

BLOOD AND MARROW TRANSPLANT PROGRAM MARKS 20 YEARS OF 'CULTURE OF COMPASSION AND COLLABORATION'



When a 51-year-old Washington, D.C.-area detective came to University of Maryland Marlene and Stewart

Greenebaum Cancer Center with an advanced case of lymphoma, it was his last hope. He had been turned away by every other blood and marrow transplantation program in the area, and the patient's primary oncologist had pleaded with UMGCC physicians to consider the man's dire case.

But desperate pleas weren't necessary in a place that prides itself on tackling complicated cases with compassion and determination. At UMGCC's

Blood and Marrow Transplant (BMT) program — having just marked its 20th anniversary in 2013 — the diverse team of specialists abides by a principle attributed to the early 20th century clinician and humanitarian Francis Peabody, M.D., who used to say, "The secret to the care of the patient is caring for the patient."

"We very much take that phrase to heart," says Aaron Rapoport, M.D., professor of medicine and the Gary Jobson Professor in Medical Oncology at UMGCC. "I think we have a culture of compassion and collaboration where we work very hard to achieve close alignment and coordination between our transplant program and leukemia and lymphoma programs. We've always been a program that leaned in on behalf of patients and we continue to try to do that whenever we can."

BROAD CHANGES IN TREATMENT

When the BMT program launched in 1993, most transplants were autologous — where patients received their own bone marrow or peripheral blood stem cells — or allogeneic-related where patients received stem cells donated by patients' closely matched siblings. Then, as now, the transplants were designed to treat a variety of blood cancers or bone marrow failure syndromes such as aplastic anemia with the intent to cure the disease.

Over the years, however, broad changes were made in the BMT program as new developments in the field yielded increasing opportunities to use donor cells from various sources and treat older and sicker patients. The program has performed about 2,000 transplants in the past

two decades, maturing step by step with the careers of team members.

"Many of our nurses, faculty and support staff have decades of experience in transplantation," Dr. Rapoport says. Our senior BMT Nurse Coordinator Kathleen Ruehle, R.N., has been an instrumental part of the program for our 20 years. "We have also established a separate follow-up clinic for our allogeneic (donor) transplant patients, with a refined pre-transplant screening process to increase not only the safety of the procedure, but also the success rates and the understanding that patients and families have of the procedure."

Over the years, new types of blood and marrow transplant procedures were successfully added, including allogeneic transplants from unrelated donors; haplo transplants, in which donor cells are only half-matched to the patient's cells; and reduced-intensity regimens for older patients who can't tolerate the typically high doses of chemotherapy and/or radiation used to destroy blood cancer to prepare for transplant.

NEW TYPES OF TRANSPLANTS SUCCESSFUL

Bone marrow transplants, which were the norm until the mid-1990s, are still done today, but their prevalence has been eclipsed by transplants of peripheral blood stem cells, Dr. Rapoport says. Not only is it easier to collect stem cells from blood, but the number of cells harvested tends to be greater. The only downside to this is a higher incidence of graft vs. host disease — where donor immune cells attack normal tissues in recipients — but this is a manageable complication for most patients, he says.



- Blood and Marrow Transplant (BMT) program launched at UMGCC in 1993
- About 2,000 transplants performed over the past two decades
- Types of transplants available expands over time, now includes haplo (half-matched cells) and reduced-intensity regimens
- BMT program considers challenging cases turned away by other programs
- Team members have decades of experience in the field

With the rise of the National Marrow Donor Registry, which has facilitated more than 55,000 marrow and cord blood transplants since 1987, finding unrelated donor matches is much more straightforward than two decades ago, he says. So is the availability of haplo transplants, which now are done at many BMT programs nationwide but are especially valuable for UMGCC's large African-American patient population.

"Based on family size nowadays, the likelihood of a patient needing a transplant of having a matched sibling is only about 25% or 30%," Dr. Rapoport explains. "The National Marrow Donor Program has close to 20 million donors in its registry, but it's very ethnically driven, so Caucasians, who are well-represented in the registry, are much more likely to find a fully matched donor than African-Americans."

