



The Beat

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Meet Our October 2019 Titan of Thrombosis: Dr. Eugene Braunwald



Dr. Eugene Braunwald



Our Titans of Thrombosis series honors advocates and experts in the thrombosis field and showcases their important contributions.

Dr. Eugene Braunwald was born in Vienna, Austria. In 1938, he and his family fled from the Nazis and ultimately settled in New York. He attended medical school at New York University. After completing his residency training (Johns Hopkins Hospital and Mount Sinai Hospital) and cardiology fellowships (Columbia University College of Physicians and Surgeons and the National Heart Institute), he served as the chief of cardiology and clinical director at the National Heart Institute from 1961-1968. He relocated to the West Coast to chair the Department of Medicine at the University of California, San Diego and moved into the same role at Brigham and Women’s Hospital/Harvard Medical School in 1972. He founded the TIMI Study Group in 1984 and is the most frequently cited author in cardiology today. His practice-changing discoveries in thrombosis have saved countless lives. We recently had the privilege of speaking with him about his extraordinary career.

Q: Tell us something that we might not know about you.

A: I have a deep love of classical music. I consider myself a “professional listener” because I’ve never been very good at playing an instrument, and it’s not that I haven’t tried! But I love the music and get totally involved in it. In medical school, I was an extra at the Metropolitan Opera. They paid us \$1.00 a night to go out there in costume in crowd scenes. It was the most thrilling thing that’s happened in my life outside of medicine.

Q: What originally drew you to cardiology?

A: When I was growing up in the 1940s, we were at war; it’s hard to describe what living through World War II was like. It was a totally different world where engineering was everything. I went to a

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Patients Are Asking: What’s The Link Between Blood Clots And Cancer?

Dr. Jean Connors provides some insights.

Q: Blood clots are a known complication in cancer patients—but how common are they?

A: If you consider everyone with a blood clot today, roughly 20% of those people have cancer. Cancer is a very strong risk factor for developing a clot. Certain types of cancers are more associated with clots, such as pancreatic and

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Upcoming Events

New Strategies for the Treatment and Management of Anticoagulant-Associated Bleeding

October 24, 2019

Nashville, TN at the Marriott at Vanderbilt University

December 5, 2019

San Francisco, CA at The Fairmont San Francisco

December 12, 2019

Ann Arbor, Michigan at the Dearborn Inn

January 22, 2020

Cleveland, Ohio at the

Cleveland Airport Marriott

2019 Celebration of Gratitude

November 14, 2019

Museum of Science

Boston, MA

NATF cordially invites you to the Celebration of Gratitude, our premier fundraising event. Our enlightening keynote speaker, Dr. C. Michael Gibson, will discuss the intersection of art and science. Guests will also have exclusive access to the exhibits in the Museum's Blue Wing. Please visit our website or call 617-730-4120 to purchase tickets.

For more information about any of these events, please visit www.natfonline.org/events or email events@natfonline.org.



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stomach cancer. Some chemotherapy and radiation treatments also increase the risk of blood clots, along with several other factors (Figure 1).

Q: Why are some cancers more likely to lead to a blood clot than others?

A: Certain cancers can release substances from the cells that activate coagulation, thereby forming a clot. Sometimes, a mass—or lymph nodes—will compress the blood vessels and slow blood flow, which also results in a clot.

Q: Are there any preventative measures that a person can take once they find out they are diagnosed with cancer?

A: Patients should remain active if they can and should talk to their providers about whether preventive anticoagulation would benefit them based on their individual risk factors. Two of the direct oral anticoagulants (DOACs) have been studied in this area—rivaroxaban (Xarelto®) and apixaban (Eliquis®) both work well at preventing blood clots with minimal bleeding.

Q: What's the current treatment protocol for clots in cancer patients?

A: Low-molecular-weight heparin (LMWH) injections used to be the gold standard, but now it's acceptable to use a DOAC. We'll still use LMWH if we're concerned about gastrointestinal (GI) tract bleeding, nausea and vomiting from chemotherapy, or other factors.

Q: Should patients expect their oncologist to help them manage a clot?

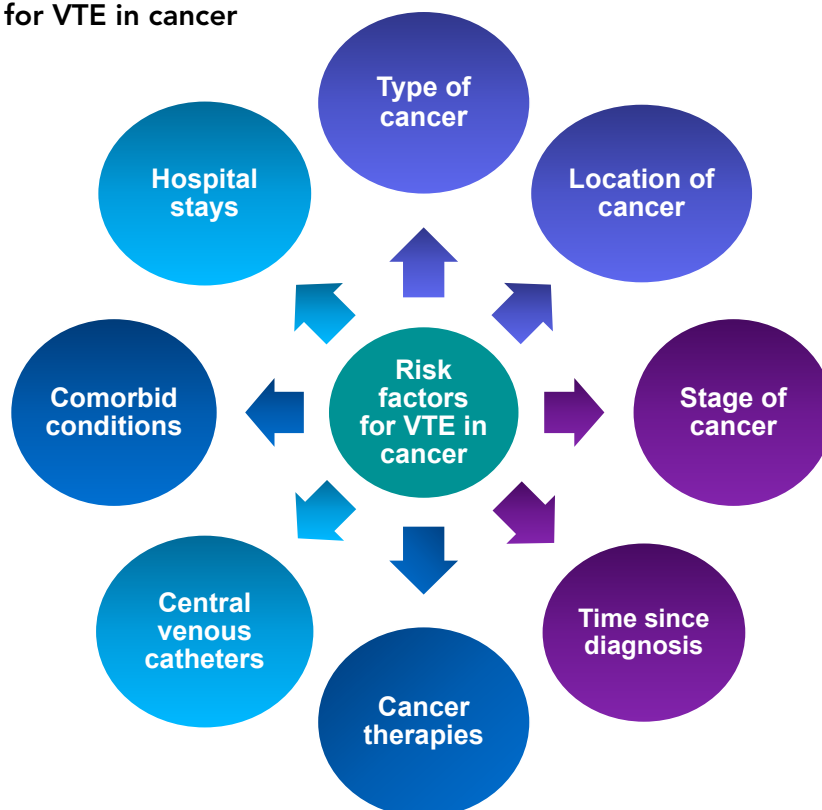
A: I think it depends on the comfort level of the patient and the medical oncologist, as well as the complexity of the blood clot and the treatment. In many situations, patients would benefit from seeing a blood clot specialist in vascular medicine, cardiology, or hematology.

