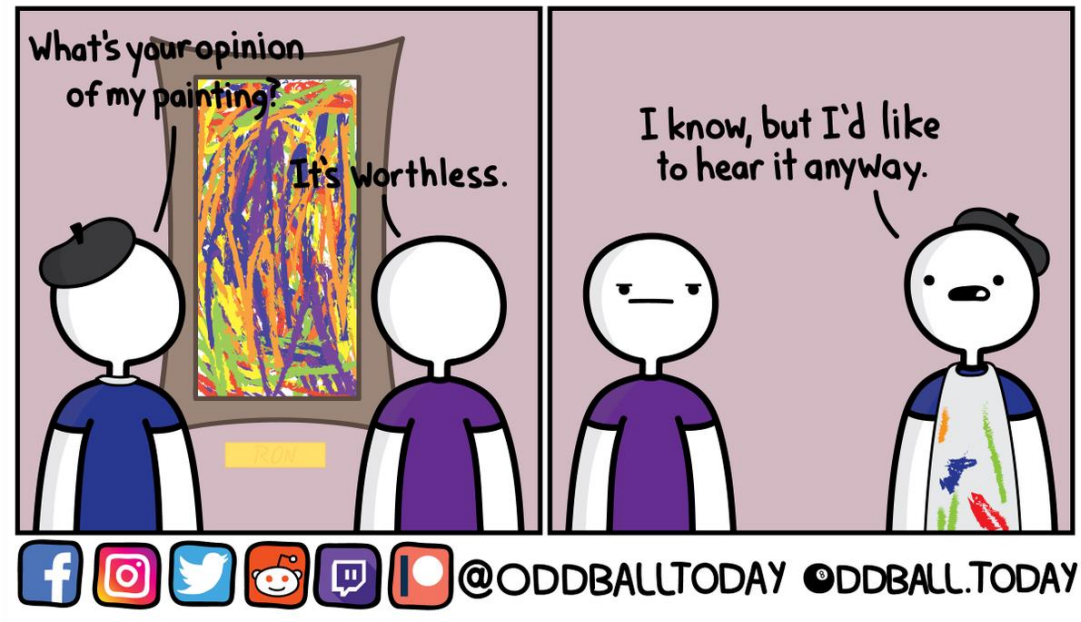
Dear valued patient and colleague

We are all epidemiologists

Do you sometimes feel as if you have taken an unwanted crash course in epidemiology? I must admit I found it rather boring in medical school, but 40 years later I am trying to translate epidemiology studies for my patients. Who knew?

For all intents and purposes, it looks like this coronavirus is here to stay just like the influenza virus. If people become immune or an effective vaccine comes into play, we will no longer need to make the awful choice between social disruption or widespread infection.

I know I maybe in the minority, but if the infection mortality rate is 0.4% or on that order, I would vote for allowing the virus to take its course even with no vaccine on the horizon. At that rate, in my opinion, it is not worth the social disruption, financial destruction and general upheaval in our society. I say this as an individual at higher risk because of age and hypertension. Just one guy's opinion, take it for what it is.



In several of my newsletters, I have described previous pandemics that have been worse than this one. What you probably don't know is that in the last 200 years there have been 7 waves of cholera, 4 new strains of influenza, tuberculosis and the most recent HIV infection which spread across the world and killed 100 million people.

Check out some names of some famous people who have died of cholera in the last 200 years:

- Tchaikovsky
- King Charles X of France
- Carl von Clausewitz, the amazing Prussian military theorist
- President James Polk

These folks died of influenza in the last 200 years:

- Bertrand Russell
- Trevor Howard
- Tallulah Bankhead
- Dmitri Mendeleev (formulated Periodic Law and created version of periodic table of elements)

And these individuals died of tuberculosis in the last 200 years:

- Elanor Roosevelt
- George Orwell
- Franz Kafka
- Frederic Chopin
- Andrew Jackson
- Henry David Thoreau
- Louis Braille

- James Monroe
- Simon Bolivar
- John Keats
- Anton Chekhov
- Dred Scott

Some of the famous people who died of AIDS:

- Isaac Asimov
- Arthur Ashe
- Rock Hudson
- Roy Cohn
- Rudolf Nureyev
- Freddie Mercury
- Perry Ellis
- Amanda Blake
- Tom Fogarty

Cholera

With all these outbreaks in relatively modern times we have a good handle on the dynamics and spread of infectious disease. An epidemic dies out when the average infection can no longer reproduce or when a large percentage of people are immune.

