



# Vaccine Hesitancy in the Age of COVID-19

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About Me

# Goals of This Talk

## **Objectives:**

- Discuss how to communicate effectively with parents about vaccines in general
- Discuss specific issues related to discussing flu vaccine with parents
- Discuss what the COVID-19 pandemic has meant for vaccinations
- Review considerations for parents about a possible COVID-19 Vaccine

## **Disclosures:**

- I have nothing to disclose

# Why Do We Vaccinate?

- Vaccines are the safest, most well studied medical intervention ever made.
- Vaccines effectively reduce the risk for infection with and complications from the diseases they target
- Vaccines prevent an estimated 2 to 3 million deaths worldwide each year, and have saved billions of dollars in medical expenses

So Why All the Fuss?

# Enter the Dunning Kruger Effect

"Ignorance more frequently begets confidence than does knowledge."

- Charles Darwin, *The Descent of Man*

"The fool doth think he is wise, but the wise man knows himself to be a fool."

- William Shakespeare

"The doorstep to the temple of wisdom is a knowledge of our own ignorance."

- Maybe Benjamin Franklin

"[Someone] who knows nothing is closer to the truth than he whose mind is filled with falsehoods and errors."

- Thomas Jefferson

"Do you see a man wise in his own eyes? There is more hope for a fool than for him."

- Proverbs 26:12

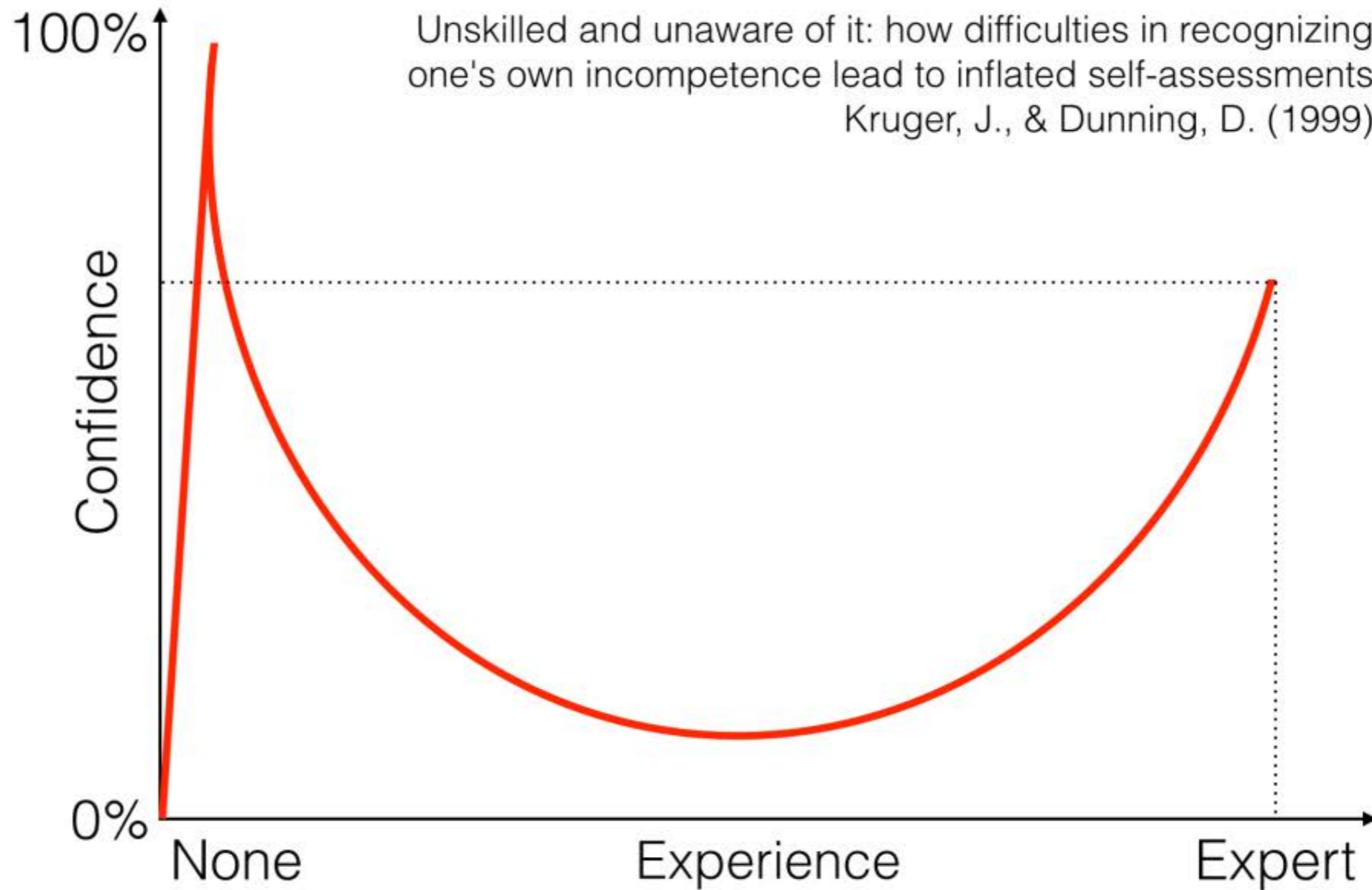
# Unskilled and Unaware of it

The story of McArthur Wheeler



# Dunning-Kruger Effect

Unskilled and unaware of it: how difficulties in recognizing one's own incompetence lead to inflated self-assessments  
Kruger, J., & Dunning, D. (1999)





“An ignorant mind is precisely not a spotless, empty vessel, but one that’s filled with the clutter of irrelevant or misleading life experiences, theories, facts, intuitions, strategies, algorithms, heuristics, metaphors, and hunches that regrettably have the look and feel of useful and accurate knowledge.”

- David Dunning

# How Does this Relate to Vaccine Hesitancy?

“Vaccines are brimming with toxins. These include dozens of chemicals, heavy metals and allergens.”

Evidence-based guidelines  
for discussing vaccines

?

# This sums it up...

Conclusion: "There is a lack of evidence regarding effective strategies to increase vaccine uptake for children of vaccine hesitant parents"

Human Vaccines and Immunotherapeutics. 2014;10(9):2584-96. "What are the factors that contribute to parental vaccine-hesitancy and what can we do about it?" Williams SE.

# What we do know:

- Providing factual information: no change in intent (but some change in attitude/belief)
- Providing emotional information: increases fear of vaccination.
- Emphasizing benefits to community (vs to individual child): no change in intent.

# Why Don't Facts Work?

## Motivated Reasoning

We constantly filter the information we receive through our own sacrosanct beliefs

This means we are more likely to believe facts that align with our world views and our sense of self, and to dismiss or reinterpret facts that challenge those views.

# Common Sacrosanct Beliefs

Foundational Beliefs: Our narrative of who we are

Common foundational beliefs:

“I am a good person.”

“I am well-informed.”

“I make decisions in the best interest of my child.”

“I know what's best for myself and my children.”

Political and Ideological Beliefs:

“Corporations are selfish and evil.”

“Experts and the government can't be trusted.”

“Natural is better.”

“My rights are more important than my responsibilities.”

“Medical interventions are excessive and harmful.”

“Simple and familiar things are safer; unknown and complicated things are dangerous.”



