

COVID-19: Do not forget the host in treating this disease

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Randy Cron, M.D., Ph.D. Credit: University of Alabama at Birmingham

Randy Cron, M.D., Ph.D., is an expert in a dangerous immune reaction to some infections, called cytokine storm syndrome.

"Cytokines are inflammatory immunologic proteins that are there to fight off infections and ward off cancers," said Cron, a University of Alabama at Birmingham professor of pediatrics and medicine. "But when they are out of control, they can make you very ill."

A [cytokine](#) storm is the result of an immune system gone wild. The body's own killer [immune cells](#) are often defective, resulting in increased production of inflammatory proteins that can lead to organ failure and death.

In a Q&A, Cron explains how cytokine storm

[syndrome](#) may be at work in the current COVID-19 pandemic and how it can be detected and possibly treated.

Q. What host reaction do you think may be a cause of death in COVID-19 cases?

A. From reading the literature primarily out of China, many of the severely ill [coronavirus](#)-infected patients appear to have clinical and laboratory features of a cytokine storm syndrome, or CSS, which is frequently fatal.

Q. What is CSS, and why does it occur?

A. CSS is an overly exuberant immune response to a triggering event, frequently certain [viral infections](#), including deadly strains of influenza virus. No one knows why some people—and not others—develop this response; but there are likely host risk factors, including genetic mutations in genes that contribute to a familial form of this disease.

Q. Are there ways to measure CSS, and are those measurements being done?

A. An elevated serum ferritin test—which is cheap, readily available and quick—is a good first step for screening for CSS. There are a variety of other tests that can then help confirm or deny the presence of a cytokine storm syndrome.

Q. Are there treatments for CSS?

A. Although we don't know what specifically will benefit CSS associated with COVID-19, we have experience with treatments for other CSS cases. There are both broadly immunosuppressive approaches, such as high-dose corticosteroids, and more novel targeted approaches that go after inflammatory cytokine proteins. These include the interleukins IL-1 and IL-6, and interferon-gamma. While we are attempting to develop vaccines for COVID-19 and are trialing novel or re-purposed anti-

viral therapies for COVID-19, let us also not forget to treat the patient with all we have to offer to help save lives. We need to address the immediate needs for the significant numbers of patients becoming critically ill in the current pandemic. As rheumatologists, we have much to offer on the front lines of helping to recognize and treat these critically ill individuals with complications of hyper-inflammation.

Cron said the good news is that "we now have a variety of therapeutic options to treat cytokine storm syndrome. But especially a lot of the older physicians don't know what this is."

That was one of Cron's primary motivating factors in writing his 2019 book, "Cytokine Storm Syndrome," which offers a detailed description of symptoms and clinical presentations of cytokine [storm](#) syndrome, along with the latest treatments and care regimens. "The sooner you recognize it, the better the outcomes," Cron said. "If we can get people to diagnose this in the ER and the ICU, that would be ideal."

Provided by University of Alabama at Birmingham

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