EXHIBIT 4

IN THE SUPREME COURT OF PENNSYLVANIA

PENNSYLVANIA DEMOCRATIC PARTY, et al., Petitioners, v. KATHY BOOCKVAR, et al., Respondents.	No. 133 MM 2020

AFFIDAVIT OF DONALD S. BURKE, MD

September 8, 2020

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I. Introduction

1. My name is Donald S. Burke. I have been retained by Wilmer Cutler Pickering Hale and Dorr LLP, counsel for Common Cause Pennsylvania; The League of Women Voters of Pennsylvania; The Black Political Empowerment Project ("B-PEP"); Make the Road Pennsylvania, a project of Make The Road States ("Make the Road PA"); Patricia DeMarco; Danielle Graham Robinson; and Kathleen Wise (together, "Amici") in the matter *Pennsylvania Democratic Party, et al., v. Boockvar, et al*., No. 133 MM 2020.

2. A central issue in this matter is the impact of COVID-19—including how it spreads, and vulnerable populations—and the related risks created by in-person voting. I have been asked to evaluate the transmission and spread of COVID-19 and the effect of in-person voting on its spread. I have also been asked to assess and comment on any opinions provided by other experts on these same issues.

II. Summary of Opinions

3. The SARS-CoV-2/COVID-19 pandemic is a serious and grave threat to public health that has led to over 6.2 million Americans being infected and has resulted in greater than 187,000 American deaths, and counting.

4. In-person voting at a polling place on election day poses serious health risks to many voters—particularly older voters, persons of color, and/or persons

with conditions that place them at increased risk. In-person voting will likely expose voters and poll workers to the novel coronavirus SARS-CoV-2, lead to new cases of COVID-19, and result in avoidable serious illness and even death. If voters fear casting their ballots in person at a polling place on election day based on spreading or contracting SARS-CoV-2, their concerns are legitimate from a medical and public health basis.

5. Returning any kind of ballot in person, including mail-in or absentee ballots, directly to an election official poses significant health risks to many voters—particularly older voters, persons of color, and/or persons with conditions that place them at increased risk. Returning any kind of ballot in person will likely expose voters to the novel coronavirus SARS-CoV-2, lead to new cases of COVID-19, and result in avoidable serious illness and even death. If voters fear personal delivery of their mail-in ballot based on spreading or contracting SARS-CoV-2, their concerns are legitimate from a medical and public health basis.

6. These health risks will be disproportionately borne by older Americans, low-income communities and communities of color. The disproportionately high prevalence of chronic underlying medical conditions and other risk factors in these communities will be compounded by longer wait times and larger congregations of voters waiting in line to cast their ballot.

7. As compared to in-person voting at a polling place, voting by depositing a ballot in a mail-box or in a drop-box is significantly safer for individual voters—particularly older voters, persons of color, and/or persons with conditions that place them at increased risk—and would reduce the risk of community spread of SARS-CoV-2.

8. Given that the only viable public health strategies available in the United States currently are risk mitigation and containment, reducing the number of events where large numbers of the general public cycle through enclosed spaces is imperative. Not taking steps to reduce these kinds of events is not only inadvisable but also reckless given the public health realities we now face in the United States.

9. Permitting voters to vote by mail or by drop-box will protect the health of voters and particularly those who are at especially at risk due to their age, compromised immune systems, or because they live with at-risk friends or family members. Steps taken to encourage and promote voting by mail or by drop-box—which can take place outside, and do not require interaction with an election official—will reduce the transmission of the novel coronavirus, thereby preventing illness and likely saving lives.

III. Background

10. I received a B.A. in chemistry and biology, *magna cum laude*, from Western Reserve University in 1967. I received a M.D. from Harvard Medical School in 1971.

11. From 1971-1976, I completed my residency training and fellowship at the Boston City Hospital and the Massachusetts General Hospital. I subsequently spent two years as a research fellow in infectious disease at the Walter Reed Army Medical Center.

12. I am the Distinguished University Professor of Health Science and Policy, the Jonas Salk Chair in Population Health, and a Professor of Epidemiology at the University of Pittsburgh.

13. I was the Dean of the University of Pittsburgh's Graduate School of Public Health from 2006-2019. I also served as the Director of the University of Pittsburgh's Center for Vaccine Research from 2006-2016.

14. I am a member of the Board of Health for Allegheny County, and have served in this capacity since 2008.

15. From 1973 to 1997, I served in the United States Army in multiple capacities, including as a Clinical Ward Officer for the U.S. Army Medical Research Institute of Infectious Diseases, a Clinical Desk Officer and Chief for

the Department of Virus Diseases, a Chief in the Virology Department of the Armed Forces Research Institute of Medical Sciences in Bangkok, Thailand, of which I subsequently served as Deputy Director, and a Research Fellow in Infectious Disease. From 1988-1990 I was a Director in the Division of Retrovirology at the Walter Reed Army Institute of Research. In 1988, I founded the U.S. Military HIV/AIDS Laboratory Complex, of which I served as Director until 1996. From 1996-1997, I was the Associate Director for Emerging Threats and Biotechnology.

16. I retired from the United States Army at the rank of Colonel after 23 years of active duty.

17. From 1997 to 2006, I was a Professor of International Health and Professor of Epidemiology at the Johns Hopkins Bloomberg School of Public Health, and a Professor of Medicine at the Johns Hopkins School of Medicine. I was also the Director of the Johns Hopkins Bloomberg School of Public Health's Center for Immunization Research.

18. I hold the following professional certifications, memberships, and affiliations:

- Elected Member, National Academy of Medicine
- Elected Fellow, American Association for the Advancement of Science
- Elected Fellow, American Academy of Microbiology

- Elected Fellow, American Epidemiological Society
- Fellow and former President (1995-96), American Society of Tropical Medicine and Hygiene
- Fellow, Royal Society of Tropical Medicine and Hygiene (U.K.)
- Fellow, American College of Physicians
- Fellow, Infectious Disease Society of America
- Member, American Public Health Association
- Member, Physicians for Human Rights
- Member, American Society for Virology
- Member, American Association for the History of Medicine
- Member, International AIDS Society
- Member, International Society for Vaccines
- Certified Diplomat in the Sub-Specialty of Infectious Diseases, American Board of Internal Medicine (1978-present)
- Certified Diplomat in the Specialty of Internal Medicine, American Board of Internal Medicine (1977-present)

19. I have studied prevention and control of infectious diseases of global concern, including HIV/AIDS, influenza, dengue, and emerging infectious diseases. I lived for six years in Thailand, worked extensively in Cameroon, and conducted field epidemiology and vaccine studies in those countries and in numerous other developing countries.

20. I led a trans-disciplinary team to develop computational models and simulations of epidemic infectious and chronic diseases and use these simulations to forecast possible future trajectories of epidemics, and to evaluate prevention and control strategies. I have won major competitive grants for research on modeling of epidemic infectious diseases from the National Institutes of Health ("NIH"), the Centers for Disease Control and Prevention ("CDC"), the

Department of Defense, the Bill and Melinda Gates Foundation, and the Robert Wood Johnson Foundation. I am currently conducting research to apply these methods to the COVID-19 pandemic.

21. I co-founded and serve as President and Chairman of the Board of Epistemix, Inc., a start-up company the provides software and services for computational modeling to forecast and control epidemic diseases.

22. I have served on expert advisory panels on epidemic infectious diseases for the NIH, CDC, Food and Drug Administration ("FDA"), and the World Health Organization ("WHO").

23. In a book chapter on emerging viruses,[1] I correctly predicted the epidemic threat posed by coronaviruses, five years before the emergence of SARS. I authored two op-ed articles in *The Wall Street Journal* on the emergence of SARS and related viruses.

24. I have been interviewed and quoted about COVID-19 epidemiology in major national media (*Newsweek*, March 16; *New York Times,* April 23 and May 4), and in Pittsburgh and other Pennsylvania print, radio, and television media on numerous occasions.

[1] DONALD S. BURKE, *Evolvability of Emerging Viruses*, PATHOLOGY OF EMERGING INFECTIONS Ch. 1 (Nelson A.M. and Horsburgh C.R., eds., American Society of Microbiology, 1998).

25. I serve on the expert Advisory Group to the National Academy of Medicine and the American Public Health Association on their national COVID-19 webinar series.

26. I have authored or co-authored over 300 peer-reviewed academic publications mostly on the topic of epidemic infectious diseases. My *curriculum vitae* lists all of the publications I have authored, including all those in the last 10 years, and is attached as Appendix A.

27. My contributions to epidemiology have been recognized by my peers. For example, in 2018, I received the John Snow Award from the Epidemiology Section of the American Public Health Association. In 2019 I was the Alexander Langmuir Keynote Lecturer at the American Epidemiological Society.

28. I have not testified as an expert at deposition or trial in the last four years.

IV. Materials Considered

29. In forming the opinions that I express in this report, I considered the materials referenced in the body of this report, the documents identified in Appendix B, and my own knowledge and experience.

V. Compensation

30. I am being compensated for my time at a consulting rate of $225 per hour, up to $4,000, and reimbursement for reasonable travel expenses. My compensation is not contingent upon the nature of my opinions, findings, conclusions, or the outcome of this matter.

VI. COVID-19

31. The SARS-CoV-2 coronavirus causes a disease known as COVID-19.[2] COVID-19 was declared to a pandemic by the World Health Organization (WHO) in March 2020. As of September 5, 2020, more than 6.1 million people have been infected with the coronavirus in the United States, and more than 187,000 people have died due to COVID-19.[3] The reported numbers of infections and of deaths in the United States are likely undercounted due to months of undertesting stemming from a variety of issues including a lack of testing kits, an inadequate

[2] My report and other sources may refer to COVID-19 (the disease) interchangeably with SARS-CoV-2 (the virus).

[3] *See Cases in the U.S.*, CTRS. FOR DISEASE CONTROL AND PREVENTION, https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html (last accessed Sept. 5, 2020).

supply of personal protective equipment, and the sizeable number of people who are asymptomatic carriers of the virus.[4]

32. SARS-CoV-2 is easily spread through respiratory transmission and can be spread by both infected individuals exhibiting symptoms and asymptomatic carriers. Infected persons can transmit the virus before they start to show symptoms, and perhaps even for weeks after their symptoms resolve. A substantial portion of infected individuals, perhaps up to 35%, never show symptoms at all but may still transmit the virus to others.[5] Others may be capable of transmitting the virus before they develop symptoms. This means that testing or isolating only persons known to have symptoms will not stop the spread of infection. In addition, some people are so-called "superspreaders," who are thought to be more infectious than others and contribute to a higher rate of transmission due to a variety of causes, including behaviors and biological factors.

33. All people are susceptible to and capable of being infected with SARS-CoV-2 because of the ease with which the virus spreads and the low rates of

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[4] *See* Apoorva Mandavilli, *Actual Coronavirus Infections Vastly Undercounted, C.D.C. Data Shows*, N.Y. TIMES (June 27, 2020), https://www.nytimes.com/2020/06/27/health/coronavirus-antibodies-asymptomatic.html (updated Aug. 6, 2020).

[5] *COVID-19 Pandemic Planning Scenarios*, CTRS. FOR DISEASE CONTROL AND PREVENTION (May 20, 2020), https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html.

immunity in the population. The virus is spread through large and small airborne droplets; that is, when an infected individual—whether symptomatic or asymptomatic—speaks, coughs, sneezes, talks, sings, etc., that individual expels droplets which can transmit the virus to others in their proximity. Some evidence suggests that the virus can be aerosolized, such that tiny droplets containing the virus can remain in the air and be inhaled by others who come into contact with that air. The virus is also known to be spread through contact with contaminated surfaces, for example, when an infected person touches a surface with a hand they have coughed into and then another person touches that same surface before it has been disinfected and then touches their face. The virus can survive on some contaminated surfaces for up to three days.[6]

34. Without adhering to effective social distancing measures, a SARS-CoV-2 infected individual is estimated to infect on average two to three others, in a community context. This "basic reproduction number," or R_0, for SARS-CoV-2 is higher in comparison to that of seasonal influenza, where on average one to one and one-half others become infected. The R_0 can vary according to population

[6] Neeltje van Doremalen et al., *Aerosol and Surface Stability of SARS-CoV-2 as Compared With SARS-CoV-1*, 382 NEW ENG. J. MED. 1962 (2020), https://pubmed.ncbi.nlm.nih.gov/32182409/; *How COVID-19 Spreads*, CTRS. FOR DISEASE CONTROL AND PREVENTION, https://tools.cdc.gov/api/v2/resources/media/407478/content.html (last accessed Sept. 5, 2020).

density, with higher population density geographic areas having higher R_0 values than lower population density areas.[7]

35. Outbreaks of COVID-19 have been reported in both indoor and outdoor spaces. Outbreaks have been linked to restaurants (Lu), fitness classes (Jang), and during choir practice in a "large multipurpose room" (Hamner). Attending events at a church led to a high COVID-19 attack rate (James). Family gatherings, such as attending a funeral or a birthday party, have led to COVID-19 clusters (Ghinai). These outbreaks demonstrate the infectiousness of SARS-CoV-2 and the possibility for transmission at indoor congregate activities, even in relatively spacious settings like a church—and, as relevant here, at a polling place where voting is occurring during an election—or in a crowded line without adequate social distancing.[8]

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[7] Paul L. Delamater, Erica J. Street, Timothy F. Leslie, Y. Tony Yang, and Kathryn H. Jacobsen, *Complexity of the Basic Reproduction Number (R_0)*, EMERGING INFECTIOUS DISEASES, Vol. 25, No. 1 (January 2019); *see also* Seth Flaxman et al., *Estimating the effects of non-pharmaceutical interventions on COVID-19 in Europe*, 584 NATURE 257 (2020), https://www.nature.com/articles/s41586-020-2405-7; Eskild Peterson et al., *Comparing SARS-CoV-2 with SARS-CoV and influenza pandemics*, 20 LANCET INFECTIOUS DISEASES e238 (2020), https://doi.org/10.1016/S1473-3099(20)30484-9; Ruiyun Li et al., *Substantial undocumented infection facilitates the rapid dissemination of novel coronavirus (SARS-CoV-2),* 368 SCIENCE 489 (2020), https://science.sciencemag.org/content/368/6490/489.full; Benjamin J. Cowling et al., *The effective reproduction number of pandemic influenza: Prospective estimation*, 21(6) EPIDEMIOLOGY 842 (2010), author manuscript available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3084966/.

[8] Jianyun Lu, et al., *Early Release-COVID-19 Outbreak Associated with Air Conditioning in Restaurant, Guangzhou, China, 2020*, 26 EMERG. INFECT. DIS. 1628 (2020), https://wwwnc.cdc.gov/eid/article/26/7/pdfs/20-0764-combined.pdf; Sukbin Jang, et al., *Cluster of Coronavirus Disease Associated with Fitness Dance Classes, South Korea*, 26 EMERG.

36. COVID-19 is a serious multi-system disease, which can lead to, among other things, respiratory, heart, and kidney failure, and ultimately death. Older persons and persons of any age with chronic underlying conditions are at a particularly high risk of severe cases and complications.[9]

37. According to the Centers for Disease Control and Prevention ("CDC"), underlying conditions that create an increased risk of severe illness from COVID-19 include cancer, chronic kidney disease, chronic obstructive pulmonary disease, immunocompromised state, obesity, serious heart conditions, sickle cell disease, and Type 2 diabetes.[10] In addition, conditions that might cause an increased risk of severe illness from COVID-19 include asthma, smoking, hypertension, pregnancy, cerebrovascular disease, cystic fibrosis, neurologic conditions, liver disease, pulmonary fibrosis, thalassemia, and Type 1 diabetes.

INFECT. DIS. 1917 (2020), https://wwwnc.cdc.gov/eid/article/26/8/pdfs/20-0633-combined.pdf; Isaac Ghinai, et al., *Community Transmission of SARS-CoV-2 at Two Family Gatherings - Chicago, Illinois, February-March 2020*, 69 MORBIDITY & MORTALITY WKLY REP. 446 (2020), https://www.cdc.gov/mmwr/volumes/69/wr/mm6915e1.htm; Lea Hamner, et al., *High SARS-CoV-2 Attack Rate Following Exposure at a Choir Practice — Skagit County, Washington, March 2020*, 69 MORBIDITY & MORTALITY WKLY REP. 606 (2020), https://www.cdc.gov/mmwr/volumes/69/wr/mm6919e6.htm.

[9] Fei Zhou et al., *Clinical Course and Risk Factors for Mortality of Adult Inpatients with COVID-19 in Wuhan, China*, 395 LANCET 1054 (2020), https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30566-3/fulltext.

[10] *People with Certain Medical Conditions*, CTRS. FOR DISEASE CONTROL AND PREVENTION, https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html (last accessed Sept. 5, 2020).

38. The Kaiser Family Foundation has estimated the proportion of each state's population at elevated risk for severe COVID-19 illness due to underlying conditions, based on the definition from the CDC of adults who are at increased risk and the CDC's 2018 Behavioral Risk Factor Surveillance System. Based on this analysis, ***in Pennsylvania, 40% of adults (over the age of 18) are at elevated risk for severe illness due to COVID-19—that is approximately four million people***. And older adults (age 65 years and over) make up 58% of that elevated risk population in Pennsylvania.[11]

39. COVID-19 is associated with an increased need for care, including intensive care, and an increased likelihood of death, compared to seasonal influenza. According to recent estimates, the fatality rate of people infected with COVID-19 is about ten times higher than a severe seasonal influenza, even in

[11] *State Data and Policy Actions to Address Coronavirus*, KAISER FAMILY FOUNDATION, https://www.kff.org/coronavirus-covid-19/issue-brief/state-data-and-policy-actions-to-address-coronavirus/ (last accessed Sept. 5, 2020); *How Many Adults Are at Risk of Serious Illness If Infected with Coronavirus? Updated Data*, KAISER FAMILY FOUNDATION, https://www.kff.org/global-health-policy/issue-brief/how-many-adults-are-at-risk-of-serious-illness-if-infected-with-coronavirus/ (last accessed Sept. 5, 2020).

advanced countries with highly effective health care systems.[12] Serious illness, sometimes resulting in death, occurs in approximately 3% of cases.[13] The rate of life-threatening complications is higher among elderly and other at-risk individuals.

40. Patients with COVID-19, particularly those in high-risk categories, may have serious illness requiring hospitalization. For those hospitalized with COVID-19, their care often requires expensive hospital care, including an entire team of health professionals with 1:1 or 1:2 staff to patient ratios, respiratory therapists, and several specialists, including intensive care and infectious disease physicians.[14] Those infected with coronavirus—both those who were hospitalized and those who had mild to moderate disease not requiring hospitalization—may face prolonged recovery periods, potentially requiring extensive rehabilitation.[15]

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[12] Marco Cascella et al., *Features, Evaluation, and Treatment of Coronavirus (COVID-19)*, STATPEARLS, https://www.ncbi.nlm.nih.gov/books/NBK554776/ (updated Aug. 10, 2020) (noting the fatality rate of the COVID-19 outbreak in China was 2.3%); Eskild Peterson et al., *Comparing SARS-CoV-2 with SARS-CoV and influenza pandemics*, 20 LANCET INFECTIOUS DISEASES e238 (2020), https://doi.org/10.1016/S1473-3099(20)30484-9 (estimating that COVID-19 has a fatality rate of approximately 1%); *Disease Burden of Influenza*, CTRS. FOR DISEASE CONTROL AND PREVENTION, https://www.cdc.gov/flu/about/burden/index.html (last accessed Sept. 5, 2020) (reporting annual influenza infection numbers of 9 million – 45 million and annual influenza-caused deaths of 12,000 – 61,000 since 2010).

[13] *Supra* note 5.

[14] Chris Carter & Joy Notter, *COVID-19 disease: a critical care perspective*, 1 CLINICS IN INTEGRATED CARE 100003 (2020), available at https://doi.org/10.1016/j.intcar.2020.100003.

[15] Derick T. Wade, *Rehabilitation after COVID-19: an evidence-based approach*, 20(4) CLINICAL MED. 359 (2020).

41. Problematically, COVID-19 shares many symptoms with seasonal influenza, and other common infectious diseases, including fever, body aches, cough, chills, and headache. Without testing, it is difficult for healthcare providers to ascertain whether an individual with these symptoms is suffering from COVID-19 or another infection.

42. Aside from self-quarantine, there is no way to completely protect against SARS-CoV-2 infection. Best practices like mask-wearing, hand hygiene, and social distancing only diminish, but do not eliminate, the risk of infection.

VII. Coronavirus Infection and Communities of Color

43. Coronavirus infection has had a disproportionate effect on communities of color.[16] First, communities of color suffer from higher infection rates than white communities. Second, infected individuals within these communities are more likely to experience serious illness or death than those in white communities. This disparity in outcomes is caused by a variety of factors, including issues related to access to care, poor quality of care, the higher prevalence of underlying chronic medical conditions among people of color and low-income people,

[16] *COVID-19 in Racial and Ethnic Minority Groups*, CTRS. FOR DISEASE CONTROL AND PREVENTION (June 4, 2020), https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/racial-ethnic-minorities.html.

housing challenges, and the larger proportion of people of color who are employed in essential jobs that contribute to enhanced exposure.

44. Social Determinants of Health are the conditions in a person's life that shape every aspect of their health, including their susceptibility to all kinds of medical conditions and the complications they may face from these conditions. Access to medical care, education, high-quality housing, utilities, and nutritional food are examples of Social Determinants of Health. The Social Determinants of Health are tightly linked to a population's health status, including to their risk of certain health conditions.[17]

45. Social Determinants of Health are a major reason why communities of color and low-income communities suffer disproportionately from SARS-CoV-2. To take just one example, people in low-income communities may live in cramped quarters with more household members. These housing conditions increase the risk of coronavirus spread within a living space and make social distancing more difficult.

46. Because of Social Determinants of Health, communities of color and low-income communities also tend to have high rates of chronic underlying

[17] *See* Elissa M. Abrams & Stanley J. Szefler, *COVID-19 and the impact of social determinants of health*, 8 LANCET RESPIRATORY MED. 659 (2020), https://doi.org/10.1016/S2213-2600(20)30234-4.

medical issues such as diabetes, hypertension, asthma, heart disease, chronic lung disease, chronic liver disease, and other conditions. People with these conditions are at a higher risk of suffering serious illness or death when they contract SARS-CoV-2.

47. Members of these communities are also, on average, less likely to have jobs that allow them to engage in social isolation, such as by working from home. Instead, they are frequently employed as essential workers in positions that involve high levels of public interaction even during the pandemic. For example, grocery store clerks, cashiers, bus drivers, and certain healthcare workers such as home health aides and nursing assistants are disproportionately people of color.[18] These roles bring workers into contact with dozens or hundreds of different people every day, increasing their risk of contracting the virus.

48. Compounding these issues, minority communities and low-income communities tend to have less access to SARS-CoV-2 testing. Public testing centers may not be located in minority communities. Even when they are, practices like drive-up testing sites exclude low-income individuals who don't have access to a car. Lack of access to testing prevents individuals, particularly

[18] Hye Jin Rho, Hayley Brown & Shawn Fremstad, *A Basic Demographic Profile of Workers in Frontline Industries*, CTR. FOR ECON. & POL'Y RES. (2020), https://cepr.net/wp-content/uploads/2020/04/2020-04-Frontline-Workers.pdf.

those who are asymptomatic, from knowing the status of their infection, and taking necessary steps to stop the spread of the disease, such as taking sick leave or self-isolating.

49. These trends have played out in Pennsylvania. The Pennsylvania's minority communities, particularly its Black communities, have suffered the most from COVID-19. Black Pennsylvanians are only 12% of the Commonwealth's population but make up approximately 21% of the Commonwealth's COVID-19 deaths, and approximately 14% of the Commonwealth's COVID-19 cases for which racial data has been reported.[19] According to the PA Department of Health, the vast majority of deaths occurred in the >60 age group (7,178 out of 7,742 or 93% as of September 5, 2020).[20]

50. It is impossible to predict with certainty how the infection rate in vulnerable communities will change as Pennsylvania begins reopening, but experts expect that communities of color will continue to suffer at disproportionate rates.

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[19] *Compare Pennsylvania COVID-19 Dashboard*, PA. DEP'T PUBLIC HEALTH (Sept. 5, 2020), *available at* https://experience.arcgis.com/experience/cfb3803eb93d42f7ab1c2cfccca78bf7 (showing 1,619 Black deaths out of 7,742 total deaths; and 18,728 Black cases out of 138,625 total cases), *with Pennsylvania Population Estimates*, U.S. CENSUS BUREAU (July 1, 2019), *available at* https://www.census.gov/quickfacts/PA.

[20] *Pennsylvania COVID-19 Dashboard*, PA. DEP'T PUBLIC HEALTH (Sept. 5, 2020), *available at* https://experience.arcgis.com/experience/cfb3803eb93d42f7ab1c2cfccca78bf7.

VIII. Coronavirus Will Still Threaten Public Health in November

51. Coronaviruses, along with other respiratory viruses, are known to follow a seasonal transmission cycle, with peak transmission in the winter rather than summer months.[21]

52. During the coming winter, the effective reproductive number of the SARS-CoV-2 virus transmission in the United States (including Pennsylvania) is likely to increase by about 1/3 over its mean annual value.[22] This "seasonal forcing" of transmission will amplify the effects of other epidemic drivers, such as opening of schools, or continued loosening of social isolation. Because of this, many public health experts, including myself, expect that there will be another, seasonally driven wave of the COVID-19 epidemic, occurring in approximately the late fall to early winter season of 2020.

53. From the onset of the epidemic until the present, the epidemic pattern of SARS-CoV-2 transmission has been remarkably variable across the Commonwealth of Pennsylvania. Cases grew quickly in eastern Pennsylvania, peaking in Philadelphia County on April 8 (555 cases per day). The epidemic also

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[21] You Li, Xin Wang, Harish Nair, *Global Seasonality of Human Seasonal Coronaviruses: A Clue for Postpandemic Circulating Season of Severe Acute Respiratory Syndrome Coronavirus 2?*, 222 J. INFECT. DISEASES 1090 (2020), https://doi.org/10.1093/infdis/jiaa436.

