

## OPINION

# More of us need to wear N95 masks

## They're the way to block aerosol transmission

Dr. Pierre Kory and Dr. Paul H. Mayo

As intensive care unit specialists in New York City, we are concerned about the increasing rates of COVID-19 infection, which may once again overwhelm our hospitals, in parts of the USA.

The severity, morbidity and mortality of COVID-19 must be re-emphasized to all, both young and old, as it spares neither. To avoid a catastrophic repeat of the initial surge, we recommend a population-wide intervention — a significant increase in the use of N95 masks — that might allow for a safer reopening of the U.S. economy.

SARS-CoV-2 was thought to be primarily transmissible via large fluid-filled droplets generated by coughing or sneezing. Those droplets usually travel short distances before falling and will not reach another person practicing social distancing nor penetrate standard (cloth or surgical) masks.

However, it has recently been determined that a major mode of transmission of SARS-CoV-2 is via aerosol droplets, exhaled by presymptomatic, asymptomatic or symptomatic persons. These small aerosol particles remain airborne indoors for extended periods and can infect those nearby who inhale them into their lungs.

We believe that the lack of emphasis placed on the prevention of aerosol droplet transmission is a major contributor to the rising case numbers in many areas of our country. And the only mask that can prevent aerosol-size droplet inhalation is an N95.

Should there be widespread use of N95 masks by the general public? Not necessarily. In Germany, Hong Kong, South Korea and Taiwan, COVID-19 was brought under control using standard masks (surgical or cloth, often homemade), an approach that relied on the fact that nearly 100% of citizens wore them in close-quartered public spaces.

Standard masks, although only partially effective in blocking inhalation of aerosols compared with the near perfect blocking performance of medical-grade N95 masks used in hospitals, are highly effective at trapping the large droplets exhaled by infected people. These large particles downsize to aerosol size after emission when they undergo evaporative loss.

### The key point

Though standard masks are imperfect in blocking or trapping, their combined performance when worn by both infected and noninfected persons leads to a low likelihood of transmission. The key point is that for standard masks to be effective, there needs to be near universal wearing of these masks when in any poorly ventilated, air-recirculated, confined indoor space, or highly congested outdoor environment.

Unfortunately, in some parts of America, the proportion of citizens routinely wearing standard masks in at-risk environments is nowhere near what's required to prevent spread. How should individuals protect themselves from infection in areas where near universal indoor mask use is not the norm? The best option is to wear an N95, which is designed to prevent inhalation of more than 99% of all droplets, large or small.

The United States has traditionally placed an emphasis on the rights of individuals. We respect the right of, but do not agree with, our fellow citizens who choose not to wear a mask. We also, however, are perplexed as to why responsible people would choose not to wear a mask given the potential harm, including death, that they could cause to their fellow citizens.

Those who protect themselves with an N95 mask would be able to safely participate in many activities involving groups of people. At-risk social gatherings and entertainment venues would be appropriate targets for routine N95 use, if universal standard mask wear-

ing is not a precondition for entry. The scientific and media publications describing “super-spreader events” provide some of the most damning evidence of the risks of congregating without universal mask wearing:

■ The choir practice where one singer infected 52 of the other 60 attendees? Aerosol transmission.

■ The 22-year-old man who sang karaoke in an air-conditioned room for two hours and infected six of his 15 friends? Aerosol transmission.

■ The 29-year-old man who infected 102 people during visits to crowded nightclubs? Aerosol transmission.

■ Cruise ship and aircraft carrier mini epidemics? Aerosol transmission through air-recirculation systems.

■ The more than 100 meat-packing plants with massive outbreaks despite workers wearing safety goggles, gloves and frocks? Aerosol transmission.

### Ramp up production of N95s

The challenge we face as a country is that we do not yet have sufficient N95 masks even for health care workers, let alone for widespread distribution. It is unclear to us why this is the case, as it is well within the immense industrial capacity of the United States to ramp up national production of these simple low-tech safety devices.

Our current infection control strategies are unlikely to succeed. The public health approach will fail due to the imbalance between tracing and testing resources compared with the large and increasing number of documented and undocumented infections.

The “lockdown” approach employed by the Chinese government to rid Wuhan of the virus is not feasible in the open democracy of our country.

Waiting for “herd immunity” would result in widespread death and disability in America while again overwhelming our hospitals.

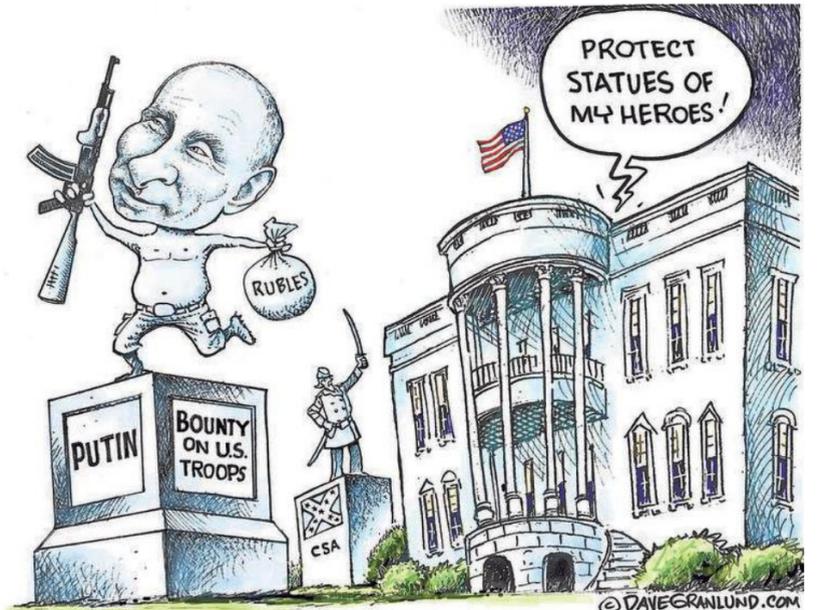
While we wait for a vaccine, an effective cure, or the unlikely event that all 50 states will pass public health laws that mandate universal mask wearing in all indoor public places, could we have a national initiative to ramp up production of N95 masks so that all Americans have access to this level of protection?