# Filtering Recommendations Through Our Patients' Beliefs

Thus, "You should vaccinate your child because vaccines are safe and will protect them from disease,"

Becomes, "You are misinformed; you are endangering your child; I am an expert and I know what's best for your child; and you should inject this unnatural chemical created by pharmaceutical companies and pushed by the government into your pure child's body."

# The Motivational Interview Approach

# General Principles

Don't try to convince parents to vaccinate!

Convince them that you care about their child, and believe that they are trying keep their child safe!

Find out what their sacrosanct beliefs are and speak to those beliefs

Avoid simply refuting wrong ideas; fill the void of a refuted idea with truth.

# Step One: Listen

Ask why they have chosen not to vaccinate or delay vaccines, and LISTEN to their response.

Many parents will be hesitant to have the conversation, and will intentionally give vague responses. Follow up: "Please tell me more."

## Step Two: Validate and Empathize

We are more likely to listen to others when we feel listened to ourselves.

We are also more likely to be willing to compromise on our deeply held beliefs when we first acknowledge the things about ourselves that make us feel proud

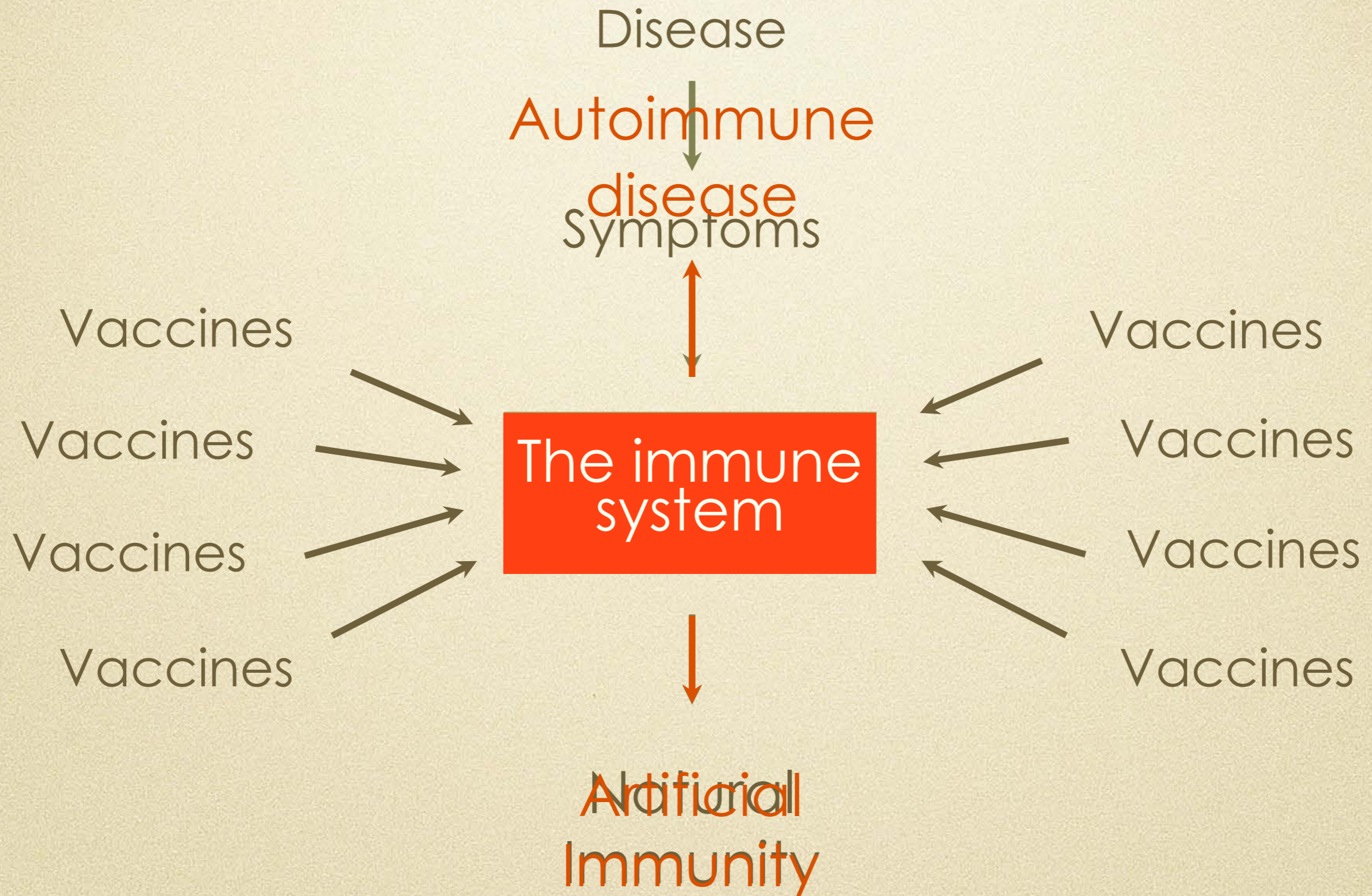
## Step Three: Ask Permission to Educate

“I strongly recommend getting all vaccines according to the CDC schedule, but I also want to make sure you feel comfortable with the decisions you make about your child’s medical care. Is it alright if I share some information that other parents have found helpful?”