[22] Stephen M. Kissler, et al., *Projecting the transmission dynamics of SARS-CoV-2 through the postpandemic period*, 368 SCIENCE 860 (Apr. 14, 2020), https://science.sciencemag.org/content/sci/368/6493/860.full.pdf.

peaked early in other large counties in the eastern region of the Commonwealth (Montgomery, Bucks, Delaware, others). In contrast, Allegheny County in western Pennsylvania experienced a small epidemic in April, but then a much larger peak on 13 July (322 cases per day). Other counties in western Pennsylvania also experienced a dominant epidemic peak in July, rather than in April.[23] If seasonal forcing and other factors generate another epidemic wave in the fall, it could occur anywhere throughout the Commonwealth.[24]

54. There currently is no approved vaccine to prevent SARS-CoV-2 infection. There is no known cure or FDA-approved[25] antiviral treatment for COVID-19 at this time. It is unlikely that a vaccine will be approved and widely distributed by November's election. Even if a vaccine were approved or available under an Emergency Use Authorization, it almost certainly would not be delivered

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[23] *COVID-19 Data for Pennsylvania*, PA. DEPT. OF HEALTH (Sept. 5, 2020), *available at* https://www.health.pa.gov/topics/disease/coronavirus/Pages/Cases.aspx.

[24] Outbreaks are not limited to large counties. For example, York County has seen a recent outbreak associated with a prison. *See COVID-19 outbreak at York County Prison*, ABC27.com (Sept. 4, 2020), https://www.abc27.com/news/covid-19-outbreak-at-york-county-prison/. Outbreaks in prisons can spread through guards and other staff into the larger community, and York County has seen a significant uptick in COVID cases in recent days. *See York County COVID-19 Resource Center*, YORK COUNTY, https://covid19-yorkcosc.hub.arcgis.com/ (last accessed Sept. 5, 2020).

[25] Issuances of Emergency Use Authorizations ("EUAs") are different than, and meet different standards than, full FDA approvals.

to a portion of the population large enough to create meaningful community immunity by November 3 (*i.e.*, election day).[26]

55. Coronavirus prevention strategies include containment and mitigation. Containment requires identifying and isolating people who are ill or who have had contact with people who are ill. It also requires the widespread use of personal protective equipment such as masks and gloves.

56. As SARS-CoV-2 spreads in a community, mitigation strategies must be used to protect public health. There is a wide consensus among public health and medical experts that avoiding congregative environments and practicing scrupulous social distancing is essential to preventing community transmission of SARS-CoV-2. This consensus is the basis for government actions including unprecedented, sweeping bans on gatherings of any size, shelter-in-place orders, and the closure of all but essential buildings. Schools, courts, collegiate and professional sports, theaters, and other congregate settings have been closed as

[26] I am aware of the CDC's recent letter to states requesting that state vaccination sites should be prepared to distribute a potential vaccine for COVID-19 by November 1. *See, e.g., Trump Administration Asks States to Be Ready for Vaccine by November*, WALL STREET JOURNAL (Sept. 3, 2020), *available at* https://www.wsj.com/articles/trump-administration-asks-states-to-be-ready-for-vaccine-by-november-11599075477 (reporting a letter from the director of the CDC to the states, stating, "'CDC urgently requests your assistance in expediting applications for these distribution facilities, and, if necessary, asks that you consider waiving requirements that would prevent these facilities from becoming fully operational by Nov. 1, 2020.'"). Even assuming a vaccine were available to *some* individuals around November 1, it almost certainly would not be delivered to a portion of the population large enough to create meaningful community immunity by November 3 (*i.e.*, election day).

part of this risk mitigation strategy. For example, on April 1, 2020, Pennsylvania Governor Tom Wolf issued an order for all residents of the Commonwealth to stay at home except as needed to maintain critical infrastructure.[27] As recognized by CDC guidelines, the stay at home orders, and social-distancing and mask wearing mandates, the only ways to meaningfully limit the spread of SARS-CoV-2 are self-quarantine, social distancing, mask wearing, frequent handwashing, and disinfecting surfaces. Self-quarantine involves not physically interacting with those outside one's household. Social distancing is maintaining at least six feet of distance between individuals. Both of these interventions are aimed at keeping infected individuals (with or without symptoms) far enough apart from other people so that they do not transmit the virus to others. Frequent handwashing and regular disinfection of surfaces can help curb the spread via contaminated surfaces. None of these steps alone or in combination, however, is guaranteed to halt transmission.

57. Transmission of SARS-CoV-2 is more likely to occur in any location where there is close proximity (less than six feet) between individuals, particularly in small and/or poorly ventilated indoor spaces. Because transmission of the virus

[27] Gov. Tom Wolf, Plan to Reopen Pennsylvania (July 8, 2020), *available at* https://www.governor.pa.gov/process-to-reopen-pennsylvania/.

can occur via contact with contaminated surfaces, there is also risk of spread of the virus at any location where multiple individuals touch surfaces.

58. An important infection mitigation strategy is to avoid conditions that lead to "cluster transmission," where a single infected individual transmits the coronavirus to a large number of bystanders. Cluster transmissions occur when large groups of people are put into close spaces and are not able to practice appropriate social distancing protocols, or when many persons have close interactions with a single infected individual. A single cluster event can lead to multiple of new infections.

59. In the United States, clusters have been particularly pernicious in meat-packing plants, where workers are required to work on processing lines in close physical proximity to other workers. Otherwise-healthy workers at meat-packing facilities have become infected with the coronavirus at rates comparable to those in outbreaks in nursing homes and prisons.[28] Other examples of cluster

[28] Michael Corkery, David Yaffe-Bellany & Derek Kravitz, *As Meatpacking Plants Reopen, Data About Worker Illness Remains Elusive*, N.Y. TIMES (May 25, 2020), https://www.nytimes.com/2020/05/25/business/coronavirus- meatpacking-plants-cases.html.

transmissions include choir practices,[29] funerals and birthday parties,[30] or church services.[31]

60. Higher-than-expected infection rates were also recorded in Wisconsin following the April primary elections.[32] A study by University of Wisconsin researchers reported a "statistically and economically significant association" between in-person voting and the spread of COVID-19 weeks after the election.[33]

61. Despite a surge in COVID-19 outbreaks in a majority of states in the United States, states and localities are continuing to lift some, but not all, containment measures. It is believed that too rash and unsafe re-opening protocols are at least partially responsible for the current spike in cases and in

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[29] Lea Hamner et al., *High SARS-CoV-2 Attack Rate Following Exposure at a Choir Practice — Skagit County, Washington, March 2020*, 69 MORBIDITY & MORTALITY WKLY REP. 606 (2020), https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6919e6-H.pdf.

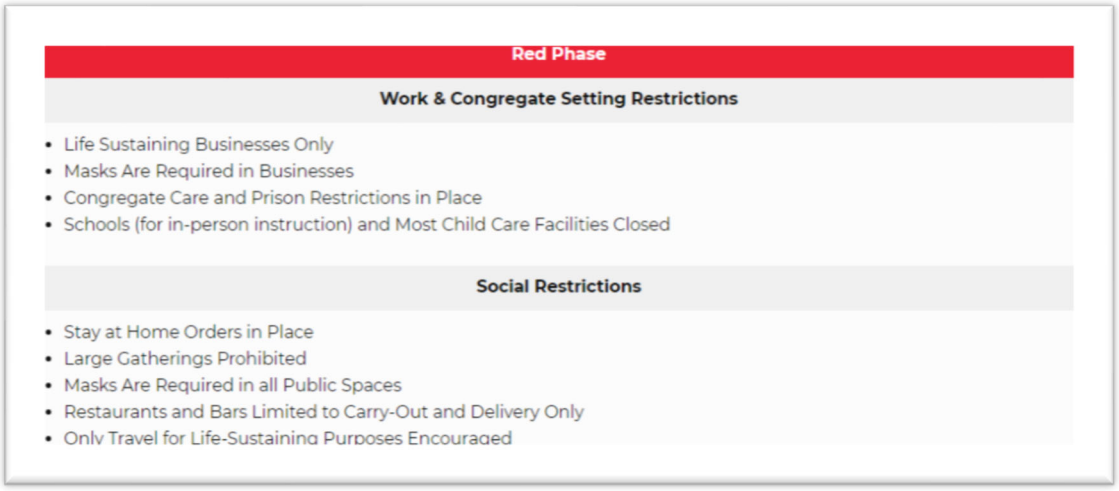
[30] Shelby Bremer, *CDC Report Shows How a Funeral and Birthday Party 'Super Spread' COVID-19 in Chicago*, NBC CHI. (Apr. 9, 2020), https://www.nbcchicago.com/news/local/cdc-report-shows-how-a-funeral-and-birthday-party-super-spread-covid-19-in-chicago/2253006/.

[31] Allison James et al., *High COVID-19 Attack Rate Among Attendees at Events at a Church — Arkansas, March 2020*, 69 MORBIDITY & MORTALITY WKLY REP. 632 (2020), https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6920e2-H.pdf.

[32] Nicholas Reimann, *Coronavirus Infections Spiked in Wisconsin After In-Person Election, Study Says*, FORBES (May 19, 2020), https://www.forbes.com/sites/nicholasreimann/2020/05/19/coronavirus-infections-spiked-in-wisconsin-after-in-person-election-study-says/#44f29b8514b3.

[33] Chad D. Cotti et al., *The Relationship between In-Person Voting, Consolidated Polling Locations, and Absentee Voting on COVID-19: Evidence from the Wisconsin Primary*, NAT'L BUREAU ECON. RES. (2020), https://www.nber.org/papers/w27187.pdf.

hospitalizations. For example, on April 17, Pennsylvania sketched a plan for re-opening; that plan is now being implemented.[34]



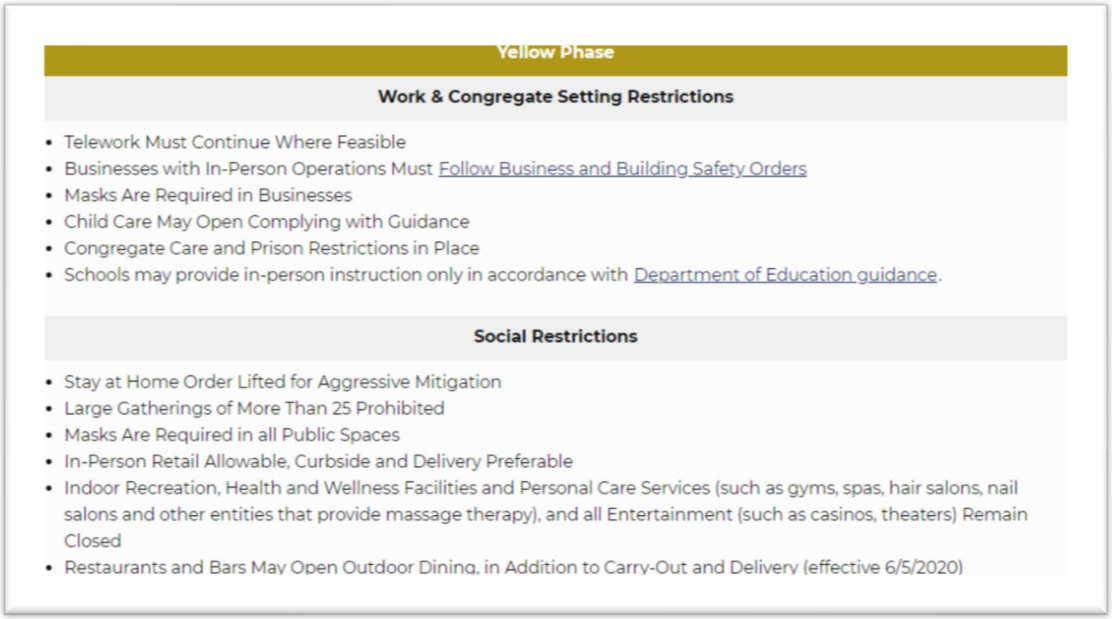
Red Phase

Work & Congregate Setting Restrictions

- Life Sustaining Businesses Only
- Masks Are Required in Businesses
- Congregate Care and Prison Restrictions in Place
- Schools (for in-person instruction) and Most Child Care Facilities Closed

Social Restrictions

- Stay at Home Orders in Place
- Large Gatherings Prohibited
- Masks Are Required in all Public Spaces
- Restaurants and Bars Limited to Carry-Out and Delivery Only
- Only Travel for Life-Sustaining Purposes Encouraged



Yellow Phase

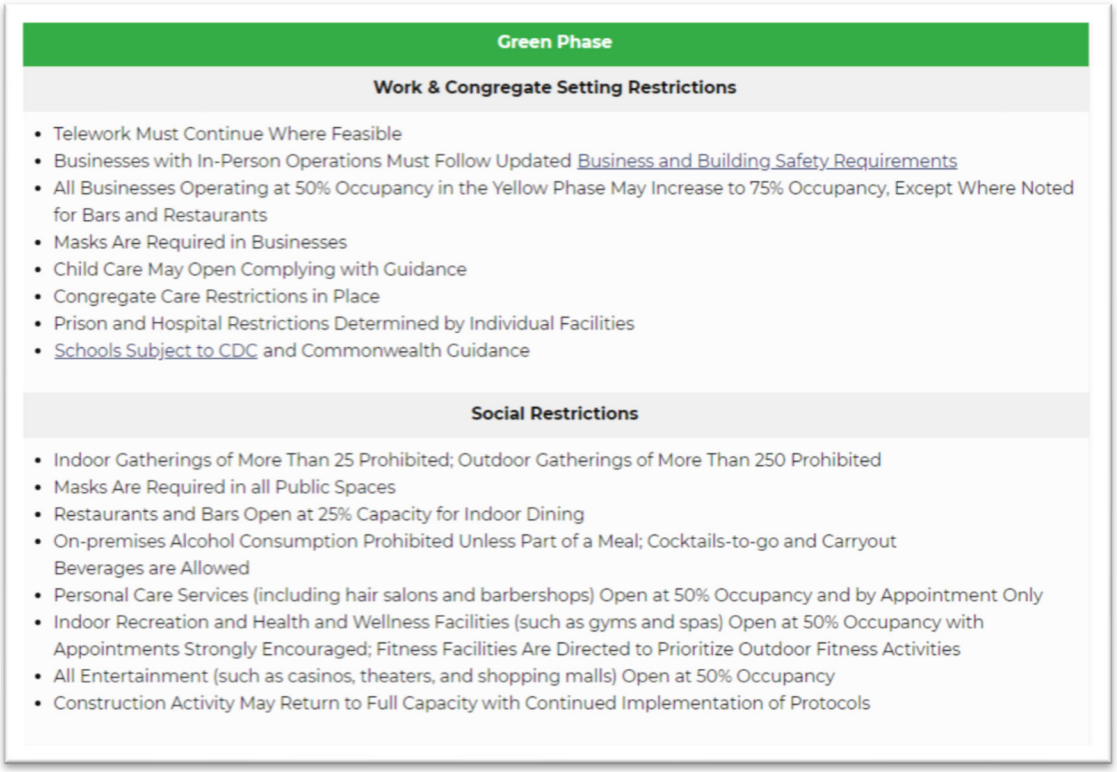
Work & Congregate Setting Restrictions

- Telework Must Continue Where Feasible
- Businesses with In-Person Operations Must Follow Business and Building Safety Orders
- Masks Are Required in Businesses
- Child Care May Open Complying with Guidance
- Congregate Care and Prison Restrictions in Place
- Schools may provide in-person instruction only in accordance with Department of Education guidance.

Social Restrictions

- Stay at Home Order Lifted for Aggressive Mitigation
- Large Gatherings of More Than 25 Prohibited
- Masks Are Required in all Public Spaces
- In-Person Retail Allowable, Curbside and Delivery Preferable
- Indoor Recreation, Health and Wellness Facilities and Personal Care Services (such as gyms, spas, hair salons, nail salons and other entities that provide massage therapy), and all Entertainment (such as casinos, theaters) Remain Closed
- Restaurants and Bars May Open Outdoor Dining, in Addition to Carry-Out and Delivery (effective 6/5/2020)

[34] Gov. Tom Wolf, Plan to Reopen Pennsylvania (July 8, 2020), *available at* https://www.governor.pa.gov/process-to-reopen-pennsylvania/.



Green Phase

Work & Congregate Setting Restrictions

- Telework Must Continue Where Feasible
- Businesses with In-Person Operations Must Follow Updated Business and Building Safety Requirements
- All Businesses Operating at 50% Occupancy in the Yellow Phase May Increase to 75% Occupancy, Except Where Noted for Bars and Restaurants
- Masks Are Required in Businesses
- Child Care May Open Complying with Guidance
- Congregate Care Restrictions in Place
- Prison and Hospital Restrictions Determined by Individual Facilities
- Schools Subject to CDC and Commonwealth Guidance

Social Restrictions

- Indoor Gatherings of More Than 25 Prohibited; Outdoor Gatherings of More Than 250 Prohibited
- Masks Are Required in all Public Spaces
- Restaurants and Bars Open at 25% Capacity for Indoor Dining
- On-premises Alcohol Consumption Prohibited Unless Part of a Meal; Cocktails-to-go and Carryout Beverages are Allowed
- Personal Care Services (including hair salons and barbershops) Open at 50% Occupancy and by Appointment Only
- Indoor Recreation and Health and Wellness Facilities (such as gyms and spas) Open at 50% Occupancy with Appointments Strongly Encouraged; Fitness Facilities Are Directed to Prioritize Outdoor Fitness Activities
- All Entertainment (such as casinos, theaters, and shopping malls) Open at 50% Occupancy
- Construction Activity May Return to Full Capacity with Continued Implementation of Protocols

62. Notably, under the Red Phase, Pennsylvanians should "Stay at Home" other than for "Life Sustaining Businesses." And even under the Yellow and Green Phases, indoor gatherings of more than 25 people are prohibited, and masks are required in all public spaces. Moreover, in all phases, the Business and Building Safety Requirements state that Pennsylvanians must "[k]eep our physical distance of six feet or more."[35]

[35] *COVID-19 Guidance for Businesses*, https://www.governor.pa.gov/covid-19/business-guidance/ (last accessed Sept. 5, 2020).

63. As of September 5, 2020, all Pennsylvania counties are currently in the Green Phase, but future COVID-19 surges or spikes could cause counties to be placed in the Yellow or Red Phases.

64. The epidemic is ongoing in Pennsylvania, with 800 to 1,000 new cases diagnosed every day across the Commonwealth.[36]

65. It is not possible to predict with certainty the pandemic's severity in November. A major determinant of the infection rate is how much of the population adheres to mitigation strategies, and it is impossible to know what community behavior will look like in November.[37] However, the consensus among public health professionals is that community spread will still be a serious threat to public health and that infection and illness rates will remain high. Some experts have warned of a surge in cases in the fall.[38] The difficulties in testing for and detecting SARS-CoV-2 will remain, and there are still no known treatments or vaccines. Government plans should be based on what we know about the

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[36] Pennsylvania COVID-19 Dashboard, PA. DEP'T PUBLIC HEALTH, *available at* https://experience.arcgis.com/experience/cfb3803eb93d42f7ab1c2cfccca78bf7 (last accessed Sept. 5, 2020); *Pennsylvania Coronavirus Map and Case Count*, N.Y. TIMES, https://www.nytimes.com/interactive/2020/us/pennsylvania-coronavirus-cases.html (last accessed Sept. 5, 2020).

[37] Mark Harrington, *Expert Consult Models to Predict If Coronavirus Cases Will Spike*, NEWSDAY (June 4, 2020), https://www.newsday.com/news/health/coronavirus/infectious-coronavirus-model-pandemic-1.45185224.

[38] Len Strazewski, *Harvard Epidemiologist: Beware COVID-19's Second Wave This Fall*, AM. MED. ASS'N (May 8, 2020), https://www.ama-assn.org/delivering-care/public-health/harvard-epidemiologist-beware-covid-19-s-second-wave-fall.

infection right now, including evidence that public gatherings threaten public health and contribute to infection transmission, because we can expect that coronavirus will continue to affect, sicken, and kill large numbers of Americans moving forward and into the fall.

66. Government plans should be based on what we know about the infection right now, including evidence that public gatherings threaten public health and contribute to infection transmission, because it is highly likely that SARS-CoV-2 will continue to infect, sicken, and kill large numbers of Americans into the fall and winter months.

IX. Spread of Infectious Disease at Polling Places

67. There is a significant risk of exposure to infectious diseases in enclosed areas like polling places with many people entering, leaving, and waiting in line to enter. There are several reasons why this is the case.

68. In Pennsylvania, a polling place could serve as many as several thousand people on election day during a presidential election year.[39] Thus, a polling place could have hundreds or thousands of people moving through the same enclosed area on election day—precisely the sort of high-traffic event that increases the risk of coronavirus spread.

69. In Pennsylvania, "more than 40,000 poll workers are needed" to staff polling places each election day.[40] In advance of elections, poll workers must be trained.[41] Training may happen in a group setting, where a poll worker might

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[39] *See, e.g., State election officials urge swift legislative action on voting reforms*, PENN LIVE (Aug. 4, 2020), *available at* https://www.pennlive.com/news/2020/08/state-election-officials-urge-swift-legislative-action-on-voting-reforms.html?outputType=amp (reporting that "more than 5,000 voters [were] assigned to one polling location" during the June 2020 primary election in Pennsylvania; and further reporting that Allegheny County has "nearly 900,000 voters"); *Voting & Election Statistics*, PA. DEPT. OF STATE, https://www.dos.pa.gov/VotingElections/OtherServicesEvents/VotingElectionStatistics/Pages/VotingElectionStatistics.aspx (last updated Aug. 31, 2020) (showing, *e.g.*, approximately 907,000 registered voters in Allegheny County, and 585,000 registered voters in Montgomery County); *Allegheny County issues full list of consolidated polling place locations for June 2 primary election*, WTAE PITTSBURGH (June 1, 2020), *available at* https://www.wtae.com/article/allegheny-county-issues-full-list-of-consolidated-polling-place-locations-for-june-2-primary-election/32501520# (reporting that Allegheny County issued a "full list of consolidated polling place locations for June 2 primary election" and listing 161 polling places); *Voter Services Polling Locations as of 9/4/2020*, MONTGOMERY COUNTY, https://webapp02.montcopa.org/voterservices/voters/ListPolls1.asp?Municipality=ALL (showing 424 polling locations in Montgomery County). By way of example, this averages out to ***nearly 5,600*** voters assigned to each polling location in Allegheny County; and ***nearly 1,400*** voters assigned to each polling location in Montgomery County.

[40] *Poll Worker Recruitment Newsletter*, PA. DEPT. OF STATE, *available at* https://www.votespa.com/Resources/Documents/PollWorkerRecruitment-Toolkit/PollWorkerRecruitment-Newsletter.pdf (last accessed Sept. 5, 2020).

[41] *Election Poll Workers*, NAT'L CONF. ST. LEGISLATURES (Aug. 19, 2019), https://www.ncsl.org/research/elections-and-campaigns/election-poll-workers637018267.aspx.

interact with dozens of other people in a confined space.[42] Poll workers may also have to set up the polling place the night before or morning of the election and take it down after the polls close.[43] Set up and take down can require poll workers to interact with other individuals by accepting deliveries of supplies, moving tables and other equipment with other poll workers, and touching surfaces and handling equipment that may have been previously touched or handled by other individuals.[44]

70. During in-person voting, poll workers are stationed at each polling place to assist voters and ensure the election is carried out efficiently and securely.[45] A poll worker at the average precinct could be exposed to hundreds or thousands of voters over the course of election day.[46] During each interaction

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42 *See, e.g.*, *Election Board Training Seminar*, OFFICE OF THE PHILADELPHIA CITY COMMISSIONERS, https://www.philadelphiavotes.com/en/voters/important-dates/details/1507-election-board-training-seminar-wards-18-19-23-25-31-33-45-62.

43 *See, e.g.*, *Montgomery County Poll Worker Training – Spring 2020*, https://www.youtube.com/watch?v=CjkzSbLooJE&feature=youtu.be (last accessed Sept. 5, 2020) (depicting poll worker set up of equipment, including of touch-screen voting machines).

44 *Id.*

45 *Election Poll Workers*, NAT'L CONF. ST. LEGISLATURES (Aug. 19, 2019), https://www.ncsl.org/research/elections-and-campaigns/election-poll-workers637018267.aspx.

46 *See supra*, calculating the potential number of voters per polling location. *See also Poll Worker Recruitment Newsletter*, PA. DEPT. OF STATE, *available at* https://www.votespa.com/Resources/Documents/PollWorkerRecruitment-Toolkit/PollWorkerRecruitment-Newsletter.pdf ("Poll workers generally work all day on Election Day, from before the polls open at 7 a.m. until after the polls close at 8 p.m. In addition, they may be asked to attend a training session before the election.") (last accessed Sept. 5, 2020).

with a particular voter, a poll worker might be expected to greet the voter, check their identification, distribute ballots, answer questions, exchange paperwork, help elderly and disabled people navigate the poll site, and carry out other duties.[47] Once the last voter has cast her ballot, poll workers must make sure that every paper ballot that was distributed is accounted for and may also have to count the ballots.[48] Each of these discrete interactions puts the poll worker at risk of contracting the novel coronavirus, and each will be repeated dozens or hundreds of times over the course of Election Day.

71. Poll workers are more likely to be older, and accordingly are also more likely to have higher rates of certain high-risk conditions. One 2016 survey reported that "the poll worker population is skewed towards older Americans," and estimated "24 percent of poll workers were 71 or older and another 32 percent were between the ages of 61 and 70."[49] Those two factors (age and chronic

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47 *Election Poll Workers*, NAT'L CONF. ST. LEGISLATURES (Aug. 19, 2019), https://www.ncsl.org/research/elections-and-campaigns/election-poll-workers637018267.aspx.

48 *Election Poll Workers*, NAT'L CONF. ST. LEGISLATURES (Aug. 19, 2019), https://www.ncsl.org/research/elections-and-campaigns/election-poll-workers637018267.aspx.

49 *Eavs Deep Dive: Poll Workers and Polling Places*, U.S. ELECTION ASSISTANCE COMM'N (Nov. 15, 2017), https://www.eac.gov/documents/2017/11/15/eavs-deep-dive-poll-workers-and-polling-places.

medical conditions) put poll workers at a higher risk of serious complications and death from COVID-19.[50]

72. Congregate settings such as polling places allow for rapid spread of infectious diseases that are transmitted person to person, especially those passed by droplets through coughing, sneezing, or even talking. When people are forced into close, crowded quarters the opportunities for transmission are greater. Polling places, which are almost always indoor spaces in public or private buildings repurposed for Election Day, may promote highly efficient spread of diseases through droplets.[51] If polling places have a low number of voting booths and privacy screens where ballots might be filled out and cast, that funnels every voter into small, intentionally enclosed areas used by dozens or hundreds of voters before them. This increases the risk of SARS-CoV-2 infection.

