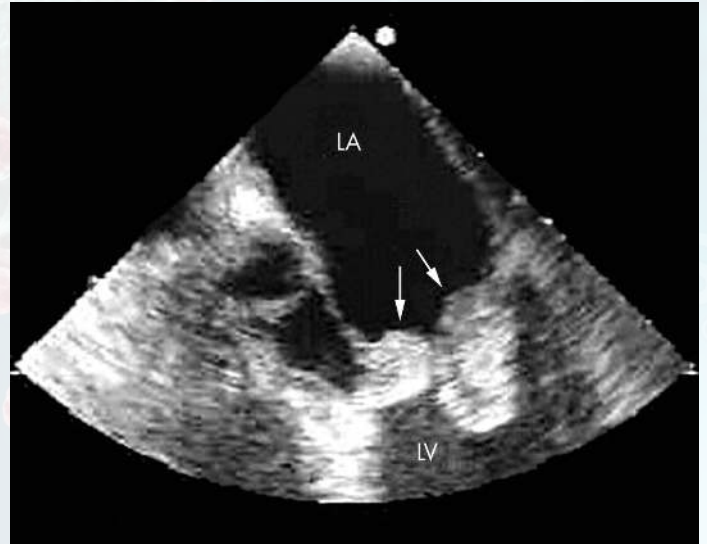
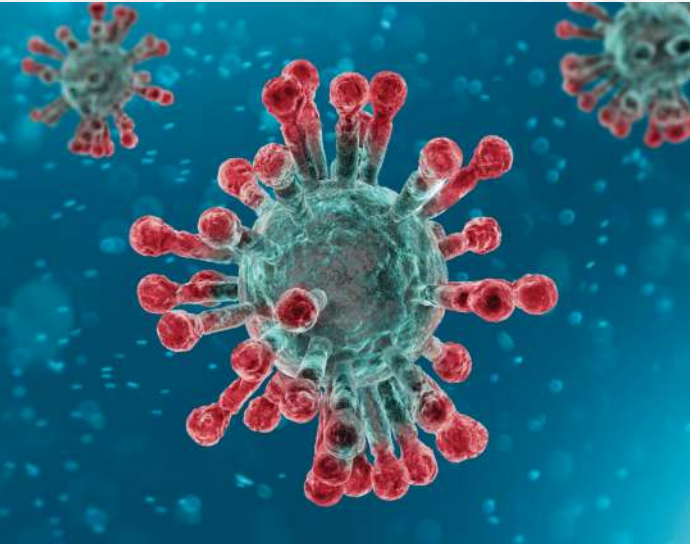


Not all that coughs is COVID



Left: Microscopic view of Coronavirus. Right: Large vegetations (arrows) in the mitral valve secondary to fungal endocarditis. Evangelista, A., & Gonzalez-Alujas, M. T. (2004). Echocardiography in infective endocarditis. *Heart (British Cardiac Society)*, 90(6), 614–617

Elliot J. Stein, MD, MSTR

Dr. Stein is an Internal Medicine Resident in the Department of Medicine, Vanderbilt University Medical Center, Nashville, TN.

The perils of anchoring bias are well known. Avoidance of this common cognitive bias is systematically sewn into the fabric of physicians during medical school. Anchoring bias—the tendency to favor one or more conclusions due to recency, recall, prevalence, or some other reason—constantly threatens the ability to make informed, comprehensive, and level-headed diagnoses.

Reducing the strength of the anchor requires a concerted, directed effort to expand and answer the all important question, “What else could this be?”

Oftentimes, physicians are drawn to particular diagnoses for good reasons—common diagnoses indeed are

common, and the sheer repetitiveness of applying a diagnosis to the last 10 patients may very well mean it correctly applies to the next patient. The life-threatening diagnosis missed in residency is permanently etched in memory because it must never be missed again.

Sometimes we anchor because a particular diagnosis dominates every moment of professional and private life. When COVID-19 became a global pandemic, threatening patients and endangering us and our families, it became one truly formidable anchor. Nowadays, it can feel like all the mooring available to the ship of diagnostics leads to one place, COVID-19.

