

# Vaccine Amnesia - How Quickly We Forget

ACOI's 2021 Annual Convention and  
Scientific Sessions

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G. Blackburn DO, MACOI

Bryan Martin DO, MACOI



# Disclosures:

- I have no conflicts of interest
- My comments are strictly my own opinion



# The 1918 “Spanish” Flu Pandemic

- Est 50-100 million deaths worldwide
- Est 2.5% mortality in young, healthy adults due to:
  - acute onset of ARDS-like syndrome - “cytokine storm”
  - necrotizing bronchopneumonia, often w/ secondary bacterial infection



# Imagine.....

- how many lives would have been saved w/ a vaccine that was ~95% effective at prevention of ICU admissions/deaths if everyone were vaccinated
- how many **preventable** deaths would have occurred if half the population declined to take the vaccine



# 1957 Influenza pandemic

- Est. 100,000 U.S. deaths

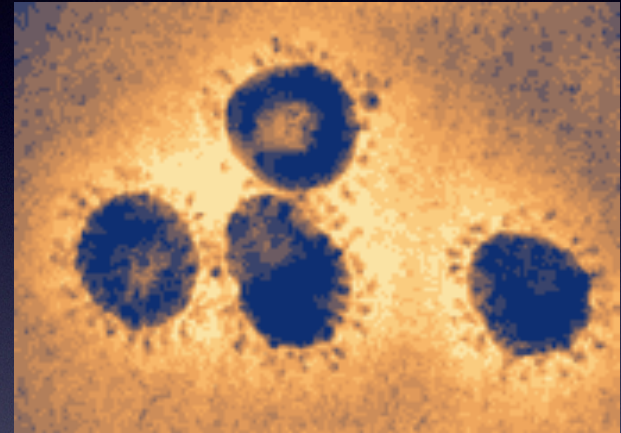


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**March 12, 2003:** W.H.O. issues Global Alert about a newly recognized cause of severe, often lethal pneumonia that began in **November of 2002** about which China was initially silent



- No effective treatment; no vaccine
- Rapid spread to 37 countries, including Canada and U.S.
- >8000 cases / >800 deaths. Significant human - human transmission w/ **10% mortality**  **$R_0 = 3$**
- Ultimately found to be due to a novel coronavirus - **SARS-CoV**



# Scientists were close to a coronavirus vaccine years ago. Then the money dried up.

"We just could not generate much interest," a researcher said of the difficulty in getting funding to test the vaccine in humans.



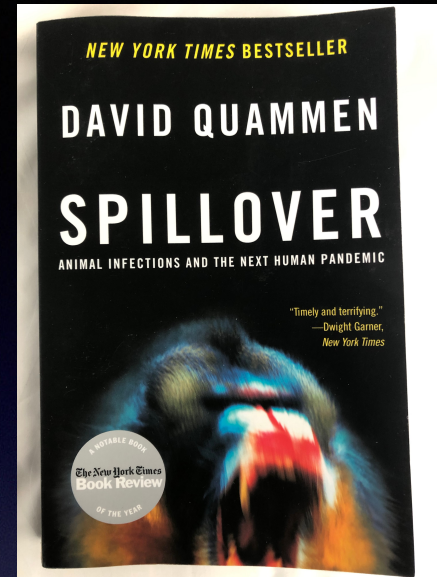
Dr. Peter Hotez in 2012 as reported on March 5th, 2020



## Other “near - OMG” moments:

- 2009: H1N1 (delay in recognition; 4% mortality initially reported. Yikes!)
- 2012: MERS (30-40% mortality)
- 2014: Ebola in Texas!





- “When the Next Big One arrives.....it will be signaled first by quiet, puzzling reports from faraway places - reports to which disease scientists and public health officials, but few of the rest of us, pay close attention.”  
- D. Quammen. **NYT 5/9/13**



“So....Blackburn....What’s going to kill us  
(and for which we are not prepared)?”

- an influenza-like virus with a high mortality - pandemic “Disease X” (think SARS)