73. Some voting machines require voters to physically interact with them—for example, by using touch screens or by pushing buttons to indicate their

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[50] Michael Barthel & Galen Stocking, *Older People Account for Large Shares of Poll Workers and Voters in U.S. General Elections*, PEW RES. CTR. (April 6, 2020), https://www.pewresearch.org/fact-tank/2020/04/06/older-people-account-for-large-shares-of-poll-workers-and-voters-in-u-s-general-elections/.

[51] *For Building Administrators and Proprietors: Use of Facilities as Polling Places During COVID-19*, PA. DEPT. OF HEALTH, https://www.health.pa.gov/topics/disease/coronavirus/Pages/Guidance/Polling-Places-Guidance.aspx (last accessed Sept. 5, 2020) (noting polling places may be, *e.g.*, churches, private banquet halls, community centers, schools, fitness centers, libraries, township buildings, "private clubs with large common area," membership organization facilities (Legion, VFW, or social clubs), or hotel meeting or banquet rooms).

candidate or choice.[52] Poll workers may have to assist voters with malfunctioning machines and assistive devices.[53] Any surface that is touched by multiple voters, or by a voter and a poll worker, needs to be sanitized after every interaction in order to minimize the risk of coronavirus transmission. The combination of a high number of surfaces touched by voters and a large number of voters increases the risk that other voters or poll workers will become infected from touching a contaminated surface.

74. Every surface will have to be properly disinfected between voters, which may be difficult to achieve, and may delay voting, causing people to wait outside or inside for prolonged periods of time. Even if that cleaning was possible, workers tasked with carrying it out would themselves risk contracting SARS-CoV-2.

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[52] For example, all voters in Philadelphia County vote using the Verified Voter – Express Vote XL ES&S voting machine, which requires use of a touch screen or a physical assistive device. *See Philadelphia County Voting System*, VotesPA.com, https://www.votespa.com/readytovote/Pages/Philadelphia-County-Voting-System.aspx (last accessed Sept. 5, 2020). Some voters in Alleghany County will use the ES&S ExpressVote 2.1 to mark their ballot, which similarly involves use of a touch screen or a physical assistive device. *See Alleghany County Voting System*, VotesPA.com, https://www.votespa.com/readytovote/Pages/Allegheny-County-Voting-System.aspx (last accessed Sept. 5, 2020).

[53] *See, e.g.*, *Philadelphia County Voting System*, VotesPA.com, https://www.votespa.com/readytovote/Pages/Philadelphia-County-Voting-System.aspx (last accessed Sept. 5, 2020); *Alleghany County Voting System*, VotesPA.com, https://www.votespa.com/readytovote/Pages/Allegheny-County-Voting-System.aspx (last accessed Sept. 5, 2020).

75. Polling places may be unable to adequately provide the mitigation recommendations described above and still carry out their primary mission of allowing voters to cast ballots effectively. During a coronavirus outbreak, people can protect themselves by washing their hands or frequently using alcohol-based sanitizers when handwashing is unavailable. For a poll worker or voter to sanitize her hands after every voter interaction, however, would substantially increase the amount of time it takes for each voter to cast a ballot, and could thus increase already-substantial waiting times. It may also cause skin conditions related to frequent washing and sanitizing.

76. If voters must wait longer to vote, they will inevitably stand in longer lines for more time with more people, exposing themselves to more people who might be infected with the novel coronavirus. In Washington D.C.'s election on June 2, conducted under pandemic conditions, voters stood in lines for up to five hours.[54] In Georgia's election on June, also conducted under pandemic conditions, "[s]ocial distancing requirements created long lines" and some voters

[54] Julie Zauzmer et al., V*oting Problems in D.C., Maryland Lead to Calls for Top Officials to Resign*, WASH. POST (June 3, 2020), https://www.washingtonpost.com/local/dc-politics/voting-problems-in-dc-maryland-lead-to-calls-for-top-officials-to-resign/2020/06/03/24b47220-a5a8-11ea-b619-3f9133bbb482_story.html.

waited for up to three hours and 45 minutes to cast their ballot.[55] In Allegheny County, Pennsylvania, during the June 2020 election, there were reports of "long lines" of voters, and a lack of social distancing in polling places with people standing "only two feet apart."[56] Moreover, not all voters in Allegheny County wore masks, and voters were not turned away for failing to wear masks.[57]

77. Precincts can easily become coronavirus transmission clusters if an infected voter is waiting in a long line to cast a ballot or an infected poll worker spends all day interacting with voters in the precinct. Proper disinfecting protocols might reduce the likelihood that a precinct can become a cluster, but they cannot eliminate the possibility. Pennsylvania has thousands of precincts;[58] if even a tiny fraction become transmission clusters, then the state could see thousands or tens of thousands of new infections.

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55 *Voting machines and coronavirus force long lines on Georgia voters*, ATLANTA JOURNAL-CONSTITUTION, https://www.ajc.com/news/state--regional-govt--politics/voting-machines-and-coronavirus-force-long-lines-georgia-voters/VajM2D3aSHALhCz7KwDrpJ/ (June 9, 2020).

56 *Primary 2020 updates: Polls now closed across Allegheny County: Officials receive complaints that some voters not 'social distancing,' wearing masks*, PITTSBURGH POST-GAZETTE (June 2, 2020), https://www.post-gazette.com/news/politics-local/2020/06/02/Primary-election-western-pennsylvania/stories/202006020068.

57 *Id.*

58 *See Election Returns*, PENN. DEP'T STATE, https://www.electionreturns.pa.gov/ (last accessed Sept. 5, 2020) (noting results for a total of 9,128 precincts in the June primary election).

78. There is no way to hold in-person voting without risking that some members of the public or some poll workers will be exposed to SARS-CoV-2. Not every member of the public nor every poll worker will follow best practices, but even if they did—wearing masks and gloves, maintaining six feet of distance between each person, and avoiding the polling place if they have any symptoms of COVID-19—infection still could not be entirely prevented. Asymptomatic individuals who are contagious but unaware will still vote; people who have mild symptoms may still decide to vote; people who are opposed to mask-wearing in public may show up to polling stations;[59] people may still touch contaminated surfaces and then touch their face; and respiratory droplets containing the virus may still circulate within the polling place.

79. Screening procedures, for example asking voters if they have symptoms or taking voters' temperatures before allowing them to enter a polling place, likewise cannot guarantee that an infection won't spread. Many contagious individuals can be asymptomatic or pre-symptomatic. Moreover, many contagious individuals do not have a fever or display the symptoms that the general public has come to associate with the disease, like coughing or fever.

[59] *Primary 2020 updates: Polls now closed across Allegheny County: Officials receive complaints that some voters not 'social distancing,' wearing masks*, PITTSBURGH POST-GAZETTE (June 2, 2020), https://www.post-gazette.com/news/politics-local/2020/06/02/Primary-election-western-pennsylvania/stories/202006020068.

Others are entirely asymptomatic, or have not yet developed symptoms, but are still contagious. Thus, many contagious individuals could not be identified by common screening procedures.

80. Voters with chronic underlying medical conditions are more likely to suffer serious complications or death from COVID-19. Communities with high rates of risk factors are also communities where the coronavirus has spread most quickly, due to socioeconomic factors and the Social Determinants of Health, and thus where in-person voting may contribute to a higher risk of new cases of COVID-19.

81. Minority communities with high rates of poverty and other risk factors are also communities where polling places tend to have the longest lines and where voting tends to take the most time, increasing voters' likelihood of exposure to the coronavirus. Even before the pandemic, residents of these communities were required to wait in line for longer periods in order to cast a ballot than residents of whiter, more affluent communities.[60]

82. These risks and expected results have all been borne out in states that have permitted in-person voting during the pandemic. In Milwaukee, for

[60] Matthew Weil, et al., *The 2018 Voting Experience: Polling Place Lines*, BIPARTISAN POL'Y CTR. (Nov. 4, 2019), https://bipartisanpolicy.org/report/the-2018-voting-experience/.

example, at least 71 SARS-CoV-2 infections have been attributed to in-person voting held in Wisconsin on April 7, 2020.[61]

83. A careful study by Cotti et al. released as a National Bureau of Economic Research working paper: (1) compared county-level data on the proportion of people voting in person and the proportion of COVID-19 tests that were positive; (2) assessed a time period after the election through May 3; (3) factored in measures of social distancing and county-specific demographics (population, population density); and (4) used the proportion of tests that were positive rather than just positive cases to control for temporal differences in testing. This study found that ***counties with higher than average in-person voting had twice the rate of COVID-19 positive tests in the weeks that followed the election***. Across a range of exploratory models, the team found a large post-election increase in COVID-19 cases in counties that had more in-person votes per voting location, all else being equal. They also noted a decrease in the number of new positive COVID-19 cases in counties with relatively more mail-in absentee votes after accounting for differences in in-person voting, county-level COVID-

[61] *See* Chad D. Cotti, Bryan Engelhardt, Joshua Foster, Erik T. Nesson, Paul S. Niekamp, *The Relationship between In-Person Voting and COVID-19: Evidence from the Wisconsin Primary*, NBER Working Paper (Issued May 2020, Rev. June 2020), https://www.nber.org/papers/w27187.pdf. As discussed above, reported numbers likely undercount the total number of infections because of the lack of testing and the high number of infection by asymptomatic individuals.

19 testing, and population measures.[62] This study was a thorough attempt to determine the relationship between the amount of in-person voting per polling station and subsequent COVID-19 diagnoses in the relevant counties.

84. Two other studies (other than that by Cotti et al.), both done quickly and published within weeks of the Wisconsin primary election on April 7, did not detect an association of voting and new SARS-CoV-2 infections. Both of those studies, however, have significant flaws. The epidemiological analysis of this problem is not simple because it requires a determination of the epidemic trajectory before the vote (increasing or decreasing) and then an analysis to detect any deflections of the expected epidemic trajectory that could be attributed to voting. In the week before the vote, the overall epidemic trajectory in Wisconsin was downward (199 cases on April 1; 138 cases on voting day April 7).

85. A study by Berry et al.[63] compares the growth of cases in Wisconsin counties before and after the April 7 primary election to the growth of cases over the same time period nationwide and found no comparative increase in Wisconsin.

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62 Chad D. Cotti, Bryan Engelhardt, Joshua Foster, Erik T. Nesson, Paul S. Niekamp, *The Relationship between In-Person Voting and COVID-19: Evidence from the Wisconsin Primary*, NBER Working Paper (Issued May 2020, Rev. June 2020), https://www.nber.org/papers/w27187.pdf.

63 Berry et al., *Wisconsin April 2020 Election Not Associated with Increase in COVID-19 Infection Rates*, non-peer reviewed preprint posted at https://www.medrxiv.org/content/10.1101/2020.04.23.20074575v1 (posted April 28, 2020).

This is not surprising, given that the epidemic trajectory was already downward in Wisconsin. Given the variability in local epidemic patterns in states and counties across the United States, comparisons to other jurisdictions can provide little meaningful insight into deflections in the expected epidemic trajectory in Wisconsin.

86. A study by Leung et al.[64] calculated the daily epidemic reproduction number Rt ("t" refers to the calculated effective epidemic reproduction number at any given point in time, t) in Wisconsin before and after the April 7 primary election. They observed a falling Rt in the days leading up to the vote, consistent with a decreasing epidemic at that time. They then found a flattening or stabilization of Rt around the day of the vote, but no major spike in Rt in the 11 days following the vote that they analyzed and concluded that the vote had no effect on the epidemic trajectory. Had they instead analyzed the case data for a few days longer they would undoubtedly have seen a major spike in Rt, because counts in Wisconsin increased from 138 cases on the April 7 election day to 314 cases one month later on May 7.

[64] Leung, et al., *No Detectable Surge in SARS-CoV-2 Transmission due to the April 7, 2020 Wisconsin Election*, non-peer reviewed preprint posted at https://www.medrxiv.org/content/10.1101/2020.04.24.20078345v1 (posted April 29, 2020).

87. Collectively, these studies do not definitively prove a direct and causal association of voting with increased SARS-CoV-2 transmission in Wisconsin. Nonetheless, given the superior study design of the Cotti et al. study showing an association of voter density and subsequent case incidence, compared to the much weaker study designs of Berry et al. and Leung et al., in my judgment the weight of this limited published literature is that voting in Wisconsin was probably associated with an increased risk of SARS-CoV-2 infection.

88. Notably, this risk persisted ***despite*** attempts by the state of Wisconsin to protect the safety of in-person voting, including social-distancing signs and tape, masks and gloves for poll workers, and use of disinfectant.[65]

89. Additionally, consolidation of in-person voting to a small number of polling places may contribute to an increase in infections. Milwaukee, for example, was forced to shut 175 of its 180 polling places due to a lack of poll workers. The five remaining polling places had long lines where voters waited for hours to cast their ballot.[66] The same was true in Pennsylvania, where, for

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[65] *April 7, 2020 Election Summary Report*, WISCONSIN ELECTIONS COMMISSION (April 18, 2020), https://www.eac.gov/sites/default/files/paymentgrants/cares/WI_20CARES_Progress_Report_042820.pdf.

[66] Alison Dirr & Mary Spicuzza, *What We Know So Far About Why Milwaukee Only Had 5 Voting Sites for Tuesday's Election While Madison Had 66*, MILWAUKEE J. SENTINEL (Apr. 9, 2020), https://www.jsonline.com/story/news/politics/elections/2020/04/09/wisconsin-election-milwaukee-had-5-voting-sites-while-madison-had-66/2970587001/.

example, "[p]olling places were consolidated in Allegheny County, and that led to some challenges — long lines, traffic problems and tight spaces that weren't conducive to social distancing practices."[67]

90. Based on my decades of professional experience in medicine, epidemiology, and public health, it is my assessment that the health risks of in-person voting in the midst of an infectious disease pandemic are clear and significant. In-person voting on election day will undoubtedly increase the chances for exposure to the novel coronavirus for poll workers and voters alike, leading to more cases of SARS-CoV-2 infection. Reducing in-person voting on election day will reduce the spread of SARS-CoV-2 and reduce illness and deaths from the resulting COVID-19.

X. Potential Alternatives To In-Person Voting At A Polling Place On Election Day

91. I understand that potential alternatives to in-person voting at issue in this case include the voter delivering a mail-in ballot in person to an election official at the headquarters of their county board of elections, sending a mail-in

[67] *Primary 2020 updates: Polls now closed across Allegheny County: Officials receive complaints that some voters not 'social distancing,' wearing masks*, PITTSBURGH POST-GAZETTE (June 2, 2020), https://www.post-gazette.com/news/politics-local/2020/06/02/Primary-election-western-pennsylvania/stories/202006020068.

ballot by mail (*e.g.*, by bringing it to the post office, or depositing it in a mailbox), or by depositing a mail-in ballot in a dropbox.

92. Returning any kind of ballot in person to another individual at the headquarters of a county board of elections (*i.e.*, a public office building) entails similar risks to in-person voting. Like polling places, public office buildings are congregate settings that allow for rapid spread of infectious diseases that are transmitted person to person. Public office buildings have narrow hallways, enclosed rooms, and a high number of surfaces that are touched by multiple people that would need to be sanitized after every interaction in order to minimize the risk of coronavirus transmission. A large number of people cycle through public office buildings. The combination of a high number of surfaces touched by people and a large number of people indoors creates a significant risk that voters, other visitors, and public employees could become infected.

93. Depositing a ballot in a mailbox or drop-box does not require that a voter interact with other members of the public, compared to in-person voting and personally delivering a mail-in ballot to a public office building. Thus, depositing a ballot in a mailbox and depositing a ballot in a drop-box are potential methods of voting that impart the least health risk to individual voters, and the least public health risk to the community.

94. My affidavit, with supporting appendices, is contained herein, and

represents my opinion and the bases and reasons thereof. To the extent any additional information is produced or served by any party, I reserve the right to incorporate such additional information in my affidavit. This affidavit was prepared solely for the above-captioned matter and should not be used for any other purpose without prior authorization.

* * *

I hereby certify that the foregoing statements are true and correct to the best of my knowledge, information, and belief. This verification is made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Executed this 3 th day of September, 2020 in Pittsburgh, PA

Donald S. Burke

Donald S. Burke, MD

APPENDIX A

CURRICULUM VITAE

NAME:	Donald Scott Burke, M.D.
	Distinguished University Professor of Health Science and Policy Jonas Salk Chair in Population Health Professor of Epidemiology
CITIZENSHIP:	United States
BUSINESS ADDRESS:	University of Pittsburgh Graduate School of Public Health 130 DeSoto Street Pittsburgh, PA 15261 Telephone: 412-383-3595 E-mail: donburke@pitt.edu

EDUCATION AND TRAINING

Undergraduate			
1963-1967	Western Reserve University, Cleveland, OH	B.A	Chemistry major; honors in biology; magna cum laude; Phi Beta Kappa
Graduate			
1967-1971	Harvard Medical School, Boston, MA	M.D.	Medicine
Post Graduate			
1971-1973	Harvard University and the Boston City Hospital, Boston, Massachusetts	Clinical Fellow Intern & Junior Resident Physician	Internal Medicine
1975-1976	Harvard University and the Massachusetts General Hospital, Boston Massachusetts	Clinical Fellow Senior Resident Physician	Internal Medicine
1976-1978	Walter Reed Army Medical Center, Washington, DC	Research Fellow	Infectious Disease

APPOINTMENTS AND POSITIONS

2018-present	Jonas Salk Chair in Population Health	University of Pittsburgh Pittsburgh, PA
2011-present	Distinguished University Professor of Health Science and Policy	University of Pittsburgh, Pittsburgh, PA
2006-2019	Dean	Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA
2006-2019	Associate Vice Chancellor for Global Health	University of Pittsburgh, Pittsburgh, PA
2006-2018	UPMC- Jonas Salk Chair in Global Health	University of Pittsburgh, Pittsburgh, PA
2006-2016	Director	Center for Vaccine Research, University of Pittsburgh, Pittsburgh, PA
2006-present	Professor of Epidemiology and Professor of Medicine	University of Pittsburgh, Pittsburgh, PA
1997-2006	Professor of International Health and Professor of Epidemiology	Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
	Professor of Medicine	Johns Hopkins School of Medicine, Baltimore, MD
	Director	Center for Immunization Research, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD
1996-1997	Associate Director	For Emerging Threats and Biotechnology, Walter Reed Army Institute of Research (WRAIR), Washington, DC
1988-1996	Director	US Military HIV/AIDS Research Program. Rockville, MD
1988-1990	Director	Division of Retrovirology, WRAIR, Washington, DC
	Founder and Director	US Military HIV/AIDS Laboratory Complex, Rockville, MD
1984-1988	Chief	Department of Virus Diseases, WRAIR, Washington, DC
1983-1984	Deputy Director	Armed Forces Research Institute of Medical Sciences, Bangkok Thailand

1978-1984	Chief	Virology Department, Armed Forces Research Institute of Medical Sciences (AFRIMS), Bangkok, Thailand
1976-1978	Clinical Desk Officer	Department of Virus Diseases, WRAIR, Walter Reed Army Medical Center, Washington, DC
1973-1975	Clinical Ward Officer	Medical Division, US Army Medical Research Institute of Infectious Diseases (USAMRID), Fort Detrick, MD

ACADEMIC AND MEDICAL APPOINTMENTS / US MILITARY

1992-1997	Professor, Department of Medicine, Uniformed Service University of The Health Sciences, Bethesda, Maryland Uniformed Service University of The Health Sciences, Bethesda, MD
1985-1997	Staff Physician, Department of Medicine, Walter Reed Army Medical Center, Washington, DC
1990-1992	Faculty, Pre-Command Course, U.S. Army Command and General Staff College, Fort Leavenworth, KS
1987-1992	Associate Professor, Department of Medicine, Uniformed Service University of The Health Sciences, Bethesda, MD
1985-1992	Adjunct Associate Professor, Department of Preventive Medicine/Biometrics, Uniformed Service University of The Health Sciences, Bethesda, MD
1985-1990	Attending Physician, Infectious Diseases Service Walter Reed Army Medical Center, Washington, DC

CERTIFICATION AND LICENSURE

1978	Diplomat in the Sub-Specialty of Infectious Diseases	American Board of Internal Medicine
1977	Diplomat in the Specialty of Internal Medicine	American Board of Internal Medicine

MEDICAL OR OTHER PROFESSIONAL LICENSURE

Not current	Medical License #D16350 Specialist in Internal Medicine and Infectious Diseases	State of Maryland

MEMBERSHIP IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

Elected Member	National Academy of Medicine
Elected Fellow	American Association for the Advancement of Science
Elected Fellow	American Academy of Microbiology
Elected Fellow	American Epidemiological Society
Fellow; President (1995-96)	American Society of Tropical Medicine and Hygiene
Fellow	Royal Society of Tropical Medicine and Hygiene (U.K.)
Fellow	American College of Physicians
Fellow	Infectious Disease Society of America
Member	American Public Health Association
Member	Physicians for Human Rights
Member	American Society for Virology
Member	American Association for the History of Medicine
Member	International AIDS Society
Member	International Society for Vaccines

HONORS

Military

1997	Legion of Merit
1991	National Defense Service Medal, First Oak Leaf Cluster
1991	Meritorious Service Medal, Third Oak Leaf Cluster
1990	Department of the Army "A" Proficiency Designator, Infectious Diseases
1989	Order of Military Medical Merit
1986	Meritorious Service Medal, Second Oak Leaf Cluster
1985	Meritorious Service Medal, First Oak Leaf Cluster

1984	Armed Forces Reserves Medal
1984	Overseas Ribbon
1981	Humanitarian Service Medal
1978	Meritorious Service Medal
1975	Army Commendation Medal
1973	National Defense Service Medal
1973	Army Service Ribbon

Medical and Public Health

2019	September 13, 2019 declared Donald S. Burke Day in Pittsburgh and Allegheny County by Mayor William Peduto and County Executive Richard Fitzgerald
2019	Porter Prize, Pittsburgh, for exemplary performance of health promotion and disease prevention
2018	John Snow Award American Public Health Association, Epidemiology Section
2018	Jonas Salk Chair in Population Health, University of Pittsburgh
2016	Fellow, American Society of Tropical Medicine & Hygiene
2011	Distinguished University Professor of Health Science and Policy, University of Pittsburgh
2009	Elected Member, Institute of Medicine (now National Academy of Medicine), National Academies of Science
2008	Lifetime National Associate of the National Research Council, for "Extraordinary Service to the NRC and the Academies"
2007	Ambassador, Paul G. Rogers Society for Global Health Research
2006	UPMC – Jonas Salk Chair in Global Health, University of Pittsburgh
2006	Elected Fellow, American Epidemiological Society
2003	Elected Fellow, American Association for the Advancement of Science (Medical Science)
2000	Elected Fellow, American Academy of Microbiology
2000	Elected Member, Delta Omega Public Health Honorary Society
1999	Golden Apple Award (best teacher), Johns Hopkins School of Hygiene and Public Health

1995	Elected President, American Society of Tropical Medicine & Hygiene
1992	Sustaining Membership Award, Association of Military Surgeons of the US, for outstanding contributions to medical research
1990	Bailey K. Ashford Medal of the American Society of Tropical Medicine and Hygiene, for outstanding achievements in tropical medicine by a society member under the age of 45 years
1989	Nathaniel A. Young Memorial Award of the American Committee on Arthropod-borne viruses, American Society of Tropical Medicine and Hygiene for outstanding contributions to arbovirology by a scientist under the age of 45 years
1989	Kimble Methodology Award of the Conference of Public Health Laboratorians, for outstanding contributions to Public Health by development and implementation of HIV diagnostics

RESEARCH AND TRAINING

Grants and Contracts Received

Years Inclusive	Title	Role
2019 – 2020	Advancing Analytics to Improve Actionable Changes in the Opioid Overdose Epidemic (CDC)	Principal Investigator
2018 – 2020	Support the Creation of a Pittsburgh Regional Forum on Opioid Epidemic (The Pittsburgh Foundation)	Co-Principal Investigator
2018 – 2020	PA Opioid Data Dashboard and Data Analytics Tool (PA Dept. of Health)	Co-Principal Investigator
2016 – 2021	Outpatient VE for Seasonal Flu Pandemic Flu and RSV in a Large Diverse Network (NIH)	Co-Investigator
2016 – 2020	Development of a Novel, Sensitive ZIKV-Specific Sero-diagnostic Assay Utilizing Biologically Inspired Synthetic Molecules (NIH/NIAID)	Principal Investigator
2004 – 2020	Modeling of Infectious Disease Agent Study Center of Excellence “MIDAS” (NIH/NIGMS)	Principal Investigator

Years Inclusive	Title	Role
2015 – 2019	Developing Public Health Decision Support Tools: FRED Ages and Stages and MPDS (Robert Wood Johnson Foundation)	Principal Investigator
2015 – 2019	Empowering Indian Health Researchers with Computational Modeling Tools (NIH / Fogarty International Center)	Co-Principal Investigator
2013 – 2019	Improving Global Health Through the Use of Modeling and Simulation in Brazil, South Africa, Taiwan, and Burma (Benter Foundation)	Principal Investigator
2013 – 2018	VMI II: Application of Computational Models to Guide and Evaluate Global Infectious Disease Control Programs (Bill and Melinda Gates Foundation)	Principal Investigator
2008 – 2016	Evaluation of Candidate Vaccine Technologies using Computational Models "Vaccine Modeling Initiative" Bill and Melinda Gates Foundation)	Principal Investigator
2013 – 2015	Detection of Recent HIV-1 Infections Based on Naturally Inspired Synthetic Oligomers (Bill and Melinda Gates Foundation)	Principal Investigator
2008 – 2014	Preparedness and Emergency Response Research Center: A Public Health Systems Approach (CDC)	Investigator
2009 – 2012	Center for Immunology of Emerging Infectious Diseases (NIH/NIAID)	Principal Investigator
2007 – 2010	Dengue Envelope Domain III C3D Vaccine (Dept of Defense)	Principal Investigator
2007 – 2011	Dengue Virus-Like Particle Vaccine (Department of Defense)	Investigator
2006 – 2009	Pittsburgh Influenza Prevention Project "PIPP" (CDC)	Principal Investigator