An infectious disease can also die out if it goes through a population very quickly. The rapidity of the spread make, at some point, makes new hosts extremely hard to find. In 1957 and 1968, the influenza

virus died quickly because cross immunity between these strains and the addition of emerging new strains reduced the pool of available new individuals.

Unfortunately, the 4 known types of coronavirus, including this one, do not compete in susceptible hosts. Therefore, hopes for this to quickly die out are not likely to come to pass.

We need to study the dynamics of SARS-CoV-2 infection and its virulence to understand the best responses. We need to identify those measures that could provide protection at less social cost. We need to identify subpopulations or settings that have disproportionate transmission so we can target them. School age children drive the influenza virus transmission even though they do not have the most severe cases and deaths. Studies have found if we reduce influenza virus in children, we disproportionately reduce adults at risk. Hopefully, we can do the same for this coronavirus.

More on the Black Death

Time for a little more history. The Black Plague decimated anywhere from 30-60% of the European population and returned in waves every 10-20 years before finally subsiding in the mid-18th century. But how did it all start?

Some believe it was brought to Europe as biological warfare when Mongols catapulted disease-ridden corpses over the walls and into the sieged city of Kaffa in the early 1340's. There is evidence that the Black Death started much earlier though.

Transmission of Black Death

The plague is caused by the bacteria Yersinia pestis and exists in the fleas of wild rodents. According to DNA studies, the plague evolved in China over 2000 years ago. As such, some have theorized it was brought along the silk road.

But there is some DNA evidence that the plague hit Europe 5000 years ago. Studies of Neolithic society have shown that the disease may be older than we think. Scientific studies of Neolithic farmers in Sweden report Yersinia pestis was present in two different individuals of the time.

Some even believe that evidence of the plague appears in the Bible. In the book of Samuel, the Philistines captured the Ark of the Lord from the Israelites, and then experienced an outbreak of tumors and affliction. This plague then followed them as they moved from city to city. The Philistine leaders decided to return the Ark to the Israelites with a guilt offering. Soon after the return of the Ark, in Beth-Shemesh, seventy Israelites died.

So, wherever the Black Death came from and whenever it began, it appeared to move freely through borders and peoples and did so for an exceptionally long time.

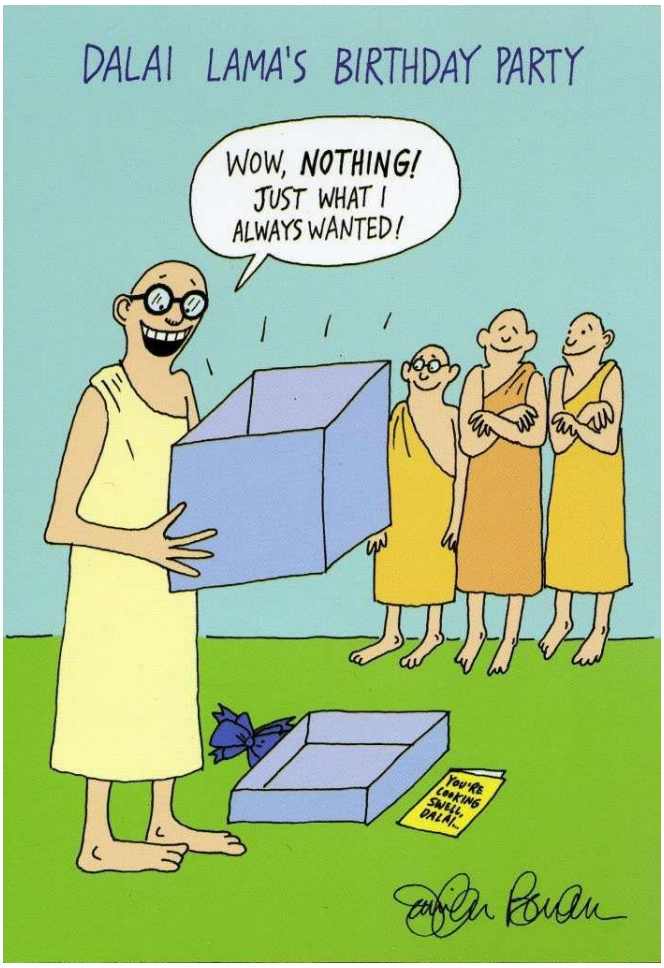
Nothing

While doing some research I came across an interesting article you may want to read. It is about nothing, literally.

https://www.forbes.com/sites/startswithabang/2020/05/01/the-four-different-meanings-of-nothing-to-a-scientist/#4764ad116394

If you ask a scientist what "nothing" is, you can get four different scientific answers.