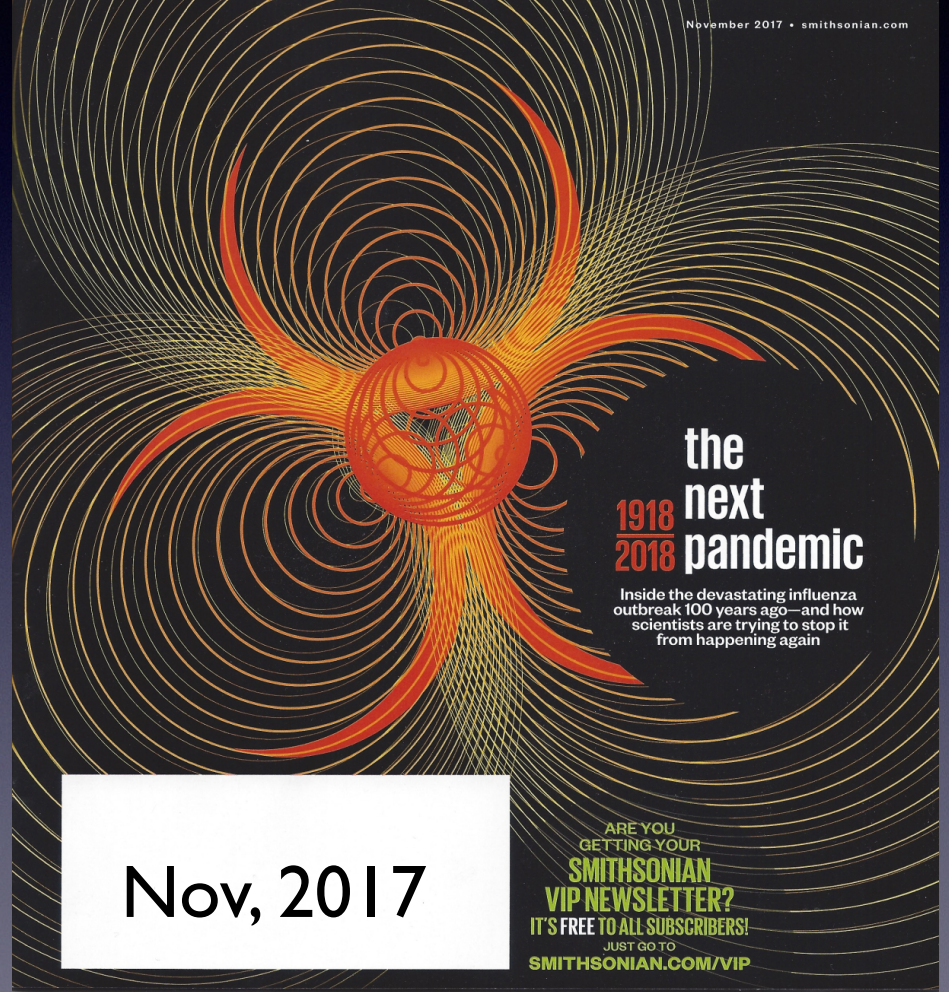




THE HEALING POWER OF GREEK TRAGEDY • PARADISE FOR GRIZZLY BEARS

# Smithsonian

November 2017 • smithsonian.com



## the next 1918 2018 pandemic

Inside the devastating influenza outbreak 100 years ago—and how scientists are trying to stop it from happening again

Nov, 2017

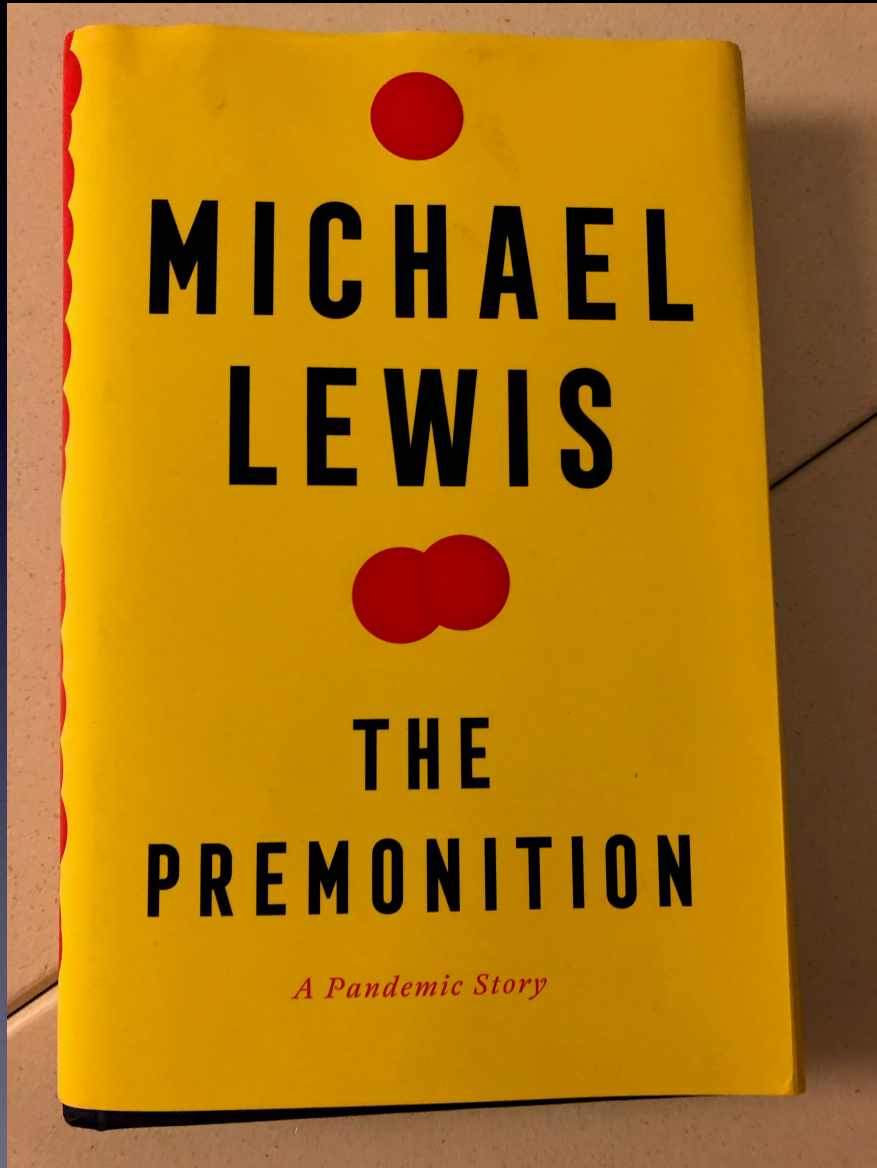
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# “Crimson Contagion 2019”