# How do Vaccines Work?

Filling the Knowledge Void

# How people imagine vaccines working





# How vaccines actually work

Disease

Vaccine



The immune system



Symptoms

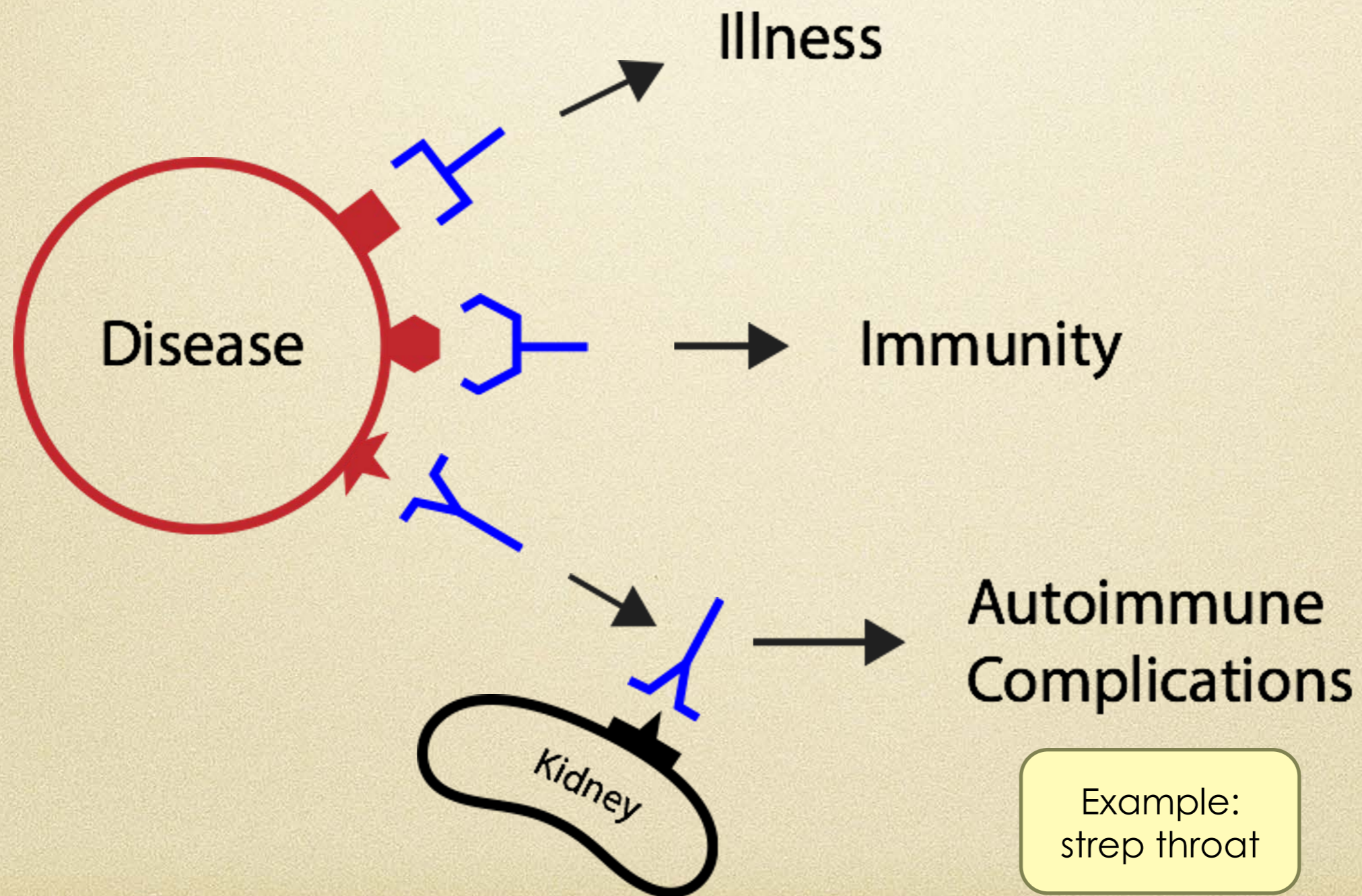


Immunity



