

1 **DECLARATION OF TARA VIJAYAN, M.D., M.P.H.**

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- 3 1. My name is Tara Vijayan. I am a physician specializing in infectious diseases
- 4 and internal medicine, and I am Board Certified in both fields. I received my
- 5 medical degree at Albert Einstein College of Medicine and my post-graduate
- 6 training at the University of California, San Francisco. In addition to a
- 7 medical doctorate, I have a master’s degree in public health, specializing in
- 8 epidemiology, from the University of California at Berkeley.
- 9 2. I have been practicing medicine for 13 years. This year I was voted a “Top
- 10 Doctor” by Los Angeles Magazine. I have won two teaching awards since I
- 11 joined the faculty at the David Geffen School of Medicine, was inducted into
- 12 Alpha Omega Alpha at my medical school, and have been awarded several
- 13 research fellowships over my career.
- 14 3. I currently serve as an assistant clinical professor in the Division of Infectious
- 15 Diseases at the David Geffen School of Medicine at the University of
- 16 California, Los Angeles. I have been in this position for the last five years. I
- 17 see patients in both the inpatient and outpatient settings.
- 18 4. I have been working through the SARS-CoV-2 (commonly referred to as
- 19 “COVID-19”) pandemic and treating patients with the virus. I estimate I have
- 20 treated approximately 100 patients who have tested positive for the virus. In
- 21 addition, as the Medical Director of our Antimicrobial Stewardship Program,
- 22 I am the lead author for our treatment guidance on COVID-19 and serve as
- 23 a leader in our Division of Infectious Diseases COVID-19 pandemic
- 24 response.

25 **Immunity**

- 26 5. There are still many aspects of this particular virus that we are studying, and
- 27 we do not have enough information about this virus and infection to provide
- 28 exact numbers.

- 1 6. We have a limited understanding of the duration of immunity among patients
2 who have tested positive for SARS-CoV-2. The immune response is a
3 complex process. One study published in the New England Journal of
4 Medicine demonstrated a rapid decay in the concentration of protective
5 antibody titers within 90 days of infection.¹
- 6 7. We also have some indication of how long immunity might last from studies
7 of other coronaviruses. For example, we already know that people get
8 reinfected regularly throughout their lives with seasonal coronaviruses that
9 cause some common colds. The data on these coronaviruses suggest that any
10 immunity to this particular coronavirus may not last long.
- 11 8. I agree with the guidance published by the Centers for Disease Control on
12 immunity to the virus, which states:
- 13 a. “The duration and robustness of immunity to SARS-CoV-2 remains
14 under investigation. Based on what we know from other related human
15 coronaviruses, people appear to become susceptible to reinfection
16 around 90 days after onset of infection. To date, reinfection appears to
17 be uncommon during the initial 90 days after symptom onset of the
18 preceding infection[.]”²
- 19 9. Re-infection with SARS-CoV-2 has been documented, with some
20 individuals presenting with more severe disease than the first infection.³ This

22 ¹ Ibarondo FJ, Fulcher JA, Goodman-Meza D, Elliott J, Hofmann C, Hausner
23 MA, Ferbas KG, Tobin NH, Aldrovandi GM, Yang OO. *Rapid Decay of Anti-
24 SARS-CoV-2 Antibodies in Persons with Mild Covid-19*. N Engl J Med. 2020 Sep
25 10;383(11):1085-1087. doi: 10.1056/NEJMc2025179.

26 ² Centers for Disease Control, *Duration of Isolation and Precautions for Adults
27 with COVID-19* (Oct. 19, 2020) available at
28 <https://www.cdc.gov/coronavirus/2019-ncov/hcp/duration-isolation.html>.

³ Kim AY, Gandhi RT. *Re-infection with SARS-CoV-2: What Goes Around May
Come Back Around*. Clin Infect Dis. 2020 Oct 9:ciaa1541. doi:
10.1093/cid/ciaa1541. Epub ahead of print. PMID: 33035308.

1 suggests that at least in some proportion of individuals immunity is not
2 sufficiently protective.

