

## FOCUS ON PEDIATRIC HEMATOLOGY/ONCOLOGY

Affiliated with Columbia University College of Physicians and Surgeons and Weill Cornell Medical College

### Building a Bridge between Pediatric and Adult Lymphoma Care

Lymphoma is the most common type of cancer in adolescents and young adults. Yet physicians are still unsure about how to treat patients with lymphoma between the ages of 18 and 30. There's a need to better understand the disease in these patients and to improve their prognosis.

"Some young adults with lymphoma are managed in an adult setting, which typically focuses on older adults with the disease, while others are cared for in a pediatric setting — but those treatments are quite different from each other. Moreover, young adult patients often don't feel like they fit into either clinical setting," explains Lisa Roth, MD, Assistant Attending Physician at NewYork-Presbyterian/Phyllis and David Komansky Center for Children's Health and Assistant Professor of Pediatrics at Weill Cornell Medical College. "There hasn't been a lot of research to identify the optimal approach for treating young adults and adolescents with lymphoma."



Lisa Roth, MD, and her colleagues are studying the biology of lymphoma in patients ages 18 to 30 to learn what differentiates this cancer from lymphoma in younger and older patients.

Young patients also have other needs during this critical time in their lives. They may be finishing their educations, living on their own for the first time, and concerned about preserving their fertility. To meet those needs, NYP/Komansky Center's pediatric lymphoma team has established a collaboration with NewYork-Presbyterian/Weill Cornell Medical Center's adult lymphoma program to form the Adolescent and Young Adult Lymphoma Program. Its goal: to ensure the most effective and appropriate medical care for each patient, meet their nonmedical needs, and ensure access to clinical trials of promising new therapies.

In addition to the treatment team, patients have access to social workers who can assist them with educational and practical needs. And those interested in fertility preservation can be referred to the internationally renowned Ronald O. Perelman and Claudia Cohen Center for Reproductive Medicine of Weill Cornell Medical College.

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### Palliative Care Enhances Comfort from Day One

For many people, the words "palliative care" evoke images of hospice care to ease the transition to end of life. And certainly in years past, that was largely the case. But there has been a shift in the field toward an approach where palliative care is offered from the moment of diagnosis and throughout the entire journey with a serious illness — assessing and attending to the emotional, social, spiritual, and physical comfort of patients and their families.

"Palliative care can mean different things for different people, depending on what they need," explains Elisha Waldman, MD, Director of Pediatric Palliative Care at NewYork-Presbyterian/Morgan Stanley Children's Hospital and Assistant Professor of Pediatrics at Columbia University College of Physicians and Surgeons. "We use a team approach to provide support for children and families dealing with potentially life-threatening diagnoses, regardless of the stage of their disease or their prognosis."

Dr. Waldman leads a team that includes social worker Jennifer Greenman, LSW, and Dana Kramer, NP, a nurse practitioner embedded in the Division of Hematology, Oncology, and Stem Cell Transplantation. "It's not about end of life — it's about quality of life," says Ms. Kramer. "Families in our Division

have the potential for tremendous distress. Through this program, we have the potential to ease their suffering."

It is the first time that a hospital in the greater New York area has assembled such a comprehensive, interdisciplinary pediatric palliative care team under the leadership of a physician with board certification in Hospice and Palliative Medicine.

"While many medical centers now routinely offer a suite of adult palliative care services, pediatric palliative care is just coming into its own," notes Dr. Waldman, who completed both a Pediatric



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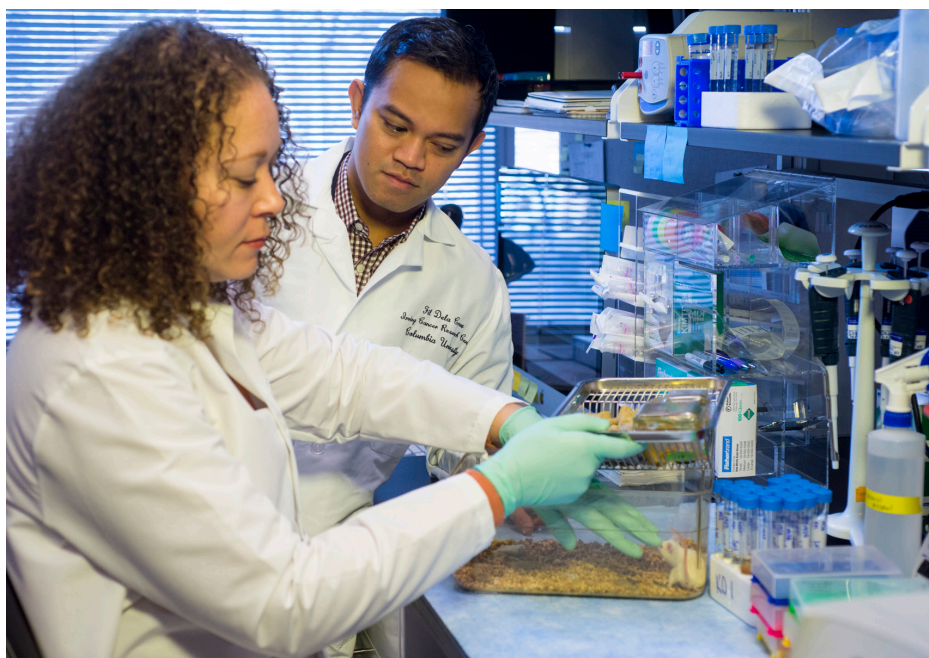
## Can Avatars Shape the Future of Cancer Care?