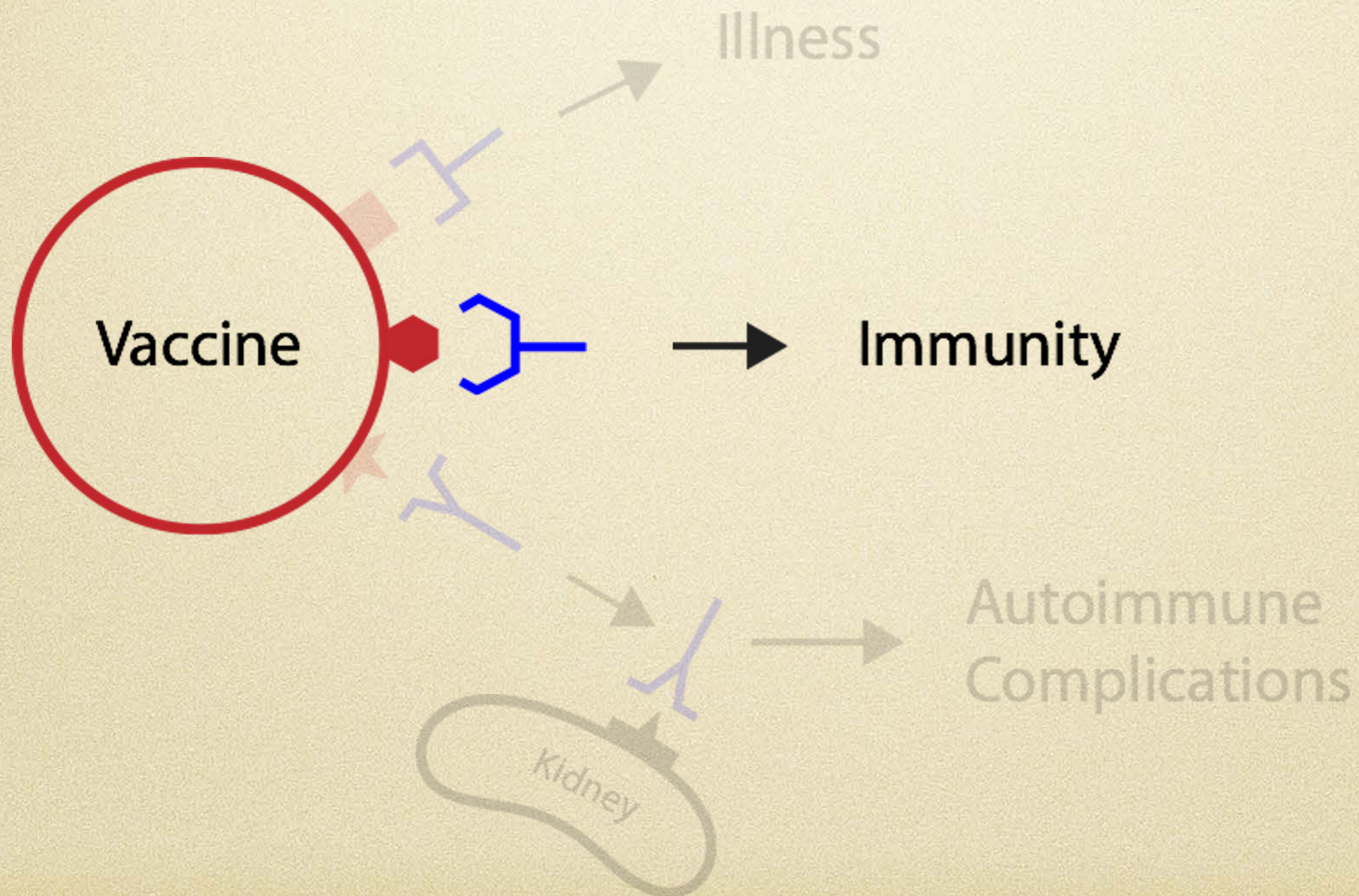
Autoimmune disease

# How the immune system works



Example:  
strep throat

# What vaccines ARE



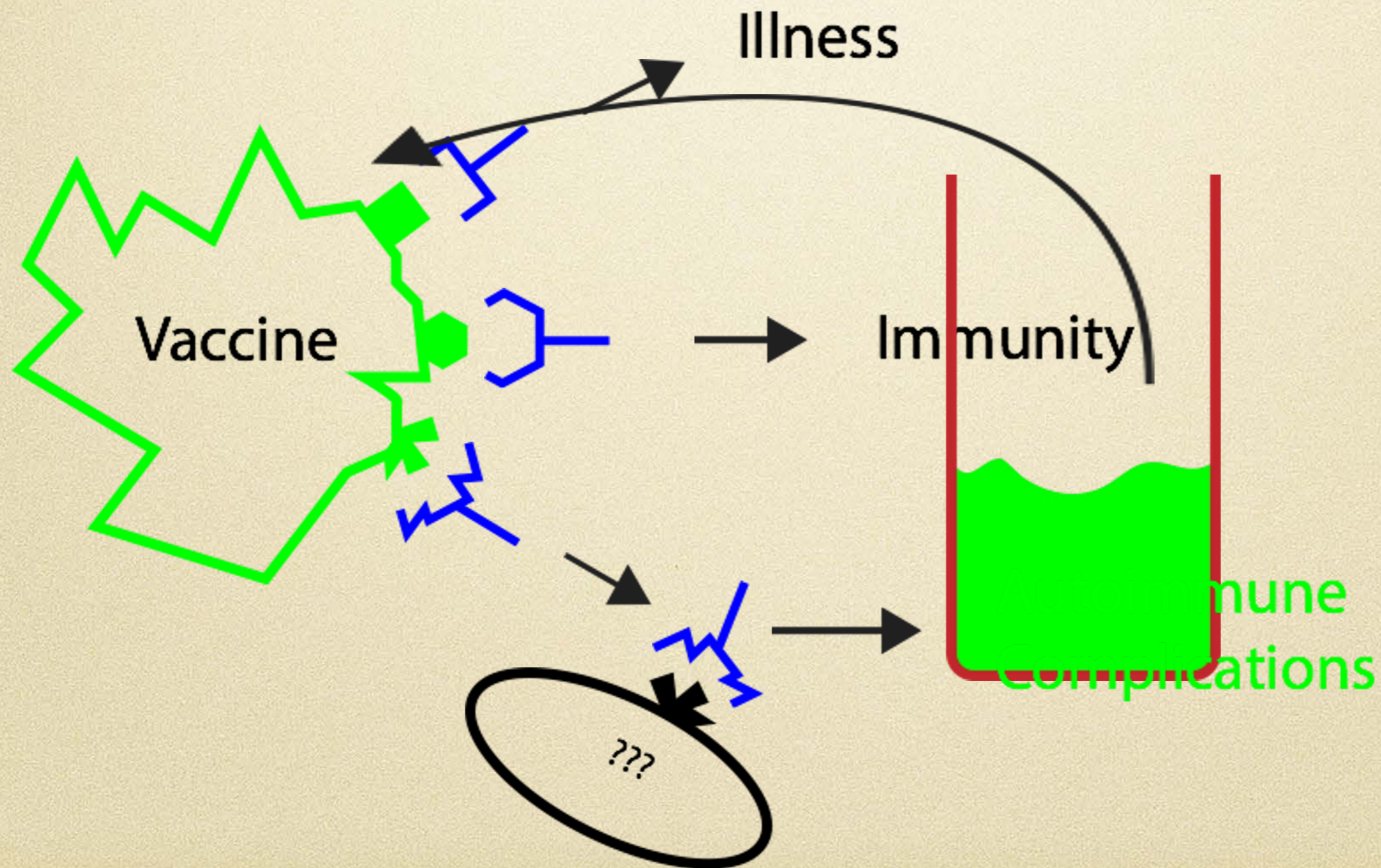


Wolf  
(*Canis lupus*)



Siberian husky  
(*Canis lupus familiaris*)