3 **Reinfection**

4 10. As stated above, re-infection has been documented. Some factors that have
5 been proposed to contribute to reinfection include: the lower durability and
6 robustness of immunity with mild infection; the viral inoculum at the time of
7 re-exposure; and, viral escape mutations.⁴

8 11.If someone was infected with the virus six or seven months ago, and had
9 recovered from it five or six months ago, it is very possible that they no
10 longer have immunity to the virus and can become infected again. From the
11 data we have, it appears that an individual can become infected again as early
12 as three weeks later, but in general, it appears that most reinfections occur at
13 least three months later.⁵

14 12.For example, in one case, a 36-year-old doctor practicing in an intensive care
15 unit was infected with the virus in March and was ill through early April. Her
16 symptoms resolved about 24 days after infection. She was then tested, and
17 tested negative, 33 days and 67 days after the onset of her first symptoms.
18 She had returned to work in the intensive care unit, where she was exposed
19 to the virus again. Twelve weeks after the first onset of symptoms, the doctor
20 again fell ill and tested positive for the virus.⁶ This is likely an example of
21 reinfection occurring after immunity dissipated, in an environment of regular
22 exposure to the virus.

24 ⁴ *Id.*

25 ⁵ *Id.*

26 ⁶ Torres DA, Ribeiro LDCB, Riello APFL, Horovitz DDG, Pinto LFR, Croda J.
27 *Reinfection of COVID-19 after 3 months with a distinct and more aggressive*
28 *clinical presentation: Case report. J Med Virol. 2020 Oct 28. doi:*
10.1002/jmv.26637. Epub ahead of print. Available at
<https://onlinelibrary.wiley.com/doi/full/10.1002/jmv.26637>.

1 13.I agree with the guidance published by the Centers for Disease Control on
2 reinfection, which is:

3 a. “To date, reports of reinfection have been infrequent. Similar to other
4 human coronaviruses where studies have demonstrated reinfection,
5 the probability of SARS-CoV-2 reinfection is expected to increase
6 with time after recovery from initial infection due to waning immunity
7 and possibly genetic drift. Risk of reinfection depends on the
8 likelihood of re-exposure to infectious cases of COVID-19. As the
9 COVID-19 pandemic continues, we expect to see more cases of
10 reinfection.”⁷

11 14.The possibility of reinfection is more likely in an environment where re-
12 exposure with a high viral inoculum is likely. Prisons and jails are such
13 environments where re-exposure with a high viral inoculum is likely, and I
14 expect to see reinfection happening in prisons and jails in the months to
15 come.

16 15.It will be important to continue to test people who have previously tested
17 positive in order to monitor for reinfection and a subsequent wave of cases
18 in prisons and jails. Without continuing, widespread testing at prisons and
19 jails, those same facilities that had prior outbreaks could see subsequent
20 outbreaks, which could be just as large and just as deadly.

21 **Prisons and Jails**

22 16.At present, the incidence of COVID-19 in correctional facilities in the United
23 States is very high. In other words, many cases are traced to prisons and jails
24 and the associated contacts in the community of those prisons and jails.

25 17.Those who are housed in prisons and jails are likely to be re-exposed to the
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27 ⁷ Centers for Disease Control, *Duration of Isolation and Precautions for Adults*
28 *with COVID-19* (Oct. 19, 2020) available at
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/duration-isolation.html>.

1 virus because of the unique features of the environment, including
2 congregate living and antiquated or poor ventilation, and because there is
3 already widespread infection in these facilities.

4 18.As requested, I have reviewed the following records that were provided to
5 me:

6 a. A Press Release by the Bureau of Prisons from September 17, 2020,
7 detailing the infection and death of Ricky Lynn Miller, an individual
8 who was incarcerated at FMC Butner (Attachment 1).

9 b. Affidavits written by three individuals at the Lompoc prison, Marlin
10 Lee Gougher, James Mazon, and Robert Rocha, detailing the history
11 of their test results (Attachment 2).

12 19.These documents state that all of these individuals were infected with SARS-
13 CoV-2 (they all tested positive). Mr. Miller tested positive at the beginning
14 of June, while the individuals at Lompoc tested positive at the beginning of
15 May. Mr. Miller had an intervening negative test. All four then tested positive
16 more than three months later—in September and October.

17 20.It is certainly possible that all of these individuals were reinfected either due
18 to a decline in their immunity or a lack of sufficient immune response at the
19 onset. In the cases of the three individuals at Lompoc, it would appear that
20 they tested positive for a second time more than four months after their
21 original positive test, and in one instance, closer to five months later. While
22 I cannot confirm that these are cases of reinfection, due to the lack of interval
23 testing as well as the lack of more granular details such as the cycle threshold,
24 it is certainly possible that these are all cases of reinfection, given our limited
25 understanding of immunity as well as the environment in which these
26 individuals are living and being regularly re-exposed to the virus.

