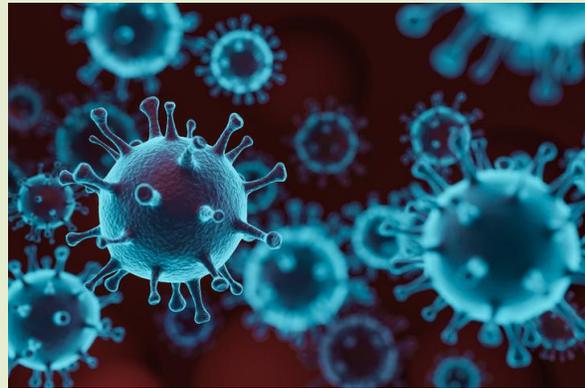


## The Role of Hormones in COVID and Immune Response

Across the world, why are men so much more susceptible to severe outcomes from COVID-19 than women? It has been suggested that estrogen may be protective against COVID-19 in females and/or that androgens (like testosterone) worsen COVID-19 in men. Androgen sensitivity would explain severe cases in female patients who present with metabolic syndrome or polycystic ovary syndrome (PCOS) or who are using birth control methods that include the use of hormones that bind to an androgen receptor (such as levonorgestrel and norethisterone).



### Is Estrogen Protective?

Physiological hormones such as estrogens and progesterone can bind to spikes on coronavirus which may interfere with attachment of the virus to stressed cells. These substances may be helpful as anti-COVID-19 agents for people with a high risk of cell stress like the elderly, cancer patients, and front-line medical staff.

Doctors at the Renaissance School of Medicine, Stony Brook University in New York are conducting a randomized trial to determine if the use of a transdermal estrogen patch for 7 days in patients with COVID-19 might reduce the need for intubation in men and women infected with COVID-19. They are recruiting male and female patients who present to their emergency department with signs and symptoms of COVID-19.

### Possible Immune Effect of Progesterone

Many of the sickest patients with COVID-19 have high levels of immune system proteins called cytokines in their blood. "Cytokine storm" is an overactive immune response to a viral infection and is one of the most devastating complications of COVID-19 infections, where the body starts to attack its own cells and tissues rather than just fighting off the virus. Cytokine storms are known to happen in autoimmune diseases, during certain kinds of cancer treatment, and can be triggered by infections like the flu. One study of patients who died of H1N1 influenza, for example, found that 81% had features of a cytokine storm.

Researchers have looked at the anti-inflammatory properties of progesterone. Pregnant women, who usually have high levels of progesterone, tend to have mild courses of COVID-19. A new study will assess the use of a short course of progesterone therapy in hospitalized men diagnosed with the novel coronavirus.

***For the reasons discussed above, it is essential that women continue their hormone therapy and that hormonal balance is optimized to potentially reduce their risk of serious consequences of COVID-19.***

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## COVID-19 Test Kits Available at Clearspring Pharmacy!

Clearspring Pharmacy has two options for COVID-19 test kits! No appointment necessary.

MicroGenDX test kits are \$199. MicroGenDX is a CLIA/CAP certified high complexity lab which has been validated and added to the FDA website as a resource laboratory for COVID-19 Testing. The test is performed in the privacy of your own home using sputum and includes a FedEx self-mailer. The results will be sent to Clearspring Pharmacy and one of our pharmacists will contact you with the results.

Also available from Vivera Pharmaceuticals is the COVID-19 Rapid Test for \$199. This is an in-vitro diagnostic test for the qualitative detection of IgM and IgG antibodies to the SARS-CoV-2 virus in human serum. Accurate results in 20 minutes!

*Ask us form more information!*

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## Have you been laid-off or furloughed due to COVID-19?

If you are having trouble paying for your cash compounded prescriptions at this time, please speak to one of our professional staff members to find out how we can help you. We do not want you to discontinue or alter your medication regiment due to financial hardship. ***We can help!***

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Be sure to follow [@ClearspringPharmacy](#) on Instagram to keep up with the latest happenings at the pharmacy and important health information!



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## Download our App

ClearSpring mobileRx app allows you to refill prescriptions on your mobile device at your convenience. You can refill multiple prescriptions on a mobile device by entering your prescription numbers, scanning the barcode on the prescription bottles or using your Patient Profile.

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## Two-Way Text Communication

At ClearSpring Pharmacy, we now offer two-way text communication where we can communicate conveniently about your prescription, refill status, insurance, etc. Ask your pharmacist for details.



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*We care about our patients and want to provide you with quality information about your health. If you ever have questions or would like more information, please feel free to ask. We look forward to caring for you and your family.*