

# Mayo Clinic Q & A - Dr. James Foran - Acute myeloid leukemia

Thu, Dec 01, 2022 7:38AM 16:38

## SUMMARY KEYWORDS

leukemia, aml, chemotherapy, patients, treatment, leukemia cells, acute leukemia, therapies, mayo clinic, people, remission, mutation, strategies, clinical trials, treat, cells, acute myeloid leukemia, called, cancer center, targeted treatments

## SPEAKERS

Narrator, Dr. James Foran, Jason Howland

---

**N** Narrator 00:01  
Coming up on Mayo Clinic Q&A...

**D** Dr. James Foran 00:03  
People come in sick with it, they're worn down, their blood counts are very off. They often have risks of infection or bleeding because of how the leukemia grows. And so it's the acuity of the situation that lends itself to the word acute leukemia, and really spurs us to treat it acutely.

**N** Narrator 00:19  
Acute myeloid leukemia, or AML is a cancer of the blood and bone marrow. It's the most common type of acute leukemia in adults, and usually gets worse quickly if it's not treated. Chemotherapy and new, more targeted treatments can be used to put leukemia into remission.

**D** Dr. James Foran 00:36  
There are definite advances in our targeted therapies. So as we learn more about the mutations that contribute to AML, we're studying more targeted treatments to go after cells with that mutation, to try to spare side effects and get the most benefit in treating leukemia.

**J** Jason Howland 00:53  
Hello, and welcome, everyone, to Mayo Clinic Q&A. I'm Jason Howland sitting in for Dr. Halena Gazelka. Acute myeloid leukemia, or AML, is a cancer of the blood and bone marrow. The

disease progresses rapidly, affecting a group of white blood cells called myeloid cells, which normally develop into mature red blood cells, white blood cells and platelets. These abnormal cells are unable to function properly, and they can build up and crowd out healthy cells. Treatment of AML depends on several factors, including the subtype of the disease, a person's age, overall health and preferences. Joining us today to discuss AML is Mayo Clinic oncologist, Dr. James Foran. Dr. Foran, welcome to the program.

**D** Dr. James Foran 01:38

Thank you very much.

**J** Jason Howland 01:40

Well, let's start out. Why is it called acute, and how does AML differ from other forms of leukemia?

**D** Dr. James Foran 01:49

Yeah, there are acute and chronic leukemias. The chronic ones tend to happen slowly over many years, and the accumulation of cells. And the most common one, CLL, different topic. We don't even treat it early on. You can watch it for a period of time until it really becomes active. The acute leukemias come on more quickly, cause people to get sick more quickly. Hence the word acute. We think of it as an acute diagnosis. Traditionally, historically, we would have said that a person who in whom we suspect acute leukemia or AML, acute myeloid leukemia, also called acute myelogenous leukemia, we would have said they should be seen and start therapy within a day or two or sometimes within a week. We've learned that you can wait a few days and sometimes a week or even two, to get the whole workup done and get all the genetics back on the leukemia so you have all the information to come up with the best strategy. But it still speaks to the acuity of the situation. People come in sick with it, they're worn down, their blood counts are very off, they often have risks of infection or bleeding, because of how the leukemia grows. And so, it's the acuity of the situation that lends itself to the word acute leukemia, and really spurs us to treat it acutely.

**J** Jason Howland 03:02

So what are some of the symptoms of AML?

**D** Dr. James Foran 03:06

You know, a lot of them are nonspecific early on. People will have the symptoms of abnormal blood counts. So red cells, which carry hemoglobin or oxygen, when they're low, we call that anemia. People will be tired, short of breath, lethargic. That can happen over a few weeks, sometimes a little longer. Where you start to get more out of breath or more fatigued. With acute leukemia, the white cell count in younger patients often high. Paradoxically, it's often low in older patients, because the AML grows in the bone marrow more often than the blood in

older patients. But it gets in the way of normal blood production as you said. The white cell count, the normal white cells will be low and so fever and infection are a risk. And we take that seriously. We start IV antibiotics early. And the third component of blood is the platelet count. When your platelet count is low, you'll bleed or bruise more easily. And sometimes the clotting system is activated in AML, so that the bleeding is really accentuated. And so often, it's nonspecific symptoms of fatigue or lethargy and fever or infection, and bleeding or bruising. And often, within a short period of time, within just a couple of weeks, people will say oh, I was feeling well at Easter and all of a sudden it's April or May and they're feeling unwell and they have abnormal blood counts in the hospital. So it comes on relatively quickly in most people.

**J** Jason Howland 04:28

When a patient is diagnosed with acute myeloid leukemia, you said you want to get started with treatment fairly quickly. How? What are typical treatments for AML?