1. A condition where the raw ingredients to create something do not exist – If you want a galaxy, you need particles to build them from. If the laws of physics say we can only create matter and antimatter in equal portions, how did we end up with a universe only made of matter? Did the matter in our Universe arise from "nothing"?
2. Nothingness is the void of empty space – This definition takes the word literally and means "no things" in it at all. If you could remove all particles and anti-particles you leave behind empty space or nothing.



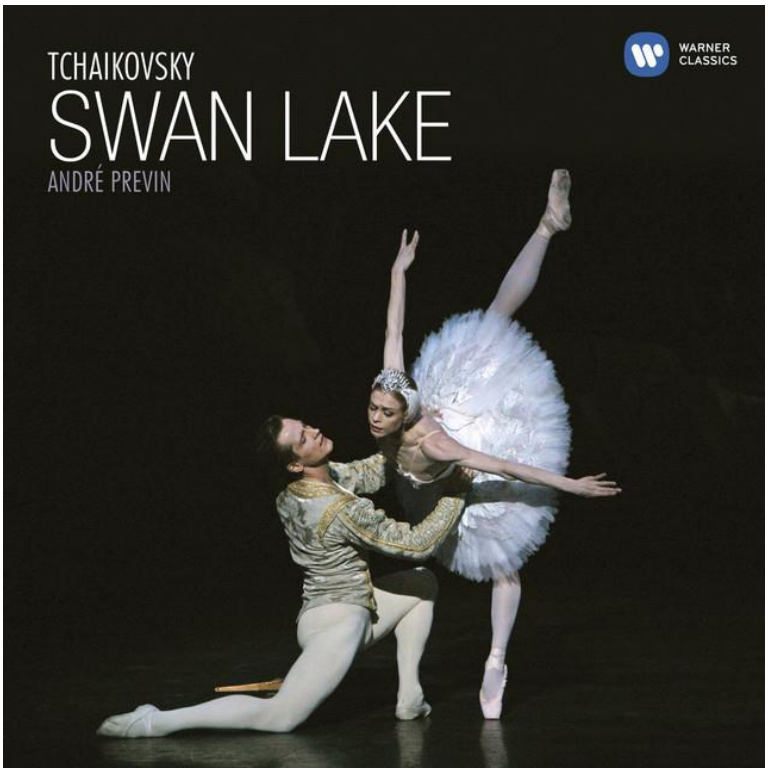
3. Nothingness as the ideal lowest-energy state possible for spacetime – This one is more difficult to understand if you have not studied space-time. Our universe has inherent energy that is a non-zero value. We do not know if this is the true lowest state of energy or whether it can go to a lower "ground state". If you could reach this true lowest energy state and expelled all your matter, energy, radiation, etc. you would be left with absolute "nothingness".
4. Nothingness only occurs when you remove the entire Universe and its laws – Everything you imagine including space, time and rules of reality are tossed eliminated. This therefore would be the true hypothesized, nothing state.

Just some food for thought in these COVID times.

Medicine and Music

On November 1, 1893 Tchaikovsky went to the theatre and a restaurant with friends. He ordered a glass of water. Due to an outbreak of cholera, the city required all water served in restaurants to be boiled before serving. He was told there was no boiled water available and he requested cold unboiled water, which he received. He was warned not to drink it but did so anyway. The next day he developed diarrhea and stomach upset. Three days later he had full blown cholera. His conditioned worsened and

he refused a doctor. Finally, he relented, and a diagnosis of cholera was made. He died at 3 AM on November 6, 1893.



How can you pick just one Tchaikovsky piece to represent his work?

Swan Lake – Waltz: https://www.youtube.com/watch?v=ZlKvv83qFhQ

Nutcracker Op. 71 – Dance of the sugar Plum Fairy: https://www.youtube.com/watch?v=TCzRLG-nSss

Violin Concerto in D major, Op. 35: https://www.youtube.com/watch?v=CTE08SS8fNk

Symphony No. 6 (Pathetique): https://www.youtube.com/watch?v=SVnF3x44rvU