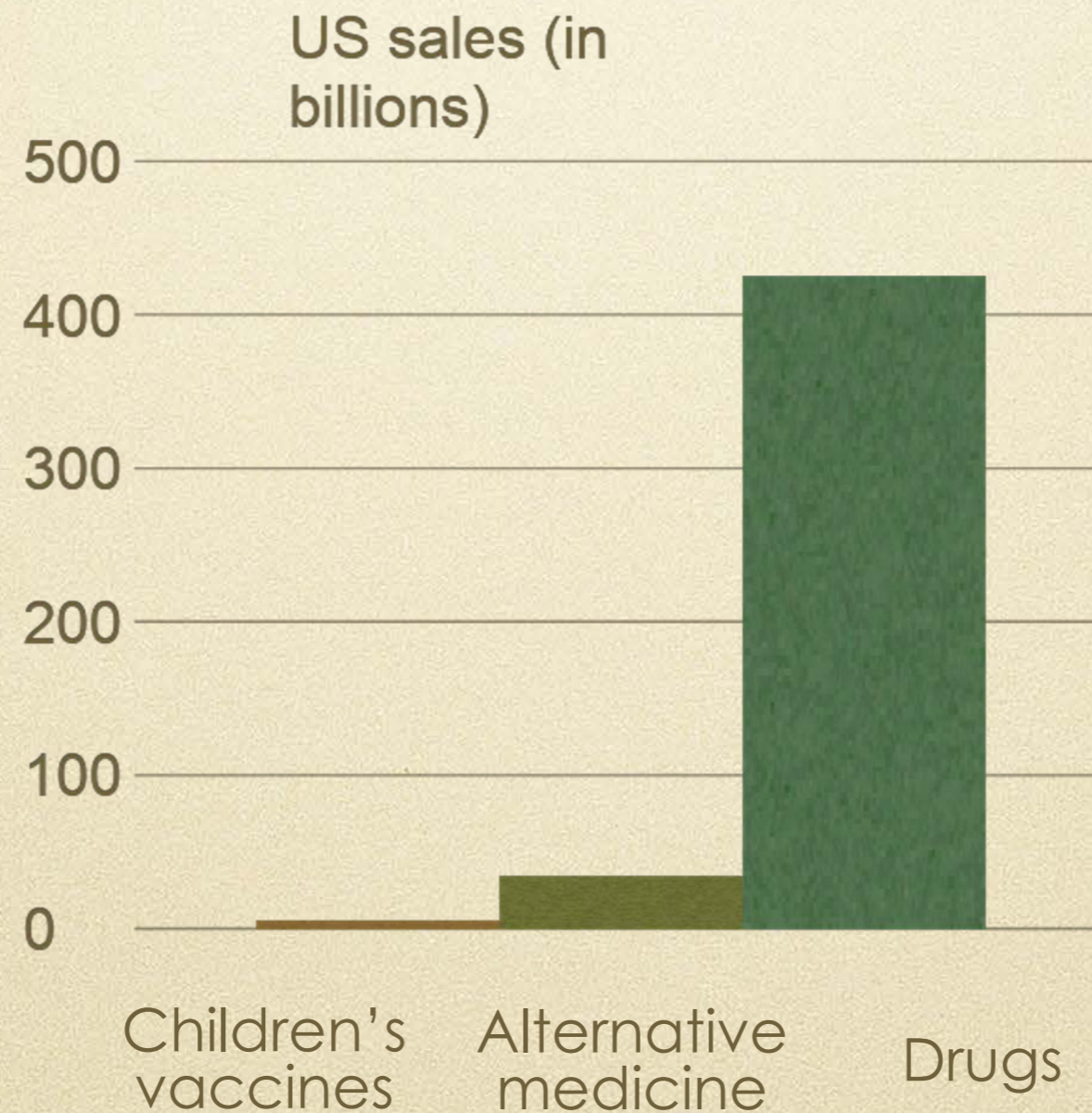
# How vaccines are NOT made



# How Profitable are Vaccines?

Correcting Misconceptions

# How profitable are vaccines?

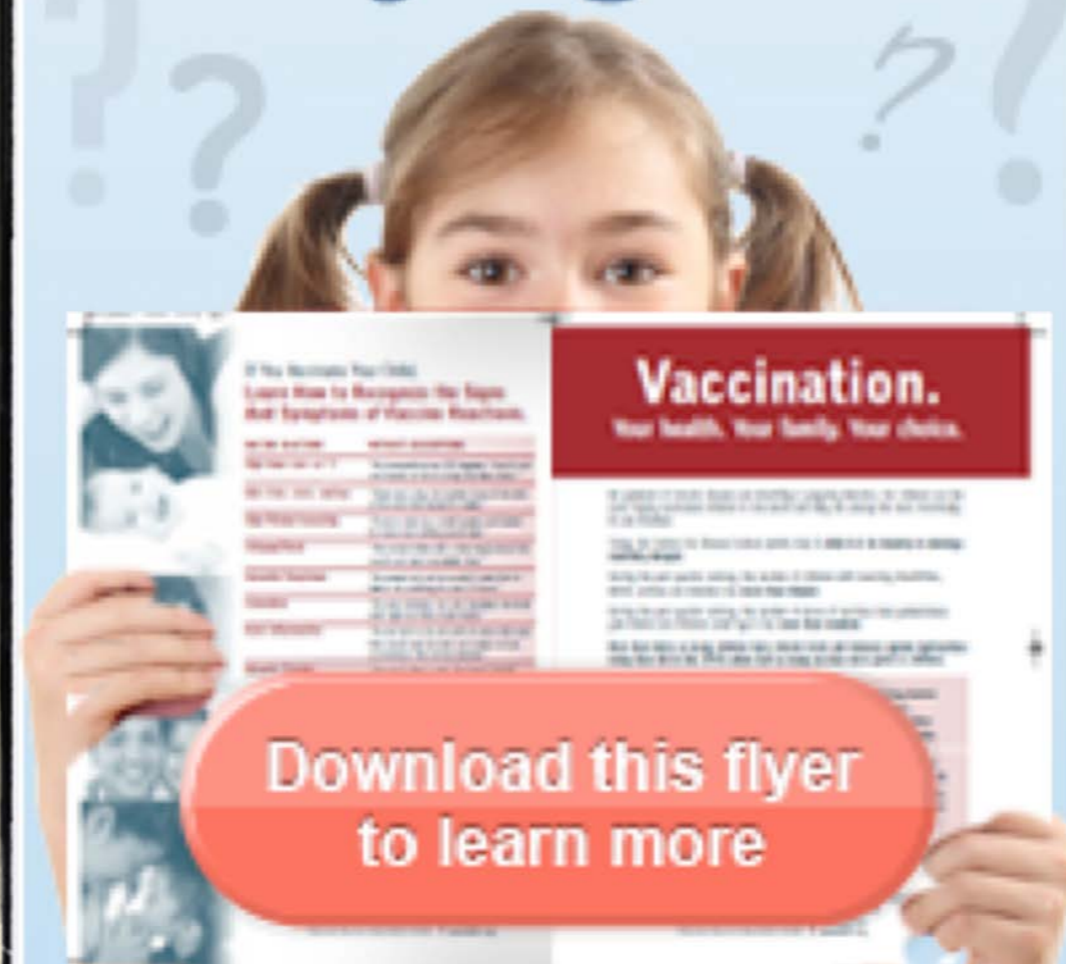




How Much is Too Much?

Providing Context

# 49 Doses of 14 Vaccines by Age 6

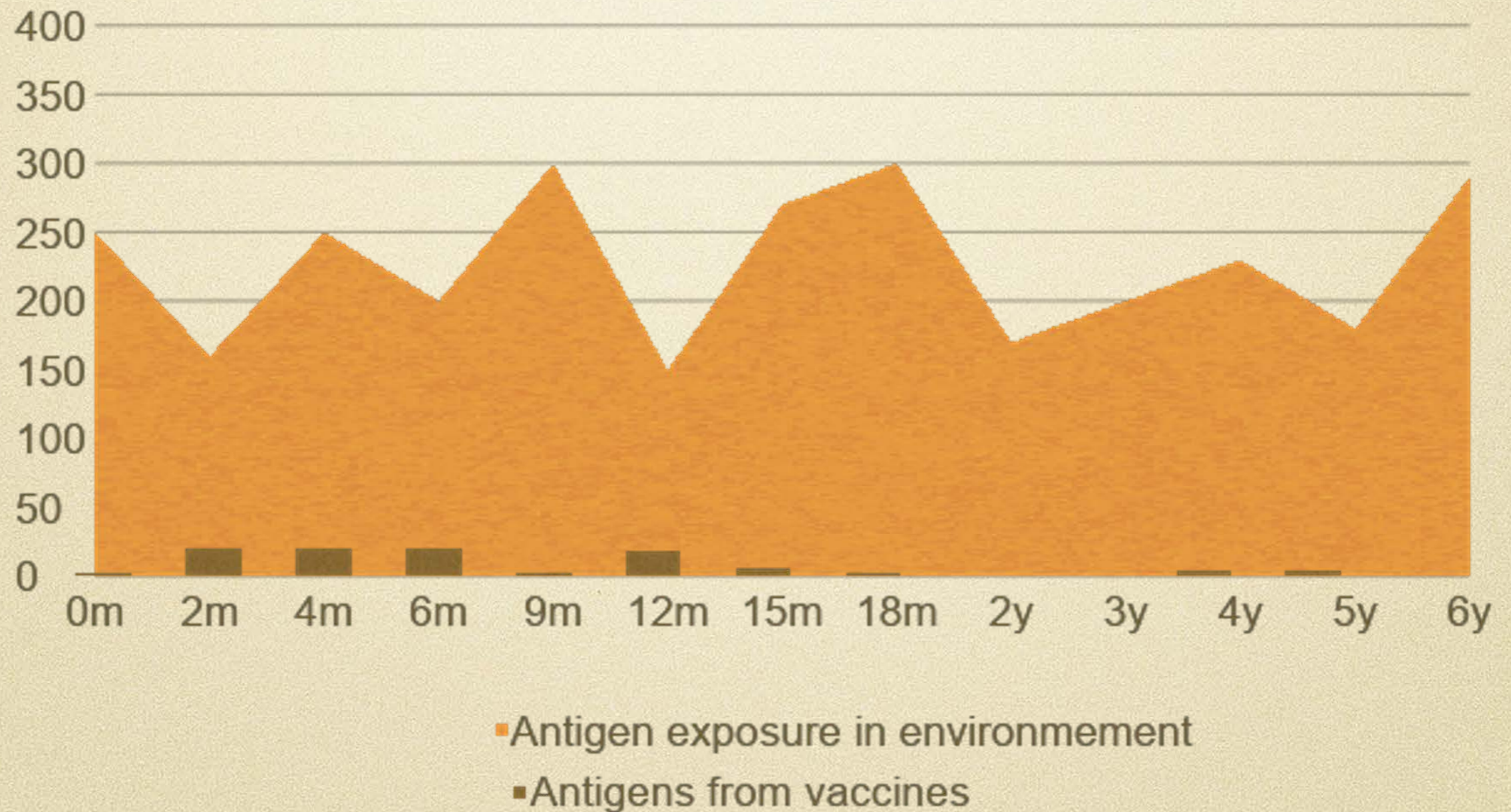


## Vaccination.

Your health. Your family. Your choice.

