STATE OF WISCONSIN

IN SUPREME COURT

Case No. 2020AP765-OA

WISCONSIN LEGISLATURE,

Petitioner,

v.

Secretary-Designee ANDREA PALM, JULIE WILLEMS VAN DIJK and NICOLE SAFAR, In Their Official Capacities as Executives of Wisconsin Department of Health Services,

Respondents.

AFFIDAVIT OF RYAN P. WESTERGAARD IN SUPPORT OF RESPONDENTS' RESPONSE TO PETITION FOR ORIGINAL ACTION

STATE OF WISCONSIN)
) ss.
COUNTY OF DANE)

I, **Ryan P. Westergaard**, MD, PhD, MPH, being first duly sworn, on oath, states as follows:

1. I am an adult resident of the State of Wisconsin and make this declaration based on my personal knowledge, including but not limited to access to and review of records at the Wisconsin Department of Health Services.

2. I am currently employed as Chief Medical Officer[1] and State Epidemiologist for Communicable Diseases at the Wisconsin Department of Health Services (DHS), Division of Public Health, Bureau of Communicable Diseases.

3. The Division of Public Health (DPH) is the organizational unit responsible for public health at the state level.

4. I am a board-certified physician and epidemiologist specializing in infectious diseases. I earned my medical degree from the Johns Hopkins University School of Medicine. I earned a PhD in clinical research and completed post-doctoral training in the epidemiology of viral infections at the Johns Hopkins Bloomberg School of Public Health. I hold a Bachelor of Science with Honors in Bioethics from the University of Wisconsin-Madison.

Background

5. SARS-CoV-2, the virus that causes coronavirus disease 2019 ("COVID-19"), represents a grave global health emergency with significant potential to produce a high number of deaths. COVID-19 is a communicable disease that is highly transmissible via respiratory droplets and fomites. Fomites are objects contaminated with the virus that may serve as an agent for transmission of the infection.

6. Individuals with COVID-19 report a wide range of symptoms including fever, cough, shortness of breath or difficulty breathing, muscle pain, headache, fatigue, sore throat, nausea, vomiting, and diarrhea. The clinical picture is highly variable: Individuals with COVID-19 may not suffer from any of these symptoms, or may not suffer from them simultaneously. Symptoms of COVID-19 can appear in as few

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[1] "Chief medical officer" means the person appointed by the state health officer under s. 250.02(2), Stats., to provide public health consultation and leadership in the program area of acute and communicable disease and who serves also as state epidemiologist for that program area." Wis. Admin. Code DHS § 145.03(3).

as two days or as long as 14 days after contact with someone who has COVID-19.

7. An individual may have active SARS-CoV-2 infection without exhibiting any symptoms. Asymptomatic transmission, whereby individuals who feel and appear healthy can spread the virus to other people, is a key driver of the COVID-19 pandemic, and presents an extraordinary challenge for slowing the spread of the disease.

8. SARS-CoV-2 is a novel virus, meaning it has never been observed to infect humans prior to its emergence in China in late 2019. It is unlike seasonal influenza and other known coronavirus species, to which a high proportion of the population has been exposed and has developed a protective immune response. Rather, the entire population is likely susceptible to SARS-CoV-2 infection, a fact that contributes to its rapid global spread.

9. A significant subset of patients with COVID-19 develop severe disease, which may require hospitalization, intensive care, and mechanical ventilation.[2] Risks are highest for older persons, with fatality rate among persons greater than 85 years of age ranging from 10–27%.

10. There is no proven effective treatment to reduce morbidity and mortality, and no vaccine has been developed and proven effective for any coronavirus.

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[2] *Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19) – United States, February 12 – March 16, 2020*, Ctr. for Disease Control & Prevention, 69 Morbidity & Mortality Wkly. Rep. 343–346, https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e2.htm (last reviewed Mar. 26, 2020); Elisabeth Mahase, *Covid-19: most patients require mechanical ventilation in the first 24 hours of critical care,* the BMJ (Mar. 24, 2020), https://doi.org/10.1136/bmj.m1201.

Transmissibility of COVID-19

11. SARS-CoV-2 is highly transmissible via respiratory droplets. These droplets are released when an infected person coughs, sneezes, speaks, or breathes. Infectious particles can remain in the air and on surfaces for an extended period of time. When people inhale the droplets, or touch surfaces that have been contaminated and then touch their mouths, faces, or eyes, the virus can make them sick. While larger droplets are believed to travel less than one meter, smaller droplets may travel further, and as far as four meters.[3] The amount of time the virus can survive in these droplets outside the body is unknown, but could be days under the right conditions.[4]

12. Public health experts quantify a disease's transmissibility in terms of its R_0 ("R Naught") or reproduction number. This number represents the average number of people to whom an infected person will transmit the virus over the course of the infection.

