patient coordinators with the Froedtert & the Medical College of Wisconsin Cancer Network help manage all the details so new patients have a successful start to their treatment.

“We respect that people are going through a life-altering event,” said Melanie Otten, MS, cancer center manager. “It could be a new diagnosis, and they may not have support. It could be their first experience with our Cancer Network. New patient coordinators take the burden off by gathering medical records so new patients don’t have to and by connecting them with the right team for their cancer.”

Coordinators on this compassionate, 23-person team are experienced and know what patients need to begin treatment with the right disease-specific cancer program. They assist new patients with everything from appointments to arranging tests, sending directions and sharing housing options for people coming from a distance.

“This patient-centered program gives people a single point of entry and makes sure they receive specialized focus for their cancer from the start,” Otten said.

Patients can connect with a new patient coordinator by calling for an appointment or a second opinion.

“Call 414-805-0505 to get started,” Otten said. “We’ll do the rest.”