Download this flyer  
to learn more

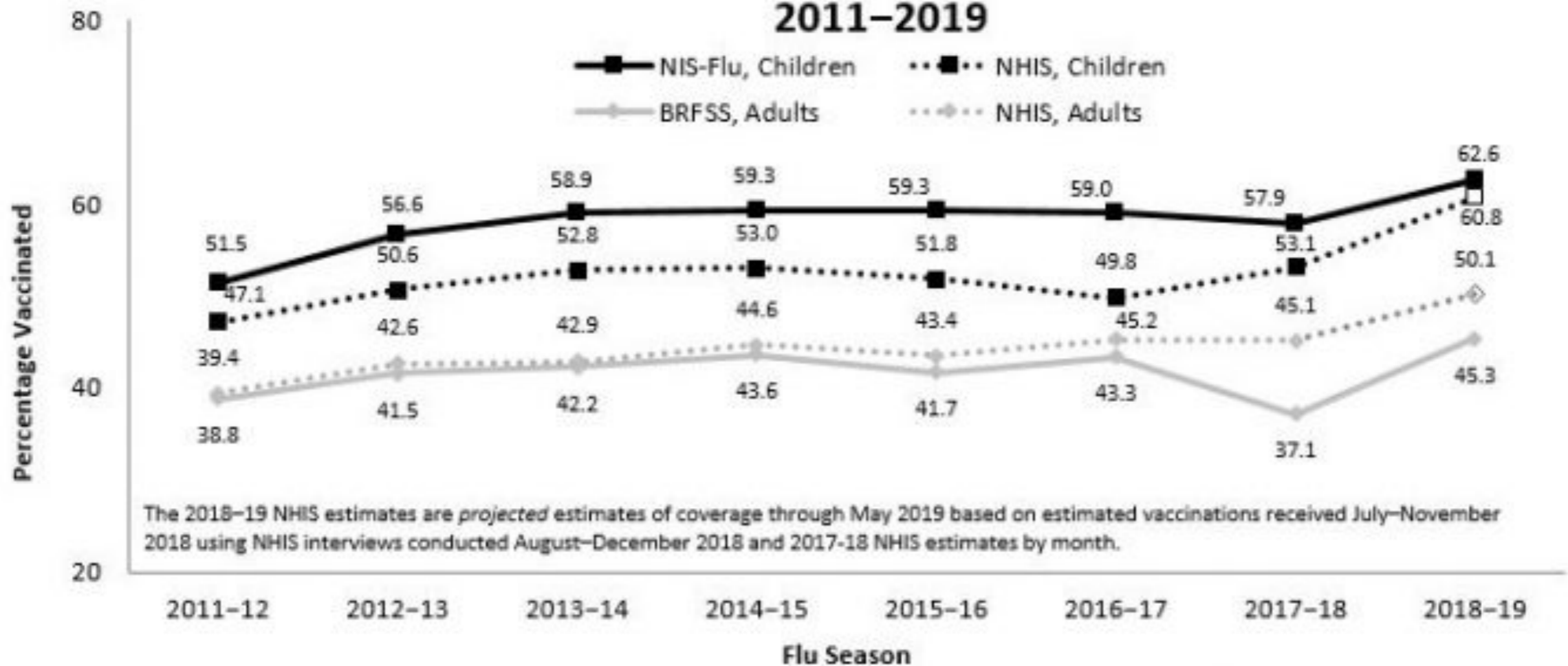
# How many antigens?



# Influenza Vaccine

# Influenza Vaccination Rates

**Figure 5. Flu Vaccination Coverage Comparisons, United States, 2011–2019**



# Why So Low?

- Relatively low efficacy

40-60% among the overall population when most circulating viruses are well matched to the vaccine

- Requires annual vaccination

- Regression to the mean, recall bias, and negativity bias

Side effects and normal winter colds

- “I’ve never gotten the vaccine and I’ve never gotten flu!”

- “The flu isn’t a big deal...”

# How Should We Discuss These Problems with Patients?

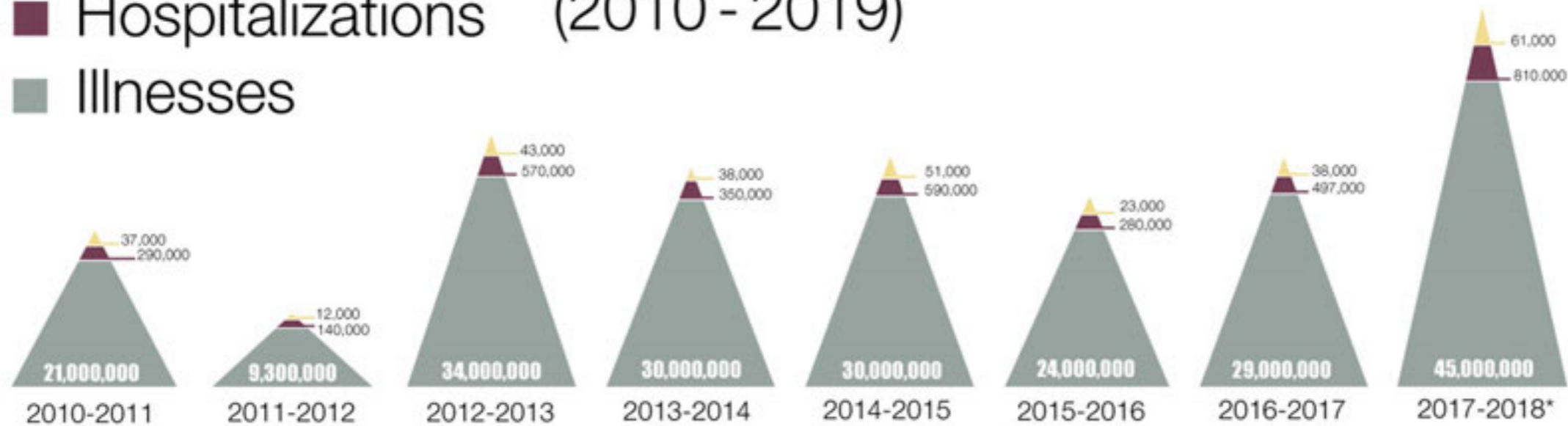
Honestly!

- Acknowledge that their concerns are correct
- 40% effectiveness is a lot better than 0%!
- The science behind the flu vaccine is the same as the science behind other vaccines; if you trust other vaccines, there's no reason not to trust the flu vaccine.
- Vaccine side effects are not dangerous; flu is!
- Most people won't get flu in a given year, whether they vaccinate or not, but millions of people will!