13. The reproduction number is not a biological constant, meaning it can be altered by behavior and/or the environment. While the precise reproduction number for COVID-19 remains unknown, some estimates suggest it is

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[3] Zhen-Donh Guo, et al., *Aerosol and surface distribution of severe acute respiratory syndrome coronavirus 2 in hospital wards, Wuhan, China, 2020*, Ctr. for Disease Control & Prevention, 26:7 Emer. Infect. Dis. (July 2020), https://doi.org/10.3201/eid2607.200885 (last updated Apr. 27, 2020).

[4] Neeltje Van Doremalen et al., Correspondence, *Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1*, 382 New Eng. J. Med. 1564 (2020), https://www.nejm.org/doi/full/10.1056/NEJMc2004973.

between 2.2 and 3.6.[5] This means that every person infected with the virus will infect 2.2–3.6 other people. An analysis of data from Wuhan, China, indicated exceptionally high transmissibility during the initial phase of the epidemic, with an estimated R_0 of 5.7.[6]

14. By comparison, seasonal influenza, which typically causes between 25,000 and 50,000 deaths per year in the United States, has a lower reproduction number of about 1.3.[7] Estimates of R_0 of the 1918 novel influenza pandemic, the deadliest communicable disease epidemic in modern history during which 50 million people died worldwide, was between 1.4 and 2.8.[8]

15. Control of the spread of COVID-19 has been especially challenging worldwide because of unrecognized transmission of the virus from people with minimal symptoms.[9] Viral shedding, which means release of the

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[5] Zhao S, Lin Q, Ran J, et al., *Preliminary estimation of the basic reproduction number of novel coronavirus (2019-nCoV) in China, from 2019 to 2020: A data-driven analysis in the early phase of the outbreak*, 92 Int. J. Infect. Dis. 214–217 (Mar. 2020), https://www.ncbi.nlm.nih.gov/pubmed/32007643.

[6] Steven Sanche, et al., Ctr. for Disease Control & Prevention, *High contagiousness and rapid spread of severe acute respiratory syndrome coronavirus 2*, 26:7 Emer. Infect. Dis. (July 2020), https://doi.org/10.3201/eid2607.200282.

[7] Matthew Biggerstaff et al., *Estimates of the Reproduction Number for Seasonal, Pandemic, and Zoonotic Influenza: A Systematic Review of the Literature*, 14:480 BMC Infectious Diseases (2014), https://bmcinfectdis.biomedcentral.com/track/pdf/10.1186/1471-2334-14-480.

[8] Brian J. Coburn et al., *Modeling Influenza Epidemics and Pandemics: Insights into the Future of Swine Flu (H1N1)*, 7:30 BMC Med. (2009), https://bmcmedicine.biomedcentral.com/track/pdf/10.1186/1741-7015-7-30.

[9] Wycliffe Wei, et al., *Presymptomatic Transmission of SARS-CoV-2 — Singapore, January 23–March 16, 2020*,

infectious viral particles from the body of an infected person via secretions such as respiratory droplets, can occur at a high level during the period before symptoms onset.[10]

Virulence (Severity) of COVID-19

16. Public health officials describe a disease's virulence by reference to the "case-fatality rate." Simply put, this is an expression of the percentage of infected people who will die from the disease.

17. The case-fatality rate varies by the presence of co-morbid health conditions, such as diabetes, cardiovascular disease, and preexisting lung disease,[11] and age; severe cases in older adults are common. The overall fatality rate, based on data from many different countries, has been reported to be 1–2%.[12] However, among adults older than 70, the fatality rate has been reported to be higher than 10%.

18. Like the reproduction number, the case fatality rate is not a biological constant, meaning it can shift up or down based on the characteristics of the affected population and its environment, and by the effectiveness and accessibility of health care resources.

Ctr. for Disease Control & Prevention, 69 Morbidity & Mortality Wkly. Rep. 411–415 https://www.cdc.gov/mmwr/volumes/69/wr/mm6914e1.htm?s_cid=mm6914e1_w (last reviewed Apr. 9, 2020).

[10] He, X., Lau, E.H.Y., Wu, P. et al. Temporal dynamics in viral shedding and transmissibility of COVID-19. *Nat. Med.* (Apr. 15, 2020), https://doi.org/10.1038/s41591-020-0869-5.

