



The Beat

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Understanding DIC



Dr. Umberto Campia

Note: Click on the underlined terms in this article to link to the glossary on page 4.

Over the last year, a number of reports on COVID-19 have mentioned a condition called “DIC,” something many of us have never heard of before. So, what is DIC and what does it involve? We asked Dr. Umberto Campia, Assistant Professor of Medicine at Harvard Medical School and NATF Medical Advisory Board member, to weigh in.

“DIC stands for **Disseminated Intravascular Coagulation** and it’s a potentially life-threatening condition that can cause blood clots *and* major bleeding. One might wonder how it’s possible to clot and bleed at the same time, and that very phenomenon makes DIC a complicated illness,” says Dr. Campia.

DIC typically occurs in two phases. First, overactive clotting causes blood clots to form in small blood vessels. These clots can obstruct blood flow to major organs (such as the liver or kidneys), resulting in organ damage. In the second stage of DIC, the uncontrolled clotting

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NATF is a proud supporter of **American Heart Month**

Love your  this February.



Upcoming Support Groups and Events

Blood Clot Support Group

Temporarily online due to COVID-19

March 16, 2021

April 20, 2021

May 18, 2021

All support groups are at 7:00 PM EST

Next month [March] is DVT Awareness Month!

This public health initiative aims to educate the public about deep vein thrombosis and one of its serious complications, pulmonary embolism.

Stay tuned for a date for our next quarterly *Ask the Expert* forum as well!

To register for a support group or submit topics for future *Ask the Expert* forums, please email events@natfonline.org or give us a call at 617.730.4120.



Introducing the NATF Medical Advisory Board (N-MAB)

NATF is pleased to announce that we have officially formed a Medical Advisory Board! The purpose of the N-MAB is to advise, assist, and support NATF staff in developing relevant, trustworthy, and up-to-date content for both patients and clinicians. Our 2021 N-MAB team brings experts together from a range of medical disciplines and institutions, and we're thrilled to welcome them to the NATF family.

Get to know our N-MAB members:



NATF STAFF CO-CHAIR:

Aviva Schwartz, MA
Boston, MA

NATF's wish to bring together thrombosis experts and advocates has finally become a reality. I am proud to serve as the co-chair of

this esteemed board and look forward to working together to carry forth NATF's mission and vision.



NATF STAFF CO-CHAIR:

Christian Ruff, MD, MPH
Brigham and Women's Hospital
Boston, MA

It's an honor to co-chair the N-MAB, and as a member of NATF's Executive Board as well, I can say that the organization is stronger than ever and at a true inflection point regarding the work we can do for patients and providers.



PATIENT ADVISOR:

Brenda Shisslak
Westwood, MA

I am serving on this board because NATF supported me when I had a DVT and I would like to do more to extend awareness to others. The voice of the patient is critical to that process.

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can deplete the body's platelets and clotting factors, leading to serious bleeding.

WHAT CAUSES DIC?

"The first thing to know is that DIC is not a standalone condition. It is triggered by another medical issue that affects the body's blood clotting pathway," Dr. Campia explains.

The major risk factors for DIC are:

- Inflammation from an infection or injury (for example, sepsis)
- Cancer
- Liver disease
- Recent surgery or trauma
- Tissue injury (for example, from burns)
- Pregnancy-related complications
- An immune reaction to a blood transfusion

DIC can develop suddenly (acute DIC), or can occur gradually without obvious symptoms (chronic DIC).

Signs and symptoms of DIC may include:

- Bleeding from any site in the body
- Bruising or a red/purple rash
- Blood in stools or urine
- Blood clots
- Swelling, pain, and warmth in legs
- Trouble breathing
- Chest pain
- Low blood pressure
- Confusion, memory loss, or difficulty thinking clearly

The overactive clotting and bleeding that occur with DIC could lead to life-threatening complications, including heart attack and stroke.

DIAGNOSIS & TREATMENT

Several tests may be used to diagnose DIC, including a complete blood count (CBC), and measures of blood clotting, such as prothrombin time (PT), partial thromboplastin time (PTT), and D-dimer. Your medical history (for example, recent injury or infection) is also a factor in making the diagnosis.

And what about treatment? "There isn't one treatment for DIC itself, so we often use what we call supportive treatments – we address the immediate symptoms of the illness as early as we can. Supportive care in DIC may include transfusion of platelets or blood products in cases of serious bleeding, or anticoagulants to treat blood clots. However, our main goal is to identify the underlying cause of DIC and treat that; for example, giving antibiotics if the root cause is an infection," says Dr. Campia.

DIC IN COVID-19?

Earlier in the pandemic, there were several reports about DIC commonly developing in patients with COVID-19. However, the American Society of Hematology (ASH) has been keeping close watch on this issue since March 2020 and has found patterns in COVID-19 patients that are not consistent with the type of DIC seen in infections like sepsis. ASH has started using the term COVID-19-associated coagulopathy to differentiate blood clotting conditions in COVID-19 from DIC.

TAKE-HOME POINTS

- Acute DIC is a potentially life-threatening complication of various medical and surgical conditions and should be promptly managed in the hospital. After recovery, patients should follow up with their primary care provider or a specialist (such as a hematologist).
- Patients with chronic DIC can typically be treated and monitored out of the hospital.
- If you have either uncontrolled bleeding or symptoms of a blood clot (including pain or swelling in your leg, chest pain, or shortness of breath), seek medical attention immediately.

