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MSK Opens New Clinic to Monitor People with a Genetic Risk for Developing Blood Cancer

By Julie Grisham, **Tuesday, January 23, 2018**



Physician-scientist Ross Levine, pictured here with research technician Aishwarya Krishnan, determined the connection between clonal hematopoiesis and blood cancer.

Summary

The clinic will focus on clonal hematopoiesis. This age-related condition increases the risk of developing certain blood cancers.

Most cancers arise by chance and, therefore, are hard to predict. But scientists and doctors are learning more about the genetic changes that cause cancer as well as those that signal a higher risk for it. Thanks to **MSK-IMPACT™**, Memorial Sloan Kettering's diagnostic test that looks for genes associated with cancer, more people who carry cancer-related genes are being identified.

To take advantage of these new opportunities, MSK has launched the Precision Interception and Prevention Initiative. This program is focused not only on catching cancer very early but also on eventually preventing it from forming in the first place. One of the program's components is a clinic for people with an age-related condition called clonal hematopoiesis (CH). MSK's clinic, the first of its kind, is beginning to see people with CH this month.

"This initiative unites high-impact science and clinical medicine to actively identify and help a population of people who are either at a high risk of developing cancer or who already have cancer but don't know it," says **Luis Diaz**, head of MSK's Division of Solid Tumor Oncology, who is leading this effort.

A person with clonal hematopoiesis has an increased number of blood cells that carry some of the same mutations that are found in blood cancers. CH occurs when hematopoietic stem cells (which give rise to all types of blood cells) form cells that are genetically distinct from the rest of the blood stem cells. Sometimes these distinct cells carry cancer-associated mutations.

"This is an exciting and quickly growing field, and it's vital for us to learn as much about it as possible," says physician-scientist **Ross Levine**, who will be heading the new clinic. "By launching this effort to monitor and care for people with CH, we will be able to advance our understanding about this important area of science."

Clonal Hematopoiesis: A Common Phenomenon Linked to Aging

Dr. Levine was part of the research team that was the first to identify the genetic basis of CH and its connection to blood cancer. They first reported that relationship in 2012. Since then, many investigators have begun to study the condition and have shown that CH is very common. Researchers have found that it is linked to an

increased risk of certain blood cancers, especially [myelodysplastic syndrome](#) and [acute myeloid leukemia](#), as well as cardiovascular disease, heart attacks, and strokes.

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Ross L. Levine
physician-scientist

The most common cause of CH is aging. Studies have suggested that between 10 and 20% of people over age 70 have signs of it in their blood. Smoking also increases the risk. “CH is very common. Millions of people have it,” Dr. Levine says. “But most people don’t know they have it, and doctors don’t know what to do with it. We thought it was important to do more research on this phenomenon so that we can start figuring out who may need intensive follow-up and treatment right away and who can be observed.”

“Right now we don’t have good ways to predict who is most likely to develop a blood cancer, so any new findings that come out of this clinic have the potential to make a big difference,” says [Marcel van den Brink](#), Head of MSK’s Division of Hematologic Oncology.

In addition, certain types of [chemotherapy](#) and [radiation therapy](#) can increase the incidence of CH. This explains why cancer survivors carry a risk for secondary leukemia. The still-rare condition is happening more often because more people with cancer are surviving longer or are cured of their disease.

A [study last year](#) from Dr. Levine, MSK researcher [Michael Berger](#), and their colleagues found that 25% of people with any type of cancer had CH, a higher number than had previously been observed. Of that group, 4.5% had specific mutations that are known to drive the formation of leukemia.

Treating Blood Cancer Earlier



Hematologic oncologist Kelly Bolton coordinates care for people with clonal hematopoiesis and helps determine those at risk for developing cancer.

Most people with CH will never develop blood cancer, but doctors are starting to understand which individuals with CH are at the highest risk. “This is one of the reasons this clinic is so important,” says MSK hematology fellow [Kelly Bolton](#), who will be helping to run the new program. “We hope about 100 patients with high-risk forms of CH will participate in our first year.”

The MSK investigators who designed MSK-IMPACT, including molecular pathologist [Marc Ladanyi](#) and Dr. Berger,

believed it was important to look for cancer-related genes in people’s normal tissue as well as in their tumors. This would help them determine whether a person’s cancer occurred completely by chance or whether inherited factors played a role. The easiest normal tissue to obtain is blood, and the gene mutations linked to CH started to show up as part of MSK-IMPACT testing.

MSK investigators hope to launch clinical trials of treatments that could block the progression from CH to active cancer.

As MSK launches its CH clinic, people who have undergone MSK-IMPACT testing for other cancers and have been found to have high-risk forms of CH in their blood will be contacted by their surgical or medical oncologist and invited to enroll in the program. MSK patients who are treated for low blood counts and found to have CH as part of their blood work will also be seen.

“In the past, CH has been just an incidental finding. When we were worried someone had an undiagnosed blood cancer, we would refer him or her to the Leukemia Service,” Dr. Bolton explains. “Now when we discover patients with high-risk forms of CH, we will have a clinic with experts in CH to manage and coordinate their care.”

For now, those who enroll in the clinic will have the opportunity to have their blood tested on a regular basis. People who are found to have a blood cancer will be able to start treatment immediately, when the disease is much easier to control.

Looking toward Future Treatments

In the future, MSK investigators hope to launch clinical trials of treatments that could block the progression from CH to active cancer. In addition, treatment for solid tumors may be tailored to protect people who already have an increased risk of developing a second cancer. But doctors don't yet know enough about what drives the formation of CH to make any changes to treatment now.

Recent studies suggest that people with CH are at risk for cardiovascular diseases. However, testing for CH is not currently part of screening for them. "It's important for people with CH to follow up with their primary-care doctors and make sure they have had the appropriate screenings for cardiovascular diseases," Dr. Bolton says. "We will encourage everyone participating in our CH clinic to do this."

Other MSK blood cancer experts involved in the CH clinic are [Virginia Klimek](#), [Simon Mantha](#), [Martin Tallman](#), [Elli Papaemmanuil](#), and [Ahmet Zehir](#).

Comments

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Elsie Turne

Jan 29, 2018 • 6:26 PM

I have cll my dr says I will die from something else before cll kills me, idont take any medication for it,he runs blood test every 6 mo,my blood stays about the same,im 88 yrs,old

Patricia O Allan

Jan 30, 2018 • 9:21 AM

I would like to participate in your clinical trials, as I have had three kinds of cancer, presently dealing with bladder cancer. I have had anemia all my adult life, tied to Thalassemia that runs in my family. I have had DVT and PEs related to the Aromatase taken after breast cancer....or not? My mother did not die of her leukemia, but of stroke related problems. Her sister sustained cancer treatment for almost 14 years before she succumbed. I have excellent doctors and keep good records for myself. What are the chances of using me in your trials?

Memorial Sloan Kettering