The creation of “avatar” laboratory models by propagating tumors from patients in mice is turning out to be a promising way to assess the efficacy of new anticancer treatments. NewYork-Presbyterian/Morgan Stanley Children’s Hospital is the only center in New York City routinely applying this technology to pediatric cancers.

The research is part of NYP/Morgan Stanley Children’s Precision in Pediatric Sequencing (PIPseq) program, in which full molecular characterization is offered for every pediatric oncology patient. “Through this initiative, we’re aiming to identify the molecular drivers of each patient’s cancer and use this information to personalize his or her treatment using novel, biologically targeted investigational agents,” explains Julia Glade Bender, MD, Medical Director of PIPseq and Associate Professor of Pediatrics at Columbia University College of Physicians and Surgeons. “With next generation sequencing, we can delve deeper into the genetic basis of cancer to pinpoint novel therapeutic targets.” This customized treatment approach is gaining speed across the spectrum of cancer care, including adult cancers, and has the potential to propel pediatric cancer care to new levels of success.

NYP/Morgan Stanley Children’s investigators are creating patient-derived xenograft models (human tumors propagated in mice) using biopsy or resection samples from young patients with solid and hematologic cancers. One centimeter of tumor tissue can be segmented and implanted in multiple mice, generating 50 to 100 avatars. Coupled with the identification of gene mutations through the PIPseq program, the avatar models can then be used to determine whether the mutations contribute to a cancer’s development.

“The ability to propagate one centimeter of tumor tissue in 50 to 100 mice is a powerful tool. The information we glean from this approach is important for determining how a drug really



Filemon Dela Cruz, MD (right), is assessing “avatar” models, which are created using a patient’s tumor tissue and used to identify genetic mutations contributing to a cancer’s development.

works, rather than testing it in artificial systems. For patients with challenging cancers that relapse or demonstrate unusual behavior, we’re always going to be able to learn something about the tumor’s biology by using this system,” explains Filemon Dela Cruz, MD, Assistant Professor of Pediatrics. He is leading the patient-derived xenograft research with Andrew Kung, MD, PhD, Chief of the Division of Pediatric Hematology, Oncology, and Stem Cell Transplantation and the Robert and Ellen Kapito Professor of Pediatrics.

For example, the researchers created an avatar for a young man with multiply relapsed undifferentiated sarcoma. Insight offered by genomic information and creation of an avatar model of this tumor allowed the clinicians to choose and test an efficacious chemotherapy regimen. As a result of sequencing efforts through the PIPseq program, they also identified and cloned a novel gene from a child diagnosed with an uncharacteristically aggressive presentation of infantile fibrosarcoma. Upon further characterization using a mouse model, the novel gene was subsequently shown to be associated with the tumor’s aggressive behavior. Researchers can also use such avatars to evaluate new drugs, with each avatar acting as its own miniature “clinical trial” of a single drug or drug combination, including investigational agents.

“We’re getting away from a ‘one-size-fits all’ approach to pediatric cancer treatment, recognizing that tumors — even those with the same name — can differ dramatically from each other,” says Dr. Dela Cruz. “These avatar models are already playing a critical role in allowing us to pinpoint changes driving cancer development, and to tailor therapies to target those changes.”