**D** Dr. James Foran 04:40

Yeah, we still use chemotherapy-based treatments because they work. We have a history, dating back now of almost four decades, of showing that you can get people into remission and you should try to get people in remission, and we use chemotherapy based regimens. Now, it's a little different if you're under the age of 65, or 70 versus older. Younger adults traditionally tolerate treatment very well, benefit from treatment very well. And so we bring somebody in the hospital, often for three weeks or four weeks, to get a seven or 14 day course of chemotherapy to clear out the leukemia from the blood, clear out their blood counts, so they all go very low, and then normal blood will recover, hopefully, so, that someone gets a remission where there's no detectable leukemia, and normal blood counts. Somebody who's older, 65 or 70, or has other diseases like heart disease may not fare as well on the heavier chemotherapy. Chemotherapies don't hurt. But they wear you out, they lower your immune system and they can predispose to infection until you get blood count recovery of normal functioning bone marrow once leukemia is cleared. So in older adults, we've learned, especially in the last few years, that some of the new lower dose strategies can be almost as effective as an intensive chemotherapy, much more tolerable for somebody who's 60 or 70, especially if they have comorbid diseases, and still have a good chance of achieving remission. It still means being on chemotherapy treatments. That often sounds scary to people, but we're very good at people getting patients through that. And we know it's worth trying, even in somebody who's sick or infirm, or older. In almost all cases, there's something we can do to ameliorate the situation and try to achieve a remission. Once someone gets into remission, we then have different strategies to prevent it from coming back again. Sometimes some extra consolidation cycles of chemotherapy, continuation of a low dose intermittent chemotherapy, and we even talked about bone marrow transplant, if it's a variant to the leukemia, and it's more aggressive, or we feel that the cure rates would be better. We'll have that conversation as well.

**J** Jason Howland 06:44

Other than age, are there other factors that help you as the healthcare professional decide on what is the best treatment approach?

D

Dr. James Foran 06:53

Yeah, age is the biggest determinant. We routinely do genetic studies of the leukemia cells. At the time of diagnosis, we do a bone marrow biopsy, which sounds terrible, but it's not. We can make that an easy experience, very manageable for people. But we send a sample the leukemia cells to see what chromosomal abnormalities are in those cells. And also what DNA mutations are in those leukemia cells, those cancer cells. And that helps us determine, is this more likely to be sensitive to chemotherapy? Could it have some insensitivity to chemotherapy? And there are some mutations, we can target with specific pills or specific medicines, either on their own or in addition to chemotherapy. So I started off by saying that we sometimes wait a few days, occasionally five or even seven, before we start therapy if a person is stable, so we can get the results of those genetic tests on the leukemia cells and help plan the best treatment that gives us the highest chance of remission. And then what's the best strategy to prevent it from coming back afterwards?

J

Jason Howland 07:53

Is that approach by Mayo Clinic to treat AML, is it different from the approach used at other cancer centers?

D

Dr. James Foran 07:59

I'd say that we've really been major contributors to what's the national standard. So one of the things we've learned about acute leukemias, you really want to be treated at a leukemia center, or by somebody who has particular expertise and support. You need to be at a place that has got a good blood bank, because almost everybody will need blood or platelet transfusions when you clear out the leukemia before the bone marrow recovers. We have particular expertise there. We've been contributing to the front of the field studies in AML, for many years now, to try to develop better therapies. We've run many of those studies and contributed to others. So, I'd say we're extremely well positioned, relative to most cancer centers, for how we can approach that and the support we can give to a patient and their family to go through it. And there are obviously other good centers nationally as well.

J

Jason Howland 08:47

Are there any promising new treatments that are being developed?

D

Dr. James Foran 08:50

Yeah, I think there are massive advances in the last five or seven years. The first is now that we understand that almost everybody with leukemia, with acute myeloid leukemia, will have some genetic abnormality in the cells. Not necessarily they're born with, but in some DNA abnormality or mutation in the leukemia cells themselves. Often, or at least in some, we can target that particular mutation with some of them new medicines, mostly oral pills that are available. We have learned that if you have a mutation, a gene called FLT3 in the leukemia cells, that adding a FLT3 inhibitor to the chemotherapy significantly improves the efficacy and

the long-term survival. If there's a mutation, a different gene called IDH, the same thing. We have some strategies for that as well. Some mutations predict for a lower remission rate with standard chemotherapies. And then those are situations where we're looking for new therapies that would be more effective, new strategies. Whether that's an immune treatment, a targeted therapy, a different type of chemotherapy. So, those mutations really helped guide us on how to apply the new strategies. And we're finding that we're actually improving outcomes for patients with that. I know we don't cure everybody. But we have definitely moved the needle in the last 20 years, in the last five years as well. And we're continually and actively looking for new strategies to improve outcomes.

**J** Jason Howland 10:24

I think you've touched on my next question here. But where is Mayo Clinic at in regards to the science and conducting research on acute myeloid leukemia?