[11] Ctr. for Disease Control & Prevention, Coronavirus Disease 2019 (COVID-19), *Information For Healthcare Professionals: Covid-19 And Underlying Conditions,* https://www.cdc.gov/coronavirus/2019-ncov/hcp/underlying-conditions.html (last visited April 27, 2020).

[12] Robert Verity, et al., *Estimates of the severity of coronavirus disease 2019: a model-based analysis,* The Lancet Infectious Diseases (Mar. 30, 2020), https://doi.org/10.1016/S1473-3099(20)30243-7.

19. Unlike for seasonal influenza, there are currently no available countermeasures for COVID-19 such as effective anti-viral drugs. The estimated case fatality rate of seasonal influenza is approximately 0.1%. Based on the available data, the estimated overall case-fatality rate of 1–2% for COVID-19, indicating it is 10–20 times more virulent than seasonal influenza.

20. In severe cases, COVID-19 can cause fatal acute respiratory distress syndrome, cardiomyopathy, sepsis, pneumonia, and acute kidney injury. Strokes and venous thromboembolism have been recently reported in younger adult patients. Necessary interventions in severe cases may include supportive care, supplemental oxygen, breathing support (BiPAP, intubation and mechanical ventilation), fluids, vasopressors (medications to increase blood pressure), and dialysis.

COVID-19 will Likely Strain Health Care Resources

21. The combination of a novel virus that is highly transmissible and virulent creates the potential for a rapid surge in infections, an enormous number of overall infections, and a correspondingly high number of deaths.

22. While most people infected with COVID-19 do not require hospitalization, and while it is difficult to determine the precise percentage of infected people who will require such care, we know from experiences around the world and in the United States that COVID-19-related hospitalizations can put an enormous strain on hospitals and in particular on Intensive Care Units (ICUs).

23. If the demand for COVID-19-related hospitalization exceeds local capacity, patients could potentially be transferred to hospitals below capacity. However, if transfer is not possible, rationing of care will occur, including rationing ventilators. Hospitals that have exceeded their capacity to treat patients due to COVID-19 will be unable to treat other conditions such as heart failure or trauma from vehicular accidents. If a hospital's supply of Personal Protective Equipment (PPE) is exhausted,

healthcare workers will be at a significant risk of contracting COVID-19, further limiting the healthcare system's capacity to treat new cases.

24. A rapid surge in COVID-19 not only strains the healthcare system but can also result in the loss of critical workforce. As of April 27, 2020, there have been 909 cases among Wisconsin health care workers, accounting for 15% of all reported cases. The introduction of COVID-19 into a workplace can lead to rapid spread of the virus in a short period of time. Numerous deaths were reported among health care workers in Italy and China, where disease transmission within hospitals occurred frequently during the early weeks of the epidemic.

Strategies to Contain and Mitigate COVID-19

25. Public health experts refer to "containment" as a strategy for responding to communicable diseases such as COVID-19. The objective of containment is to prevent continued transmission within a population and keep the disease burden low. Containment of a communicable disease is highly resource intensive and requires a well-organized public health system and trained staff. Successful containment requires *identifying* all cases of disease, *isolating* affected patients and *quarantining* people who have had close contact with infected individuals. Contact tracing by public health personnel is the primary disease containment activity needed for containment at the local community level.

26. Public health experts refer to "mitigation" as a set of strategies involving larger-scale, community-wide interventions aimed at delaying or slowing the exponential growth of a pandemic when the size and speed of disease spread makes local containment impossible. Community mitigation strategies such as school closures and social distancing measures for workplaces and mass gatherings have been a core component of the pandemic preparedness

framework developed by CDC and other global health agencies.[13]

27. The premise underlying mitigation is that physical distance (i.e., at least 6 feet) between individuals who are infected and those who are susceptible is key to preventing the virus from spreading from person-to person. In the absence of countermeasures such as effective treatments or a vaccine, physical distancing is the main tool for lowering the reproductive number of a respiratory virus.

Emergence and Growth of the COVID-19 Epidemic in Wisconsin

28. The first case of COVID-19 was identified in Wisconsin on February 5 in a traveler returning from China. Investigation of the case by local public health and hospital staff led to safe isolation of the patient, and quarantine of contacts identified through contact tracing. It is believed that no onward transmission resulted from the first case, indicating that local containment efforts were successful.

29. The second and third cases of COVID-19 in Wisconsin were identified on March 9. Within one week, by March 16, COVID-19 was reported in 47 Wisconsin residents, some of whom did not have known travel history or exposure to known cases. The detection of multiple cases of COVID-19 without epidemiologic links to known cases or travel regions of where the virus was known to be spreading widely provided the first evidence of person-to-person spread of the disease in Wisconsin communities.