- a simulated outbreak of an unknown respiratory illness in a Chicago resident having recently returned from China in January, 2019





“It has started...”

Charity Dean  
12/21/19



November 2019.....

And then along came SARS-CoV-2  
(Covid-19)

over 600,000 U.S. deaths, and counting!  
over 4 million deaths worldwide, and  
counting!



# Jeopardy

Category: Medicine

99%



What % of patients in the U.S. who died of COVID-19 in June of 2021 were **NOT VACCINATED?**



Vaccine “hesitancy” listed as one  
of top ten Global Health Threats for 2019  
(Pre-COVID)

**Unvaccinated boy nearly died from tetanus.  
The cost of his care was almost \$1 million.**

6-year-old was infected in 2017 while playing on the family's farm, the first case of tetanus in Oregon in 30 years, according to a CDC report.





# THE ANTI-VAX DEATH TOLL





Dr. Sherri Tenpenny asked Christian legislators in Ohio to consider what God will say to them if they allow businesses to require employees be vaccinated against COVID-19.

THE OHIO CHANNEL

**Sheri Tenpenny DO!!!**



And she is not alone....





And she is not alone....





# The Tuskegee “Experiment”

- Background: prior to this study, the cure rate for syphilis was ~30%, following months of toxic, sometimes lethal mercury and arsenic
- In 1932, the U.S. Public Health Service, working with the Tuskegee Institute, began a study called the “*Tuskegee Study of Untreated Syphilis in the Negro Male*” to record the natural history of (untreated) syphilis.
- Some AA persons in leadership as well as the NMA supported this study. Others have argued, at least prior to penicillin, that the treatment might have been worse than the disease



# The Tuskegee “Experiment”

- Under the guise of free medical care, 399 black males, mostly sharecroppers from Macon County, Alabama, diagnosed with syphilis were treated for “bad blood” w/ placebo from 1932 until the time of their death
- This non-treatment continued even after penicillin became available in 1947 and was recommended as treatment for syphilis!! (participants were not told of the availability of treatment nor given information regarding opting out of the study)



# The Tuskegee “Experiment”

- This same non-treatment continued until concerns were raised in 1968 and again, more publicly, in 1972 about the ethics of continuing to withhold known effective treatment.
- Within a month of these concerns being made public in 1972, the study was finally halted



# The Tuskegee “Experiment”

- As a result of this continued unethical non-treatment, many of these individuals infected others and many developed the numerous complications of tertiary and neurosyphilis, including aortitis, blindness, dementia, stroke...
- Most members of the African-American community are well aware of this study



So....how many of you have ever seen a case of rabies within the continental U.S.?





## In the U.S.:

- only average **2 deaths/yr**  
(Early 1900s: ~100/yr), but.....
- 40,000 annual exposures - \$\$\$\$

## Worldwide:

- **55,000 deaths/yr!**



# Nebraska zoo says 200 people possibly exposed to rabid bat

7/10/21

- Question: If you were told that you or your loved one had possibly been exposed to rabies, how many of you would decline vaccination?