2005 – 2010	Planning for Avian Influenza Outbreaks and Potential Pandemics in Thailand (NIH/Fogarty International Center)	Principal Investigator
2003 – 2006	Mid-Atlantic Regional Center of Excellence for Biodefense (NIH/NIAD)	Co-Principal Investigator
2000 – 2006	Johns Hopkins HIV Vaccine Trials Unit (NIH/NIAID)	Principal Investigator

HONORARY LECTURES AND SEMINARS

December 2019	Keynote Address	Epidemics7, Charleston, SC
March 2019	Alexander Langmuir Keynote Lecturer	American Epidemiological Society, Annual Meeting, Los Angeles, CA
February 2015	Keynote Speaker	Sixth Annual J. Robert Clapp, Jr., Diversity Leadership Award Ceremony, Rush University Medical Center, Chicago, IL
April, 2009	O. Ray Kling Distinguished Lecturer	University of Oklahoma, Oklahoma City, OK
December 2008	Keynote Address	Tulane University President's Symposium, New Orleans, LA
June 2008	Invited Lecturer	"Science with the Stars" Walter Reed Army Institute of Research Seminar Series, Silver Springs, MD
December 2007	Keynote Address	Institute of Medicine Forum on Microbial Threats, Washington, DC
August 2007	Keynote Address	Annual Meeting of the US Department of Defense Global Emerging Infection Surveillance and Response System, Louisville, KY
September 2006	John C. Cutler Memorial Lecturer	University of Pittsburgh Graduate School of Public Health. Pittsburgh, PA
June 2005	Keynote Address	Annual Symposium, New York Academy of Medicine and the Royal Society of Medicine, New York, NY
April 2004	Invited Lecturer	Annual Meeting of the National Academy of Sciences, Washington, DC
December 2003	Centennial Anniversary Lecturer	American Society of Tropical Medicine and Hygiene, Philadelphia, PA
November 2002	Distinguished Scientist Seminar	Marine Biological Laboratory, Woods Hole, MA

March 2001	Thomas Francis, Jr. Annual Memorial Lecturer	University of Michigan School of Public Health, Ann Arbor, MI
February 1999	Invited Lecturer, 50th Anniversary Celebration	University of Pittsburgh, Graduate School of Public Health, Pittsburgh, PA
November 1997	Chapman Binford Memorial Lecture	American Society of Microbiology, Atlanta, GA
December 1996	Presidential Address	American Society of Tropical Medicine and Hygiene, Baltimore, MD
May 1995	Visiting Professor	University of Pittsburgh, School of Medicine, Department of Molecular Genetics and Biochemistry, Pittsburgh, PA
February 1995	Visiting Lecturer	Department of Microbiology and Molecular Genetics, Harvard Medical School, Boston, MA
March 1994	Visiting Professor	Tulane University School of Public Health and Tropical Medicine, New Orleans, LA
April 1993	Visiting Professor	Dartmouth Medical School and Dartmouth College, Hanover, NH

PUBLICATIONS

ORCID ID: 0000-0002-5704-8094

1. Rushforth NB, **Burke DS**. Behavioral and electrophysiological studies of hydra, II. Pacemaker activity of isolated tentacles. Biol Bull 1971;140:502-519
2. **Burke DS**. Cardiac monitor malfunction simulating bizarre rhythm. Postgrad Med 1976;60:265-66
3. **Burke DS**. Immunization against Tularemia: Analysis of the effectiveness of live *Francisella tularensis* vaccine in prevention of laboratory-acquired tularemia. J Infect Dis. 1977 Jan;135(1):55-60
4. Goldman L, Caldera DL, Nussbaum SR, Southwick FS, Krogstad D, Murray B, **Burke DS**, O'Malley TA, Goroll AH, Caplan CH, Nolan J, Carabello B, Slater EE. Multifactorial index of cardiac risk in noncardiac surgical procedures. N Engl J Med. 1977 Oct 20;297(16):845-50
5. Oster CN, **Burke DS**, Kenyon RH, Ascher MS, Harber P, Pedersen CE. Laboratory-acquired Rocky Mountain Spotted Fever: The hazard of aerosol transmission. N Engl J Med. 1977 Oct 20;297(16):859-63
6. **Burke DS**, Ramsburg HH, Edelman R. Persistence in humans of antibody to subtypes of Venezuelan Equine Encephalitis (VEE) virus after immunization with attenuated (TC-83) VEE virus vaccine. J Infect Dis. 1977 Sep;136(3):354-9
7. **Burke DS**, Ullian RB. Megaesophagus and pneumonia associated with Mycobacterium chelonei: A case report and a literature review. Am Rev Respir Dis. 1977 Dec;116(6):1101-7
8. Goldman L, Caldera DL, Southwick FS, Nussbaum SR, Murray B, O'Malley TA, Goroll AH, Caplan CH, Nolan J, **Burke DS**, Krogstad D, Carabello B, Slater EE. Cardiac risk factors and complications in non-cardiac surgery. Medicine (Baltimore). 1978 Jul;57(4):357-70

9. Fine D, Mosher D, Yamada T, **Burke DS**, Kenyon R. Coagulation and complement studies in Rocky Mountain Spotted Fever. Arch Intern Med 1978;138:735-738
10. **Burke DS**, Madoff S. Infection of a traumatic pelvic hematoma with Mycoplasma hominis. Sex Transm Dis. 1978 Apr-Jun;5(2):65-7
11. Light JA, **Burke DS**. Association of cytomegalovirus (CMV) infections with increased recipient mortality following transplantation. Transplant Proc. 1979 Mar;11(1):79-82
12. **Burke DS**, Gaydos JC, Hodder RA, Bancroft WH. Seroimmunity to polioviruses in U.S. Army recruits. J Infect Dis. 1979 Feb;139(2):225-7
13. **Burke DS**, Magic shotgun pelets. Lancet. 1979 Jun 30;1(8131):1414
14. **Burke DS**, Brown SL. Lack of diagnostic utility of "Febrile Agglutinin" screens. Mil Med. 1980 Sep;145(9):624-7
15. **Burke DS,** Jensen MM, Immunization against turkey coryza by colonization with mutants of Alcaligenes faecalis. Avian Dis. 1980 Jul-Sep;24(3):726-33
16. **Burke DS**, Nimmannitya S. Passively acquired antibody to hepatitis A virus in Thai infants. Southeast Asian J Trop Med Public Health. 1980 Sep;11(3):415-6
17. **Burke DS**, Snitbhan R, Johnson DE, Scott RM. Age specific prevalence of hepatitis A virus antibody in Thailand. Am J Epidemiol. 1981 Mar;113(3):245-9
18. Johnson DE, **Burke DS**, Williams RG, Murray BE. Observations on medical care in a refugee camp in Thailand. Mil Med. 1981 Dec;146(12):842-5
19. Nimmannitya S, Nisalak A, **Burke DS**. Passively acquired antibody to flaviviruses in Thai infants. Southeast Asian J Trop Med Public Health. 1981 Sep;12(3):344-5
20. **Burke DS**, Churchill FE Jr, Gaydos JC, Kaufman L. Epidemic histoplasmosis in patients with undifferentiated fever. Mil Med. 1982 Jun;147(6):466-7
21. Tingpalapong M, Whitmire RE, Watts DM, **Burke DS**, Binn LN, Tesaprateep T, Laungtongkum S, MarchwickRH. Epizootic of viral enteritis in dogs in Thailand. Am J Vet Res. 1982 Sep;43(9):1687-90
22. Watts DM, Harrison BA, Nisalak A, Scott RM, **Burke DS**. Evaluation of Toxorhynchites splendens (Diptera: Culicidae) as a bioassay host for dengue viruses. J Med Entomol. 1982 Jan 28;19(1):54-9
23. **Burke DS**, Nisalak A. Detection of Japanese encephalitis virus Immunoglobulin M antibodies in serum by antibody capture radioimmunoassay. J Clin Microbiol. 1982 Mar;15(3):353-61
24. **Burke DS**, Nisalak A, Ussery MA. Antibody capture immunoassay detection of Japanese encephalitis virus immunoglobulin M and G antibodies in cerebrospinal fluid. J Clin Microbiol. 1982 Dec;16(6):1034-42 PMID:7161371
25. Lam K-W, **Burke DS**, Siemens M, Cipperly V, Li C-Y, Yam LT. Characterization of serum acid phosphatase associated with dengue hemorrhagic fever. Clin Chem. 1982 Nov;28(11):2296-9
26. Gilbreath MJ, Pavanand K, MacDermott RP, Ussery M, **Burke DS**, Nimmannitya S, Tulyayon S. Cold-reactive immunoglobulin M antilymphocyte antibodies directed against B cells in Thai children with dengue hemorrhagic fever. J Clin Microbiol. 1983 Apr;17(4):672-6
27. Echeverria P, **Burke DS**, Blacklow NR, Cukor G, Charoenkul C, Yanggratoke S. Age-specific prevalence of antibody to rotavirus, Escherichia coli, heat-labile enterotoxin, Norwalk virus, and hepatitis A virus in a rural community in Thailand. J Clin Microbiol. 1983 May;17(5):923-5
28. Srivatanakul P, **Burke DS**, Thanasombutt S, and Tanngarmtron D. Serum markers of hepatitis A and B virus infection in Thai patients with primary hepatocellular carcinoma. Thai Cancer J 1983;9:113-118
29. Henderson A, Leake CJ, Burke DS. Japanese encephalitis in Nepal. Lancet. 1983 Dec 10;2(8363):1359-60

30. **Burke DS**, Heisey GB. Wild Malaysian cynomolgus monkeys are exposed to hepatitis A virus. Am J Trop Med Hyg. 1984 Sep;33(5):940-4
31. Brown GW, Shirai A, Jegathesan M, **Burke DS**, Twartz JC, Saunders P, and Huxsoll DL. Febrile illness in Malaysia - An analysis of 1,629 hospitalized patients. Am J Trop Med Hyg. 1984 Mar;33(2):311-5
32. Henchal EA, McCown JM, **Burke DS**, Seguin MC, Brandt WE. Epitopic analysis of antigenic determinants on the surface of dengue-2 virions using monoclonal antibodies. Am J Trop Med Hyg. 1985 Jan;34(1):162-9
33. **Burke DS**, Nisalak A, Ussery MA, Laorakpongse T, Chantavibul S. Kinetics of IgM and IgG Responses to Japanese encephalitis virus in human serum and cerebrospinal fluid. J Infect Dis. 1985 Jun;151(6):1093-9
34. **Burke DS**, Tingpalapong M, Ward GS, Andre R, Leake CJ. Intense transmission of Japanese encephalitis virus to pigs in a region free of epidemic encephalitis. Southeast Asian J Trop Med Public Health. 1985 Jun;16(2):199-206
35. **Burke DS**, Tingpalapong M, Elwell MR, Paul PS, VanDeusen RA. Japanese encephalitis virus immunoglobulin M antibodies in porcine sera. Am J Vet Res. 1985 Oct;46(10):2054-7
36. **Burke DS**, Chatiyanonda K, Anandrik S, Nakornsri S, Nisalak A, Hoke CH. Improved surveillance of Japanese encephalitis by detection of virus-specific IgM in desiccated blood specimens. Bull World Health Organ. 1985;63(6):1037-42
37. **Burke DS**, Lorsomrudee W, Leake CJ, Hoke CH, Nisalak A, Chongswasdi V, Laorkapongse T. Fatal outcome in Japanese encephalitis. Am J Trop Med Hyg. 1985 Nov;34(6):1203-10
38. **Burke DS**, Nisalak A, Lorsomrudee W, Ussery MA, Laorpongse T. Virus-specific antibody-producing cells in blood and cerebrospinal fluid in acute Japanese encephalitis. J Med Virol. 1985 Nov;17(3):283-92
39. Watts DM, Harrison BA, Pantuwatana S, Klein TA, **Burke DS**. Failure to detect natural transovarial transmission of dengue virus by Aedes aegypti and Aedes albopictus (Diptera: Culicidae). J Med Entomol. 1985 May 24;22(3):261-5
40. Johnson RT, **Burke DS**, Elwell M, Leake CJ, Nisalak A, Hoke CH, Lorsomrudee W. Japanese encephalitis: immunocytochemical studies of viral antigen and inflammatory cells in fatal cases. Ann Neurol. 1985 Nov;18(5):567-73
41. **Burke DS**, Ussery MA, Elwell MR, Nisalak A, Leake C, Laorakpongse T, Isolation of Japanese encephalitis virus strains from sentinel pigs in northern Thailand, 1982. Trans R Soc Trop Med Hyg. 1985;79(3):420-1
42. Wattanavijarn W, Tesprateep T, **Burke DS,** Absence of porcine parvovirus transmission to man. Trans R Soc Trop Med Hyg. 1985;79(4):561
43. **Burke DS**, Nisalak A, Nimmannitya S, Disappearance of Chikungunya virus from Bangkok. Trans R Soc Trop Med Hyg. 1985;79(3):419-20
44. Tingpalapong M, Hoke CH, Ward GS, **Burke DS**, Elwell MR, Lohytyothin S, Saisombat S. Anti-rabies virus IgM in serum and cerebrospinal fluid from rabid dogs. Southeast Asian J Trop Med Public Health. 1986 Dec;17(4):550-7
45. **Burke DS**, Nisalak A, Hoke CH. Field trial of a Japanese encephalitis diagnostic kit. J Med Virol. 1986 Jan;18(1):41-9
46. Leake CJ, **Burke DS**, Nisalak A, Hoke CH. Isolation of Japanese encephalitis virus from clinical specimens using a continuous mosquito cell line. Am J Trop Med Hyg. 1986 Sep;35(5):1045-50
47. **Burke DS**, Redfield RR, Classification of infections with human immunodeficiency virus. Ann Intern Med. 1986 Dec;105(6):968
48. Monath TP, Wands JR, Hill LJ, Brown NV, Marciniak RA, Wong MA, Gentry MK, **Burke DS**, Grant JA, Trent DW. Geographic classification of dengue-2 virus strains by antigen signature analysis. Virology. 1986 Oct 30;154(2):313-24

49. Leake CJ, Ussery MA, Nisalak A, Hoke CH, Andre RG, **Burke DS**. Virus isolations from mosquitoes collected during the 1982 Japanese encephalitis epidemic in northern Thailand. Trans R Soc Trop Med Hyg. 1986;80(5):831-7
50. Kelley PW, Redfield RR, Ward DL, **Burke DS**, Miller RN, Prevalence and incidence of HTLV-III infection in a prison. JAMA. 1986 Oct 24-31;256(16):2198-9
51. **Burke DS**, Redfield RR, False-positive Western blot tests for antibodies to HTLV-III. JAMA. 1986 Jul 18;256(3):347
52. Sjogren MH, Tanno H, Fay O, Sileoni S, Cohen BD, **Burke DS**, Feighny RJ. Hepatitis A virus in stool during clinical relapse. Ann Intern Med. 1987 Feb;106(2):221-6
53. **Burke DS**, Morrill JE. Levels of Interferon in the plasma and cerebrospinal fluid of patients with acute Japanese Encephalitis. J Infect Dis. 1987 Apr;155(4):797-9
54. Watts DM, **Burke DS**, Harrison BA, Whitmire RE, Nisalak A. Effect of temperature on the vector efficiency of Aedes aegypti for dengue-2 virus. Am J Trop Med Hyg. 1987 Jan;36(1):143-52
55. **Burke DS**, Nisalak A, Gentry MK. Detection of flavivirus antibodies in human serum by epitope-blocking immunoassay. J Med Virol. 1987 Oct;23(2):165-73
56. **Burke DS**, Redfield RR, Putman P, Alexander SS. Variations in Western blot banding patterns of Human T-Cell Lymphotropic Virus Type III/Lymphadenopathy-associated Virus. J Clin Microbiol. 1987 Jan;25(1):81-4
57. Redfield RR, Wright DC, James WD, Jones TS, Brown C, **Burke DS**. Disseminated vaccinia in a military recruit with human immunodeficiency virus (HIV) disease. N Engl J Med. 1987 Mar 12;316(11):673-6
58. **Burke DS**, Brandt BL, Redfield RR, Lee T-H, Thorne RM, Beltz GA, Hung C-H. Diagnosis of Human Immunodeficiency Virus infection by immunoassay using a molecularly cloned and expressed virus envelope polypeptide. Comparison to Western blot on 2707 consecutive serum samples. Ann Intern Med. 1987 May;106(5):671-6
59. **Burke DS**, Brundage JF, Bernier W, Gardner LI, Redfield RR, Gunzenhauser J, Voskovitch J, Herbold JR. Demography of HIV infections among civilian applicants for military service in four counties in New York City. N Y State J Med. 1987 May;87(5):262-4
60. Redfield RR, **Burke DS**. Shadow on the Land: The Epidemiology of HIV infection. Viral Immunol. 1987 Spring;1(1):69-81
61. Rhoads JL, Wright DC, Redfield RR, **Burke DS**. Chronic vaginal candidiasis in women with Human Immunodeficiency infection. JAMA. 1987 Jun 12;257(22):3105-7
62. **Burke DS**, Brundage JF, Herbold JR, Berner W, Gardner LI, Gunzenhauser JD, Voskovitch J, Redfield RR. Human Immunodeficiency Virus infections among civilian applicants for United States military service, October 1985 to March 1986. N Engl J Med. 1987 Jul 16;317(3):131-6
63. Lennox JL, Redfield RR, **Burke DS**. HIV antibody screening in a general hospital population. JAMA. 1987 Jun 5;257(21):2914
64. **Burke DS**, Nisalak A, Johnson DE, Scott RMcN. A prospective study of dengue infections in Bangkok. Am J Trop Med Hyg. 1988 Jan;38(1):172-80 PMID:3341519
65. Kliks SC, Nimmanitya S, Nisalak A, **Burke DS**. Evidence that maternal dengue antibodies are important in the development of dengue hemorrhagic fever in infants. Am J Trop Med Hyg. 1988 Mar;38(2):411-9
66. Walker PJ, Henchal EA, Blok J, Repik PM, Henchal LS, **Burke DS**, Robbins SJ, Gorman BM. Variation in dengue type 2 viruses isolated in Bangkok during 1980. J Gen Virol. 1988 Mar;69 (Pt 3):591-602
67. Putnak JR, Charles PC, Padmanabhan R, Irie K, Hoke CH, **Burke DS**. Functional and antigenic domains of the dengue-2 virus nonstructural glycoprotein NS-1. Virology. 1988 Mar;163(1):93-103

68. Innis BL, Eckels KH, Kraiselburd E, Dubois DR, Meadors GF, Gubler DJ, **Burke DS**, Bancroft WH. Virulence of a live dengue virus vaccine candidate: A possible new marker of dengue virus attenuation. J Infect Dis. 1988 Oct;158(4):876-80
69. Hoke CH, Nisalak A, Sangawhipa N, Jatanasen S, Laorakapongse T, Innis BL, Kotchasenee S-O, Gingrich JB, Latendresse J, Fukai K, **Burke DS**. Protection against Japanese encephalitis by inactivated vaccines. N Engl J Med. 1988 Sep 8;319(10):608-14 PMID:2842677
70. Brundage JF, **Burke DS**, Gardner LI, Visintine R, Peterson M, Redfield RR. HIV infection among young adults in the New York area: Prevalence and incidence estimates based on antibody screening among civilian applicants for military service. NY State J of Med 1988:88:232-235
71. Warrell MJ, Looareesuwan S, Manatsathit S, White NJ, Phuapradit P, Vejjajiva A, Hoke CH, **Burke DS**, Warrell DA. Rapid diagnosis of rabies and post-vaccinal encephalitides. Clin Exp Immunol 1988 Jun;72(3):521
72. **Burke DS**, Brundage JF, Redfield RR, Damato JJ, Schable CA, Putman P, Visintine R, Kim HI. Measurement of the false positive rate in a screening program for Human Immunodeficiency Virus infections. N Engl J Med. 1988 Oct 13;319(15):961-4
73. Damato JJ, Fipps DR, Redfield RR, **Burke DS**. The Department of the Army quality assurance program for Human Immunodeficiency Virus antibody testing. Lab Med 1988;19:577-580
74. Damato JJ, Kim H, Fipps DR, Wylie N, **Burke DS**. High-resolution HIV Western blot methodology using Bio Rad Mini Protein II Test System. Lab Med 1988;19:753-756
75. Fipps DR, Damato JJ, Brandt B, **Burke DS**. Effects of multiple freeze thaws and various temperatures on the reactivity of Human Immunodeficiency Virus antibody using three detection assays. J Virol Methods. 1988 Jun;20(2):127-32
76. Gendelman HE, Orenstein JM, Martin MA, Ferrua C, Mitra R, Phipps T, Wahl LA, Lane HC, Fauci AS, **Burke DS**, Skillman D, Meltzer MS. Efficient isolation and propagation of Human Immunodeficiency Virus on recombinant colony-stimulating factor 1-treated monocytes. J Exp Med. 1988 Apr 1;167(4):1428-41
77. Looney DJ, Fisher AG, Putney SD, Rusche JR, Redfield RR, **Burke DS**, Gallo RC, Wong-Staal F. Type-restricted neutralization of molecular clones of Human Immunodeficiency Virus. Science. 1988 Jul 15;241(4863):357-9
78. Fipps DR, Damato JJ, **Burke DS**. Effects of heat inactivation on HIV antibody screening and confirmatory test systems. Diagn Microbiol Infect Dis. 1988 Jun;10(2):103-7
79. Redfield RR, **Burke DS**. HIV Infection: The Clinical Picture. Sci Am. 1988 Oct;259(4):90-8
80. **Burke DS**, Review of laboratory proficiency, Infect Control Hosp Infect Control Hosp Epidemiol. 1988 Aug;9(8):365
81. Kliks SC, Nisalak A, Brandt WE, Wahl L, **Burke DS**. Antibody-dependent enhancement of dengue virus growth in human monocytes as a risk factor for dengue hemorrhagic fever. Am J Trop Med Hyg. 1989 Apr;40(4):444-51
82. Mason PW, Dalrymple JM, Gentry MK, McCown JM, Hoke CH, **Burke DS**, Fournier MJ, Mason TL. Molecular characterization of a neutralizing domain of the Japanese encephalitis virus structural glycoprotein. J Gen Virol. 1989 Aug;70 (Pt 8):2037-49
83. Kaufman BM, Summers PL, DuBois DR, Cohen WH, Gentry MK, Timchak RL, **Burke DS**, Eckels KH. Monoclonal antibodies for dengue virus PRM glycoprotein protect mice against lethal dengue infection. Am J Trop Med Hyg. 1989 Nov;41(5):576-80
84. Shafferman A, Lennox J, Grosfeld H, Sadoff J, Redfield RR, **Burke DS**. Patterns of antibody recognition of selected conserved amino acid sequences from the HIV envelope in sera from different stages of HIV infection. AIDS Res Hum Retroviruses. 1989 Feb;5(1):33-9

85. Rickman WJ, Waxdal MJ, Monical C, Damato JD, **Burke DS**. Department of Army lymphocyte immunophenotyping quality assurance program. Clin Immunol Immunopathol. 1989 Jul;52(1):85-95
86. Gardner LI, Jr, Brundage JF, **Burke DS**, McNeil JG, Visintine R, Miller RN. Spatial diffusion of the Human Immunodeficiency Virus infection epidemic in the United States, 1985-1987. Ann Assoc Am Geograph 79:25-43
87. McNeil JG, Brundage JF, Wann ZF, **Burke DS**, Miller RN, and the Walter Reed Retrovirus Research Group. Direct measurement of Human Immunodeficiency Virus seroconversions in a serially tested population of young adults in the United States Army, October 1985 to October 1987. N Engl J Med. 1989 Jun 15;320(24):1581-5
88. Shafferman A, Layne A, Sadoff J, **Burke DS**, Morton WR, Benveniste RE. Antibody recognition of SIV envelope peptides in plasma from macaques experimentally infected with SIVmne. AIDS Res Hum Retroviruses. 1989 Jun;5(3):327-36
89. **Burke DS**. Laboratory diagnosis of Human Immunodeficiency Virus infection. Clin Lab Med. 1989 Sep;9(3):369-92
90. Gardner LI, Brundage JF, **Burke DS**, McNeil JG, Visintine R, Miller RN. Evidence for spread of the Human Immunodeficiency Virus epidemic into low prevalence areas of the United States. J Acquir Immune Defic Syndr. 1989;2(6):521-32
91. Burke DS, Redfield RR, Bjornson DC, Fowler AK, Oster, CN, Frequent isolation of HIV-1 from the blood of patients receiving zidovudine (AZT) therapy, N Engl J Med. 1989 Dec 14;321(24):1682
92. Malone JL, Simms TE, Gray GC, Wagner KF, Burge JR, **Burke DS**. Sources of variability in repeted T-helper lymphocyte counts from Human Immunodeficiency virus Type 1-infected patients: total lymphocyte count fluctuations and diurnal cycle are important. J Acquir Immune Defic Syndr. 1990;3(2):144-51
93. Brundage JF, McNeil JG, Miller RN, Gardner LI, Harrison SM, Hawkes C, Craig DB, Redfield RR, **Burke DS**. The current distribution of CD4+ T-lymphocyte counts among adults in the United States with Human Immunodeficiency Virus infections: Estimates based on the experience of the US Army. J Acquir Immune Defic Syndr. 1990;3(1):92-4
94. Kelly PW, Miller RN, Pomerantz R, Wann F, Brundage JF, **Burke DS**. Human Immunodeficiency Virus seropositivity among members of the active duty U.S. Army, 1985-1989. Am J Public Health. 1990 Apr;80(4):405-10
95. Gomatos PJ, Stamatos NM, Gendelman HE, Fowler A, Hoover DL, Kalter DC, **Burke DS**, Tramont EC, Meltzer MS. Relative inefficiency of soluble recombinant CD4 for inhibition of infection by monocyte-tropic HIV in monocytes and T cells. J Immunol. 1990 Jun 1;144(11):4183-8
96. **Burke DS**, Brundage JF, Goldenbaum M, Gardner LI, Peterson M, Visintine R, Redfield RR. Human Immunodeficiency Virus infections in teenagers: Seroprevalence among applicants for US military service. JAMA. 1990 Apr 18;263(15):2074-7.
97. **Burke DS**, Fowler AK, Redfield RR, Dilworth S, Oster CN. Isolation of HIV-1 from the blood of seropositive adults: Patient stage of illness and sample inoculum size are major determinants of a positive culture. J Acquir Immune Defic Syndr. 1990;3(12):1159-67
98. Brundage JF, **Burke DS**, Gardner LI, McNeil JG, Goldenbaum M, Visintine R, Redfield RR, Peterson M, Miller RN. Tracking the spread of the HIV infection epidemic among young adults in the United States: results of the first four years of screening among civilian applicants for U.S. military service. J Acquir Immune Defic Syndr. 1990;3(12):1168-80
99. Cowan DN, Pomerantz RS, Wann ZF, Goldenbaum M, Brundage JF, Miller RN, **Burke DS**, Carroll CA, and the Walter Reed Retrovirus Research Group. Human Immunodeficiency Virus infection among members of the Reserve Components of the US Army: Prevalence, incidence, and demographic characteristics J Infect Dis. 1990 Oct;162(4):827-36

