



LETTER TO  
THE EDITOR

## Reply to Bauer

**Robert S. Bobrow**

Department of Family, Population,  
and Preventive Medicine  
Stony Brook University, New York

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“I don’t care if it’s horse piss. It works!”

— President John F. Kennedy

I don’t know whom or what Dr. Bauer consults for his own medical care, but most of us rely on well-intentioned individuals doing the best they can with the tools they have on hand. Polymerase chain reaction (PCR), which can identify viruses and bacteria by their DNA or RNA within a few hours using a multiplication (amplification) technique, is such a tool. Identifying bacteria by culture takes several days, and viruses, which require living cells to reproduce, are difficult to culture at all. We use PCR to diagnose respiratory viruses such as influenza and Covid, as well as herpes viruses, bacteria that cause meningitis, sexually transmitted diseases, hepatitis B and C, and HIV. In the case of hepatitis and HIV, we measure “viral loads”—a quantification of virus particles using PCR. We can watch viral loads rise or fall as people become infected and then respond to treatment. This always correlates clinically: On becoming infected with HIV, the viral load rises rapidly coincident with flu or mononucleosis-like symptoms in at least 40% of people. The load reaches a peak at 6 months and plateaus (this is called the viral set point, and varies with individuals). HIV’s target, the CD4 immunoreactive cell, starts to decrease in number as soon as infection begins, and continues to decline as long as the viral loads are high. The higher the viral set point, the faster the decline. It may take 8–10 years until the CD4 count is low enough to cause symptoms, and then people become quite ill. Before antiviral therapy, more than 90% died. When I did hospital rotations in the late 1980s, an adult medical service of 12–15 patients always included at least one dying of AIDS, and usually someone younger than myself.

Another useful tool in medicine is antibody testing. The body makes antibodies in response to infections, and their presence, known as seropositivity, identifies past and present illness. It can take a number of days (for most infections) to weeks (Lyme disease) to months (HIV) for the body to mount a measurable antibody response. So culture and PCR, when available, are faster and allow treatment to begin. This is how well-intentioned people doing the best they can practice medicine.

Originally, we identified HIV-infected patients by their antibodies to HIV and declining CD4 cell counts. Then the technology to measure viral loads evolved. The HIV virus can be identified by viral culture or PCR in all seropositive HIV patients.<sup>1,2</sup> It can be seen with an electron microscope (Google it).<sup>3</sup> It parallels disease activity and CD4 counts rise as viral loads fall.

Now to Covid, which has killed more than a million Americans as of this writing. Prior

to vaccines, the greatest determinant of who died was age: 75% of deaths occurred in those over 65, as opposed to 4% in those under 45.<sup>4</sup> More than one in five persons 80 years or older who contracted Covid died (statistics from China; consistent with what I've seen in the US).<sup>5</sup> In 2018, less than one in a thousand of those over 65 with flu or pneumonia died.<sup>6</sup> Quite a difference. With influenza, the older and infirm are still generally at the greatest risk, but in some epidemics this varies, depending on immunity (antibody) levels from past infections in different age groups. In the great influenza pandemic of 1918, where an estimated 50 million died worldwide, younger people were at much greater risk of dying.

Influenza and pneumonia combined killed 55,672 Americans in 2017;<sup>7</sup> Covid killed an estimated 375,000 in 2020.<sup>8</sup> My hospital had more than 400 beds filled by Covid patients in April 2020. No flu epidemic ever approached that. Currently, the greatest determinant of who dies from Covid is vaccination status. An unvaccinated person was 58 times more likely to die (during Oct.–Nov. 2021) than a fully vaccinated and boosted one.<sup>9</sup>

Back to HIV. We still have no vaccine for it (nor do we have one for hepatitis C), but based on the premise that the HIV virus is the sole cause of AIDS, drugs were developed to target it. Now, using these drugs in combination, HIV-infected Americans who seek medical care before their infection is far advanced can expect a life expectancy ap-

proaching that of the general population.<sup>10</sup> Which is to say: "It works!"

## NOTES

- <sup>1</sup> <https://pubmed.ncbi.nlm.nih.gov/2298875/>
- <sup>2</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC266626/pdf/jcm00079-0182.pdf>
- <sup>3</sup> [https://www.google.com/search?rlz=1C10KWM\\_enUS787US787&q=Can+you+see+HIV+in+electron+microscope?&tbm=isch&source=iu&ictx=1&vet=1&fir=rV6Ubidn9gTpUM%252C1H0laxiAsNFYRM%252C\\_&usg=AI4\\_-kQce5G-SKlRGEtuFRdui4twPseBCg&sa=X&ved=2ahUKEwi5ieT3npz4AhUbdDABHRFyAVoQ9](https://www.google.com/search?rlz=1C10KWM_enUS787US787&q=Can+you+see+HIV+in+electron+microscope?&tbm=isch&source=iu&ictx=1&vet=1&fir=rV6Ubidn9gTpUM%252C1H0laxiAsNFYRM%252C_&usg=AI4_-kQce5G-SKlRGEtuFRdui4twPseBCg&sa=X&ved=2ahUKEwi5ieT3npz4AhUbdDABHRFyAVoQ9)
- <sup>4</sup> <https://www.cdc.gov/nchs/covid19/mortality-overview.htm>
- <sup>5</sup> <https://www.worldometers.info/coronavirus/coronavirus-age-sex-demographics/>
- <sup>6</sup> <https://www.cdc.gov/mmwr/volumes/69/wr/mm6940a5.htm>
- <sup>7</sup> [https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68\\_09-508.pdf](https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_09-508.pdf)
- <sup>8</sup> <https://www.cdc.gov/mmwr/volumes/70/wr/mm7014e1.htm>
- <sup>9</sup> [https://www.cdc.gov/mmwr/volumes/71/wr/mm7104e2.htm?s\\_cid=mm7104e2\\_w](https://www.cdc.gov/mmwr/volumes/71/wr/mm7104e2.htm?s_cid=mm7104e2_w)
- <sup>10</sup> <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0081355>