*Dr. Pierre Kory is a pulmonary and critical care medicine specialist who worked as an emergency volunteer caring for COVID-19 patients in New York City. He is also a founding member of the Frontline Covid-19 Critical Care Alliance that developed a COVID-19 treatment protocol. Dr. Paul H. Mayo is the academic director of critical care at Northwell Health LIJ/NSUH Medical Center and a professor of medicine at the Zucker School of Medicine of Hofstra University.*



Wearing an N95 mask at a restaurant in Fort Collins, Colorado.

TREVOR HUGHES/USA TODAY



DAVE GRANLUND/USA TODAY NETWORK

# War hero Duckworth is best Biden VP pick

## We need her grit to steer us safely through crisis

Mike Honda

John Bolton detonates bombshell after bombshell in his new White House memoir about how President Donald Trump has repeatedly threatened our national security. And now, amid multiple reports that American troops are dying due to Russian bounties for U.S. blood, the commander in chief denies he was in the loop.

It has become urgently evident that presumptive Democratic nominee Joe Biden's vice presidential pick must be someone who can repair the substantial damage Trump has done to the United States and our national security. Now is the time for a war hero to rebuild our defense — morally, physically, technologically, emotionally — and defend our democracy from Trump's ruin.

Sen. Tammy Duckworth, D-Ill., a finalist in Biden's veepstakes, is the only vice presidential contender with the military valor, national security chops and wealth of experience that can protect and rebuild America. If you are surprised to hear this, it is because Biden reportedly is considering mostly African American contenders and the attention is focused on them. Tammy is of Asian descent. Asian Americans and Pacific Islanders are the fastest growing segment of the electorate, and we make up an increasingly sizable share of voters in the swing states that will determine the election.

Since I met Tammy more than 14 years ago, I've been inspired by her grit and willingness to give her life in service to her country. This firecracker of a woman, who had lost both her legs in combat on the front lines in Iraq, was running for Congress to advocate for all her brothers and sisters still recovering in Walter Reed military hospital — as she, too, was still healing from her own loss of limbs.

Being hellbent on making things better is a theme in Tammy's life. Her odd jobs as a teenager, like selling flowers on the side of the road, sometimes were her family's only source of income. Her father was a Marine Corps veteran fallen on hard times, and her mother is an immigrant. For a period of time, they relied on food stamps and lived out of a motel, so she understands the economic challenges many Americans go through.

### National security strengths

Tammy hustled through college on Pell Grants and was one of the first female combat helicopter pilots. As a member of Congress, she earned her Ph.D. and had two babies — one as a House member, one as a senator.

She is the personification of the American dream, which is why she is best positioned to protect it. She has honored our country with the highest form of service and nearly the highest form of sacrifice. Her 23-year military record as a war hero can lend critical



Sen. Tammy Duckworth, D-Ill., with her new daughter on Capitol Hill in 2018.

J. SCOTT APPLEWHITE/AP

national security credentials to a ticket and beat five-time draft dodger Donald Trump with the votes of service members and veterans who do not identify as Democrats or Republicans, but as patriots.

Tammy has effectively attacked Trump over his poor handling of national security, coining the nickname “Cadet Bone Spurs” and, most recently, for misusing the military to stroke his own ego and attack civilians. More than any other vice presidential candidate, she understands the strategic choices the country must make when we send our service members to war.

She can counter the invisible warfare our enemies are waging on us from afar, including Trump's scandalous inaction in the face of U.S. intelligence and news reports that Russia offered bounties to Taliban fighters to kill U.S. soldiers. She can navigate the nuances of repairing our diplomatic ties and leadership on the world stage.

### Persevering, patriotic leader

Tammy is prepared for the big job on Day One. She is a former assistant secretary of Veterans Affairs, served in the U.S. House of Representatives for four years and is now in the U.S. Senate, where she was named one of the most effective freshmen lawmakers.

She knows how to steer large organizations and build strong relationships to get things done for our troops, veterans and working families across the country. No other VP pick in recent history has such a wealth of experience working across all levels of government. We are in a time of crisis and need the grit of a combat pilot to steer us through safely.

Tammy Duckworth, a persevering, patriotic leader and a literally battle-tested lieutenant colonel, is exactly who we need at the side of our new commander in chief. And remember, the last time Biden teamed up with a junior senator from the “Land of Lincoln,” it went pretty well for the nation.

*Democrat Mike Honda represented California's 17th Congressional District from 2001 to 2017.*

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