100. Birx D, Redfield RR, Tencer K, Fowler A, **Burke DS**, and Tosato G. Induction of interleukin-6 during Human Immunodeficiency Virus Infection. Blood. 1990 Dec 1;76(11):2303-10
101. Humphrey M, Mosca J, Baker JR Jr, Drabick JJ, Carr FE, **Burke DS**, Wartofsky L, Djuh Y-Y, and Burman KD. Absence of retroviral sequences in Graves disease. Lancet. 1991 Jan 5;337(8732):17-8
102. Birx DL, Rhoads JL, Wright JC, **Burke DS**, Redfield RR. Immunologic parameters in early-stage HIV-seropositive subjects associated with vaccine responsiveness. J Acquir Immune Defic Syndr. 1991;4(2):188-96
103. Wages JM Jr., Hamdallah M, Calabro MA, Fowler AK, Oster CN, Redfield RR, and **Burke DS**. Clinical Performance of a polymerase chain reaction testing algorithm for diagnosis of HIV-1 infection in peripheral blood mononuclear cells. J Med Virol. 1991 Jan;33(1):58-63
104. Michael NL, Morrow P, Mosca J, Vahey M, **Burke DS**, and Redfield RR. Induction of Human Immunodeficiency Virus Type 1 expression in chronically infected cells is associated primarily with a shift in RNA splicing patterns. J Virol. 1991 Mar;65(3):1291-303
105. McNeil JG, Brundage JF, Gardner LI, Wann ZF, Razullo PO, Redfield RR, **Burke DS**, Miller RN. Trends of HIV seroconversion among young adults in the US Army, 1985 to 1989. JAMA. 1991 Apr 3;265(13):1709-14
106. Redfield RR, Birx DL, Ketter N, Tramont E, Polonis V, Davis C, Brundage JF, Smith G, Johnson S, Fowler A, Wierzba T, Shafferman A, Volvovitz F, Oster C, **Burke DS**, and the Military Medical Consortium for Applied Retroviral Research. A Phase I evaluation of the safety and immunogenicity of vaccination with recombinant gp160 in patients with early Human Immunodeficiency Virus infection. N Engl J Med. 1991 Jun 13;324(24):1677-84
107. Cowan DN, Brundage JF, Pomerantz RS, Miller RN, **Burke DS**. HIV infection among members of the US Army Reserve Components with medical and health occupations. J JAMA. 1991 Jun 5;265(21):2826-30
108. Drabick JJ, Horning VL, Lennox JL, Coyne PE, Oster CN, Knight RD, Dillard TA, Fuller SA, Damato JJ, **Burke DS**. A retrospective analysis of diseases associated with indeterminate HIV western blot patterns. Mil Med. 1991 Feb;156(2):93-6
109. Damato JJ, O'Bryen BN, Fuller SA, Roberts CR, Redfield RR, **Burke DS**. Resolution of indeterminant HIV-1 test data using the Department of Defense HIV-1 testing program. Lab Medicine 1991;22:107-113
110. Michael NL, **Burke DS**. Natural history of human immunodeficiency virus infection. Dermatol Clin. 1991 Jul;9(3):429-41
111. Shafferman A, Jahrling PB, Benveniste RE, Lewis MG, Phipps TJ, Eden-McCutchan F, Sadoff J, Eddy GA, **Burke DS**. Protection of macaques with a simian immunodeficiency virus envelope peptide vaccine based on conserved human immunodeficiency virus type 1 sequence. Proc Natl Acad Sci U S A. 1991 Aug 15;88(16):7126-30
112. Rosenberg YJ, White BD, Papemaster SF, Zack P, Jarling PB, Eddy GA, **Burke DS**, Lewis MG. Variation in T-lymphocyte activation and susceptibility to SIVPBj-14-induced acute death in macaques. J Med Primatol. 1991 Jun;20(4):206-10
113. McCutchan FE, Sanders-Buell E, Oster CW, Redfield RR, Hira SK, Perine PL, Ungar BLP, **Burke DS**. Genetic comparison of Human Immunodeficiency Virus (HIV-1) isolates by polymerase chain reaction. J Acquir Immune Defic Syndr. 1991;4(12):1241-50
114. Rhoads JL, Birx DL, Wright DC, Brundage JF, Brandt BL, Redfield RR, **Burke DS**. Safety and immunogenicity of multiple conventional immunizations administered during early HIV infection. J Acquir Immune Defic Syndr. 1991;4(7):724-31

115. **Burke DS**, Introduction to the 1991 ASTMH presidential address, Am J Trop Med Hyg. 1992 Mar;46(3):239-40
116. Michael NL, Vahey M, **Burke DS**, Redfield RR. Viral DNA and mRNA expression correlate with the stage of human immunodeficiency virus (HIV) type 1 infection in humans: evidence for viral replication in all stages of HIV disease. J Virol. 1992 Jan;66(1):310-6
117. Roberts CR, Fipps DR, Brundage JF, Wright SE, Goldenbaum M, Alexander SS, **Burke DS**. Prevalence of human T-lymphotropic virus in civilian applicants for the United States Armed Forces. Am J Public Health. 1992 Jan;82(1):70-3
118. **Burke DS**. Human HIV Vaccine Trials: Does antibody-dependent enhancement pose a genuine risk? Perspect Biol Med. 1992 Summer;35(4):511-30
119. Nkya WM, Warren RQ, Wolf H, Hendrix CW, Tesha J, Redfield RR, Melcher GP, **Burke DS**, Kanda P, Kennedy RC. Fine specificity of the humoral immune response to HIV-1 Gp160 in HIV-1 infected individuals from Tanzania. J Med Virol. 1992 May;37(1):61-6
120. McCutchan FE, Ungar BLP, Hegerich P, Roberts CR, Fowler AK, Hira SK, Perine PL, **Burke DS**. Genetic analysis of HIV-1 isolates from Zambia and an expanded phylogenetic tree for HIV-1. J Acquir Immune Defic Syndr. 1992;5(5):441-9
121. Shafferman A, Lewis MG, McCutchan FE, Benveniste RE, Jahrling PB, Hickman RL, Lai C-Y, **Burke DS**, Eddy GA. Vaccination of macaques with SIV conserved envelope peptides suppressed infection and prevented disease progression and transmission. AIDS Res Hum Retroviruses. 1992 Aug;8(8):1483-7
122. McCutchan FE, Hegerich PA, Brennan TP, Phanuphak P, Singharaj P, Jugsudee A, Berman PW, Gray AM, Fowler AK, **Burke DS**. Genetic variants of HIV-1 in Thailand. AIDS Res Hum Retroviruses. 1992 Nov;8(11):1887-95
123. **Burke DS**, Amsterdam AIDS conference reveals slow progress. Crit Care Nurse. 1992 Oct;12(7):98-9
124. **Burke DS,** International vaccine efficacy trials: special considerations. AIDS Res Hum Retroviruses. 1992 Aug;8(8):1531
125. Rosenberg YJ, Shafferman A, White BD, Papermaster SF, Leon E, Eddy GA, Benveniste R, **Burke DS**, Lewis MG. Variation in the CD4+ and CD8+ populations in lymph nodes does not reflect that in the blood during SIVMNE/E11S infection of macaques., J Med Primatol. 1992 Feb-May;21(2-3):131-7
126. Malone JL, Oldfield EX 3rd, Wagner KF, Simms TE, Daly R, O'Brian J, **Burke DS**, Abnormalities of morning serum cortisol levels and circadian rhythms of CD4+ lymphocyte counts in human immunodeficiency virus type 1-infected adult patients, J Infect Dis. 1992 Jan;165(1):185-6
127. Tramont EC, **Burke DS**. AIDS/HIV in the US Military. Vaccine. 1993;11(5):529-33.
128. Roy MJ, Damato JJ, **Burke DS**. Absence of true seroreversion of HIV-1 antibody in seroreactive individuals. JAMA. 1993 Jun 9;269(22):2876-9
129. Kim JH, Mosca JD, Vahey MT, McLinden RJ, **Burke DS**, Redfield RR. Consequences of Human Immunodeficiency Virus Type 1 superinfection of chronically infected cells. AIDS Res Hum Retroviruses. 1993 Sep;9(9):875-82
130. Birx DL, Brundage J, Larson K, Engler R, Smith L, Squire E, Carpenter G, Sullivan M, Rhoads J, Oster C, James W, Lupton G, Wierzba T, **Burke DS**, Redfield RR. The prognostic utility of delayed-type hypersensitivity skin testing in the evaluation of HIV-infected patients. J Acquir Immune Defic Syndr. 1993 Nov;6(11):1248-57
131. **Burke DS**. Of postulates and peccadilloes: Robert Koch and vaccine (tuberculin) therapy for tuberculosis. Vaccine. 1993;11(8):795-804
132. Shafferman A, Lewis MG, McCutchan FE, Benveniste RE, Jahrling PB, **Burke DS**, Eddy GA. Prevention of transmission of simian immunodeficiency virus from vaccinated

macaques that developed transient virus infection following challenge. Vaccine. 1993;11(8):848-52

133. **Burke DS**. Vaccine therapy for HIV: A historical review of the treatment of infectious diseases by active specific immunization with microbe-derived antigens. Vaccine. 1993;11(9):883-91. Erratum in: Vaccine 1994 Jan;12(1):93
134. Mascola JR, Mathieson BJ, Zack PM, Walker MC, Halstead SB, **Burke DS**. Summary report: Workshop on the potential risks of antibody-dependent enhancement in human HIV vaccine trials. AIDS Res Hum Retroviruses. 1993 Dec;9(12):1175-84
135. Mascola JR, **Burke DS**. Antigen detection in neutralization assays: High levels of interfering anti-p24 antibodies in some plasma. AIDS Res Hum Retroviruses. 1993 Dec;9(12):1173-4
136. Lewis MG, Elkins WR, McCutchan FE, Beneveniste RE, Lai CY, Montefiori DC, **Burke DS**, Eddy GA, Shafferman A. Passively transferred antibodies directed against conserved regions of SIV envelope protect macaques from SIV infection. Vaccine. 1993 Oct;11(13):1347-55
137. Louwagie J, McCutchan FE, Peeters M, Brennan TP, Sanders-Buell E, Eddy GA, van der Groen G, Fransen K, Gershy-Damet GM, Deleys R, **Burke DS**. Phylogenetic analysis of gag genes from 70 international HIV-1 isolates provides evidence for multiple genotypes. AIDS. 1993 Jun;7(6):769-80
138. Mascola JR, Louwagie J, McCutchan FE, Fischer CL, Hegerich PA, Wagner KF, Fowler AK, McNeil JG, **Burke DS**. Two antigenically distinct subtypes of Human Immunodeficiency Virus Type 1: Viral genotype predicts neutralization serotype. J Infect Dis. 1994 Jan;169(1):48-54
139. Mayers DL, Japour AJ, Arduino JM, Hammer SM, Reichman R, Wagner KF, Chung R, Lane J, Crumpacker CS, McLeod GX, Beckett LA, Roberts CR, Winslow D, **Burke DS**. Dideoxynucleoside resistance emerges with prolonged zidovudine monotherapy. Antimicrob Agents Chemother. 1994 Feb;38(2):307-14
140. Louwagie J, Delwart EL, Mullins JI, McCutchan FE, Eddy G, **Burke DS**. Genetic analysis of HIV-1 isolates from Brazil reveals presence of two distinct genetic subtypes. AIDS Res Hum Retroviruses. 1994 May;10(5):561-7
141. Carroll R, Lin JT, Dacquel EJ, Mosca JD, **Burke DS**, St Louis DC. A Human Immunodeficiency Virus Type 1 (HIV-1) -based retroviral vector system utilizing stable HIV-1 packaging cell lines. J Virol. 1994 Sep;68(9):6047-51
142. Biselli R, Loomis LD, Del Bono V, **Burke DS**, Redfield RR, Birx DL. Immunization of HIV-infected patients with RPG160: Modulation of anti-RGP120 antibody spectrotype. J Acquir Immune Defic Syndr. 1994 Oct;7(10):1016-24
143. Vahey M, Birx DL, Michael NL, **Burke DS**, Redfield RR. Assessment of gag DNA and genomic RNA in peripheral blood mononuclear cells in HIV-infected patients receiving intervention with a recombinant gp 160 subunit vaccine in a phase I study. AIDS Res Hum Retroviruses. 1994 Jun;10(6):649-54
144. VanCott TC, Bethke FR, Kalyanaraman V, **Burke DS**, Redfield RR, Birx DL. Preferential antibody recognition of structurally distinct HIV-1 gp120 molecules. J Acquir Immune Defic Syndr. 1994 Nov;7(11):1103-15
145. Mascola JR, McNeil JG, **Burke DS**, AIDS vaccines. Are we ready for human efficacy rials? JAMA. 1994 Aug 10;272(6):488-9
146. Mayers DL, Mikovits JA, Joshi B, Hewlett IK, Estrada JS, Wolfe AD, Garcia GE, Doctor BP, **Burke DS**, Gordon RK, Lane JR, Chiang PK. Anti-Human Immunodeficiency Virus 1 (HIV-1) activities of 3-Deaza-adenosine Analogs: Increased potency against 3-azido-3-dexythymidine-resistant HIV-1 strains. Proc Natl Acad Sci U S A. 1995 Jan 3;92(1):215-9
147. Louwagie J, Janssens W, Mascola J, Heyndrickx L, Hegerich P, van der Groen G, McCutchan FE **Burke DS**. Genetic diversity of the envelope glycoprotein from human immunodeficiency virus type 1 isolates of African origin. J Virol. 1995 Jan;69(1):263-71

148. **Burke DS**. Review: Human trials of experimental HIV vaccines. AIDS. 1995;9 Suppl A:S171-80
149. Loomis LD, Deal CD, Kersey KS, **Burke DS**, Redfield RR, Birx DL. Humoral responses to linear epitopes on the HIV-1 envelope in seropositive volunteers after vaccine therapy with rgp160. J Acquir Immune Defic Syndr Hum Retrovirol. 1995 Sep 1;10(1):13-26
150. Artenstein AW, VanCott TC, Mascola JR, Carr JK, Hegerich PA, Gaywee J, Sanders-Buell E, Robb ML, Dayhoff DE, Thitivichianlert S, Nitayaphan S, McNeil JG, Birx DL, Michael RA, **Burke DS** McCutchan FE. Dual infection with Human Immunodeficiency Virus type 1 of distinct envelope subtypes in humans. J Infect Dis. 1995 Apr;171(4):805-10
151. Salminen MO, Koch C, Sanders-Buell E, Ehrenberg PK, Michael NL, Carr JK, **Burke DS**, McCutchan FE. Recovery of virtually full-length HIV-1 provirus of diverse subtypes from primary virus cultures using the polymerase chain reaction. Virology. 1995 Oct 20;213(1):80-6
152. Brodine SK, Mascola JR, Weiss PJ, Ito SI, Porter KR, Artenstein AW, Garland FC, McCutchan FE, **Burke DS**. Detection of diverse HIV-1 genetic subtypes in the USA. Lancet. 1995 Nov 4;346(8984):1198-9
153. Michael NL, Mo T, Merzouki A, O, Shaughnessy M, Oster C, **Burke DS**, Redfield RR, Birx DL, Cassol SA. Human immunodeficiency virus type 1 cellular RNA load and splicing patterns predict disease progression in a longitudinally studied cohort. J Virol. 1995 Mar;69(3):1868-77
154. VanCott TC, Bethke FR, **Burke DS**, Redfield RR Birx DL. Lack of induction of antibodies specific for conserved, discontinuous epitopes of HIV-1 envelope glycoprotein by candidate AIDS vaccines. J Immunol. 1995 Oct 15;155(8):4100-10
155. Renzullo PO, McNeil JG, Wann ZF, **Burke DS**, Brundage JF. Human immunodeficiency virus type-1 seroconversion trends among young adults serving in the United States Army, 1985 - 1993. J Acquir Immune Defic Syndr Hum Retrovirol. 1995 Oct 1;10(2):177-85
156. Brown AE, Lane JR, Wagner KF, Zhou S, Chung R, Ray KL, Blatt SP, **Burke DS**. Rates of p24 antigenemia and viral isolation in comparable white and black HIV-infected subjects. AIDS. 1995 Apr;9(4):325-8
157. Artenstein AW, Coppola J, Brown AE, Carr JK, Sanders-Buell E, Galbarini E, Mascola JR, VanCott TC, Schonbrood P, McCutchan FE, **Burke DS**. Multiple introductions of HIV-1 subtype E into the western hemisphere. Lancet 1995 Nov 18;346(8986):1376
158. Salminen MO, Carr JK, **Burke DS**, McCutchan FE. Identification of breakpoints in intergenotypic recombinants of HIV type-1 by bootscanning. AIDS Res Hum Retroviruses. 1995 Nov;11(11):1423-5
159. Brown AE, **Burke DS.** Cost of HIV testing in the U.S. Army. N Engl J Med. 1995 Apr 6;332(14):963
160. **Burke DS**, Brown AE, Screening surgeons for HIV infection. Ann Intern Med. 1995 Nov 15;123(10):812-3
161. **Burke DS**. Joseph-Alexander Auzias-Turrenne, Louis Pasteur, and early concepts of virulence, attenuation, and vaccines. Perspect Biol Med. 1996 Winter;39(2):171-86
162. Brown AE, Brundage JF, Tomlinson JP, **Burke DS**. The U.S. Army HIV testing program: The First Decade. Mil Med. 1996 Feb;161(2):117-22
163. Brown AE, Newby JH, Ray KL, Jackson JN, **Burke DS**. Prevention and treatment of HIV infection in minorities in the U.S. Military: A Review of Military Research. Mil Med. 1996 Feb;161(2):123-7
164. Wong MT, Dolan MJ, Kozlow E, Doe R, Melcher GP, **Burke DS**, Boswell RN, Vahey M. Patterns of virus burden and T-cell phenotype are established early and are correlated

with the rate of disease progression in Human Immunodeficiency Virus type 1 - infected persons. J Infect Dis. 1996 Apr;173(4):877-87

165. Mascola JR, Snyder SW, Weislow OS, Belay SM, Belshe RB, Schwartz DH, Clements ML, Dolin R, Graham BS, Gorse GJ, Keefer MC, McElrath MJ, Walker MC, Wagner KF, McNeil JG, McCutchan FE, **Burke DS**. Immunization with envelope subunit vaccine products elicits neutrallizing antibodies against laboratory-adapted but not primary isolates of human immunodeficiency virus type 1. J Infect Dis. 1996 Feb;173(2):340-8
166. McCutchan FE, Artenstein AW, Sanders-Buell E, Salminen MO, Carr JK, Mascola JR, Yu X-F, Nelson KE, Khamboonruang C, Schmitt D, Kieny MP, McNeil JG, **Burke DS**. Diversity of the envelope glycoprotein among human immunodeficiency virus type 1 isolates of clade E from Asia and Africa. J Virol. 1996 Jun;70(6):3331-8
167. Sirisopana N, Torugsa K, Mason CJ, Markowitz LE, Jugsudee A, Supapongse T, Chuenchitra C, Michael RA, **Burke DS**, Singharaj P, Johnson AE, McNeil JG, McCutchan FE, Carr JK. Correlates of HIV-1 seropositivity among young men in Thailand. J Acquir Immune Defic Syndr Hum Retrovirol. 1996 Apr 15;11(5):492-8
168. Chiang PK, McCann PP, Land JR, Pankaskie M, **Burke DS**, Mayers DL. Anti-human immunodeficiency virus (HIV-1) activities of inhibitors of polyamine pathways. J J Biomed Sci. 1996 Apr;3(2):78-81
169. Levine BL, Mosca JD, Riley JL, Carroll RG, Vahey MT, Jogodzinski L, Wagner KF, Mayers DL, **Burke DS**, Weislow OS, St. Louis DC, June CH. Antiviral effect and ex vivo CD4+ T cell proliferation in HIV-1 positive patients as a result of CD28 costimulation. Science. 1996 Jun 28;272(5270):1939-43
170. Carr JK, Salminen MO, Koch C, Gotte D, Artenstein AW, Hegerich PA, St. Louis D, **Burke DS**, McCutchan FE. Full length sequence and mosaic structure of a human immunodeficiency virus type 1 isolate from Thailand. J Virol. 1996 Sep;70(9):5935-43.
171. Salminen MO, Johansson B, Sonnerborg A, Ayehunie S, Gotte D, Leinikki P, **Burke DS**, McCutchan FE. Full-length sequence of an Ethiopian human immunodeficiency virus. AIDS Res Hum Retroviruses. 1996 Sep 20;12(14):1329-39
172. Mascola JR, Louder MK, Surman SR, Vancott TC, Yu XF, Bradac J, Porter KR, Nelson KE, Girard M, McNeil JG, McCutchan FE, Birx DL, **Burke DS**. Human immunodeficiency virus type 1 neutrallizing antibody serotyping using serum pools and an infectivity reduction assay. AIDS Res Hum Retroviruses. 1996 Sep 20;12(14):1319-28
173. Michael NL, Davis KE, Loomis-Price LD, VanCott TC, **Burke DS**, Redfield RR, Birx DL. V3 seroreactivity and sequence variation: tracking the emergence of V3 genotypic variation in HIV-1 infected patients. AIDS. 1996 Feb;10(2):121-9
174. Kim JH, McLinden RJ, Mosca JD, **Burke DS**, Boswell RN, Birx DL, Redfield RR. Transcriptional effects of superinfection in HIV chronically infected T cells: studies in dually infected clones. J Acquir Immune Defic Syndr Hum Retrovirol. 1996 Aug 1;12(4):329-42
175. McCutchan FE, Salminen MO, Carr JK**, Burke DS.** HIV-1 genetic diversity. AIDS. 1996 Dec;10 Suppl 3:S13-20
176. Porter KR, Mascola JR, Hupudio H, Ewing D, VanCott TC, Anthony RL, Corwin AL, Widodo S, Ertono S, McCutchan FE, **Burke DS**, Hayes CG, Wignall FS, Graham RR. Genetic, antigenic and serologic characterization of human immunodeficiency virus type 1 from Indonesia. J Acquir Immune Defic Syndr Hum Retrovirol. 1997 Jan 1;14(1):1-6
177. Evans JS, Nims T, Cooley J, Bradley W, Jagodzinski L, Zhou S, Melcher GP. **Burke DS**, Vahey M. Serum levels of virus burden in early-stage HIV-1 disease in women. J Infect Dis. 1997 Apr;175(4):795-800
178. Kim JH, Loveland JE, Sitz KV, Ratto Kim S, Mclinden RJ, Tencer K, Davis K, **Burke DS**, Boswell RN, Redfield RR, Birx DL. Expansion of restricted cellular immune

responses to HIV-1 envelope by vaccination: IL-7 and IL-12 differentially augment cellular proliferative responses to HIV-1. Clin Exp Immunol. 1997 May;108(2):243-50

179. Pope M, Frankel S, Mascola JR, Trkola A, Isdell F, Birx DL, **Burke DS**, Ho DD, Moore JP. Human immunodeficiency virus type 1 strains of subtypes B and E replicate in cutaneous dendritic cell - T-cell mixtures without displaying subtype -specific tropism. J Virol. 1997 Oct;71(10):8001-7
180. Salminen MO, Carr JK, Robertson DL, Hegerich P, Gotte D, Koch C, Sanders-Buell E, Gao F, Sharp PM, Hahn BH, **Burke DS**, McCutchan FE. Evolution and probable transmission of inter-subtype recombinant HIV-1 in a Zambian couple. J Virol. 1997 Apr;71(4):2647-55
181. **Burke DS**. Recombination in HIV: An important viral evolutionary strategy. Emerg Infect Dis. 1997 Jul-Sep;3(3):253-9
182. **Burke DS,** Sing for the gov'nor: a call to advocacy for tropical medicine and hygiene. Am J Trop Med Hyg. 1997 Jan;56(1):1-6
183. Gardner LI, Harrison SH, Hendrix CW, Blatt SP, Wagner KF, Chung RC, Harris RW, Cohn DL, **Burke DS**, Mayers DL. Size and duration of zidovudine benefit in 1003 HIV-infected patients: U.S. Army, Navy, and Air Force natural history data. Military Medical Consortium for Applied Retroviral Research. J Acquir Immune Defic Syndr Hum Retrovirol. 1998 Apr 1;17(4):345-53
184. **Burke DS**, DeJong KA, Grefenstette JJ, Ramsey CL, Wu AS. Putting more genetics into genetic algorithms. Evol Comput. 1998 Winter;6(4):387-410
185. Ramsey CL, DeJong KA, Grefenstette JJ, Wu AS, **Burke DS**. Genome length as an evolutionary self-adaptation. Parallel Problem Solving from Nature 5: 345-353 (1998).
186. Wu AS, DeJong KA, **Burke DS**, Grefenstette JJ, Ramsey CL. Visual analysis of evoluntionary algorithms. Proceedings of the 1999 congress on Evoluntionary Computation 1999;2:1419-1425
187. Wolfe ND, Eitel MD, Gockowski J, Muchaal PK, Nolte C, Prosser AT, Torimiro JN, Weise SF, **Burke DS**. Deforestation, hunting, and the ecology of microbial emergence. Global Change and Human Health 2000;1:1-5
188. Hay SI, Myers MF, **Burke DS**, Vaughn DW, Endy T, Ananda N, Shanks GD, Snow RW, Rogers DJ. Etiology of interepidemic periods of mosquito-borne disease. Proc Natl Acad Sci U S A. 2000 Aug 1;97(16):9335-9
189. Carr JK, Torimiro JN, Wolfe ND, Eitel MN, Kim B, Sanders-Buell E, Jagodzinski LL, Gotte D, **Burke DS**, Birx DL, Mc Cutchan FE. The AG recombinant IbNG and novel strains of group M HIV-1 are common in Cameroon. Virology. 2001 Jul 20;286(1):168-81
190. Esparza J, **Burke DS**. Epidemiological considerations in planning HIV preventive vaccine trials. AIDS. 2001;15 Suppl 5:S49-57
191. Epstein JM, Cummings DAT, Chakravarty S, Singa RM, **Burke DS**. Toward a containment strategy of smallpox bioterror: An individual-based computational approach. Brookings Institution Center on Social and Economic Dynamics Working Paper No. 31 (2002).
192. Nisalak A, Endy TP, Nimmannitya S, Kalayanarooj S, Thisayakorn U, Scott RM, **Burke DS**, Hoke CH, Innis BL, David W. Vaughn DW. Serotype-specific dengue virus circulation and dengue disease in Bangkok, Thailand from 1973 to 1999. Am J Trop Med Hyg. 2003 Feb;68(2):191-202
193. Oh S, Hodge JW, Ahler JD, **Burke DS**, Schlom J, Berzofsky JA. Selective induction of high avidity CTL by altering the balance of signals from APC. J Immunol. 2003 Mar 1;170(5):2523-30
194. Oh S, Berzofsky JA, **Burke DS**, Waldmann TA, Perera LP. Co-administration of HIV vaccine vectors with vaccinia viruses expressing IL-15 but not IL-2 induces long-lasting cellular immunity. Proc Natl Acad Sci U S A. 2003 Mar 18;100(6):3392-7

