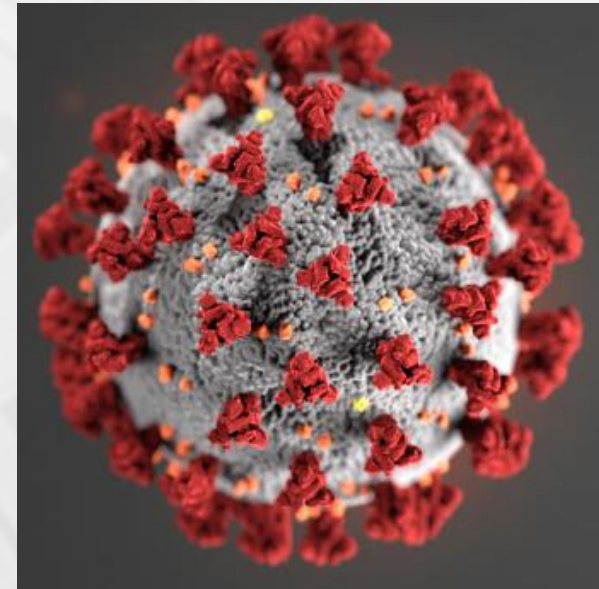


# A Crash Course in Infectious Diseases

Presented by Nantucket Department of Health & Human  
Services, Provincetown Health Department, and Wellfleet Health  
and Conservation

March 5, 2020

# Infectious Diseases



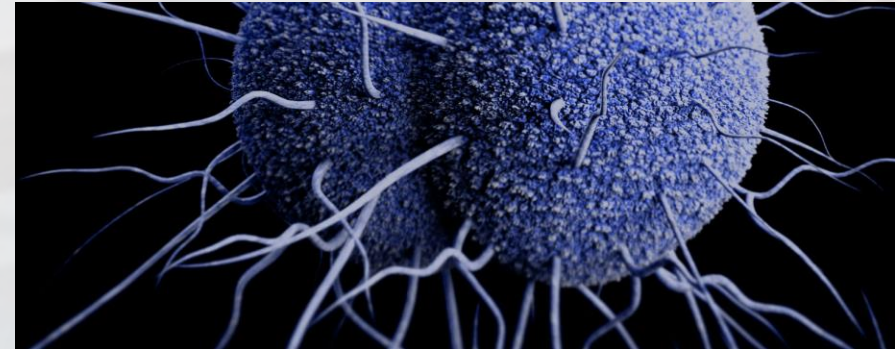
Novel Coronavirus (CoVid-19)  
Source CDC.Gov

## What are they?

Any virus, bacteria, or other microorganism that can cause a disease (aka. Pathogen)

## Why should I care?

It can strike in any place, at any time, without warning, and it is not pleasant ... for anybody.