How many of you have ever seen a case of tetanus within the continental U.S.?



# Tetanus



- ~29 cases/yr (U.S.); 2 deaths
- Worldwide: still 59,000 deaths, 200,000 cases/yr



How many of you have ever seen a case of measles within the continental U.S.?



# Measles

- In the U.S., prior to vaccine (1963):
  - 2 - 4 million cases; 400 - 500 deaths/yr
- ~1980: est. 2.6 million deaths/yr (worldwide)
- **New: (est) over 207,000 deaths from measles in 2020 from breakdown in health care delivery as result of Covid-19, EBOLA and war**
- Estimated 21,000,000 measles deaths prevented worldwide since 2000 by vaccination  
(Paules et al NEJM June 6, 2019)





- This same question could be asked of multiple serious and often devastating communicable diseases e.g.
  - hepatitis A, B
  - rubella
  - H. influenza meningitis
  - polio
  - smallpox
  - and more...



What do all of these have in common,  
and why have you most likely never  
seen a case?



They are all nearly 100% preventable by immunization - as are many others, though many vaccines may not approach this degree of efficacy



# Vaccine Preventable Diseases - (some more so than others)

- Covid-19
- measles
- mumps
- rubella
- diphtheria
- dengue
- pertussis
- tetanus
- influenza
- polio
- rabies
- hepatitis A
- hepatitis B
- pneumococcus
- smallpox
- ebola
- chlamydia (?)
- malaria (early)
- meningococcus / H. influenza
- H. zoster (chickenpox)
- H. zoster (shingles)
- HPV
- Japanese encephalitis
- rotavirus
- typhoid
- cholera



**Unvaccinated hospitalized patients say they regret not getting the shot**

7/10/21



Angela Morris' daughter, Caia Morris Cooper, is fighting for her life at Arkansas Children's Hospital. She said the hardest part about watching her child suffer is that the entire thing was preventable.



'I wish I would've made better choices for her': Arkansas mom regrets...



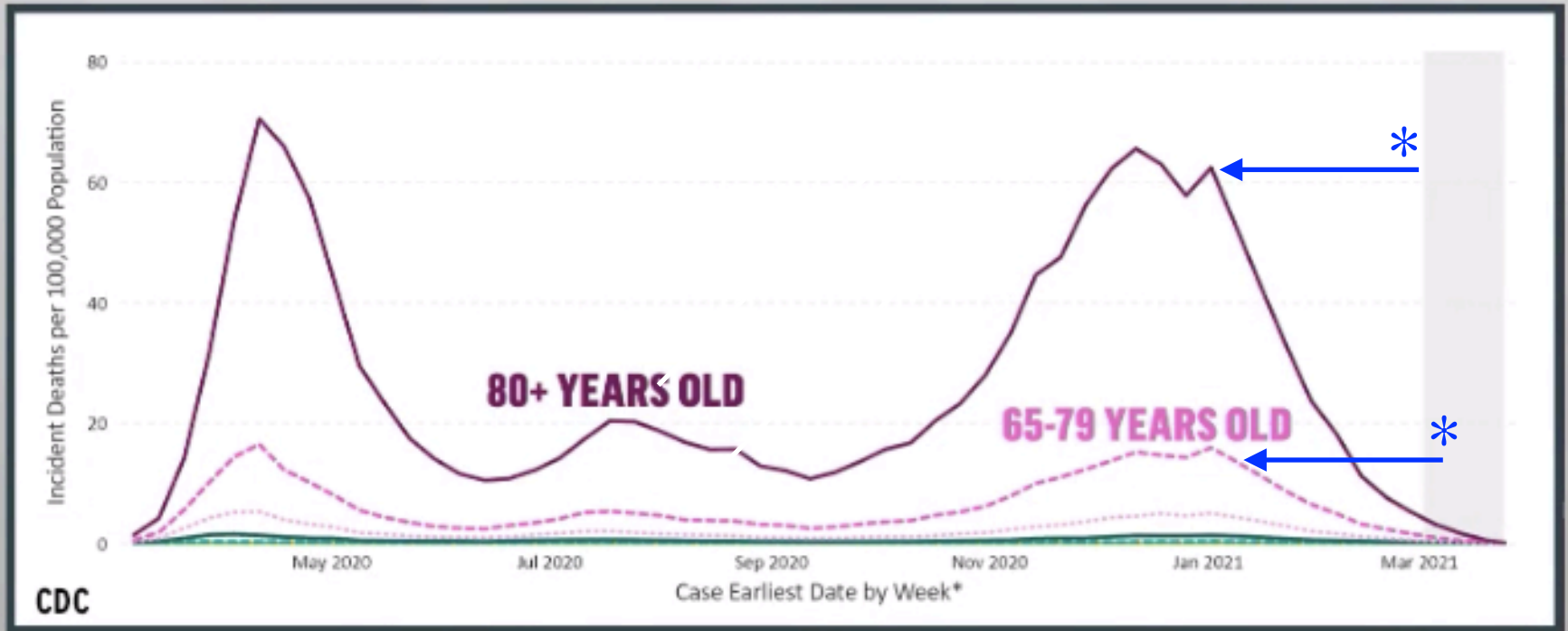
# **'It's too late': Alabama doctor shares final moments of Covid patients, urges vaccination**