The BMT team's special expertise in two areas, multiple myeloma treatment and reduced-intensity regimens, serves those two patient groups especially well, Dr. Rapoport says. For multiple myeloma — a cancer of plasma cells that

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DR. AARON RAPOPORT's research interest is in the development of novel strategies for re-building immune system function after autologous stem cell transplantation for myeloma and leukemia.

STAFF MEMBERS

- **Saul Yanovich, M.D.**,
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- **Aaron P. Rapoport, M.D.**,
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- **Ashraf Z. Badros, M.B., Ch.B.**,
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- **Kathleen Ruehle, R.N.**,
Senior BMT Coordinator
- **Mindy Landau, R.N., MC**
Nurse Practitioner
- **Nancy Hardy, M.D., M.A.,
F.A.C.P.**
(Joining the team in 2014)
- **Jean A. Yared, M.D.**

NEWEST MEMBER OF THE TEAM

Nancy Maureen Hardy, M.D., M.A., F.A.C.P., has just joined the BMT team at the University of Maryland. For the past five years, Dr. Hardy has been at the Center for Cancer Research at the National Institutes of Health where she served as clinical investigator, National Cancer Institute (NCI), Experimental Transplantation and Immunology Branch (ETIB); head, NCI Relapse Prevention and Treatment Program; and senior clinician, Stem Cell Transplantation and Infectious Disease Services. Dr. Hardy is an active clinician and researcher who is very interested in the aftermath of a hematopoietic stem cell transplantation (SCT).

Dr. Rajagopalan completed clinical and research fellowships in cardiovascular medicine and vascular biology at the Emory University School of Medicine in Atlanta and advanced cardiovascular imaging training at Duke University in North Carolina. He has previously served in faculty positions at the University of Michigan, Ann Arbor, and at the Mount Sinai School of Medicine in New York.

Dr. Rajagopalan has an interest in atherosclerosis, peripheral and vascular disease, cardiovascular MRI and CT and environmentally induced heart disease. His research, which will continue at the University of Maryland, has focused on the role of inflammation in cardiometabolic disease and molecular imaging of atherosclerosis.

Dr. Rajagopalan has published more than 200 original research publications in peer-reviewed journals such as *JAMA*, *New England Journal of Medicine*, *Circulation*, *Journal of Clinical Investigation* and *Circulation Research*. He has served as an editor for two textbooks, several monographs and dozens of book chapters on vascular disease and atherosclerosis, and his research is routinely cited.

Dr. Rajagopalan can be reached at **410-328-4716**. +

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proliferate in bone marrow — faculty are engaged in clinical research using activated immune cells from the patients themselves, often in combination with vaccinations or strategies for genetically modifying those cells, to redirect them to the myeloma. Meanwhile, reduced-intensity regimens often benefit those over age 60, who 20 years ago weren't even considered eligible for transplant.

"When reduced-intensity regimens are compared to standard regimens, the results tend to be pretty close," Dr. Rapoport says, "so I don't think we lose much in terms of outcomes."

DETECTIVE NOW CANCER-FREE

Considered too sick and weak by other area BMT programs to be eligible for transplant, the detective suffering from lymphoma received his transplant at UMGCC in May 2013 and five months later had "nearly normal" blood counts and no evidence of cancer. Dr. Rapoport lauded the patient as a "real law enforcement hero, a heroic figure for helping track down some of the worst criminals," and was gratified that UMGCC's large team had banded together to fulfill its mission of considering the toughest cases.

In addition to medical oncologists/hematologists, BMT program staff members consist of infectious disease specialists, radiation oncologists, nurses, nurse practitioners, patient care technicians, nutritionists, social workers and cell processing technicians, among others.

"This is a patient who unfortunately had been turned away by all the other programs in the area because they thought he was too tough and risky a case," Dr. Rapoport says. "Nowadays, part of the challenge is to make your survival stats look as good as possible so you can attract patients and contracts, so most of the programs — even larger than ours — wouldn't take a risk on this guy. We did because we felt he had a chance.

"We would have done this for anybody, but it so happens this was a guy who had given so much of himself to others and has so much more to give," he adds. "We're just so gratified that not only can he be here for his own family, but can continue to contribute to our society and our country through all he has to offer. This patient would not have had a chance for transplant without the University of Maryland BMT team." +