**D** Dr. James Foran 10:35

Front of the field, I believe. We have some investigators like Dr. Scott Kaufmann, who runs a basic science research lab, and who's funded to do leukemia research, and also looks after patients with leukemia. We have a whole team. He's based in Rochester, but we all collaborate from all three cancer center sites in the Mayo Clinic Cancer Center. Each of the three sites has sub-specialists dedicated to acute myeloid leukemia treatment, and we collaborate internally there. And we're very active in clinical trials to look for new therapies, many of them that we design ourselves, or that we lead, or that we contribute, if they're very good ideas from others that have been run nationally. So that's an area of really active participation for us to get better therapies for patients. And I think that our clinical research in AML is excellent and helping contribute to the national momentum of getting better treatments for patients.

**J** Jason Howland 11:32

If you could touch a little bit more on the clinical trials, that patients take part in this research. What is that all about?

**D** Dr. James Foran 11:42

Well, that's a decision that's a person-by-person decision to go on a clinical trial, we believe. And there's good evidence to support this, that we give our best therapies on clinical trials. They're well-constructed, they're scientifically reviewed, and they're novel strategies to try to get the best for patients. And then, they're very structured in how we treat patients and monitor to make sure that they're as safe as they can be. And then we're learning where the improvements are for patients when they go on them. So we believe in them. So when somebody comes in with AML, either into the clinic or hospital, and often will treat this in the hospital, we're always looking to see is there a clinical trial that's appropriate for that person, and is that person appropriate for the clinical trial. Now, of course, if somebody had some other disease like heart failure, and your clinical trial involves a medicine that could be hard to the heart, well, then that wouldn't be the right thing for the person. But it's an active process for

every patient to look and see what's the best option for them, and to offer that to them with the standard therapy in mind, so we can see what the best strategy is for them. So we're strong advocates for it. We believe they're some of our best therapies are helping to move the field forward. I also know as a patient, and I have had this conversation with many people in clinic, as a patient, you want us to be doing clinical trials, you want us to be advanced in the field. But that particular study may or may not be the right thing for you. And you may want to do it, and you may not. And so it's really something that is voluntary to consider. And so it's an area where we're trying to offer our best alternatives and our best standard treatments, and then working to see what's right for the patient and their family in their lives and what makes sense to them, and how we can get them the most benefits from those treatments. We have a robust infrastructure, honestly, and all three of the cancer center sites at Mayo Clinic so that we can support clinical trials, we can make them as safe as possible, and really try to get the best therapies for a person with AML.

J

Jason Howland 13:38

We're just about out of time. But I've got one last question for you. If you could whip out your crystal ball, look into the future ahead. What do you see as far as the future for patients with acute myeloid leukemia, in treating, diagnosis, research, that sort of thing?

D

Dr. James Foran 13:58


Yeah, there, there are definite advances in our targeted therapies. So as we learn more about the mutations that contribute to AML, we're studying more targeted treatments to go after cells with that mutation, to try to spare side effects and get the most benefit in treating leukemia. But I think there's going to be more and more emphasis on new targeted treatments. The second is on immune treatments. Now, for many patients who go into remission with AML, a bone marrow transplant from a donor is the best way to prevent it from coming back. And that's actually immune therapy. You're giving a new bone marrow and a new immune system. We've learned that we're doing more transplants, not less, because we can get more people through it. We can get the benefits for more we get better outcomes. And so I think there's going to be an ongoing role for transplants, maybe even still bigger. We're also looking at new immune treatments to try to stimulate someone's immune system to fight the leukemia. We're opening clinical trials at all of the sites. There's now one open at Mayo Clinic Rochester, we're just opening one at Mayo Clinic Florida and Arizona as well, in the near future, to use CAR-T therapy, just as an example, which is taking someone's own immune cells and reprogramming their T cells to fight leukemia. It works in lymphoma, works in a different type of leukemia called ALL, and we're looking at that in AML, as well as some of the other immune stimulating antibodies. So I think there's going to be an increasing role for trying to leverage someone's immune system, which didn't recognize the leukemia in the first place, to help it recognize it and treat it. Sometimes with bone marrow transplant, sometimes with targeted therapies, sometimes on its own. And I think that's going to be the real focus in the next five to 10 years of how to get the best for patients with those strategies.


J


Jason Howland 15:44

Fascinating stuff, and hope for patients. Well, unfortunately, we are all out of time, but I'd like to thank our quest today, Mayo Clinic oncologist, Dr. James Foran, for joining us. Thank you, Dr.

Foran.

 Dr. James Foran 15:58  
Thank you very much.

 Jason Howland 16:00  
And thank you for joining us as well here on Mayo Clinic Q&A. Have a great day.

 Narrator 16:04  
Mayo Clinic Q&A is a production of the Mayo Clinic News Network and is available wherever you get and subscribe to your favorite podcasts. To see a list of all Mayo Clinic podcasts, visit [NewsNetwork.MayoClinic.org](https://www.mayoclinic.org/news-network). Then click on podcasts. Thanks for listening, and be well. We hope you'll offer a review of this and other episodes when the option is available. Comments and questions can also be sent to [MayoClinicNewsNetwork@mayo.edu](mailto:MayoClinicNewsNetwork@mayo.edu).