27 21.Complete clearance of a prison of transmissible virus is not possible in the
28 absence of a highly effective, durable vaccine, like the measles vaccine, and

1 the likelihood of this remains uncertain (see below). Furthermore, the
2 movement of staff and prisoners in and out of the prison makes this even less
3 likely. Prisons are prime spaces for re-exposures.

4 22. Prisons and jails are responsible for a large number of cases as well as more
5 severe illness from the virus. The case rate in prisons is at least 5.5 times
6 higher than the general population, and the age-adjusted death rate is 3 times
7 higher than that of the overall U.S. population.⁸

8 23. People who are incarcerated often experience poor health, and many of the
9 health conditions they face place them at high risk of complications and death
10 from SARS-CoV-2. Research has shown that the prevalence of chronic
11 health conditions for individuals in prisons and jails is 24.5% to 42.8% higher
12 than in the general population.⁹

13 24. According to a case-tracking project for incarcerated populations, there had
14 been at least 197,659 prisoners in the United States who had tested positive
15 for the virus and at least 1,454 prisoner deaths, as of November 17, 2020.¹⁰
16 This number does not take into account the associated cases or deaths in the
17 community.

20 ⁸ Saloner B, Parish K, Ward JA, DiLaura G, Dolovich S. *COVID-19 cases and*
21 *deaths in federal and state prisons*. JAMA. 2020;324(6):602-603.

22 ⁹ See Wilper AP, Woolhandler S, Boyd JW, et al. *The health and health care of US*
23 *prisoners: results of a nationwide survey*. Am J Public Health. 2009;99(4):666-672;
24 Bai JR, Befus M, Mukherjee DV, Lowy FD, Larson EL. *Prevalence and predictors*
25 *of chronic health conditions of inmates newly admitted to maximum security*
26 *prisons*. J Correct Health Care. 2015;21(3):255-264; Rosen DL, Thomas S, Kavee
27 *AL, Ashkin EA. Prevalence of chronic health conditions among adults released*
28 *from the North Carolina prison system, 2015-2016*. N C Med J. 2019;80(6):332-
337; Maruschak LM, Berzofsky M, Unangst J., *Special Report: Medical Problems*
of State and Federal Prisoners and Jail Inmates, 2011-12, Dept. of Justice, Office
of Justice Programs, Bureau of Justice Statistics (Oct. 4, 2016), last accessed Nov.
23, 2020, available at <https://www.bjs.gov/content/pub/pdf/mpsfjji1112.pdf>.

¹⁰ The Marshall Project, *A state-by-state look at coronavirus in prisons* (Nov. 20,
2020) available at <https://www.themarshallproject.org/2020/05/01/a-state-by-state-look-at-coronavirus-in-prisons>.

1 Recovery

2 25. Even if a person recovered from a first infection with the virus that does not
3 mean that they will recover from a subsequent infection. An individual could
4 survive a first infection and die from a subsequent infection.

5 26. Likewise, people who had a mild or asymptomatic disease course the first
6 time around very well may not have a mild or asymptomatic disease course
7 with subsequent reinfection. Severe illness from COVID-19 is defined as
8 hospitalization, admission to the ICU, intubation or mechanical ventilation,
9 or death.

10 27. Studies suggest that individuals who previously had severe cases have a
11 stronger and longer-lasting immunity to SARS-CoV-2 infection than
12 individuals who had a milder illness.¹¹

13 28. The long-term complications are highly variable, but several conditions can
14 persist for months, including the loss of taste or smell, shortness of breath,
15 and fatigue, and infection can also result in damage to the heart, lungs,
16 kidneys, and nervous system.¹² Some studies suggest that long-term lung
17 damage, including scarring, can occur in even mild cases.¹³

18 29. There are also situations in which patients develop persistent symptoms long
19 after the virus can be detected in the body, for as long as six months or more.

21 ¹¹ Ibarondo FJ, Fulcher JA, Goodman-Meza D, Elliott J, Hofmann C, Hausner MA,
22 Ferbas KG, Tobin NH, Aldrovandi GM, Yang OO. *Rapid Decay of Anti-SARS-*
CoV-2 Antibodies in Persons with Mild Covid-19. *N Engl J Med*. 2020 Sep
23 10;383(11):1085-1087. doi: 10.1056/NEJMc2025179.