*Neisseria gonorrhoeae* bacteria  
Source CDC.gov

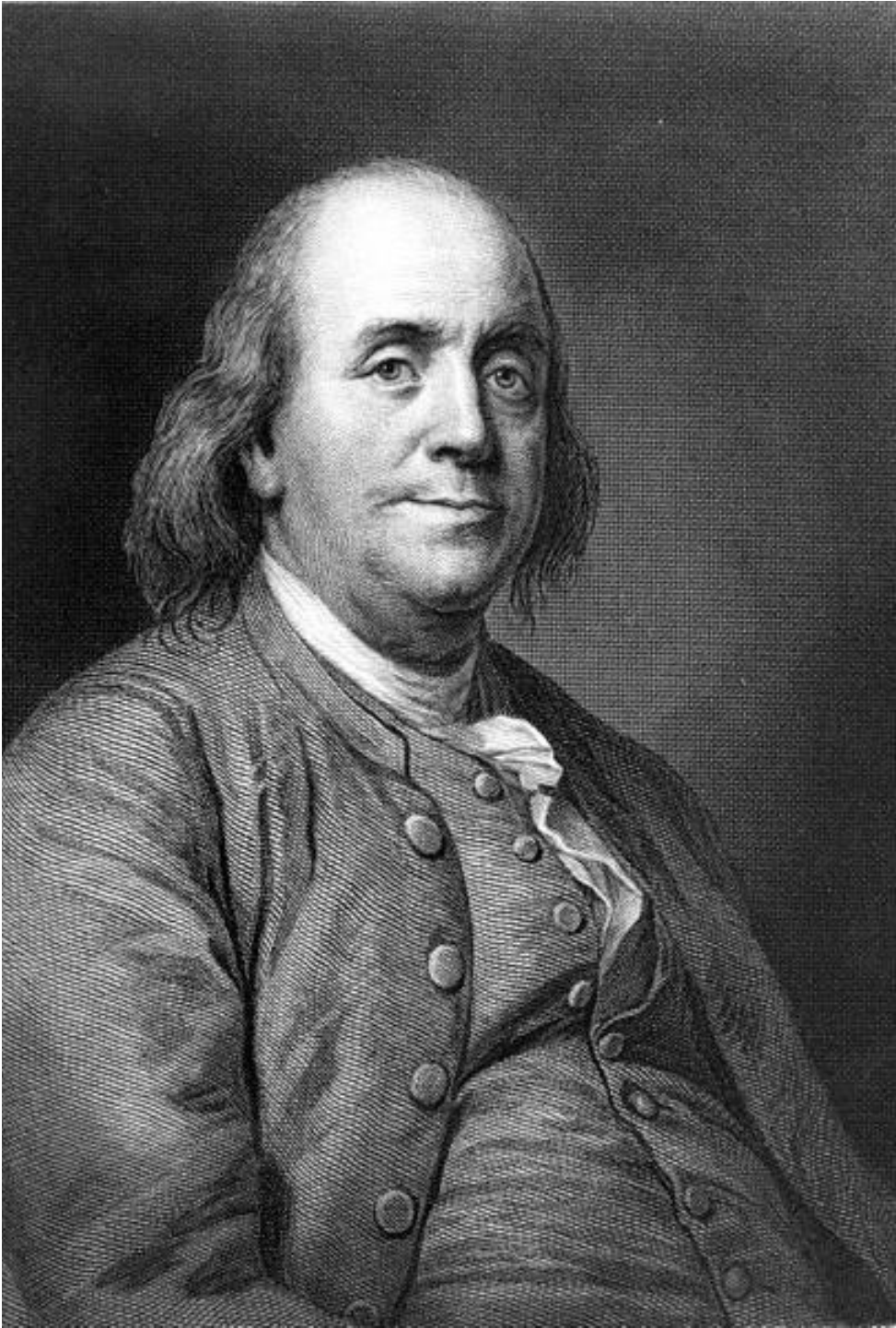
# Pathogenic Pathways

(How do I get it?)

Most Common  
In the USA

- 
- Sexually Transmitted (Chlamydia, Gonorrhea, Syphilis)
  - Fecal-Oral Route (Campylobacter, Salmonella, E.coli)
  - Vector-Borne aka “Bug transmitted” (Lyme, Spotted Fever)
  - Blood-Borne (HIV, Hepatitis C)
  - Air-Borne (Measles, Influenza, SARS-CoV-2)