Dr. Brytney Cobia said patients dying from Covid-19 have begged for the vaccine. "I hold their hand and tell them that I'm sorry, but it's too late," she wrote.



# COVID-19 WEEKLY CASES AND DEATHS PER 100,000 POPULATION

BY AGE GROUP, UNITED STATES, MARCH 1, 2020-MARCH 25, 2021



\*introduction of Covid vaccine



# Cerebral Venous Sinus Thrombosis (CVST)

## GENERAL POPULATION



**0.5** per  
100,000 per year

## COVID-19



**4.5 to 20** per  
100,000  
COVID-19 cases

## PREGNANCY



**10 to 12** per  
100,000 deliveries

## ORAL CONTRACEPTIVE PILL



**2.7 to 40** per  
100,000 people

## JOHNSON & JOHNSON VACCINE



Possibly **0.09** per  
100,000 vaccines

### References:

Amesegor, F. *Front Neurol*, 2015. Jick, S. *Contraception*, 2006. Nikirat, A. *J Pioneer Med Sci*, 2019. Dentali, F. *Blood*, 2004. Abdalkader, M. *J Stroke Cerebrovasc Dis*, 2021. Siegler, J. *Int J Stroke*, 2020. FDA/CDC, 2021.

Image by Wale Ahmed (adapted from an image from Ali H. Mokdad)



# POSITIVE FLU SPECIMENS

IN WEEK 7 OF FLU SEASON

2019-2020 - **174,037**

2020-2021 - **1,499**

2021 (U.S.)



## INFLUENZA-ASSOCIATED PEDIATRIC DEATHS

2017-2018	-	<b>188</b>
2018-2019	-	<b>144</b>
2019-2020	-	<b>195</b>
2020-2021	-	<b>1</b>



“For Sars in 2003, it took four months before the genome sequence of the coronavirus was available.....

The first human trial of a possible Sars vaccine was conducted in Beijing in December 2004, but by that time the epidemic was over, and research into other diseases was given priority so it was shelved.”

“Seventeen years after the severe acute respiratory syndrome (Sars) outbreak and seven years since the first Middle East respiratory syndrome (Mers) case, there is still no coronavirus vaccine despite dozens of attempts to develop them.”\*

\*as reported by J. Ma, Feb 21, 2020



# Some take homes:

- In order for a vaccine to work, it must first be given!
- In order for a vaccine to be developed, the risk must first be recognized and the response must be rapid and effective
- Re: Covid-19 - the warnings were there. We just chose to ignore or otherwise prepare for what would ultimately kill millions!
- This is not the last pandemic!!!



# One Year Later, We Still Have No Plan to Prevent the Next Pandemic

By Thomas L. Friedman

And yes, there could soon be another pandemic.



Friedman TL, NYT; 3/17/21

# Why the coronavirus slipped past disease detectives

By Charles Schmidt - Scientific American April 04, 2020





“...climate change is the greatest public health emergency of our time and is particularly harmful to fetuses, infants, children and adolescents”

Salas R.N. et al. NEJM May 30, 2019 (Pre-COVID)

**Climate change is a 'health emergency,'  
74 medical and public health groups  
warn**

Climate change isn't just a threat to the environment, it's a threat to "our health and well-being," experts say.

June 24, 2019, 10:07 AM EDT





**Gov. Inslee: Heat wave is beginning of permanent climate emergency**



**'Outlandish' forecasts in Northwest suggest a feared climate reality is here decades early**

## America's Northwest Is Scorching



*David McNew/Getty Images*

**"The climate scientists have said this is coming." Extreme heat new normal as 110-degree temperatures blanket region**



# “So....Blackburn.... What’s going to kill us - and why?”



- our failure to prepare for “the next big one”
- our ignoring the remarkable history of vaccines and the science behind them
- our failure to appreciate the impact of climate change on the world our children and their children will be forced to live in







Thank you