24 ¹² Rubin R. *As Their Numbers Grow, COVID-19 “Long Haulers” Stump Experts*.
25 *JAMA*. 2020 Sep 23. doi: 10.1001/jama.2020.17709. Epub ahead of print. PMID:
26 32965460; Marshall M. *The lasting misery of coronavirus long-haulers*. *Nature*.
27 2020 Sep;585(7825):339-341. doi: 10.1038/d41586-020-02598-6. PMID:
28 32929257.

¹³ See, e.g., Lois Parshley, *The Emerging Long-Term Complications of COVID-*
19, Explained, *Vox* (June 12, 2020), available at
[https://www.vox.com/platform/amp/2020/5/8/21251899/coronavirus-long-](https://www.vox.com/platform/amp/2020/5/8/21251899/coronavirus-long-term-effects-symptoms)
[term-effects-symptoms](https://www.vox.com/platform/amp/2020/5/8/21251899/coronavirus-long-term-effects-symptoms).

1 These patients are often referred to in the lay and scientific press as ‘long-
2 haulers.’ ‘Long-haulers’ report a variety of symptoms, including persistent,
3 extraordinary fatigue, shortness of breath, body aches, and an inability to
4 focus or fogginess.¹⁴

5 **A Vaccine**

6 30.The Pfizer and Moderna vaccine developments are promising. In a controlled
7 trial setting, the efficacy appears to be >90%. We do not know how long the
8 immune response from the vaccine series will last. We also do not know
9 about the real-world effectiveness of these vaccines.

10 31.Additionally, we do not know if the vaccine will be as effective in certain,
11 critical sub-populations, specifically: older individuals, those with lowered
12 immune systems, and those with obesity—the very populations at risk for
13 severe disease. Historically, certain vaccines have been less effective in
14 eliciting a sufficient immune response and preventing disease in these
15 populations (notably the influenza vaccine and even the hepatitis B vaccine,
16 which otherwise has excellent efficacy).¹⁵

17 32.While we are all hopeful that the current vaccine contenders will be
18 distributed to the broader population by the summer or fall of 2021, there is
19 currently no set time for when prisoners and correctional facility staff will be
20

21 ¹⁴ Rubin R. *As Their Numbers Grow, COVID-19 “Long Haulers” Stump Experts.*
22 *JAMA.* 2020 Sep 23. doi: 10.1001/jama.2020.17709. Epub ahead of print. PMID:
23 32965460; Marshall M. *The lasting misery of coronavirus long-haulers.* *Nature.*
2020 Sep;585(7825):339-341. doi: 10.1038/d41586-020-02598-6. PMID:
32929257.

24 ¹⁵ Lee JH, Hong S, Im JH, Lee JS, Baek JH, Kwon HY. *Systematic review and*
25 *meta-analysis of immune response of double dose of hepatitis B vaccination in*
26 *HIV-infected patients.* *Vaccine.* 2020 May 19;38(24):3995-4000. doi:
27 10.1016/j.vaccine.2020.04.022; Izurieta HS, Lu M, Kelman J, Lu Y, Lindaas A,
28 Loc J, Pratt D, Wei Y, Chillarige Y, Wernecke M, MaCurdy TE, Forshee R.
Comparative effectiveness of influenza vaccines among U.S. Medicare
beneficiaries ages 65 years and older during the 2019-20 season. *Clin Infect Dis.*
2020 Nov 19;ciaa1727. doi: 10.1093/cid/ciaa1727. Epub ahead of print.

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vaccinated.

33. Even an effective vaccine that is successfully and widely distributed—and administered to an entire jail population and its staff—is not going to be a silver bullet. Again, we do not know how long the immune response will last.

34. I anticipate that current public health measures such as physical distancing and masking will remain essential to mitigate the pandemic for the next two years, particularly in congregate settings such as prisons and jails.


35. Mitigating the pandemic, for all of the above-stated reasons, requires more than targeting immunity. A successful strategy will focus on preventing infection and preventing the spread of the virus.

36. We must manage our resources well. A large outbreak of thousands of cases associated with a local prison or jail will seriously deplete hospital and other resources for treating infected individuals.

37. I wholly agree with the large number of public health experts who have stated that further decarceration is a critically important strategy in mitigating the toll of this virus.

I state the foregoing is true and correct under penalty of perjury of the laws of the United States of America.

Dated: 11/24/2020



Dr. Tara Vijayan