Dr. Connors is the Medical Director of the Anticoagulation Management Service at Brigham and Women's Hospital and Dana-Farber Cancer Institute.



Dr. Jean Connors

Figure 1: Risk factors for VTE in cancer





prestigious engineering high school in Brooklyn but didn't like engineering. There wasn't enough human contact. So, I switched to pre-med.

When I started medical school, the first section of my physiology class focused on cardiovascular physiology, which is essentially applied engineering. There were two kinds of cardiac subspecialists at the time: electrophysiologists (they were called electricians) and the hemodynamacists (they were called plumbers). I became a "plumber," so the engineering thing never really left me. I found a way to be an engineer with the degree of human contact I was searching for.

Q: One of your most significant contributions in thrombosis was establishing the TIMI Study Group. Tell us about TIMI.

A: **TIMI** stands for **T**hrombolysis, which means dissolving clots, **i**n **M**ycocardial **I**nfarction.

Thrombolysis restores blood flow to the heart and limits further damage to the muscle. The first TIMI trial was in 1984—but the ideas that informed that trial evolved long before.

A physician named Herrick described several patients in 1919 who presented with severe, sudden chest pain and died; on autopsy, these patients had blood clots in their coronary arteries. Herrick's observation begged the question of whether someone could have a clot and *live*. If we had a patient with terrible chest pain, what could we do so they didn't die?

In the late 1960s, I realized that the size of a heart attack matters. Large infarcts kill people. If you could limit the infarct size, you could save lives. In the 1970s, a Soviet cardiologist named Chazov confirmed my idea: he found that you could limit infarct size—and reduce mortality—by infusing a drug called streptokinase directly into a coronary artery clot.

Our first trial, aptly named TIMI-1, compared streptokinase with a drug called tPA. We wanted to see which drug was superior for dissolving a blood clot; tPA was superior. We're now up to our 64th trial—TIMI-64—but we're not doing trials solely in thrombolysis. Now we're studying heart failure and diabetes. Thrombosis is a complication of diabetes,

and heart failure is associated with a high risk of thromboembolism, so the theme is still there.

Q: Yes, and part of our mission at NATF is to spread the message that thrombosis is not a standalone condition. What would you say to help us communicate that message?

A: I would say that thrombosis is a common, serious complication of many diseases like diabetes, cancer, heart failure, and atrial fibrillation. Thrombosis is a lot like anemia (a deficiency of red blood cells in the blood). Multiple situations can lead to anemia, including trauma, a bleeding ulcer, a tumor in the bone marrow, etc. Thrombosis, like anemia, is triggered by something. The triggers may be known or unknown, but the point is that thrombosis is not an isolated event. Clinicians and patients need to pay attention to underlying conditions that can raise the risk for thrombosis.



Dr. Braunwald, 1963.

Q: You once said that by 2027, the principal role of a cardiologist will be to interpret a patient's genetic information and then develop a personalized plan to prevent heart disease. Do you still think that the future of cardiology is headed in this direction?

A: I think the future of cardiology is going to go two ways. First, advances in genetics will target prevention at a very early age. There are now genetic techniques that give you risk scores that are the same in newborns and adults. These techniques will get further refined.

Second, technology will also continue to evolve. I think we're going to have smaller, less expensive left ventricular assist devices. They're not going to require all kinds of wires through the skin. The energy will be transmitted in a different, less invasive way. So, genetics and technology—that's where the future is.

Thank you, Dr. Braunwald!



Upcoming Support Groups

Let's Heal Together – An In-Person Post-Thrombotic Limb Support Group

[Sponsored by NATF]

October 28, 2019

NYU Langone Health
New York City, NY

For more information and to register, please email Heather Paulson-Soussou at hpaulson26@optimum.net

In-Person Blood Clot Support Group

October 17, 2019

November 7, 2019

December 3, 2019

Brigham and Women's Hospital
Boston, MA

Please visit natfonline.org for more information

All support groups start at 7:00 PM. To register, email info@natfonline.org or call 617-730-4120.

Upcoming Online Blood Clot Support Groups

To register for this online support group, please email info@natfonline.org.

November 26, 2019: Dr. David Jenkins
Vitamins for CVD Prevention and Treatment

December 10, 2019: Dr. Arvind Pandey
I've Had a DVT/PE: Now What?

For more information about any of these support groups, please visit www.natfonline.org/patients/support-groups or email info@natfonline.org.

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13 October 2019

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