30. Community transmission continues in Wisconsin. As of April 27, 2020, 6,081 cases have been reported in 66 out of 72 Wisconsin counties.

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[13] Noreeen Qualls, et al. *Community Migration Guidelines to Prevent Pandemic Influenza – United States, 2017*, Ctr. for Disease Control & Prevention, 66 Morbidity & Mortality Wkly. Rep. 2017 1–34 (Apr. 21, 2017), https://www.cdc.gov/mmwr/volumes/66/rr/rr6601a1.htm.

31. The "doubling rate" refers to the number of days it takes for the number of confirmed cases to double, and is a commonly used metric for understanding the speed or trajectory of a disease epidemic. During early March, DHS observed the doubling rate in Wisconsin to be 3.4 days. This doubling rate was comparable to what was observed in a number of other countries with rapidly accelerating case counts, such as Italy and Spain.

Using Mathematical Models to Understand the COVID-19 Trajectory

32. Simulation models have been developed to predict the likely trajectory of communicable disease epidemics, incorporating basic assumptions about the transmissibility of the virus, duration of infectiousness of infected patients, and characteristics about population size, density, and movement. Using parameters based on observations of the epidemic in China, researchers at Imperial College London predicted that, in the absence of any mitigation efforts, COVID-19 would result in approximately 510,000 deaths in Great Britain and 2.2 million deaths in the United States. [14]

33. Real world data reported from several regions where the virus began to spread widely throughout communities before mitigation efforts were implemented confirmed the propensity of COVID-19 to demonstrate rapid exponential growth. The Hubei province in China witnessed an exponential increase in cases: there were 7,153 confirmed cases reported on February 1, but by February 22 this had

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[14] Neil Ferguson, et al., Imperial College COVID-19 Response Team, *Report 9: Impact of non-pharmaceutical interventions (NPIs) to reduce COVID-19 mortality and healthcare demand*, (Mar. 16, 2020), https://www.imperial.ac.uk/media/imperial-college/medicine/sph/ide/gida-fellowships/Imperial-College-COVID19-NPI-modelling-16-03-2020.pdf.

increased to 63,454 cases.[15] Italy followed a similar trajectory during the past two months, beginning with two cases on February 1 and increasing to 175,925 cases and 23,227 reported deaths by April 19.[16] Domestically, New York City reported its first case on March 3 and is reporting a total of 156,100 cases and 11,708 deaths as of April 27, 2020.[17]

34. In the period before March 24, DHS was reviewing similar projections from other modeling efforts, and consulting regularly with healthcare organizations around the state who were preparing their own models and expressing concern that the number of cases and associated hospitalizations could quickly exceed their capacity, particular their ICU bed capacity and ventilator capacity.

35. The Office of Health Informatics at DPH developed models based on strategies and assumptions used in other contexts, incorporating the data observed in Wisconsin during the first several weeks of March. These models predicted that in the absence of social distancing interventions, the number of cases and deaths in Wisconsin could have reached 1,200 cases by March 25 resulting in 10–87 deaths; 5,000 cases by April 1 resulting in 100–350 deaths; 22,000 cases by April 24 resulting in 440–1,500 deaths.

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[15] World Health Organization, *Coronavirus disease 2019 (COVID-19) Situation Report – 33* (Feb. 22, 2020), https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200222-sitrep-33-covid-19.pdf?sfvrsn=c9585c8f_4; World Health Organization, *Novel Coronavirus (2019-nCoV) Situation Report – 12* (Feb. 1, 2020), https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200201-sitrep-12-ncov.pdf?sfvrsn=273c5d35_2.

[16] World Health Organization, *Coronavirus disease 2019 (COVID-19) Situation Report – 90* (Apr. 19, 2020), https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200419-sitrep-90-covid-19.pdf?sfvrsn=551d47fd_2.

[17] NYC Health, *COVID-19: Data* https://www1.nyc.gov/site/doh/covid/covid-19-data.page (last visited Apr. 27, 2020).

36. Given what the data indicated about the expected exponential growth of the epidemic in Wisconsin, there was an urgent need for implementation of mitigation measures to avoid a surge of cases that could overwhelm hospital capacity. On March 24, 2020, Secretary-designee Palm signed Emergency Order Number 12 ("First Safer at Home Order"). At the time, there were 457 confirmed cases of COVID-19 in Wisconsin.

The Predicted Impact of Community Mitigation Measures

37. Restricting physical contact is a necessary tool for preventing the development and growth of local community "hotspots." Virus transmission inside homes and enclosed public spaces occurs frequently and easily among people with asymptomatic infection. Transmission within homes may be impossible to prevent entirely if one member of a household unit becomes infected. Limiting close contact between members of *different* household is therefore a key strategy for interrupting chains of transmission within communities.