Consider the case of a 59-year-old otherwise healthy man. He had no past medical history except for osteoarthritis and migraines. He is not on any chronic medications. In April 2020, he developed unilateral knee swelling, headaches, rigors, and mild dyspnea. Up to that point,

he had been exercising regularly, socially distancing, and had no sick contacts or recent travel. His symptoms worsened, and he reached out to his primary care provider (PCP) who offered a telemedicine visit. During the visit, the PCP was concerned for multifocal pneumonia due to COVID-19 and recommended steroids for knee pain, acetaminophen for fever, home quarantine, and a drive-through COVID-19 test.

The nasopharyngeal swab was negative, and the PCP concluded that the test was a false negative. The patient, failing to improve, reached out to an anesthesiologist friend who recommended he seek treatment in an emergency department (ED). In the ED, the patient had a normal chest X-ray and received one liter of intravenous fluid, a knee sonogram, and a repeat COVID-19 nasopharyngeal swab. He was discharged to home with a presumptive diagnosis of COVID-19.

The repeat test was also negative. The patient, now on his 20th day of illness, still with fevers, rigors, daily headaches, and dyspnea at rest, developed loss of appetite and noticed a weight loss of approximately five pounds. Again, his anesthesiologist friend advised him to seek treatment in an ED, this time at an academic medical center. The anesthesiologist informed the ED of the case prior to the patient's arrival.

This time, a systolic murmur loudest at the cardiac apex was found. The transthoracic echocardiogram revealed a vegetation on the mitral valve and severe mitral regurgitation. The patient's blood cultures were positive within 24 hours. He underwent urgent mitral valve repair for heart failure with a week-long postoperative stay in the intensive care unit.

Following discharge, he received intravenous antibiotics at home for six weeks. His fevers, dyspnea, and appetite improved. In total, he was swabbed for COVID-19 three times, all of which resulted in negative results.

There are several lessons to be gleaned from this vignette. First, it's not always COVID-19 (but it often is). A patient presenting during a pandemic with fever, rigors, dyspnea, and headache is very hard to label as anything other than COVID-19. With tens of thousands of daily COVID-19 cases in the United States, it isn't unreasonable to assume that a patient with this symptom profile has the infection, instead of having, say, endocarditis, bacteremia, and new symptomatic mitral regurgitation.

Several unique features of the COVID-19 pandemic may reinforce the virus' grasp on clinical reasoning. The Center for Disease Control and Prevention recommends social distancing and masks even when people do not feel sick. This

is because during a global pandemic it must be assumed that everyone is infected with the virus. While this assumption is useful, believing everyone is sick from the virus may spillover into medical decision-making. It could also cause providers to assume that the patient is sick from COVID when, in fact, it is something entirely different.

COVID-19 has forced the use of telemedicine, where the physical exam is no longer hands on. Whether or not the patient in the above case exhibited a new murmur during his video call with his PCP is impossible to know, but any murmur goes unheard in the absence of listening.

The COVID-19 RT-PCR test may have a high false negative rate, with one study estimating it between 20 percent and 67 percent.¹ This high rate permits, and even encourages, a negative result to be questioned, presuming a patient truly is positive for COVID-19.

In the case, the sovereignty of COVID-19 anchoring bias was overthrown by the patient's physician-friend. Without his encouragement and advocacy on behalf of the patient, it is unclear whether the patient would have received timely and appropriate treatment. It took a team of medical professionals to deliver the appropriate diagnosis and treatment to this patient, but not all patients have access to this sort of team or this sort of friend. As a result, a delay of appropriate diagnosis and care may disproportionately affect those with limited health care access and literacy.

We must take great caution to remember that diseases must be ruled out instead of ruled in, not every false negative is a presumptive positive, and some patients must be physically examined. We must recognize that anchoring bias is as potent during the COVID-19 pandemic as it has ever been. However, the antidote to this distortion is the same as always, and it starts with the question, "What else could this be?"

References

1. Kucirka LM, Lauer SA, Laeyendecker O, Boon D, Lessler J. Variation in False-Negative Rate of Reverse Transcriptase Polymerase Chain Reaction–Based COVID-19 Tests by Time Since Exposure. *Ann Intern Med.* 2020; 173(4): 262–7.

The author's E-mail address is elliott.j.stein@vumc.org.