195. de Bruyn G, Anthony J. Rossini AJ, Chiu Y-L, Holman D, Elizaga ML, Frey SE, **Burke DS**, Evan TG, Corey L, Keefer MC. Safety profile of recombinant canarypox HIV vaccines. Vaccine. 2004 Jan 26;22(5-6):704-13
196. Cummings DAT, Irizarry RA, Huang NE, Endy TP, Nisalak A, Ungchusak K, **Burke DS**. Traveling waves in the occurrence of dengue hemorrhagic fever in Thailand. Nature. 2004 Jan 22;427(6972):344-7
197. Wolfe ND, Switzer WM, Carr JK,, Bhullar VB, Vedapuri Shanmugam V, Tamoufe U, Prosser AT, Torimiro JN, Wright A, Mpoudi-Ngole E, McCutchan FE, Birx DL, Folks TM, **Burke DS**, Heneine W. Naturally acquired simian retrovirus infections among Central African hunters. Lancet. 2004 Mar 20;363(9413):932-7
198. Kijak GH, Sanders-Buell E, Wolfe ND, Mpoudi-Ngole E, Kim B, Brown B, Robb ML, Birx DL, **Burke DS**, Car JK, McCutchan FE. Development and application of a high-throughput HIV type 1 genotyping assay to identify CRF02_AG in West/West Central Africa. AIDS Res Hum Retroviruses. 2004 May;20(5):521-30
199. Oh S, Perera LP, **Burke DS**, Waldmann TA, Berzofsky JA. IL-15/IL-15R alpha-mediated avidity maturation of memory CD8+ T cells. Proc Natl Acad Sci U S A. 2004 Oct 19;101(42):15154-9
200. Waters HR, Dougherty L, Tegang S-P, Tran N, Wiysonge CS, Long K, Wolfe ND, **Burke DS**. Coverage and costs of childhood immunization in Cameroon. Bull World Health Organ. 2004 Sep;82(9):668-75. PMID:15628204. PMCID:PMC2622979.
201. Wolfe ND, Prosser AT, Carr JK, Tamoufe U, Mpoudi-Ngole E, Torimiro JN, LeBreton M, McCutchan FE, Birx DL, **Burke DS**. Exposure to nonhuman primates in rural Cameroon. Emerg Infect Dis. 2004 Dec;10(12):2094-9. PMID:15663844. PMCID:PMC3323379.
202. **Burke DS**, Brown SL. Lessons learned from the 1954 Field Trial of Poliomyelitis Vaccine. Clin Trials. 2004 Feb;1(1):3-5. PMID:16281456.
203. Nguyen JC, Murphy ME, Nutman TB, Neafie RC, Maturo S, **Burke DS**, Turiansky GW. Tropical Medicine Rounds: Cutaneous onchocerciasis in an American traveler. Int J Dermatol. 2005 Feb;44(2):125-8. PMID:15689210.
204. Gilbert PB, Peterson ML, Follmann D, Hudgens MG, Francis DP, Gurwith M, Heyward WL, Jobes DV, Popovic V, Self SG, Sinangil F, **Burke DS**, Berman PW. Correlation between immunologic responses to recombinant glycoprotein 120 vaccine and incidence of HIV-1 infection in a phase 3 HIV-1 preventive vaccine trial. J Infect Dis. 2005 Mar 1;191(5):666-77. PMID:15688279.
205. Wolfe ND, Heneine W, Carr JK, Garcia AD, Shanmugam V, Tamoufe U, Torimiro JN, Prosser AT, Lebreton M, Mpoudi-Ngole E, McCutchan FE, Birx DL, Folks TM, **Burke DS**, Switzer WM. Emergence of unique primate T-lymphotropic viruses among central African bushmeat hunters. Proc Natl Acad Sci U S A. 2005 May 31;102(22):7994-9. PMID:15911757. PMCID:PMC1142377.
206. Cummings DAT, Schwartz IB, Billings L, Shaw LB, **Burke DS**. Dynamic effects of antibody dependent enhancement on the fitness of viruses. Proc Natl Acad Sci U S A. 2005 Oct 18;102(42):15259-64. PMID:16217017. PMCID:PMC1257724.
207. Ferguson NM, Cummings DA, Cauchemez S, Fraser C, Riley S, Meeyai A, Iamsirithworn S, **Burke DS**. Strategies for containing an emerging influenza pandemic in Southeast Asia. Nature. 2005 Sep 8;437(7056):209-14. PMID:16079797.
208. Schwartz IB, Shaw LB, Cummings DAT, Billings L, McCrary M, **Burke DS**. Chaotic desynchronization of multistrain diseases. Phys Rev E Stat Nonlin Soft Matter Phys. 2005 Dec;72(6 Pt 2):066201. PMID:16486034.
209. Wolfe ND, Daszak P, Kilpatrick AM, **Burke DS**. Bushmeat hunting, deforestation, and prediction of zoonoses emergence. Emerg Infect Dis. 2005 Dec;11(12):1822-7. PMID:16485465.

210. Kalish ML, Wolfe ND, Ndongmo CB, McNicholl J, Robbins KE, Aidoo M, Fonjungo PN, Alemnji G, Zeh C, Djoko CF, Mpoudi-Ngole E, **Burke DS**, Folks TM. Central African hunters exposed to simian immunodeficiency virus. Emerg Infect Dis. 2005 Dec;11(12):1928-30. PMID:16485481. PMCID:PMC3367631.
211. **Burke DS**, Kliks S, Antibody-dependent enhancement in dengue virus infections. J Infect Dis. 2006 Feb 15;193(4):601-3; PMID:16425141. author reply 603-4.
212. Torimiro JN, Carr JK, Wolfe ND, Karacki P, Martin MP, Gao X, Tamoufe U, Thomas A, Ngole EM, Birx DL, McCutchan FE, **Burke DS**, Carrington M. HLA class I diversity among rural rainforest inhabitants in Cameroon: identification of A*2612-B*4407 haplotype. Tissue Antigens. 2006 Jan;67(1):30-7. PMID:16451198.
213. Cummings DA, Moss WJ, Long K, Wiysonge CS, Muluh TJ, Kollo B, Nomo E, Wolfe ND, **Burke DS**. Improved measles surveillance in Cameroon reveals two major dynamic patterns of incidence. Int J Infect Dis. 2006 Mar;10(2):148-55. PMID:16275043.
214. **Burke DS,** Epstein JM, Cummings DA, Parker JI, Cline KC, Singa RM, Chakravarty S. Individual-based computational modeling of smallpox epidemic control strategies. Acad Emerg Med. 2006 Nov;13(11):1142-9. PMID:17085740.
215. Kuniholm MH, Wolfe ND, Huang CY, Mpoudi-Ngole E, Tamoufe U, **Burke DS**, Gubler DJ. Seroprevalence and distribution of Flaviviridae, Togaviridae, and Bunyaviridae arboviral infections in rural Cameroonian adults. Am J Trop Med Hyg. 2006 Jun;74(6):1078-83. PMID:16760524. Erratum in: Am J Trop Med Hyg. 2006 Aug;75(2):371.
216. Gupta SB, Mast CT, Wolfe ND, Novitsky V, Dubey SA, Kallas EG, Schechter M, Mbewe B, Vardas E, Pitisuttithum P, Burke D, Freed D, Mogg R, Coplan PM, Condra JH, Long RS, Anderson K, Casimiro DR, Shiver JW, Straus WL. Cross-clade reactivity of HIV-1-specific T-cell responses in HIV-1-infected individuals from Botswana and Cameroon. Journal of Acquired Immune Deficiency Syndromes (1999). 2006 Jun;42(2):135-9. PMID:16760794. doi:10.1097/01.qai.0000223017.01568.e7.
217. LeBreton M, Umlauf S, Djoko CF, Daszak P, **Burke DS**, Kwenkam PY, Wolfe ND. Rift Valley fever in goats, Cameroon. Emerg Infect Dis. 2006 Apr;12(4):702-3. PMID:16715582. PMCID:PMC3294709.
218. Oh S, Stegman B, Pendleton CD, Ota MO, Pan CH, Griffin DE, **Burke DS**, Berzofsky JA. Protective immunity provided by HLA-A2 epitopes for fusion and hemagglutinin proteins of measles virus. Virology. 2006 Sep 1;352(2):390-9. PMID:16781760.
219. Switzer WM, Qari S, Wolfe ND, **Burke DS**, Folks TM, Heneine W. Ancient origin and molecular features of the novel human T-lymphotropic virus type 3 revealed by complete genome analysis. J Virol. 2006 Aug;80(15):7427-38. PMID:16840323. PMCID:PMC1563715.
220. Ferguson NM, Cummings DA, Fraser C, Cajka JC, Cooley PC, **Burke DS**. Strategies for mitigating an influenza pandemic. Nature. 2006 Jul 27;442(7101):448-52. PMID:16642006.
221. Switzer WM, Hewlett I, Aaron L, Wolfe ND, **Burke DS**, Heneine W. Serologic testing for human T-lymphotropic virus-3 and -4. Transfusion. 2006 Sep;46(9):1647-8. PMID:16965596.
222. Ockenhouse CF, Hu WC, Kester KE, Cummings JF, Stewart A, Heppner DG, Jedlicka AE, Scott AL, Wolfe ND, Vahey M, **Burke DS**. Common and divergent immune response signaling pathways discovered in peripheral blood mononuclear cell gene expression patterns in presymptomatic and clinically apparent malaria. Infect Immun. 2006 Oct;74(10):5561-73. PMID:16988231. PMCID:PMC1594921.
223. Longini IM Jr, Elizabeth Halloran M, Nizam A, Yang Y, Xu S, **Burke DS**, Cummings DA, Epstein JM. Containing a large bioterrorist smallpox attack: a computer simulation approach. Int J Infect Dis. 2007 Mar;11(2):98-108. PMID:16899385.

224. Billings L, Schwartz IB, Shaw LB, McCrary M, **Burke, DS**, Cummings DA. Instabilities in multiserotype disease models with antibody-dependent enhancement. J Theor Biol. 2007 May 7;246(1):18-27. PMID:17270219.
225. Torimiro JN, Wolfe ND, Thomas A, Martin MP, Mpoudi-Ngole E, Tamoufe U, Birx DL, Carrington M, **Burke DS**, Carr JK. Frequency of CCR5 variants among rural populations with low HIV-1 prevalence in Cameroon. AIDS. 2007 Feb 19;21(4):527-8. PMID:17301575.
226. Lessler J, Cummings DA, Fishman S, Vora A, **Burke DS**. Transmissibility of swine flu at Fort Dix, 1976. J R Soc Interface. 2007 Aug 22;4(15):755-62. PMID:17412677. PMCID:PMC2373398.
227. LeBreton M, Yang O, Tamoufe U, Mpoudi-Ngole E, Torimiro JN, Djoko CF, Carr JK, Tassy Prosser A, Rimoin AW, Birx DL, **Burke DS**, Wolfe ND. Exposure to wild primates among HIV-infected persons. Emerg Infect Dis. 2007 Oct;13(10):1579-82. PMID:18258013. PMCID:PMC2851513.
228. Halloran ME, Ferguson NM, Eubank S, Longini IM Jr, Cummings DA, Lewis B, Xu S, Fraser C, Vullikanti A, Germann TC, Wagener D, Beckman R, Kadau K, Barrett C, Macken CA, **Burke DS**, Cooley P. Modeling targeted layered containment of an influenza pandemic in the United States. Proc Natl Acad Sci U S A. 2008 Mar 25;105(12):4639-44. PMID: 18332436. PMCID: PMC2290797.
229. Parmanto B, Paramita MV, Sugiantara W, Pramana G, Scotch M, **Burke DS**. Spatial and multidimensional visualization of Indonesia's village health statistics. Int J Health Geogr. 2008 Jun 11;7:30. PMID:18544174. PMCID:PMC2494543.
230. Vora A, **Burke DS**, Cummings DA. The impact of a physical geographic barrier on the dynamics of measles. Epidemiol Infect. 2008 May;136(5):713-20. PMID:17662170. PMCID:PMC2870857.
231. Parrish CR, Holmes EC, Morens DM, Park EC, **Burke DS**, Calisher CH, Laughlin CA, Saif LJ, Daszak P. Cross-species virus transmission and the emergence of new epidemic diseases. Microbiol Mol Biol Rev. 2008 Sep;72(3):457-70. PMID:18772285. PMCID:PMC2546865.
232. Switzer WM, Salemi M, Qari SH, Jia H, Gray RR, Katzourakis A, Marriott SJ, Pryor KN, Wolfe ND, **Burke DS**, Folks TM, Heneine W. Ancient, independent evolution and distinct molecular features of the novel human T-lymphotropic virus type 4. Retrovirology. 2009 Feb 2;6:9. PMID:19187529. PMCID:PMC2647524.
233. Sintasath DM, Wolfe ND, Lebreton M, Jia H, Garcia AD, Le Doux-Diffo J, Tamoufe U, Carr JK, Folks TM, Mpoudi-Ngole E, **Burke DS**, Heneine W, Switzer WM. Simian T-lymphotropic virus diversity among nonhuman primates, Cameroon. Emerg Infect Dis. 2009 Feb;15(2):175-84. PMID:19193260. PMCID:PMC2657614.
234. **Burke DS**, Russell J, Cerqueira MT, Conley KM, Eggleston MM, Koo D, Lewis AL, Lee AF, Pearson CE, Pestronk RM, Schwartz B, Smith WA. Comments from the field on the Galway Consensus Conference Statement. Health Educ Behav. 2009 Jun;36(3):483-6. PMID:19447946.
235. Zimmer SM, **Burke DS.** Historical perspective—Emergence of influenza A (H1N1) viruses. N Engl J Med. 2009 Jul 16;361(3):279-85. PMID: 19564632
236. Torimiro JN, Javanbakht H, Diaz-Griffero F, Kim J, Carr JK, Carrington M, Sawitzke J, **Burke DS**, Wolfe ND, Dean M, Sodroski J. A rare null allele potentially encoding a dominant-negative TRIM5alpha protein in Baka pygmies. Virology. 2009 Aug 15;391(1):140-7. PMID:19577266. PMCID:PMC2760473.
237. Cummings DA, Iamsirithaworn S, Lessler JT, McDermott A, Prasanthong R, Nisalak A, Jarman RG, **Burke DS**, Gibbons RV. The impact of the demographic transition on dengue in Thailand: insights from a statistical analysis and mathematical modeling. PLoS Med. 2009 Sep;6(9):e1000139. PMID:19721696. PMCID:PMC2726436.

238. Lee BY, **Burke DS**. Constructing target product profiles (TPPs) to help vaccines overcome post-approval obstacles. Vaccine. 2010 Apr 1;28(16):2806-9. PMID:19782109. PMCID:PMC3385993.
239. Lee BY, Brown ST, Cooley P, Potter MA, Wheaton WD, Voorhees RE, Stebbins S, Grefenstette JJ, Zimmer SM, Zimmerman RK, Assi TM, Bailey RR, Wagener DK, **Burke DS**. Simulating school closure strategies to mitigate an influenza epidemic. J Public Health Manag Pract. 2010 May-June;16(3):252-61. PMID:20035236. PMCID:PMC2901099.
240. Lee BY, Brown ST, Cooley PC, Zimmerman RK, Wheaton WS, Zimmer SM, Grefenstette JJ, Assi TM, Furphy TJ, Wagner DK, **Burke DS**. A computer simulation of employee vaccination to mitigate an influenza epidemic. Am J Prev Med. 2010 Mar;38(3):247-57. PMID:20042311. PMCID:PMC2833347.
241. Fried LP, Bentley ME, Buekens P, **Burke DS**, Frenk JJ, Klag MJ, Spencer HC. Global health is public health. Lancet, 2010 Feb 13;375(9714):535-7. PMID: 20159277.
242. Cooley P, Lee BY, Brown S, Cajka J, Chasteen B, Ganapathi L, Stark JH, Wheaton WD, **Burke DS**. Protecting health care workers: a pandemic simulation based on Allegheny County. Influenza Other Respiratory Viruses, 2010 Mar; 4(2):61-72. PMID:20167046. PMCID:PMC2894576.
243. Carr JK, Wolfe ND, Torimiro JN, Tamoufe U, Mpoudi-Ngole E, Eyzaguirre L, Birx D L, McCutchan FE, **Burke DS.** HIV-1 recombinants with multiple parental strains in low-prevalence, remote regions of Cameroon: evolutionary relics? Retrovirology 2010 Apr 28;7:39. PMID:20426823. PMCID:PMC2879232.
244. Lee BY, Brown ST, Korch GW, Cooley PC, Zimmerman RK, Wheaton WD, Zimmer SM, Grefenstette, Bailey JJ, Assi TM, **Burke DS**. A computer simulation of vaccine prioritization, allocation, and rationing during the 2009 H1N1 Influenza pandemic. Vaccine, 2010 July12;28(31):4875-9. PMID:20483192. PMCID:PMC2906666.
245. Morens, DM, **Burke DS**, Halstead SB. The wages of original antigenic sin. Emerg Infect Dis. 2010 Jun;16(6):1023-4. PMID: 20507764. PMCID: PMC3086238.
246. Lee BY, Norman BA, Assi TM, Chen SI, Bailey RR, Rajgopal J, Brown ST, Wiringa AE, **Burke DS.** Single versus multi-dose vaccine vials: an economic computational model. Vaccine 2010 Jul 19;28(32):5292-300. PMID:20566395. PMCID:PMC2919154.
247. Zimmer SM, Crevar CJ, Carter DM, Stark JH, Giles BM, Zimmerman RK, Ostroff SM, Lee BY, **Burke DS,** Ross TM**.** Seroprevalence following the second wave of Pandemic 2009 H1N1 influenza in Pittsburgh, PA, USA. PLoS One, 2010 Jul 14;5(7):311601. PMID:20644650. PMCID:PMC2904390.
248. Van Panhuis WG, Gibbons RV, Endy TP, Rothman AL, Srikiatkhachom A, Nisalak A, **Burke DS,** Cummings DA. Inferring the serotype associated with dengue virus infections on the basis of pre-and post-infection neutralizing antibody titers. J Infect Dis. 2010 Oct 1;202(7);1002-10. PMID:20738205. PMCID:PMC2943243.
249. Huang SS, Avery TR, Song Y, Elkins KR, Nguyen CC, Nutter SK, Nafday AA, Condon CJ, Chang MT, Chrest D, Boos J, Bobashev G, Wheaton W, Frank SA, Platt R, Lipsitch M, Bush RM, Eubank S, **Burke DS**, Lee BY. Quantifying interhospital patient sharing as a mechanism for infectious disease spread. Infect Control Hosp Epidemiol. 2010 Nov;31(11):1160-9. PMID:20874503. PMCID:PMC3064463.
250. Lee BY, Brown ST, Cooley P, Grefenstette JJ, Zimmerman RK, Zimmer SM, Potter MA, Rosenfeld R, Wheaton WD, Wiringa AE, Bacon KM, **Burke DS.** Vaccination deep into a pandemic wave potential mechanisms for a "third wave" and the impact of vaccination. Am J Prev Med, 2010 Nov;39(5):21-9. PMID:20965375. PMCID:PMC2975455.
251. Lee BY, McGlone SM, Song Y, Avery TR, Eubank S, Chang CC, Bailey RR, Wagener DK, **Burke DS**, Platt R, Huang SS. Social network analysis of patient sharing among hospitals in Orange County, California. Am J Public Health. 2011 Apr;101(4):707-13. PMID: 21330578. PMCID: PMC3052345.

252. Lee BY, Assi TM, Rookkapan K, Connor DL, Rajgopal J, Sornsrivichai V, Brown ST, Welling JS, Norman BA, Chen SI, Bailey RR, Wiringa AE, Wateska AR, Jana A, Van Panhuis WG, **Burke DS**. Replacing the measles ten-dose vaccine presentation with the single-dose presentation in Thailand. Vaccine. 2011 May 12;29(21):3811-7. PMID:21439313. PMCID:PMC3084328.
253. Ndip LM, Biswas HH, Nfonsam LE, LeBreton M, Ndip RN, Bissong MA, Mpoudi-Ngole E, Djoko C, Tamoufe U, Prosser AT, **Burke DS**, Wolfe ND. Risk factors for African tick-bite fever in rural central Africa. Am J Trop Med Hyg. 2011 Apr;84(4):608-13. PMID:21460018. PMCID:PMC3062457.
254. Lee BY, Connor DL, Kitchen SB, Bacon KM, Shah M, Brown ST, Bailey RR, Laosiritaworn Y, **Burke DS**, Cummings DA. Economic value of dengue vaccine in Thailand. Am J Trop Med Hyg. 2011 May; 84(5):764-72. PMID:21540387. PMCID:PMC3083745.
255. Lee BY, McGlone SM, Wong KF, Yilmaz SL, Avery TR, Song Y, Christie R, Eubank S, Brown ST, Epstein JM, Parker JI, **Burke DS**, Platt R, Huang SS. Modeling the spread of methicillin-resistant Staphylococcus aureus (MRSA) outbreaks throughout the hospitals in Orange County, California. Infect Control Hosp Epidemiol. 2011 Jun;32(6):562-72. PMID:21558768. PMCID:PMC3388111.
256. Brown ST, Tai JH, Bailey RR, Cooley PC, Wheaton WD, Potter MA, Voorhees RE, Lejeune M, Grefenstette JJ, **Burke DS**, McGlone SM, Lee BY. Would school closure for the 2009 H1N1 influenza epidemic have been worth the cost?: a computational simulation of Pennsylvania. BMC Public Health. 2011 May 20;11:353. PMID:21599920. PMCID:PMC3119163.
257. Rajgopal J, Connor DL, Assi TM, Norman BA, Chen SI, Bailey RR, Long AR, Wateska AR, Bacon KM, Brown ST, **Burke DS**, Lee BY. The optimal number of routine vaccines to order at health clinics in low or middle income countries. Vaccine. 2011 Jun 25:29(33);5512-8. PMID:21624419. PMCID:PMC3138835.
258. Assi TM, Brown ST, Djibo A, Norman BA, Rajgopal J, Welling JS, Chen SI, Bailey RR, Kone S, Kenea H, Connor DL, Wateska AR, Jana A, Wisniewski SR, Van Panhuis WG, **Burke DS**, Lee BY. Impact of changing the measles vaccine vial size on Niger's vaccine supply chain: a computational model. BMC Public Health. 2011 Jun 2;11:425. PMID:21635774. PMCID:PMC3129313.
259. Lee BY, Song Y, Bartsch SM, Kim DS, Singh A, Avery TR, Brown ST, Yilmaz SL, Wong KF, Potter MA, **Burke DS,** Platt R, Huang SS. Long-term care facilities; important participants of the acute care facility social network? PloS one. 2011;6(12):e29342. PMID:22216255. PMCID:PMC3246493
260. Lee BY, Brown ST, Bailey RR, Zimmerman RK, Potter MA, McGlone SM, Cooley PC, Grefenstette JJ, Zimmer SM, Wheaton WD, Quinn SC, Voorhees RE, **Burke DS**. The benefits to all of ensuring equal and timely access to influenza vaccines in poor communities. Health Aff (Milwood). 2011 Jun;30(6):1141-50. PMID:21653968. PMCID:PMC3385997.
261. Stebbins S, Cummings DA, Stark JH, Vukotich C, Mitruka K, Thompson W, Rinaldo C, Roth L, Wagner M, Wisniewski SR, Dato V, Eng H, **Burke DS**. Reduction in the Incidence of Influenza A But Not Influenza B Associated With Use of Hand Sanitizer and Cough Hygiene in Schools: A Randomized Controlled Trial. Pediatr Infect Dis J. 2011 Nov;30(11):921-6. PMID:21691245. PMCID:PMC3470868.
262. Fraser C, Cummings DA, Klinkenberg D, **Burke DS**, Ferguson NM. Influenza transmission in households during the 1918 pandemic. Am J Epidemiol. 2011 Sept 1;174(5):505-14. PMID:21749971.
263. Lee BY, Assi TM, Rookkapan K, Wateska AR, Rajgopal J, Sornsrivichal V, Chen SI, Brown ST, Welling J, Norman BA, Connor DL, Bailey RR, Jana A, Van Panhuis WG, **Burke, DS**. Maintaining vaccine delivery following the introduction of the rotavirus and

pneumococcal vaccines in Thailand. PloS one. 2011;6(9):e24673. PMID:21931805. PMCID:PMC3172252.

