



## COVID-19 versus seasonal influenza 2019–2020: USA

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Received: 30 April 2020 / Accepted: 17 May 2020 / Published online: 8 June 2020  
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**Summary** Severe mitigation efforts in the USA to reduce the incidence of COVID-19 infections have led to a massive rise in unemployment, social disruption, and appear to be leading to a severe economic depression. In contrast, no such interventions were regarded as necessary to manage seasonal influenza in 2019–2020. Another mitigation approach is proposed for COVID-19 that would allow society to function and yet should still be effective.

**Keywords** Respiratory Virus · Coronavirus · SARS-CoV-2 · Pandemic · Mitigation

The pandemic of COVID-19 infections has caused numerous illnesses worldwide and attempts to mitigate the pandemic have severely disrupted many aspects of how society in the USA has functioned. The first case in the USA was diagnosed in January 2020 [1]. Mitigation efforts in the USA have focused on extreme measures for social distancing resulting in a large proportion of the healthy population asked or forced to remain at home. These measures have led to a massive rise in unemployment in the USA, caused tremendous social disruption, and appear to be leading to a severe economic depression. In addition, no clear end point or criteria for discontinuing these measures has been explicitly defined.

The current case load has demonstrated that many hospitals and medical centers in geographic areas in the USA with the most cases are not properly equipped to deal with the rapid emergence of a res-

piratory virus pandemic, which would appear to be a powerful impetus to reduce the new case load regardless of the impact of the interventions on the rest of society.

The USA has had to deal with respiratory virus pandemics before, with the worst one being the 1918–1919 influenza pandemic [2]; however, seasonal influenza in the USA in the time period from October 2019 until the present has not attracted very much media interest and with few to no interventions from the federal or local government in terms of shutting down the functionality of society. Some might be surprised to learn that the US Centers for Disease Control and Prevention estimated that from 1 October 2019 to 4 April 2020 up to 56 million cases of influenza have already occurred in the USA with up to 62,000 deaths (Table 1; [3–7]).

Strong mitigation efforts in certain cities in the USA reduced the number of cases of influenza in the 1918–1919 pandemic, but often cases recurred when the mitigation efforts were suspended or reduced [2]. An important consideration in terms of controlling respiratory virus outbreaks is the risk for development of a second wave of cases if insufficient herd immunity in the at-risk population has developed and if no vaccine has been developed.

Would an alternative mitigation effort in the USA for the COVID-19 pandemic of just quarantining cases and case contacts (with investigations of identified cases being done routinely and expeditiously to identify contacts), along with widespread adoption of hand hygiene and, perhaps, for a limited time period, with wearing a mask when outside of the home, be just as effective as the much more severe and disruptive restrictions currently being imposed [8, 9]? With this modified approach, no businesses would need to be closed, sporting events would continue, laboratories at universities and medical schools could

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**Table 1** Comparison of seasonal influenza and COVID-19, USA, 2019–2020

Variable	Influenza	COVID-19
Virus type	Enveloped single-stranded RNA virus (negative sense)	Enveloped single-stranded RNA virus (positive sense)
Cell receptor	N-acetyl neuraminic acid	Angiotensin-converting enzyme 2; possibly also host cellular serine protease
Seasonal	Yes	Unknown
Precautions	Droplet <sup>a</sup>	Airborne plus gowns, gloves, and eye protection
Duration of infectiousness	From 1 day before illness to as long as severe symptoms persist; virus has been detected up to 21 days after onset of illness	Possibly from 3 days before onset of symptoms in some cases until clearance of the virus
Treatment options	Yes (multiple FDA-approved drugs)	No established therapies
Vaccine	Yes	No
Incubation time: Exposure to onset of symptoms	1–4 days, median 2 days	2–14 days
Pregnant patients at high risk for severe illness	Yes	?No
Children at risk for severe illness	Yes	?No
Number of cases USA	39–56 million cases (10/1/19–4/4/20)	740,557 (4/19/20) <sup>b</sup>
Number of deaths USA	24,000–62,000 (10/1/19–4/4/20) (up to 0.16% of cases)	38,979 (4/19/20) (5.3% of cases) <sup>b</sup>

<sup>a</sup> Aerosol transmission may be possible but is controversial and may be dependent on the strain of influenza virus [5, 7]  
<sup>b</sup> The number of cases listed is likely to be a serious underestimate of the total number of infections given the infrequency of testing persons not admitted to a hospital in the USA. Therefore, the percentage of deaths listed is likely to greatly overestimate the actual percentage

continue to do their important research studies, and group gatherings would be allowed. With this alternative, and far less disruptive, approach all persons with fever and/or cough and/or shortness of breath, as well as those with any other unexplained symptom (e.g., fatigue or malaise or gastrointestinal symptoms), would be asked to stay at home for a defined period of time (typically  $\leq 14$  days but duration would depend on the specific circumstances) and contact their healthcare provider. These measures, while somewhat burdensome, are much less so than the ones currently in place.

Although it could be argued that self-quarantining only those persons with symptoms, or who have had contact with a possible COVID-19 case, including even those whose only contact occurred during the 72 h period before the onset of symptoms in the person with possible COVID-19 infection, might not completely eliminate the spread of the virus, it is certainly likely to reduce substantively the spread of the infection to others [4, 5, 8, 10–14]. Self-quarantining is suggested of persons exposed to a patient with COVID-19 infection even if exposure only occurred during the 72-h period before illness began, because certain evidence exists that infected, but asymptomatic, persons can potentially spread the virus [4, 13, 14]. Unresolved questions in respect to this issue are how often transmission occurs from asymptomatic patients prior to this 72-h time period and how often and for how long asymptomatic patients might continue to spread the virus without ever becoming symptomatic. In general, however, the available data with respect to transmission of COVID-19 by asymptomatic but infected persons indicate that the frequency of this event and

the number of resulting secondary cases would be too low to substantively negatively impact mitigation of the pandemic by the more limited control measures proposed above [8, 13, 14].

**Acknowledgements** The author thanks Julia Singer, Lisa Giarratano, Dr. Doris Bucher, and Stanley H. Weiss, M.D. for their assistance.

**Conflict of interest** G.P. Wormser reports receiving research grants from Immunetics, Inc., Institute for Systems Biology, Rarecyte, Inc., and Quidel Corporation. He owns equity in Abbott/AbbVie; has been an expert witness in malpractice cases involving Lyme disease; and is an unpaid board member of the American Lyme Disease Foundation.

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