Least Common  
In the USA



*An ounce of prevention  
is worth a pound of cure.*

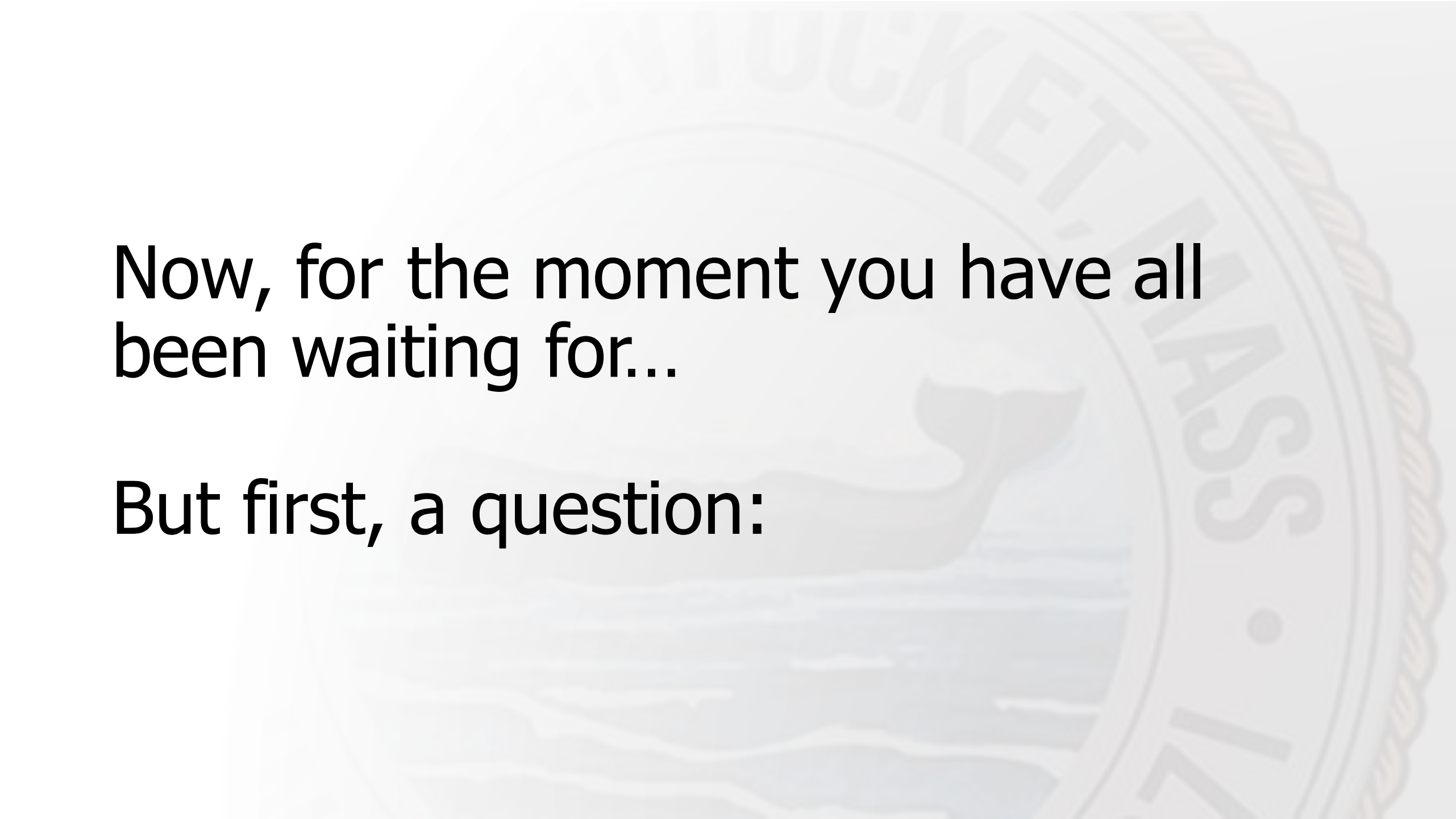
*- Benjamin Franklin*

Ben Franklin coined this timeless phrase in 1736 in order to remind the citizens of Philadelphia to remain vigilant about fire awareness and prevention. As is true of many of his quotes and advancements, it still has great relevance today