# Know The Burden!

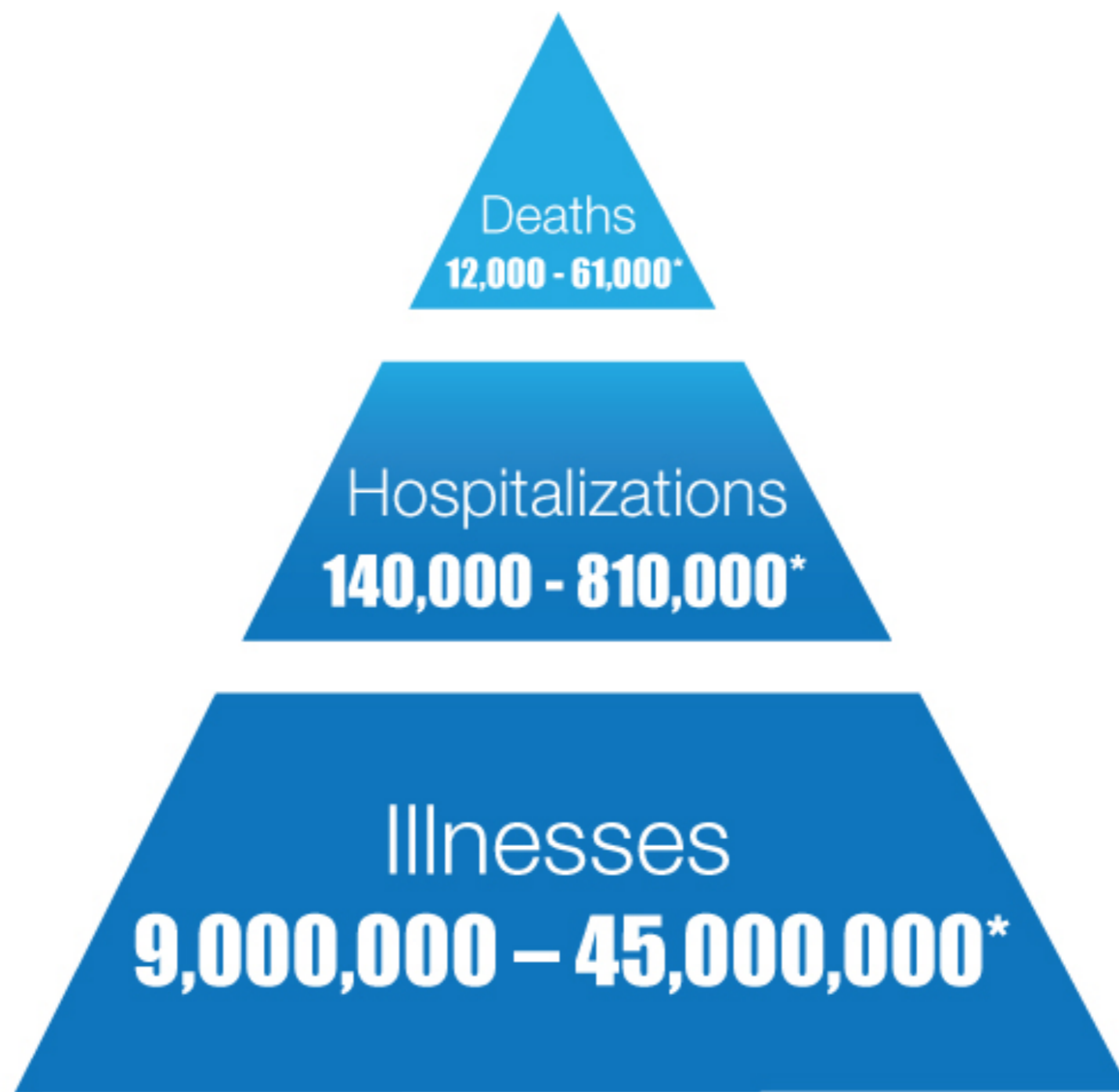
- Deaths
- Hospitalizations
- Illnesses

## Estimated U.S. Influenza Burden, By Season (2010 - 2019)



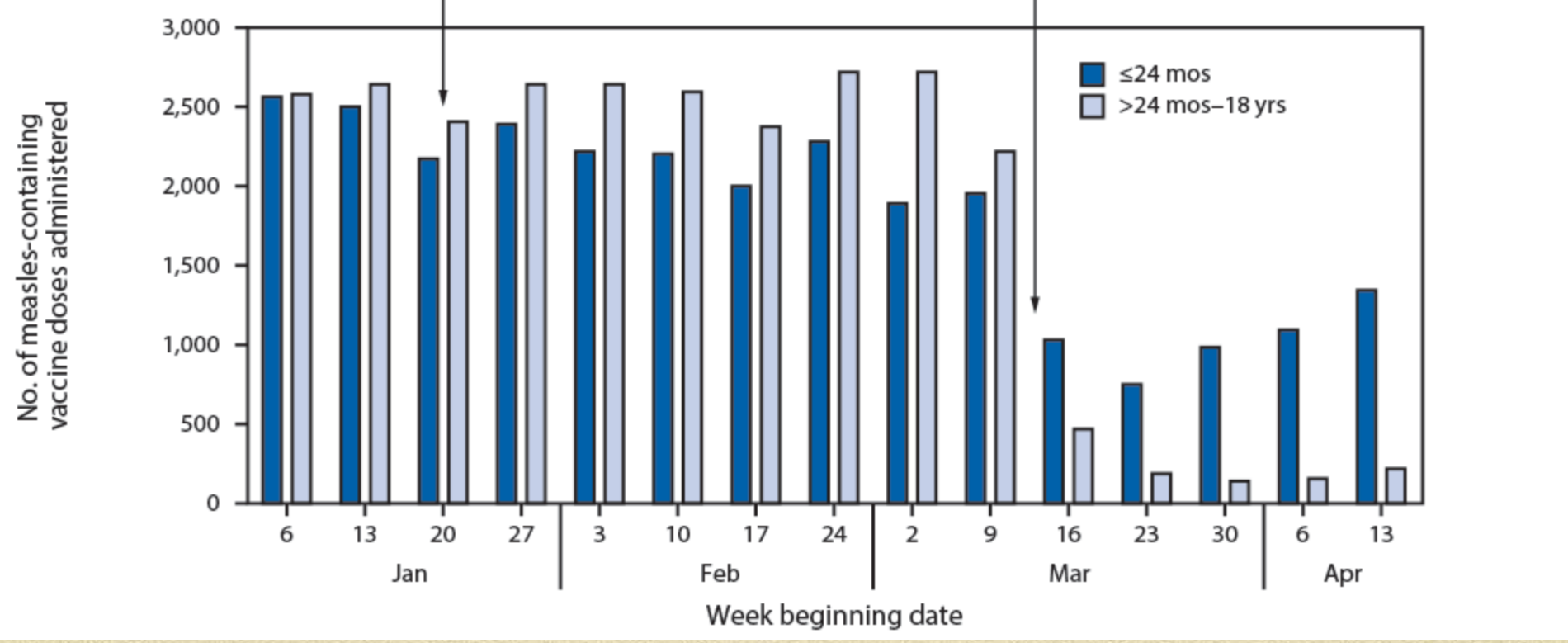
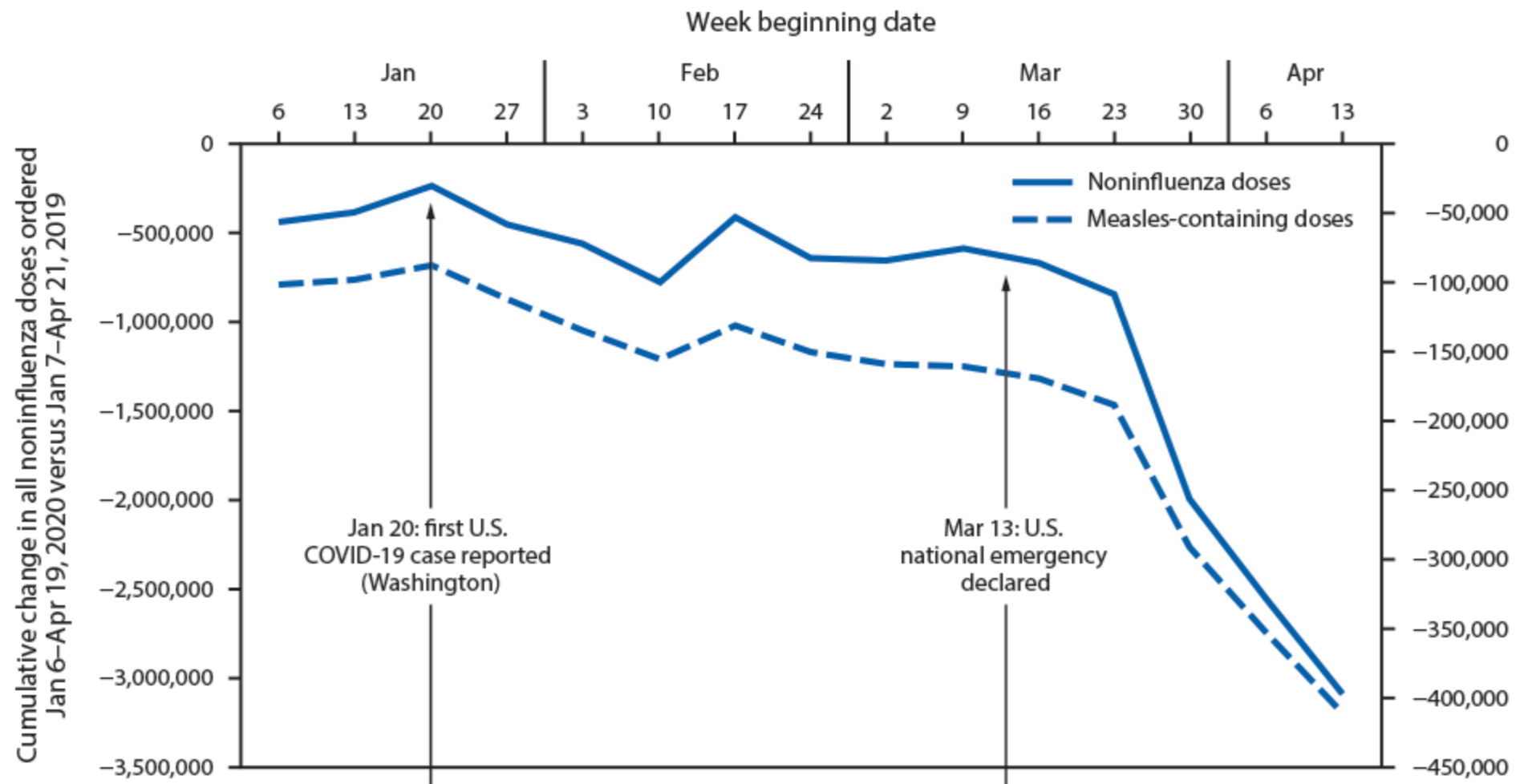
\*Estimates for these seasons are preliminary and may change as data are finalized.