REFERENCES

COVID-19 and Coagulopathy: Frequently Asked Questions. American Society of Hematology. Updated December 24, 2020.

Disseminated Intravascular Coagulation. The National Heart, Lung and Blood Institute. Updated October 8, 2019.

Patient education. Disseminated Intravascular Coagulation: The basics. UpToDate. Updated January 4, 2021.



UNDERSTANDING DIC GLOSSARY

Coagulopathy: A condition affecting the blood’s ability to form clots (coagulate).

Clotting factors: This term (also known as *coagulation factors*) refers to substances in the blood that help blood clot normally. Some clotting factors you may have heard of include fibrinogen, thrombin, or genetic factors like factor V.

Complete blood count (CBC): This blood test measures the number of white and red blood cells and platelets in the blood.

D-dimer: This blood test looks for the presence of D-dimer in the blood, which is a protein fragment found in the blood after a blood clot breaks down.

Inflammation: This term refers to the body’s natural response to injury, toxins, infections, or anything else it deems harmful. When the body recognizes

an “attack,” white blood cells are released to help fight infection. Sometimes we can see inflammation; for example, the skin around a cut may turn red or swell. This is called **acute inflammation**. If the body perceives a foreign substance or unwanted toxin over a long period of time—toxins from cigarettes, for example—**chronic inflammation** occurs.

Partial thromboplastin time (PTT): This blood test measures how long it takes for the blood to clot.

Platelet: This small cell fragment helps blood clot by slowing or stopping bleeding. The medical term for platelet is *thrombocyte*.


Prothrombin time (PT): This blood test measures how long it takes for plasma—the liquid part of your blood—to clot.

Sepsis: A severe, body-wide response to infection that can lead to organ damage/failure or death. ■



Spotlight on the *Patient Pulse*

Each month, NATF launches a new on-demand webinar for patients, caregivers, families, and friends affected by blood clots and related diseases. Each episode features an expert discussing new research or answering commonly asked questions about thrombosis-related topics. Recent webinars include:

[Managing Nosebleeds When You’re on Anticoagulation](#) 

[Cardiovascular Disease in Women](#) 

[A Patient’s Guide to Atrial Fibrillation](#) 

[Exercising Safely After a Blood Clot](#) 

[Understanding Post-Thrombotic Syndrome](#) 

Check out these webinars anytime and please contact us if you have an idea for a future *Patient Pulse* episode!



INTERNAL MEDICINE:

Alex Spyropoulos, MD
Northwell Health System
Manhasset, NY

It's a pleasure to be part of something that advances care in the area of blood clots. In the COVID-19 era in particular, blood clots are front and center in the minds of providers and patients.



CARDIOLOGY & VASCULAR MEDICINE:

Aaron Aday, MD, MS
Vanderbilt University Medical Center
Nashville, TN

I benefited greatly from NATF's educational efforts when I was a trainee, and now I want to continue supporting NATF's mission by advancing thrombosis education across the country.



CARDIOLOGY & VASCULAR MEDICINE:

Allen Taylor, MD
MedStar Georgetown University Hospital / MedStar Health Research Institute
Washington, DC

NATF's initiatives fill critical gaps in patient and provider education, and I'm pleased to be a part of a board that supports these broad efforts.



CARDIOLOGY & VASCULAR MEDICINE:

Umberto Campia, MD, MS
Brigham and Women's Hospital
Boston, MA

I have been involved with NATF for several years and have great appreciation for the education that the organization delivers to patients and families. I am excited to help support these activities.



HOSPITAL MEDICINE:

Margaret Fang, MD, MPH
University of California San Francisco
San Francisco, CA

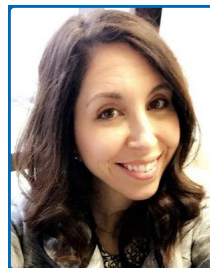
I really admire NATF's educational mission, which ranges from producing scientific publications for clinicians to video content and seminars for patients. It's delightful working with a group that caters to both providers and patients.



HEMATOLOGY/ONCOLOGY:

Tzu-Fei Wang, MD, MPH
University of Ottawa
Ottawa, Canada

I am passionate about clinical research on blood clots and cancer, a topic that is well aligned with NATF's educational mission. I'm honored that NATF has given me an opportunity to educate people about this important issue.



PHARMACY:

Tara Lech, PharmD
Beth Israel Lahey Health
Burlington, MA

I have always relied on NATF to find educational resources that I can give to patients and colleagues in my clinic. I'm excited to be a part of this board and help NATF continue its mission of ensuring that key education is delivered to patients.



NURSING:

Jennifer Ballard-Hernandez, DNP
UC Irvine / Tibor Rubin VA Medical Center
Long Beach, CA

I am blown away by the quality of educational products put out by NATF and I'm excited to bring a nursing perspective to the organization. It's important for nurses at the bedside to have access to the type of education that NATF produces.



*Fighting blood clots
through education*

North American Thrombosis Forum
368 Boylston Street
Brookline, MA 02445

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STAFF

Kathryn Mikkelsen, MBA
Executive Director
KMikkelsen@natfonline.org

Courtney Anderson
Director of Operations
CJohnson@natfonline.org

Aviva Schwartz, MA
**Director, Content & Education Co-
Chair, Medical Advisory Board**
Managing Editor, The Beat
ASchwartz@natfonline.org