# Levels of Prevention

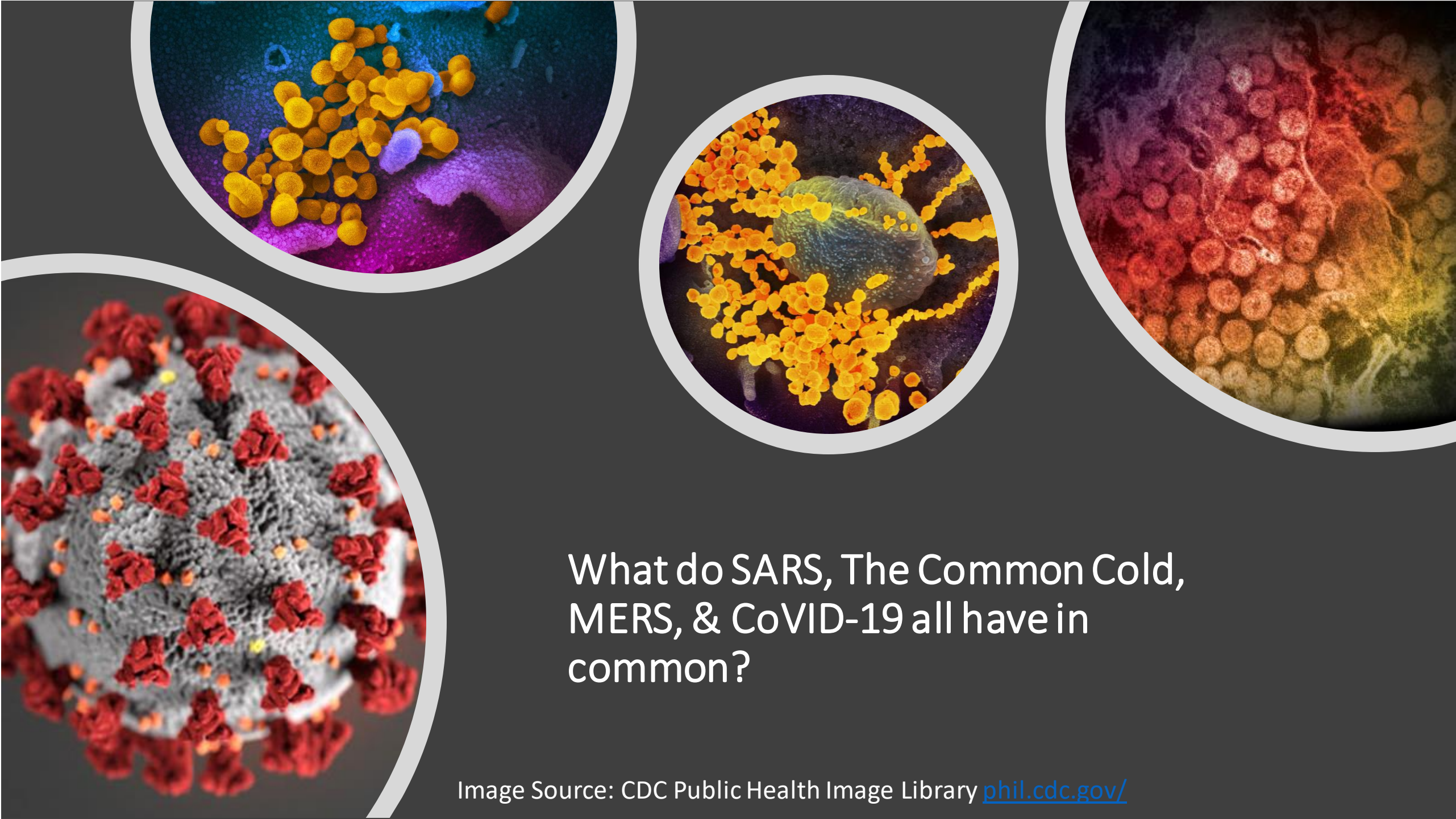
- **Primary**: Preventing a disease, before it happens
  - Properly washing your hands
  - Cleaning contaminated surfaces
- **Secondary**: Health Screening/Testing
  - Nasal Swabs
  - Sputum samples
- **Tertiary**: Blocking disease progression and spread
  - Isolation & Quarantine
  - Antivirals or Antibiotics





Now, for the moment you have all  
been waiting for...

But first, a question:



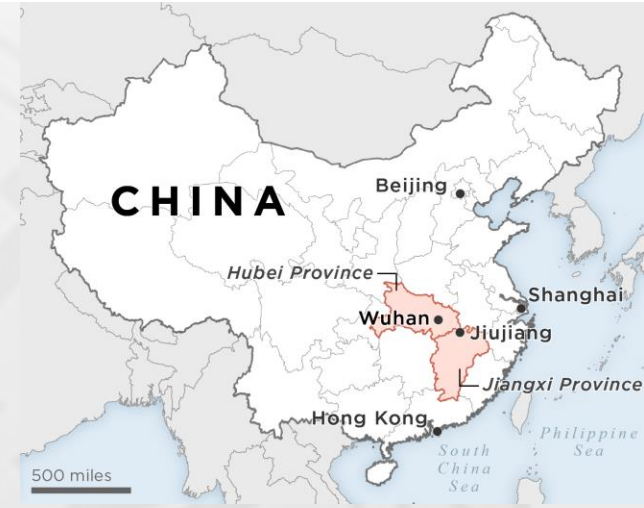
What do SARS, The Common Cold,  
MERS, & CoVID-19 all have in  
common?

Image Source: CDC Public Health Image Library [phil.cdc.gov/](https://phil.cdc.gov/)

**They are all types of Coronaviruses!**



# A Brief history of the Novel Coronavirus (nCov-19 / CoVID-19 / SARS-CoV-2)



- December 2019 - First cases of a new coronavirus started appearing in Wuhan, China
- January 2020 – First human to human transmission confirmed, cases begin to appear outside of China (including the USA)
- February 2020 – Global quarantine and isolation protocols in place; first USA-based Death
- March 2020 – Widespread local transmission across the USA and other countries

# Why is it spreading so fast?

## Basic Reproduction Number ( $R_0$ )

Expected number of cases directly generated by one case in a susceptible population.