*To refer a pediatric patient for cancer care at NYP/Morgan Stanley Children’s, please call (212) 305-9770.*

**Full molecular characterization is offered for every pediatric oncology patient at NYP/Morgan Stanley Children’s through the unique Precision in Pediatric Sequencing (PIPseq) program.**



## Building a Bridge between Pediatric and Adult Lymphoma Care (continued from page 1)

Historically, young adults and adolescents with cancer have not experienced the improvements in outcomes achieved in younger children. Some of this is due to the lower rate of clinical trial enrollment observed in adults with cancer. But some is attributable to the lack of protocols available for patients in this age range. “We just don’t know the best way to treat these patients because we haven’t studied them enough,” says Dr. Roth. Connecting patients with appropriate clinical trials which may advance the field is therefore a priority of the program. Plans are in the works to bring together the Children’s Oncology Group (COG) and the adult Alliance for Clinical Trials in Oncology to establish a joint clinical trial of investigational lymphoma therapy targeted to adolescents and young adults. This effort is a cross-campus collaboration involving both NYP/Komansky Center and NYP/Morgan Stanley Children’s. Kara Kelly, MD — Associate Chief of Hematology, Oncology, and Stem Cell Transplantation at NYP/Morgan Stanley Children’s, Professor of Pediatrics at Columbia, and Chair of the COG Hodgkin Lymphoma Committee — has been working with Weill Cornell’s John Leonard, MD, Chair of the Alliance Lymphoma Committee, to jointly lead the development of this national trial.

**More research is needed to improve the treatment of young adults with lymphoma.**

Another aim of the initiative is to study what differentiates lymphoma in patients aged 18 to 30 from the disease in younger and older patients. Dr. Roth and her colleagues are studying the biology of lymphoma in adolescents and young adults to find out. Working in collaboration with Weill Cornell’s Institute for Precision Medicine, the investigators are performing genomic sequencing to tease out the biology of the disease — yielding information which can help guide treatment.

The results of these studies could lead to less toxic targeted therapies. “Lymphomas are very curable. But lymphomas in adolescents and young adults tend to be aggressive tumors that require high-dose intensive chemotherapy,” concludes Dr. Roth. “As we’re curing more patients, we’re seeing more toxicity associated with treatment. The goals of therapy have therefore shifted in an attempt to maintain the high cure rates we have achieved, but with less toxicity.”

*To refer a patient to NYP/Komansky Center for lymphoma care, please call the Division of Pediatric Hematology/Oncology at (212) 746-3400.*

## Palliative Care Enhances Comfort from Day One (continued from page 1)

Hematology/Oncology fellowship and a Pediatric Hospice and Palliative Care Fellowship. “More institutions are recognizing the importance of the palliative care team.”

Palliative care services range from relieving physical symptoms (such as pain, nausea, fatigue, constipation, itching, sleep problems, and any other physical problems impairing quality of life) to nutritional, psychosocial, and spiritual support. A palliative care consultation typically begins with the team assessing a family’s goals and preferences.

“When we enter the child’s hospital room, the family quickly learns we are there for a reason other than to hear about the child’s medical situation,” says Dr. Waldman. “We may begin by saying, ‘I’ve read your child’s medical history and I’d like you to tell me about your child. What’s a good day or a hard day? What makes your child laugh?’ Parents learn in the first 30 seconds that they’re sitting across from a different type of team.” The team also asks parents questions such as, “What keeps you up at night? What is your understanding of your child’s illness? What are your goals for your child? What are you hoping for?”

“We may assume they’re going to answer, ‘I want my child to be cured,’ but often the answer is more specific — such as ‘I’d like to see my child sit on our back porch again and enjoy the sunlight’ or ‘We’d like to have him spend another Thanksgiving with us at home,’” adds Dr. Waldman. “Once we understand their goals, future choices affecting the patient’s clinical care

become much clearer.”

That kind of support is critical for families dealing with serious chronic illnesses such as cancer and certain nonmalignant hematologic conditions. “Their clinical course is complex and variable. It may be marked by periods of decline and recovery,” notes Dr. Waldman. “These families live with the grayness of uncertainty about the child’s future, which can exact an enormous emotional, psychological, and financial toll on the entire family.”

Of course, the child’s input is just as important. “Children facing the prospect of serious illness, potential long-term complications, or even death may worry about many things, such as being alone or feeling scared that it’s going to hurt,” says Dr. Waldman. “I tell the medical team that these are issues we can fix.” The palliative care team also asks families where they seek support. This question can help them determine if there may be a role

for chaplaincy in the family’s care, or if there are issues about family structure and finances that could be helped by the expertise of a social worker.

Children with cancer typically make up 20 percent of palliative care referrals. “Speaking with patients and families early in their care makes what can be a rough ride a little smoother,” explains Ms. Kramer. “Most children with cancer and nonmalignant hematologic disorders do survive. The goal is for them to live long and to live well.”



Dana Kramer, NP, is a nurse practitioner dedicated to palliative care for pediatric hematology/oncology patients.

## Focus on Pediatric Hematology/Oncology

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