38. Data from the current pandemic provide evidence that social distancing interventions effectively reduce virus transmission. Self-isolation, closures of schools and universities, bans on mass gatherings, and stay at home orders have been shown to be effective in the United Kingdom. Prior to implementing these measures, the effective reproduction number— the average number of people that develop disease after contact with an infected person— was almost four.[18] After these measures, the reproductive number

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[18] Seth Flaxman, et al., *Report 13: Estimating the number of infections and the impact of non-pharmaceutical interventions on COVID-19 in 11 European countries.* Imperial College London (Mar. 30, 2020), https://doi.org/10.25561/77731 or https://spiral.imperial.ac.uk:8443/bitstream/10044/1/77731/10/2020-03-30-COVID19-Report-13.pdf (last visited Apr. 28, 2020).

decreased to around one, indicating that COVID-19 transmission had been significantly reduced.

39. Disease modeling for Wisconsin, conducted by DHS in coordination with researchers at Johns Hopkins University, indicates that ending the Safer at Home order would produce a large peak in cases requiring hospitalization that exceeds current capacity. If the order is lifted and not replaced with a robust and successful containment strategy, the DHS modeling data suggests that peak hospitalizations in Wisconsin could exceed 25,000 patients during the summer.

Intensified Containment Strategies are Necessary to Prevent a Surge of Disease when Community Mitigation Strategies are Scaled Back

40. Community mitigation strategies cannot be sustained indefinitely without incurring substantial social, economic and public health consequences. DHS has proposed phased strategy for transitioning away from social distancing measures. Named the "Badger Bounce Back" plan, the strategy proceeds in three phases:

a. ***Phase 1***: Lifting some restrictions while implementing widespread testing and containment strategies with continued infection control and physical distancing measures. Examples of restrictions that would be lifted include opening restaurants, removal of retail restrictions, partially opening non-essential businesses and reopening childcare centers and K-12 schools;

b. ***Phase 2***: Lifting more restrictions while implementing widespread testing and containment strategies with continued infection control and physical distancing measures. Examples of restrictions that would be lifted include allowing mass gatherings of up to 50 people, opening bars, completely opening non-essential businesses and considering opening post-secondary institutions.

c. ***Phase 3:*** Lifting most restrictions while implementing widespread testing and containment strategies with continued infection control. Deploying medical countermeasures, including vaccines and therapeutics, as they become available.

41. During Phase 1, substantial investments are required in the State and local public health disease containment and response infrastructure, including sufficient resources to test widely, isolate all infected people, and perform effective contact tracing to identify everyone who has been exposed to infected individuals. To be effective at the scale required in the current epidemic, contact tracing must utilize an expanded workforce, new data and technology platforms, and community supports.

42. In addition, there needs to be an expansion of workforce and health care capacity to implement robust infection prevention and control practices in congregate living settings such as long-term care, assisted living, correctional facilities and jails.

43. To transition from Phase 1 to Phase 2 requires economic infrastructure and social supports for individuals, families and small businesses who are most vulnerable and directly impacted by isolation and quarantine directives are required. Rural and urban assets and gaps must be addressed in a detailed plan of action. Investments in a healthcare workforce that address short-term and long-term health care sectors and the functional and access needs of diverse populations.

44. Effective community engagement and support for human service sectors is needed to ensure that individuals found to be exposed to COVID-19 can safely quarantine for the required 14-day period. Teams of individuals with knowledge of local communities must be deployed to engage with individuals suspected of having COVID-19 to support safe isolation and quarantine at home, and to conduct contact investigation interviews in a culturally sensitive way that engenders trust.

45. During Phase 2, containment measures and social supports established during Phase 1 will be fully implemented. Some social distancing measures can be lifted in stepwise fashion based on the best available evidence. This deliberate and sequential approach should be clearly communicated through a robust public education campaign to avoid undermining the work that has led up to this point.

46. Given the significant resources being committed to vaccine development, we are hopeful that an effective vaccine will be introduced within the next 2 years. An effective vaccine could potentially provide lasting immunity to SARS-CoV-2, disrupt transmission of the virus in communities, and if accessible to all and brought to scale, could end the COVID-19 pandemic as a global health concern.

Dated this 28th day of April 2020.

Ryan P. Westergaard, MD, PhD, MPH

Subscribed and sworn to before me
this 28th day of April, 2020.

Notary Public, State of Wisconsin
My Commission ~~expires~~: is permanent