**“So... What does that mean in English?”**

The amount of people you can get sick if you are contagious and are not isolated or quarantined.

Disease	Transmission	$R_0$
Measles	Airborne	12–18
Diphtheria	Saliva	6–7
Smallpox	Airborne droplet	5–7
Polio	Fecal–oral route	5–7
Rubella	Airborne droplet	5–7
Mumps	Airborne droplet	4–7
Pertussis	Airborne droplet	5.5
HIV/AIDS	Sexual contact	2–5
SARS	Airborne droplet	2–5
<b>COVID-19</b>	<b>Airborne droplet</b>	<b>1.4–3.8</b>
Influenza (1918 pandemic strain)	Airborne droplet	2–3
Ebola (2014 Ebola outbreak)	Body fluids	1.5–2.5
MERS	Airborne droplet	0.3–0.8

# How do we stop the spread?

## First, a vocabulary lesson!

- **Cleaning** – physical removal of “pollutants” from an environment. Germs aren’t killed, but the food source is removed
- **Sanitizing** –reduction of microbial population or bacteria (“Kills 99% of germs”)
- **Disinfection** – destruction of 100% of a targeted microorganism
- **Sterilization** – 100% kill or elimination of ALL organisms
- **Isolation** – separation of people who HAVE a specific illness from a population
- **Quarantine** – separation of people who have BEEN EXPOSED to an infectious agent and may become infectious themselves

# How do we stop the spread?

- First and foremost, keep your areas (work & home) clean! All infectious diseases need food to survive. Cleaning is the first barrier.
- Sanitize your workspaces. To do so, always **READ** the instructions on the chemical you are using. Often it says “To sanitize” or “To disinfect” on the back. This explains the amount of time the surface must stay wet with the chemical to be functional (known as contact time)
- Disinfection and/or sterilization is not always feasible. Do your best!

# Prevention starts with YOU!

## Stop Germs! Wash Your Hands.

### When?

- After using the bathroom
- Before, during, and after preparing food
- Before eating food
- Before and after caring for someone at home who is sick with vomiting or diarrhea
- After changing diapers or cleaning up a child who has used the toilet
- After blowing your nose, coughing, or sneezing
- After touching an animal, animal feed, or animal waste
- After handling pet food or pet treats
- After touching garbage



### How?



**Wet** your hands with clean, running water (warm or cold), turn off the tap, and apply soap.



**Lather** your hands by rubbing them together with the soap. Be sure to lather the backs of your hands, between your fingers, and under your nails.



**Scrub** your hands for at least 20 seconds. Need a timer? Hum the "Happy Birthday" song from beginning to end twice.



**Rinse** hands well under clean, running water.



**Dry** hands using a clean towel or air dry them.

**Keeping hands clean is one of the most important things we can do to stop the spread of germs and stay healthy.**

LIFE IS BETTER WITH  
**CLEAN.**

# What if a case is found here?

- Isolation & quarantine procedures and declarations will be handled by the State DPH in conjunction with NHHS
- These procedures interrupt the chain of transmission
- Stay calm! Most cases are mild (80%). Many people may not even know they have it
- If infected, stay home and take care of your symptoms. Fever reducers and expectorants are integral in handling symptoms

# What if a case is found here?

- If sick, wear a mask to protect those around you. Masks are in great demand, do not use them when not necessary
- If symptoms worsen, call the hospital or your primary care. Do not just “show up” without giving them a warning.
- If the outbreak worsens, social distancing may be implemented.  
Examples: cancel gatherings, events, etc...

# Next Steps

- Health & Human Services staff will continue to monitor the outbreak as it evolves
- CDC.gov, & WHO.int regularly to get information on the current status of the outbreak



**KEEP  
CALM  
AND  
WASH YOUR  
HANDS**



# Quiz!

1. What takes 20 seconds and is the most important part of prevention?
2. What do SARS, MERS, COVID-19, & the Common Cold have in common?
3. How is COVID-19 spread?
4. What is the federal agency responsible for outbreak response?