264. Lee BY, Assi TM, Rajgopal J, Norman BA, Chen SI, Brown ST, Slayton RB, Kone S, Kenea H, Welling JS, Connor DL, Wateska AR, Jana A, Wiringa AE, Van Panhuis WG, **Burke DS.** Impact of Introducing the Pneumococcal and Rotavirus Vaccines into the Routine Immunization Program in Niger. Am J Public Health. 2012 Feb: 102(2):269-75. PMID:21940923. PMCID:PMC3386610.
265. Shim E, Grefenstette JJ, Albert SM, Cakouros BE, **Burke DS.** A game dynamic model for vaccine skeptics and vaccine believers: Measles as an example. J Theor Biol. 2012 Feb 21;295:194-203. PMID:22108239.
266. Word DP, Cummings DA, **Burke DS,**, Iamsirithaworn S, Laird CD. A nonlinear programming approach for estimation of transmission parameters in childhood infectious disease using a continuous time model. JR Soc Interface. 2012 Aug 7;9(73):1983-97. PMID:22337634. PMCID:PMC3385750.
267. Djoko CF, Wolfe ND, Aghokeng AF, Lebreton M, Liegeois F, Tamoufe U, Schneider BS, Ortiz N, Mbacham WF, Carr JK, Rimoin AW, Fair NJ, Pike BL, Mpoudi-Ngole E, Delaporte E, **Burke DS,** Peeters M. Failure to detect simian immunodeficiency virus infection in a large Cameroonian cohort with high non-human primate exposure. EcoHealth. 2012 Mar;9(1):17-23. PMID:22395958.
268. Stark JH, Sharma R, Ostorff S, Cummings DA, Ermentrout B, Stebbins S, **Burke DS,** Wisniewski SR. Local spatial and temporal processes of influenza in Pennsylvania. USA: 2003-2009. PloS One. 2012;7(3):e34245. PMID:22470544. PMCID:PMC3314628.
269. Potter MA, Brown ST, Lee BY, Grefenstette J, Keane CR, Lin CJ, Quinn SC, Stebbins S, Sweeney PM, **Burke DS**. Preparedness for pandemics: does variation among States affect the nation as a whole? J Public Health Manag Pract. 2012 May; 18(3):233-40. PMID:22473116. PMCID:PMC3758226.
270. Salje H, Lessler J, Endy TP, Curriero FC, Gibbons RV, Nisalak A, Nimmannitya S, Kalayanarooj S, Jarman RG, Thomas SJ, **Burke DS,** Cummings DA. Revealing the microscale spatial signature of dengue transmission and immunity in an urban population. Proc. Natl Acad Sci U S A. 2012 June 12;109(24):9535-8. Epub 2012 May 29. PMID:22645364. PMCID:PMC3386131.
271. Stark JH, Cummings DA, Ermentrout B, Ostroff S, Sharma R, Stebbins S, **Burke DS**, Wisniewski SR. Local variations in spatial synchrony of influenza epidemics. PloS one. 2012;7(8):e43528. PMID:22916274. PMCID:PMC3420894.
272. Potter MA, Brown ST, Cooley PC, Sweeney PM, Hershey TB, Gleason SM, Lee BY, Keane CR, Grefenstette J, **Burke DS.** School closure as an influenza mitigation strategy: how variations in legal authority and plan criteria can alter the impact. BMC Public Health. 2012 Nov 14;12:977. PMID:23148556.PMCID:PMC3532840.
273. Wecker M, Gilbert P, Russell N, Hural J, Allen M, Pensiero M, Chulay J, Chiu YL, Abdool Karim SS, **Burke DS**, HVTN 040/059 Protocol Team, NIAID HIV Vaccine Trials Network. Phase I safety and immunogenicity evaluations of an alphavirus replicon HIV-1 subtype C gag vaccine in healthy HIV-1-uninfected adults. Clinical and vaccine immunology : CVI. 2012 Oct;19(10):1651-60. PMID:22914365. PMCID:PMC3485893.
274. Ma D, Jasinska A, Kristoff J, Grobler JP, Turner T, Jung Y, Schmitt C, Raehtz K, Feyertag F, Martinez Sosa N, Wijewardana V, **Burke DS**, Robertson DL, Tracy R, Pandrea I, Freimer N, Apetrei C; International Vervet Research Consortium. SIVagm infection in wild African green monkeys from South Africa: epidemiology, natural history, and evolutionary considerations. PLoS Pathog. 2013 Jan;9(1):e1003011. PMID:23349627. PMCID:PMC3547836.

275. Toner ES, Adalja AA, Nuzzo JB, Inglesby TV, Henderson DA, **Burke DS.** Assessment of Serosurveys for H5N1. Clin Infect Dis. 2013 May;56(9):1206-12. PMID:23386633. PMCID:PMC3858121.
276. Kumar S, Grefenstett JJ, Galloway D, Albert SM, **Burke DS.** Policies to reduce influenza in the workplace: impact assessments using an agent-based model. Am J Public Health. 2013 Aug: 103(9):1406-11. Epub 2013 June 13. PMID:23763426.
277. Reich NG, Shrestha S. King AA, rohani P, Lessler j, Kalayanarooj S, Yoon IK, gibbons RV, **Burke DS,** Cummings DA. Interactions between serotypes of dengue highlight epidemiological impact of cross-immunity. J R Soc Interface. 2013 July3; 10(86):20130414. PMID:23825116. PMCID:PMC3730691.
278. **Burke DS**, Grefenstette JJ. Toward an integrated meta-model of public health dynamics for preparedness decision support. J Public Health Manag Pract. 2013 Sep-Oct;19: Suppl 2:S12-5. PMID:23903387.
279. Gibbons RV, Nisalak A, Yoon IK, Tannitisupawong D, Rungsimunpaiboon K, Vaughn DW, Endy TP, Innis BL, **Burke DS**, Mammen MP Jr, Scott RM, Thomas SJ, Hoke CH Jr. A model international partnership for community-based research on vaccine-preventable diseases: the Kamphaeng Phet-AFRIMS Virology Research Unit (KAVRU).Vaccine. 2013 Sep 23;31(41):4487-500. Epub 2013 Aug 8. PMID:23933334
280. Rodriguez-Barraquer I, Mier-y-Teran-Romero L, **Burke DS,** Cummings DA. Challenges in the interpretation of dengue vaccine trial results. PLoS Negl Trop Dis. 2013 Aug 29;7(8):e2126. doi: 10.1371/journal.pntd.0002126. eCollection 2013. PMID:24009782. PMCID:PMC3757058.
281. Grefenstette JJ, Brown ST, Rosenfeld R, DePasse J, Stone NT, Cooley PC, Wheaton WD, Fyshe A, Galloway DD, Sriram A, Guclu H, Abraham T, **Burke DS**. FRED (a Framework for Reconstructing Epidemic Dynamics): an open-source software system for modeling infectious diseases and control strategies using census-based populations. BMC Public Health. 2013 Oct 8;13:940. PMID:24103508. PMCID:PMC3852955.
282. Yonas MA, Burke JG, Brown ST, Borrebach JD, Garland R, **Burke DS**, Grefenstette JJ. Dynamic simulation of crime perpetration and reporting to examine community intervention strategies. Health Educ Behav. 2013 Oct;40(1 Suppl):87S-97S. PMID:24084404. PMCID:PMC3964320.
283. Kumar S, Grefenstette JJ, Galloway D, Alert SM, **Burke DS**, Kumar et al. respond. Am J Public Health Jan 2014;104(1):e1-2. PMID: 24228647
284. Azman AS, Stark JH, Althouse BM, Vukotich CJ Jr, Stebbins S, **Burke DS**, Cummings DA. Household transmission of influenza A and B in a school-based study of non-pharmaceutical interventions. Epidemics. 2013 Dec;5(4):181-6. Epub 2013 Sep 26. PMID:24267874.
285. Rodriguez-Barraquer I, Mier-y-Teran-Romero L, Schwartz IB, **Burke DS**, Cummings DA. Potential opportunities and perils of imperfect dengue vaccines. Vaccine. 2014 Jan 16;32(4):514-20. Epub 2013 Nov 19. PMID:24269318. PMCID:PMC4142437.
286. van Panhuis WG, Grefenstette J, Jung SY, Chok NS, Cross A, Eng H, Lee BY, Zadorozhny V, Brown S, Cummings D, **Burke DS**. Contagious diseases in the United States from 1888 to the present. N Engl J Med. 2013 Nov 28;369(22):2152-8. PMID:24283231.
287. LeBreton M, Switzer WM, Djoko CF, Gillis A, Jia H, Sturgeon MM, Shakar A, Zheng H, Nkeunen G, Tamoufe U, Nana A, Le Doux Diffo J, Tafon B, Kiyang J, Schneider BS, **Burke DS**, Wolfe ND. A gorilla reservoir for human T-lymphotropic virus type 4. Emerg Microbes Infect. 2014 Jan;3(1):e7. Doi: 10.1038/emi.2014.7. Epub 2014 Jan 22. PMID:26038495. PMCID:PMC3913825.
288. Lukens S, DePasse J, Rosenfeld R, Ghedin E, Mochan E, Brown ST, Grefenstette J, **Burke DS**, Swigon D, Clermont G. A large-scale immune-epidemiological simulation of

influenza A epidemics. BMC Public Health, 2014;14:1019. PMID:25266818. PMCID:PMC4194421.

289. van Panhuis WG, Paul P, Emerson C, Grefenstette J, Wilder R, Herbst AJ, Heymann D, **Burke DS**. A systematic review of barriers to data sharing in public health. BMC Public Health. 2014 Nov 5;14(1):1144. PMID:25377061. PMCID:PMC4239377.
290. Ruberto I, Marques E, **Burke DS**, van Panhuis WG. The availability and consistency of dengue surveillance data provided online by the World Health Organization. PLoS Negl Trop Dis. 2015 Apr 14;9(4):e0003511. PMID:25874804. PMCID:PMC4397048.
291. Farrow DC, **Burke DS**, Rosenfeld R. Computational characterization of transient strain-transcending immunity against Influenza A. PLoS One. 2015 May 1;10(5):e0125047. eCollection 2015. PMID:25933195. PMCID:PMC4416895.
292. Ablah E, Biberman DA, Weist EM, Buekens P, Bentley ME, **Burke D**, Finnegan JR Jr, Flahault A, Frenk J, Gotsch AR, Klag MJ, Rodriguez Lopez MH, Nasca P, Shortell S, Spencer HC. Improving global health education: development of a Global Health Competency Model. The American Journal of Tropical Medicine and Hygiene. 2014 Mar;90(3):560-5. PMID:24445206. PMCID:PMC3945704.
293. Rodriguez-Barraquer I, Mier-y-Teran-Romero L, Ferguson N. **Burke DS**, Cummings DA. Differential efficacy of dengue vaccine by immune status. Lancet. 2015 May2;385(9979):1726. doi.10.1016/S0140-6736(15)60889-3. PMID: 25943936
294. van Panhuis WG, Choisy M, Xiong X, Chok NS, Akarasewi P, Iamsirithaworn S, Lam SK, Chong CK, Lam FC, Phommasak B, Vongphrachanh P, Bouaphanh K, Rekol H, Hien NT, Thai PQ, Duong TN, Chuang JH, Liu YL, Ng LC, Shi Y, Tayag EA, Roque VG Jr, Lee Suy LL, Jarman RG, Gibbons RV, Velasco JM, Yoon IK, **Burke DS**, Cummings DA. Region-wide synchrony and traveling waves of dengue across eight countries in Southeast Asia. Proc Natl Acad Sci U S A. 2015 Oct 20;112(42):13069-74. doi: 10.1073/pnas.1501375112. Epub 2015 Oct 5.2015 Oct 5. PMID:26438851
295. Dalziel BD, Bjørnstad ON, van Panhuis WG, **Burke DS**, Metcalf CJ, Grenfell BT. Persistent Chaos of Measles Epidemics in the Prevaccination United States Caused by a Small Change in Seasonal Transmission Patterns. PLoS Computational Biology. 2016 Feb;12(2):e1004655. PMID:26845437. PMCID:PMC4741526. doi:10.1371/journal.pcbi.1004655
296. Balmert LC, Buchanich JM, Pringle JL, Williams KE, **Burke DS**, Marsh GM. Patterns and Trends in Accidental Poisoning Deaths: Pennsylvania's Experience 1979-2014. PLoS One. 2016;11(3):e0151655. PMID:26963396. PMCID:PMC4786332. doi:10.1371/journal.pone.0151655.
297. Metcalf CJE, Farrar J, Cutts F, Basta N, Graham AL, Lessler J, Ferguson N, **Burke D**, Grenfell BT. Use of Serological surveys to generate key insights of the changing global landscape of infectious disease. Lancet (London, England). 2016 Apr 5. PMID:27059886. doi:10.1016/S0140-6736(16)30164-7.
298. Buchanich JM, Balmert LC, Pringle JL, Williams KE, **Burke DS,** Marsh GM. Patterns and trends in accidental poisoning death rates in the US, 1979-2014. Preventive Medicine. 2016 Apr 13. PMID:27085991. doi:10.1016/j.ypmed.2016.04.007.
299. Gearhart TL, Montelaro RC, Schurdak ME, Pilcher CD, Rinaldo CR, Kodadek T, Park Y, Islam K, Yurko R, Marques ET Jr, **Burke DS**. Selection of a potential diagnostic biomarker for HIV infection from a random library of non-biological synthetic peptoid oligomers. J Immunol Methods. 2016 Aug;435:85-89. PMID:27182050. PMCID:PMC4947968. doi:10.1016/j.jim.2016.05.001.
300. Zimmerman RK, Nowalk MP, Chung J, Jackson ML, Jackson LA, Petrie JG, Monto AS, McLean HQ, Belongia EA, Gaglani M, Murthy K, Fry AM, Flannery B; U.S. Flu VE Investigators. 2014-2015 Influenza Vaccine Effectiveness in the United States by Vaccine Type. Clin Infect Dis. 2016 Dec 15;63(12):1564-1573. PMID: 27702768. PMCID: PMC5146719. doi:10.1093/cid/ciw635

301. **Burke DS.** Forecasting the opioid epidemic. Science. 2016 Nov 4;354(6312):529. PMID: 27811241. doi:10.1126/science.aal2943
302. Farrow DC, Brooks LC, Hyun S, Tibshirani RJ, **Burke DS,** Rosenfeld R. A human judgment approach to epidemiological forecasting. PLoS Comput Bio, 2017 Mar 10;13(3):e1005248. PMID:28282375. PMCID:PMC5345757. doi:10.1371/journal.pcbi.1005248.
303. Marques ETA, **Burke DS.** Tradition and innovation in development of a Zika vaccine. Lancet, 2018 Feb 10:391(10120):516-517. PMID:29217377. doi:10.1016/S0140-6736(17)33107-0
304. Nascimento EJM, Huleatt JW, Cordeiro MT, Castanha PMS, George JK, Grebe E, Welte A, Brown M, **Burke DS,** Marques ETA. Development of antibody biomarkers of long term and recent dengue virus infections. J Virol Methods, 2018 Jul;257:62-68. PMID:29684416. doi: 10.1016/j.jviromet.2018.04.009.
305. Buchanich JM, Doerfler SM, Lann MF, Marsh GM, **Burke DS.** Improvement in racial disparities in years of life lost in the USA since 1990. PLoS One. 2018 Apr 25;13(4):e0194308. PMID: 29694402 doi: 10.1371/journal.pone.0194308.
306. Buchanich JM, Balmert LC, Williams KE, **Burke DS.** The effect of incomplete death certificates on estimates of unintentional opioid-related overdose deaths in the United States, 1999-2015. Public Health Rep. 2018 Jul/Aug;133(4):423-431. PMID: 29945473 doi: 10.1177/0033354918774330.
307. España G, Grefenstette J, Perkins A, Torres C, Campo Carey A, Diaz H, de la Hoz F, **Burke DS**, van Panhuis WG. Exploring scenarios of chikungunya mitigation with a data-driven agent-based model of the 2014-2016 outbreak in Colombia. Sci Rep. 2018 Aug 15;8(1):12201. doi: 10.1038/s41598-018-30647-8. PMID: 30111778; PMCID: PMC6093909.
308. Jalal H, Buchanich JM, Roberts MS, Balmert LC, Zhang K, **Burke DS.** Changing dynamics of the drug overdose epidemic in the United States from 1979 through 2016. Science. 2018 Sep 21;361(6408). pii: eaau1184. doi: 10.1126/science.aau1184. PMID: 30237320
309. van Panhuis WG, Cross A, **Burke DS**. Project Tycho 2.0: A repository to improve the integration and reuse of data for global population health. J Am Med Inform Assoc. 2018 Dec 1;25(12):1608-1617. doi: 10.1093/jamia/ocy123. PMID: 30321381
310. Sinclair DR, Grefenstette JJ, Krauland MG, Galloway DD, Frankeny RJ, Travis C, **Burke DS,** Roberts MS. Forecasted size of measles outbreaks associated with vaccination exemptions for schoolchildren. JAMA Netw Open. 2019 Aug 2;2(8):e199768. doi: 10.1001/jamanetworkopen.2019.9768.
311. Jalal H, Buchanich JM, Sinclair DR, Roberts MS, **Burke DS**. Age and generational patterns of overdose death risk from opioids and other drugs. Nat Med. 2020 May;26(5) :699-704. doi: 10.1038/s41591-020-0855-y. Epub 2020 May 4. PMID: 32367060
312. Jalal H, and **Burke DS**. Hexamaps for Age-Period-Cohort Data Visualization in R. Epidemiology (in press, 2020).

Books

1. **Burke DS** (Chairman). Under The Weather: Climate, Ecosystems, and Infectious Disease. National Academy Press, Washington DC, 2001.
2. **Burke DS** (Chairman). Protecting the Frontline in Biodefense Research: The Special Immunizations Program. National Academy Press, Washington DC, 2011.

Book Chapters / Monographs

1. **Burke DS**, Chutichedej P, Boongrapu P, Narendar Pal Singh. Studies of viral hepatitis at Pramongkutklao Hospital, pp 134-150 in Viral Hepatitis in Thailand, Ed. Wasi C and Thongcharoen P, Aksorn Samai, Bangkok (in Thai language, 1983).
2. **Burke DS**. The prospects for immunizing against Japanese encephalitis. In Priorities for New Vaccine Development, Part II. National Academy of Sciences, Washington, DC (1987).
3. Binn LN, Bancroft WH, Eckels KH, Marchwicki RH, Dubois DR, Asher LVS, LeDuc JW, Trahan CJ, **Burke DS**. Inactivated hepatitis A virus vaccine produced in human diploid MRC-5 cells. In Zuckerman AJ (ed.): Viral Hepatitis and Liver Disease. New York: Alan R. Liss, Inc., pp 91-93 (1988).
4. Sjorgren MH, Eckels KH, Binn LN, Dubois DR, Hoke CH, **Burke DS**, Bancroft WH. Safety and immunogenicity of an inactivated hepatitis A vaccine. In Zuckerman AJ (ed): Viral Hepatitis and Liver Disease. New York: Alan R. Liss, Inc., pp 94-96 (1988).
5. **Burke DS**, Leake CJ. Japanese encephalitis. Chapter 28 in The Arboviruses: Epidemiology and Ecology, Volume III, pages 63-92. CRC Press, Inc. Boca Raton, FL (1988).
6. **Burke DS**, McCutchan FE. Global Distribution of Human Immunodeficiency Virus-1 Clades, chapter 7 in AIDS, Biology, diagnosis, Treatment and Prevention, fourth edition, ed. VT DeVita, S Hellman, SA Rosenberg. Lippincott-Raven Publishers (1996).
7. **Burke DS**. Vaccine Therapy. Chapter 67 in New Generation Vaccines, Second Edition, second edition, ed. Levine MM, Woodrow GC, Kaper JB, and Cobon GS, Marcel Decker, Inc., New York (1997).
8. **Burke DS**. Evolvability of Emerging Viruses. Chapter 1in Pathology of Emerging Infections, ed. Nelson AM and Horsburgh CR, American Society of Microbiology, Washington DC (1998).
9. **Burke DS**. HIV and AIDS in the United States Military. Chapter in the Oxford Companion to American Military History, ed. Chambers JW (2000).
10. **Burke DS**. AIDS and AIDS-Related Infections. Chapter 114 in Essentials of Tropical Infectious Diseases: Principles, Pathogens, and Practice, ed. Guerrant RL, Weller PF, and Walker DH, W.B. Saunders Company, Philadelphia, PA (2000).
11. **Burke DS** and Monath TP. Flaviviruses. Chapter 33 (pp. 1043-1126) in Field's Virology, 4th Edition, Editors Knipe DM and Howley PM, Lippincott Williams & Wilkins, Philadelphia, PA (2001).
12. **Burke DS**. Vaccine Therapy. Chapter in New Generation Vaccines, Third Edition, ed. Levine MM, Woodrow GC, Kaper JB, and Cobon GS, Marcel Decker, Inc., New York (2004).
13. Epstein JM, Cummings DAT, Chakravarty S, Singa RM, **Burke DS**. Toward a containment strategy for smallpox bioterror: An individual-based computational approach. Brookings Institution Press, Washington DC (2004)

Book Reviews

1. **Burke DS**. Louis Pasteur. J Amer Med Assoc 283: 2587-2588 (2000).
2. **Burke DS**. The Politics of International Health. Bull Hist Med 74: 650-651 (2000).
3. **Burke DS**. The Vaccine Book. J Amer Med Assoc 290: 406-407 (2003).
4. **Burke DS**. Six Modern Plagues and How We Are Causing Them. Env Health Perspectives 112: A66 (2004).

Letters to the Editor

1. **Burke DS**, Rushforth NB. Inhibition of pacemaker activity in Hydra. Amer Zool 6:91 (letter, 1966).
2. **Burke DS**. Magic shotgun pellets. Lancet 1:1414 (letter, 1979).
3. Henderson A, Leake CJ, **Burke DS**. Japanese encephalitis in Nepal. Lancet 2:1359-1360 (letter, 1983).
4. **Burke DS**, Ussery MA, Elwell MR, Nisalak A, Leake C, Laorakpongse T. Isolation of Japanese encephalitis strains from sentinal pigs in northern Thailand, 1982. Trans Roy Soc Trop Med Hyg 79:420-421 (letter, 1985).
5. **Burke DS**, Nisalak A, Nimmannitya S. Disappearance of chikungunya virus from Bangkok. Trans Roy Soc Trop Med Hyg 79:419-420 (letter, 1985).
6. Wattanavijarn W, Tesprateep T, **Burke DS**. Absence of porcine parvovirus transmission to man. Trans Roy Soc Trop Med Hyg 79:561 (letter, 1985).
7. **Burke DS**, Redfield RR. False positive Western blot tests for antibodies to HTLV-III. J Am Med Assoc 256:347 (letter, 1986).
8. Kelley PW, Redfield RR, Ward DL, **Burke DS**, Miller RN. Prevalence and incidence of HTLV-III infection in a prison. J Am Med Assoc 256:2198-2199 (letter, 1986).
9. **Burke DS**, Redfield RR. Classification of infections with Human Immunodeficiency Virus. Ann Int Med 105:968 (letter, 1986).
10. Lennox JF, Redfield RR, **Burke DS**. HIV antibody screening in a general hospital population. J Am Med Assoc 257:2914 (letter, 1987).
11. **Burke DS**, Redfield RR. Transmission of Human Immunodeficiency Virus (HIV). N Engl Med 318:1202-1203 (letter, 1988).
12. **Burke DS**. Review of laboratory proficiency. Infect Control Hosp Epidemiol 9:365 (letter, 1988).
13. **Burke DS**, Brundage JF, Redfield RR, Damato JJ. Screening for Human Immunodeficiency Virus infections. N Engl J Med 320:461-463 (letter, 1989).
14. **Burke DS**, Redfield RR, Bjornson DC, Fowler AK, Oster CN. Frequent isolation of HIV-1 from the blood of patients receiving zidovudine (AZT) therapy. N Engl J Med 321:1682 (letter, 1989).
15. Malone JL, Oldfield EC; Wagner KF, Simms TE, Daly R, O'Brian J, **Burke DS**. Abnormalities of morning serum cortisol levels and circadian rhythms of CD4+ lymphocyte counts in human immunodeficiency virus type 1-infected adult patients (letter). J Infect Dis 165:185-186 (letter, 1992).
16. Roy MJ, Damato JJ, **Burke DS**. Absence of seroreversion of HIV-1 antibody in seroreactive individuals. J Am Med Assoc 270:2179 (letter, 1993).
17. **Burke DS**, Brown AE. Screening surgeons for HIV infection. Ann Intern Med 123:812-813 (letter, 1995).
18. Brown AE, **Burke DS**. Cost of HIV testing in the U.S. Army. N Eng J Med 332:963 (letter, 1995).
19. **Burke DS.** Another look at Microbe Hunters. Amer Soc Microbiol News 8: 403 (letter, 1997).
20. **Burke DS, Kliks S.** Antibody dependent enhancement in dengue virus infections. J Infect Dis 193: 601-603 (2006).

Editorials / Other

1. **Burke DS**. A strategy to prevent the spread of AIDS. The Saturday Evening Post, May/June, pp. 22, 91 (1988).
2. **Burke DS**. The threat posed by dengue virus infection. Infect Med 5:499-510 (1988).

3. **Burke DS**. Introduction to the 1991 ASTMH Presidential Address. Am J Trop Med Hyg 46:239-240 (1992).
4. **Burke DS**. Amsterdam AIDS Conference reveals slow progress (news). Critical Care Nurse 12:98-99 (1992).
5. **Burke DS**. HIV infection and AIDS: Editorial overview. Curr Opp Infect Dis 6:179-180 (1993).
6. Mascola JR, McNeil, JG, **Burke DS**. AIDS vaccines. Are we ready for human efficacy trials? J Am Med Assoc 272:488-489 (1994).
7. **Burke DS**. 1996 American Society of Tropical Medicine and Hygiene President's Address. Sing for the Gov'nor: A call to advocacy for tropical medicine and hygiene. Am J Trop Med Hyg 56:1-6 (1997).
8. **Burke DS**. Six Months to Act (Op-Ed on SARS). Wall Street Journal, 25 April 2003.
9. **Burke DS**. Ignoring Deadly Viruses (Op-Ed on avian influenza). Asian Wall Street Journal, 26 January 2004.
10. **Burke DS**. Avian Influenza Is a Threat to Our Collective Security (Op-Ed). Wall Street Journal, 3 November 2005
11. **Burke DS**. Obamacare Arrives in Allegheny County: The nation and the Pittsburgh Region can now focus on preventive care. (Op-Ed). Pittsburgh Post-Gazette, Nov 21, 2012
12. **Burke DS**. This is a Well Regulated Militia?? (Infographic), 26 June 2016
13. **Burke DS**. We didn't lose the War on Drugs, we surrendered (Op-Ed). Pittsburgh Post-Gazette. 22 Oct. 2017
14. Hufford M, and **Burke DS**: The costs of heroin and naloxone: a tragic snapshot of the opioid crisis. (Op-Ed) STAT, 8 November 2018. https://www.statnews.com/2018/11/08/costs-heroin-naloxone-tragic-snapshot-opioid-crisis/

SERVICE: UNIVERSITY AND PROFESSIONALLY RELATED

University of Pittsburgh

2006-2019	Graduate School of Public Health, University of Pittsburgh, Pittsburgh, PA	Dean
2006-2019	Center for Global Health, University of Pittsburgh, Pittsburgh, PA	Associate Vice Chancellor
2006 - 2016	Center for Vaccine Research, University of Pittsburgh, Pittsburgh, PA	Director
2011 - 2014	Distinguished Faculty Committee, University of Pittsburgh	Chair
2013 - 2014	Chancellor Search Committee, University of Pittsburgh	Member

Johns Hopkins University (Bloomberg School of Public Health)

2002-2006	Committee on Appointments and Promotions / school-wide	Member
2002-2006	Disease Prevention and Control Division	Assoc Dept Chairman
2001-2003	Biodefense Leadership Group / school-wide	Member
1998-2001	Committee on Human Research (Institutional Review Board) / school-wide	Co-Chairman

1998-2006	Certificate Program in Vaccine Science and Policy	Director
1997-2006	Appointments and Promotions Committee	Member
1997-2006	Executive Committee	Member
1997-2006	Curriculum Committee	Member
1997-2003	Admissions Committee	Member
1997-2002	Graduate Degree Program in Vaccine Science and Policy	Director

CONSULTATIONS, PANELS, AND BOARDS

World Health Organization/SE Asia Regional Office, Temporary Advisor, on Research in Viral Hemorrhagic Fevers, 1980; on Dengue Hemorrhagic Fever, 1983; on Viral Hepatitis, 1984
Steering Committee on Dengue Vaccines, World Health Organization, Member, 1985 – 1988
AIDS Vaccine Research and Development Subgroup, US Public Health Service, DoD representative, 1987 – 1992
HIV Early Care Advisory Group, American Medical Association, Member, 1989 – 1990
Diagnostic and Therapeutic Technology Assessment Panel, American Medical Association, Member, 1989 – 1991
Roundtable for the Development of Drugs and Vaccines against AIDS, Institute of Medicine, Member, 1989 – 1994
International Forum on AIDS Research, Institute of Medicine, Member, 1990 – 1992
Steering Committee on AIDS/HIV Vaccine Development, World Health Organization, Member, 1991 – 1994
HIV/AIDS Working Group, Center for Strategic and International Studies, Member, 1992 – 1994
Mahidol University, Consultant, Post-graduate Training in Virology in Response to the HIV/AIDS Epidemic, Bangkok, Thailand, 1993
Civil-Military Alliance against HIV/AIDS, Co-Founder, 1993
Working Group on HIV Vaccine Development and International Field Trials of the Federal Coordinating Committee on Science, Engineering and Technology Committee on Life Sciences and Health, Co-Chairman, 1992 – 1994
Pharmaceutical Organization, Royal Thai Government, Consultant, on Local Production of HIV Vaccines, 1994
AIDS Vaccine Trials Data and Safety Monitoring Board, Member, National Institutes of Health, 1988 – 1996
UNAIDS, Temporary Advisor on HIV Molecular Epidemiology, 1996 and 2000
Vice President's Working Group on HIV Vaccines and Therapeutics, White House, Member, 1996
American Association of Blood Banks, Consultant, Think Tank on Emerging Viruses, 1996
Ministry of Agriculture, Government of New Zealand, Consultant, on Rabbit Hemorrhagic Disease Virus as a Bio-control Agent, 1997
National Institutes of Health Study Section on Tropical Medicine and Parasitology, Member, 1997 – 2000
Food and Drug Administration, Transmissible Spongiform Encephalopathies Advisory Committee, Member, 1998 – 2002
National Research Council, Panel on Climate, Ecology, Infectious Diseases, and Health, Chairman, 1999 – 2001
Institute of Medicine, Department of Defense Global Emerging Infectious Surveillance Committee, Member, 2000 – 2001

International Research Institute for Climate Prediction of Columbia University, Scientific Advisory Committee, Member, 2000 – 2003
Institute of Medicine, Committee on Emerging Microbial Threats to Health in the 21st Century, Member, 2001 – 2003
Smallpox Computational Modeling Working Group, Office of Public Health Emergency Preparedness, US Department of Health and Human Services, Member, 2002 – 2004. SARS Task Force, Defense Science Board, Department of Defense, Member, 2003 – 2004.
National Biodefense Analysis and Countermeasure Center, Department of Homeland Security, Working Group on Threat Prioritization, Chair, Virology Group, 2003 – 2004
Federation of American Scientists, Biosecurity Education for Biology Graduate Students Project, Temporary Advisor, 2004
International AIDS Vaccine Initiative, Co-founder, 1994-96; Senior Scientific Advisor, 1997-2002; Policy Advisory Board Member, 2003 – present
Institute of Medicine, Department of Defense / Veterans Affairs Medical Follow-up Agency, Member of the Board, 2002-2006
Physicians for Human Rights / Health Action AIDS, Executive Committee, 2003 – 2006
Data Safety and Monitoring Board, HIV RV144 Phase III Clinical Trial (Rayong Thailand), Member, 2004 – 2009
Middle Atlantic Regional Center of Excellence for Biodefense and Emerging Infections (MARCE), Steering Committee, 2004 – 2008
Consortium for Conservation Medicine, Executive Committee, 2004-present
Bill & Melinda Gates Foundation, Technical Review Panel, HIV/AIDS Vaccines, Member, 2005
Special Review Panel of the Joint National Institutes of Health / National Science Foundation Ecology of Infectious Disease Program, Panel Chairman, 2005
Jewish Healthcare Foundation, Board Member, 2006 – 2012
Community Health Committee of the UPMC Board of Directors, 2006 – 2009
National Biodefense Analysis & Countermeasures Center, Science & Technology Advisory Committee, Department of Homeland Security, 2006 – present
Brookings Institution Center on Social and Economics Dynamics Advisory Board Member, 2006 – 2007
Wellcome Trust / Bill & Melinda Gates Foundation Ad Hoc Advisory Meeting on Innovation in Research, Delegate, London, 2007
South African AIDS Vaccine Initiative of the South African Medical Research Council, Scientific Advisory Committee, 2007 – 2009
Pediatric Dengue Vaccine Initiative, Board of Counselors, Chair, 2007 – 2010
Jewish Health Care Pittsburgh Regional Health Initiative (PRHI) Oversight Committee Member, 2008 – 2018
Institute of Medicine, Board on Global Health, Committee on Research Needs for Retention of Variola Virus Member, 2008 – 2009
NIH Director's Blue Ribbon Panel for the Risk Assessment of the National Emerging Infectious Diseases Laboratories, Member, 2008 – 2011
University of Pittsburgh Confucius Institute Advisory Board Member, 2008 – 2015
Dengue Vaccine Advocacy Initiative (Sanofi-Pasteur) Steering Committee Member, 2008 – 2018
UPMC/21CB Vaccine Production Steering Committee Member, 2009 – 2011
Institute of Medicine Report on Personal Protective Equipment against H1N1 Review Coordinator, 2009
Pennsylvania's Public Health Law Advisory Committee, 2009 – 2012
National Biosurveillance Advisory Subcommittee, Centers for Disease Control, Member and Champion for National Workforce Development Taskforce, 2010 - 2011
Institute of Medicine, Committee on the Special Immunizations Program for Laboratory Personnel Engaged in Research on Countermeasures for Select Agents, Chair, 2010 - 2012
Office of Public Health Preparedness and Response Board of Scientific Counselors, CDC,

2011 – 2014
Association for Schools and Programs of Public Health Global Health Committee Chair, 2011 - 2015
National Research Council, Committee on Support to the Department of Defense's Programs to Counter Biologic Threats, Chair, 2012 – 2015
World Health Organization, Immunization and Vaccines Implementation Research Committee, 2012 – 2019
Governor's Health Innovation in Pennsylvania (HIP) Steering Committee, 2015 – 2016
National Academies of Science-Engineering-Medicine, Planning Committee on Gain-of-Function Research, The Second Symposium, 2016
Association for Schools and Programs of Public Health, member of Task Force on Public Health Initiatives to Address the Substance Abuse Crisis, 2018

Current Consultations, Boards, and Panels
Allegheny County Board of Health, Member, 2008 – present
MRC Centre for Outbreak Analysis and Modeling, Scientific Advisory Board Member, Imperial College, London, 2008 – present
Grace and Harold Sewell Memorial Fund for Medical Librarians, Board Member and Vice-President, 2012 – present
Magee Women's Research Institute & Foundation, Board Member, 2019 - present
National Academy of Medicine / American Public Health Association Expert Advisory Panel, COVID-19 Webinar Series, 2020 – present

BUSINESS ACTIVITIES

Epistemix, Inc. Co-founder and President, 2018 - present

CLINICAL AND RELATED ACTIVITIES

Inpatient: Patient Care

LOCATION/SERVICE	ACTIVITY	TIME DEVOTED TO ACTIVITY
Walter Reed Army Medical Center, Washington, DC	Attending Physician, Infectious Diseases Service	1985-1990

I was previously licensed in Maryland but I do not currently practice medicine

PATENTS

Title:	PRIMATE T-LYMPHOTROPIC VIRUSES (HTLV-3 and HTLV-4)
Patent Holders:	Switzer WM, Heneine W, Folks TM, Wolfe ND, Burke DS, Mpoudi-Ngole E
Patent #:	8,541,221 B2 (formerly 7794998)
Application Date:	7/01/2010
Issue Date:	9/24/2013

Title:	SIMIAN T-CELL LYMPHOTROPIC VIRUS
Patent Holders:	Switzer WM, Heneine W, Folks TM, Wolfe ND, Burke DS, Sintasath DM
Patent #:	8,663,968
Application Date:	05/20/2008
Issue Date:	03/04/2014

Title:	COMPOSITIONS AND METHODS FOR PEPTOID-BASED DETECTION AND DIAGNOSIS OF HIV/AIDS AND OTHER INFECTIOUS DISEASES
Patent Holders:	Burke DS, Montelaro RC, Gearhart TL, Marques ET
Provisional Patent Application University of Pittsburgh Ref #:	03791
Application #:	62/335,893
Recorded date:	06/09/2016

APPENDIX B

Materials Considered

Alison Dirr & Mary Spicuzza, *What We Know So Far About Why Milwaukee Only Had 5 Voting Sites for Tuesday's Election While Madison Had 66*, MILWAUKEE J. SENTINEL (Apr. 9, 2020), https://www.jsonline.com/story/news/politics/elections/2020/04/09/wisconsin-election-milwaukee-had-5-voting-sites-while-madison-had-66/2970587001/.

Alleghany County Voting System, VotesPA.com, https://www.votespa.com/readytovote/Pages/Allegheny-County-Voting-System.aspx (last accessed Sept. 5, 2020).

Allegheny County issues full list of consolidated polling place locations for June 2 primary election, WTAE PITTSBURGH (June 1, 2020), *available at* https://www.wtae.com/article/allegheny-county-issues-full-list-of-consolidated-polling-place-locations-for-june-2-primary-election/32501520#.

Allison James et al., *High COVID-19 Attack Rate Among Attendees at Events at a Church — Arkansas, March 2020*, 69 MORBIDITY & MORTALITY WKLY REP. 632 (2020), https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6920e2-H.pdf.

Apoorva Mandavilli, *Actual Coronavirus Infections Vastly Undercounted, C.D.C. Data Shows*, N.Y. TIMES (June 27, 2020), https://www.nytimes.com/2020/06/27/health/coronavirus-antibodies-asymptomatic.html (updated Aug. 6, 2020).

April 7, 2020 Election Summary Report, WISCONSIN ELECTIONS COMMISSION (April 18, 2020), https://www.eac.gov/sites/default/files/paymentgrants/cares/WI_20CARES_Progress_Report_042820.pdf.

Benjamin J. Cowling et al., *The effective reproduction number of pandemic influenza: Prospective estimation*, 21(6) EPIDEMIOLOGY 842 (2010), author manuscript available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3084966/.

Berry et al., *Wisconsin April 2020 Election Not Associated with Increase in COVID-19 Infection Rates*, non-peer reviewed preprint posted at https://www.medrxiv.org/content/10.1101/2020.04.23.20074575v1 (posted April 28, 2020).

Cases in the U.S., CTRS. FOR DISEASE CONTROL AND PREVENTION, https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html (last accessed Sept. 5, 2020).

Chad D. Cotti et al., *The Relationship between In-Person Voting, Consolidated Polling Locations, and Absentee Voting on Covid-19: Evidence from the Wisconsin Primary*, NAT'L BUREAU ECON. RES. (2020), https://www.nber.org/papers/w27187.pdf.

Chad D. Cotti, Bryan Engelhardt, Joshua Foster, Erik T. Nesson, Paul S. Niekamp, *The Relationship between In-Person Voting and COVID-19: Evidence from the Wisconsin Primary*, NBER Working Paper (Issued May 2020, Rev. June 2020), https://www.nber.org/papers/w27187.pdf.

Chris Carter & Joy Notter, *COVID-19 disease: a critical care perspective*, 1 CLINICS IN INTEGRATED CARE 100003 (2020), available at https://doi.org/10.1016/j.intcar.2020.100003.

COVID-19 Data for Pennsylvania, PA. DEPT. OF HEALTH (Sept. 5, 2020), *available at* https://www.health.pa.gov/topics/disease/coronavirus/Pages/Cases.aspx.

COVID-19 Guidance for Businesses, https://www.governor.pa.gov/covid-19/business-guidance/ (last accessed Sept. 5, 2020).

COVID-19 in Racial and Ethnic Minority Groups, CTRS. FOR DISEASE CONTROL AND PREVENTION (June 4, 2020), https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/racial-ethnic-minorities.html.

COVID-19 outbreak at York County Prison, ABC27.com (Sept. 4, 2020), https://www.abc27.com/news/covid-19-outbreak-at-york-county-prison/.

COVID-19 Pandemic Planning Scenarios, CTRS. FOR DISEASE CONTROL AND PREVENTION (May 20, 2020), https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html.

Derick T. Wade, *Rehabilitation after COVID-19: an evidence-based approach*, 20(4) CLINICAL MED. 359 (2020).

Disease Burden of Influenza, CTRS. FOR DISEASE CONTROL AND PREVENTION, https://www.cdc.gov/flu/about/burden/index.html (last reviewed Apr. 17, 2020).

DONALD S. BURKE, *Evolvability of Emerging Viruses*, PATHOLOGY OF EMERGING INFECTIONS Ch. 1 (Nelson A.M. and Horsburgh C.R., eds., American Society of Microbiology, 1998).

Eavs Deep Dive: Poll Workers and Polling Places, U.S. ELECTION ASSISTANCE COMM'N (Nov. 15, 2017), https://www.eac.gov/documents/2017/11/15/eavs-deep-dive-poll-workers-and-polling-places.

Election Board Training Seminar, OFFICE OF THE PHILADELPHIA CITY COMMISSIONERS, https://www.philadelphiavotes.com/en/voters/important-dates/details/1507-election-board-training-seminar-wards-18-19-23-25-31-33-45-62.

Election Poll Workers, NAT'L CONF. ST. LEGISLATURES (Aug. 19, 2019), https://www.ncsl.org/research/elections-and-campaigns/election-poll-workers637018267.aspx.

Election Returns, PENN. DEP'T STATE, https://www.electionreturns.pa.gov/ (last accessed Sept. 5, 2020).

Elissa M. Abrams & Stanley J. Szefler, *COVID-19 and the impact of social determinants of health*, 8 LANCET RESPIRATORY MED. 659 (2020), https://doi.org/10.1016/S2213-2600(20)30234-4.

Eskild Peterson et al., *Comparing SARS-CoV-2 with SARS-CoV and influenza pandemics*, 20 LANCET INFECTIOUS DISEASES e238 (2020), https://doi.org/10.1016/S1473-3099(20)30484-9.

Fei Zhou et al., *Clinical Course and Risk Factors for Mortality of Adult Inpatients with COVID-19 in Wuhan, China*, 395 LANCET 1054 (2020), https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30566-3/fulltext.

For Building Administrators and Proprietors: Use of Facilities as Polling Places During COVID-19, PA. DEPT. OF HEALTH, https://www.health.pa.gov/topics/disease/coronavirus/Pages/Guidance/Polling-Places-Guidance.aspx (last accessed Sept. 5, 2020).

Gov. Tom Wolf, Plan to Reopen Pennsylvania (July 8, 2020), *available at* https://www.governor.pa.gov/process-to-reopen-pennsylvania/.

How COVID-19 Spreads, CTRS. FOR DISEASE CONTROL AND PREVENTION, https://tools.cdc.gov/api/v2/resources/media/407478/content.html (last accessed Sept. 5, 2020).

How Many Adults Are at Risk of Serious Illness If Infected with Coronavirus? Updated Data, KAISER FAMILY FOUNDATION, https://www.kff.org/global-health-policy/issue-brief/how-many-adults-are-at-risk-of-serious-illness-if-infected-with-coronavirus/ (last accessed Sept. 5, 2020).

Hye Jin Rho, Hayley Brown & Shawn Fremstad, *A Basic Demographic Profile of Workers in Frontline Industries*, CTR. FOR ECON. & POL'Y RES. (2020), https://cepr.net/wp-content/uploads/2020/04/2020-04-Frontline-Workers.pdf.

Isaac Ghinai, et al., *Community Transmission of SARS-CoV-2 at Two Family Gatherings - Chicago, Illinois, February-March 2020*, 69 MORBIDITY & MORTALITY WKLY REP. 446 (2020), https://www.cdc.gov/mmwr/volumes/69/wr/mm6915e1.htm.

Jianyun Lu, et al., *Early Release-COVID-19 Outbreak Associated with Air Conditioning in Restaurant, Guangzhou, China, 2020*, 26 EMERG. INFECT. DIS. 1628 (2020), https://wwwnc.cdc.gov/eid/article/26/7/pdfs/20-0764-combined.pdf.

Julie Zauzmer et al., *Voting Problems in D.C., Maryland Lead to Calls for Top Officials to Resign*, WASH. POST (June 3, 2020), https://www.washingtonpost.com/local/dc-politics/voting-problems-in-dc-

maryland-lead-to-calls-for-top-officials-to-resign/2020/06/03/24b47220-a5a8-11ea-b619-3f9133bbb482_story.html.

Lea Hamner et al., *High SARS-CoV-2 Attack Rate Following Exposure at a Choir Practice — Skagit County, Washington, March 2020*, 69 MORBIDITY & MORTALITY WKLY REP. 606 (2020), https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6919e6-H.pdf.

Len Strazewski, *Harvard Epidemiologist: Beware COVID-19's Second Wave This Fall*, AM. MED. ASS'N (May 8, 2020), https://www.ama-assn.org/delivering-care/public-health/harvard-epidemiologist-beware-covid-19-s-second-wave-fall.

Leung, et al., *No Detectable Surge in SARS-CoV-2 Transmission due to the April 7, 2020 Wisconsin Election*, non-peer reviewed preprint posted at https://www.medrxiv.org/content/10.1101/2020.04.24.20078345v1 (posted April 29, 2020).

Marco Cascella et al., *Features, Evaluation, and Treatment of Coronavirus (COVID-19)*, STATPEARLS, https://www.ncbi.nlm.nih.gov/books/NBK554776/ (updated Aug. 10, 2020).

Mark Harrington, *Expert Consult Models to Predict If Coronavirus Cases Will Spike*, NEWSDAY (June 4, 2020), https://www.newsday.com/news/health/coronavirus/infectious-coronavirus-model-pandemic-1.45185224.

Matthew Weil et al., *The 2018 Voting Experience: Polling Place Lines*, BIPARTISAN POL'Y CTR. (Nov. 4, 2019), https://bipartisanpolicy.org/report/the-2018-voting-experience/.

Michael Barthel & Galen Stocking, *Older People Account for Large Shares of Poll Workers and Voters in U.S. General Elections*, PEW RES. CTR. (April 6, 2020), https://www.pewresearch.org/fact-tank/2020/04/06/older-people-account-for-large-shares-of-poll-workers-and-voters-in-u-s-general-elections/.

Michael Corkery, David Yaffe-Bellany & Derek Kravitz, *As Meatpacking Plants Reopen, Data About Worker Illness Remains Elusive*, N.Y. TIMES (May 25, 2020), https://www.nytimes.com/2020/05/25/business/coronavirus-meatpacking-plants-cases.html.

Montgomery County Poll Worker Training – Spring 2020, https://www.youtube.com/watch?v=CjkzSbLooJE&feature=youtu.be (last accessed Sept. 5, 2020).

Neeltje van Doremalen et al., *Aerosol and Surface Stability of SARS-CoV-2 as Compared With SARS-CoV-1*, 382 NEW ENG. J. MED. 1962 (2020), https://pubmed.ncbi.nlm.nih.gov/32182409/.

Nicholas Reimann, *Coronavirus Infections Spiked in Wisconsin After In-Person Election, Study Says*, FORBES (May 19, 2020), https://www.forbes.com/sites/nicholasreimann/2020/05/19/coronavirus-infections-spiked-in- wisconsin-after-in-person-election-study-says/#44f29b8514b3.

Paul L. Delamater, Erica J. Street, Timothy F. Leslie, Y. Tony Yang, and Kathryn H. Jacobsen, *Complexity of the Basic Reproduction Number (R_0)*, EMERGING INFECTIOUS DISEASES, Vol. 25, No. 1 (January 2019).

Pennsylvania Coronavirus Map and Case Count, NY TIMES, https://www.nytimes.com/interactive/2020/us/pennsylvania-coronavirus-cases.html (last accessed Sept. 5, 2020).

Pennsylvania COVID-19 Dashboard, PA. DEP'T PUBLIC HEALTH (Sept. 5, 2020), *available at* https://experience.arcgis.com/experience/cfb3803eb93d42f7ab1c2cfccca78bf7.

Pennsylvania Population Estimates, U.S. CENSUS BUREAU (July 1, 2019), *available at* https://www.census.gov/quickfacts/PA.

People with Certain Medical Conditions, CTRS. FOR DISEASE CONTROL AND PREVENTION, https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html (last accessed August 19, 2020).

Philadelphia County Voting System, VotesPA.com, https://www.votespa.com/readytovote/Pages/Philadelphia-County-Voting-System.aspx (last accessed Sept. 5, 2020).

Poll Worker Recruitment Newsletter, PA. DEPT. OF STATE, *available at* https://www.votespa.com/Resources/Documents/PollWorkerRecruitment-Toolkit/PollWorkerRecruitment-Newsletter.pdf (last accessed Sept. 5, 2020).

Primary 2020 updates: Polls now closed across Allegheny County: Officials receive complaints that some voters not 'social distancing,' wearing masks, PITTSBURGH POST-GAZETTE (June 2, 2020), https://www.post-gazette.com/news/politics-local/2020/06/02/Primary-election-western-pennsylvania/stories/202006020068.

Ruiyun Li et al., *Substantial undocumented infection facilitates the rapid dissemination of novel coronavirus (SARS-CoV-2),* 368 SCIENCE 489 (2020), https://science.sciencemag.org/content/368/6490/489.full.

Seth Flaxman et al., *Estimating the effects of non-pharmaceutical interventions on COVID-19 in Europe*, 584 NATURE 257 (2020), https://www.nature.com/articles/s41586-020-2405-7.

Shelby Bremer, *CDC Report Shows How a Funeral and Birthday Party 'Super Spread' COVID-19 in Chicago*, NBC CHI. (Apr. 9, 2020), https://www.nbcchicago.com/news/local/cdc-report-shows-how-a-funeral-and-birthday-party-super-spread-covid-19-in-chicago/2253006/.

State Data and Policy Actions to Address Coronavirus, KAISER FAMILY FOUNDATION, https://www.kff.org/coronavirus-covid-19/issue-brief/state-data-and-policy-actions-to-address-coronavirus/ (last accessed Sept. 5, 2020).

State election officials urge swift legislative action on voting reforms, PENN LIVE (Aug. 4, 2020), *available at* https://www.pennlive.com/news/2020/08/state-election-officials-urge-swift-legislative-action-on-voting-reforms.html?outputType=amp.

Stephen M. Kissler, et al., *Projecting the transmission dynamics of SARS-CoV-2 through the postpandemic period*, 368 SCIENCE 860 (Apr. 14, 2020), https://science.sciencemag.org/content/sci/368/6493/860.full.pdf.

Sukbin Jang, et al., *Cluster of Coronavirus Disease Associated with Fitness Dance Classes, South Korea*, 26 EMERG. INFECT. DIS. 1917 (2020), https://wwwnc.cdc.gov/eid/article/26/8/pdfs/20-0633-combined.pdf.

Trump Administration Asks States to Be Ready for Vaccine by November, WALL STREET JOURNAL (Sept. 3, 2020), *available at* https://www.wsj.com/articles/trump-administration-asks-states-to-be-ready-for-vaccine-by-november-11599075477.

U.S. Census Bureau, Pennsylvania Population Estimates, July 1, 2019, *available at* https://www.census.gov/quickfacts/PA.

Voter Services Polling Locations as of 9/4/2020, MONTGOMERY COUNTY, https://webapp02.montcopa.org/voterservices/voters/ListPolls1.asp?Municipality=ALL.

Voting & Election Statistics, PA. DEPT. OF STATE, https://www.dos.pa.gov/VotingElections/OtherServicesEvents/VotingElectionStatistics/Pages/VotingElectionStatistics.aspx (last updated Aug. 31, 2020).

Voting machines and coronavirus force long lines on Georgia voters, ATLANTA JOURNAL-CONSTITUTION https://www.ajc.com/news/state--regional-govt--politics/voting-machines-and-coronavirus-force-long-lines-georgia-voters/VajM2D3aSHALhC z7KwDrpJ/ (June 9, 2020).

York County COVID-19 Resource Center, YORK COUNTY, https://covid19-yorkcosc.hub.arcgis.com/ (last accessed Sept. 5, 2020).

You Li, Xin Wang, Harish Nair, *Global Seasonality of Human Seasonal Coronaviruses: A Clue for Postpandemic Circulating Season of Severe Acute Respiratory Syndrome Coronavirus 2?*, 222 J. INFECT. DISEASES 1090 (2020), https://doi.org/10.1093/infdis/jiaa436.