\*The top range of these burden estimates are from the 2017-2018 flu season. These are preliminary and may change as data are finalized.

# Vaccinations and COVID-19



# Why Have Rates Dropped?

- Parents have become hesitant to see their pediatricians for fear of exposure to COVID-19
- Parents feel a false sense of security that by sheltering in place they are at reduced risk for vaccine-preventable diseases

# Why Are Vaccinations More Important During a Pandemic?

- More unvaccinated kids means we are at higher risk for a vaccine-preventable disease outbreak, not a lower risk
- Higher burdens on the healthcare system means it will be harder to identify, track, and contain additional outbreaks of infectious diseases, and to treat infected patients
- These factors also put public health at higher risk from this year's flu pandemic

A COVID-19 Vaccine?

# How Do Vaccines Normally Get Made?

- Begin with non-human testing. Only once there is sufficient data to suggest that it will be safe and effective in humans, is it approved for human trials
- **Phase 1 trials:** placebo-controlled studies in small groups of about 100 people to test whether the vaccine generates an immune response and is safe, and ensure the vaccine can be produced en masse

Typically takes 1-2 years

- **Phase 2 trials:** larger studies of several hundred people to further test safety, refine dosing requirements, and standardize vaccine production

Typically takes 2 years or more

- **Phase 3 trials:** Placebo-controlled studies of thousands of participants from the population intended to receive the vaccine to look for less common differences in outcomes between the two groups.

Typically takes 3-4 years

# How Are COVID Vaccines Being Made?

- Billions of dollars have been invested to fast track development of a COVID-19 vaccine (through “Operation Warp Speed” in the US), but the public health crisis in conjunction with political grandstanding has raised legitimate safety concerns about a future vaccine
- As of September 2020:
  - Dozens of COVID vaccines are in human trials
  - 3 vaccines have been funded for Phase 3 trials in the US
  - 1 vaccine has been approved for use: Sputnik V, approved by Russia on August 11, despite not having entered Phase 3 trials



# Can We Trust a COVID Vaccine and Who Should Get it?

It Depends...

# Political Ideological Beliefs and COVID in the US

- In August, the White House Coronavirus Task Force directed the CDC to change testing guidance, and recommend against testing asymptomatic patients, even though 40% of COVID patients may be asymptomatic
- This guidance was reversed on 9/18, “due to the significance of asymptomatic and pre-symptomatic transmission”
- There was no new data cited to justify either change

# So Who Can We Trust?

## The Experts!

- Public Health Professionals and Vaccinologists study longer than me, work harder than me, and make less money than me; all because they care about keeping people healthy.
- Politicians have political motivations, public health professionals are motivated by public health
- Look at what the experts are saying: researchers involved in the process, vaccinologists, independent studies from Universities and Research Centers
- Make sure you know whether Phase 3 trials were completed
- Funding and transparency will depend largely on the outcome of the November election
- The vaccine will not end the pandemic, and is not a replacement for social distancing!

“When you’re disagreeing with someone who’s on the other side of the street from you, it doesn’t help to yell at them from across the street; you have to go to their side and see things from their perspective, and then you can ask them to walk back across with you.”

- Dr. Bill Cosgrove

# Thank you!



[www.boostoregon.org](http://www.boostoregon.org)  
[facebook.com/boostoregon](https://facebook.com/boostoregon)  
Twitter: @boostoregon  
[Instagram.com/boostoregon](https://instagram.com/boostoregon)

How are vaccines different  
from drugs?

Speaking to Parents' Sacrosanct Beliefs

# Drug example

- N-(4-Hydroxyphenyl)acetamide
- Synthetic, centrally acting analgesic
- Reactive intermediate: n-acetyl-p-benzoquinone imine (NAPQI)
- Associations: liver failure, death, asthma, autism
- Additional ingredients: anhydrous citric acid, butylparaben, D&C red no. 33, FD&C blue no. 1, flavors, glycerin, high fructose corn syrup, microcrystalline cellulose and carboxymethylcellulose sodium, propylene glycol, purified water, sodium benzoate, sorbitol solution, sucralose, xanthan gum.

# Vaccine example: Hib

- Purified bacteria polysaccharide
- Inactivated tetanus toxoid
- Sucrose
- No preservative
- Things used to grow/purify/extract/neutralize: cell culture medium (amino acids, etc), ammonium sulfate (purifies proteins by precipitation), formalin (inactivates and detoxifies)
- Filter sterilized



# Vaccine example: Hib

- Purified bacteria polysaccharide
- Inactivated tetanus toxoid
- Sucrose

# Vaccine example: DTaP

- Acellular Pertussis bacteria
- Inactivated diphtheria and tetanus toxoids
- Aluminum
- 2-phenoxyethanol (buffer)
- No preservative
- Things used to grow/purify/extract/neutralize: cell culture medium (amino acids, etc), ammonium sulfate (purifies proteins by precipitation), formaldehyde & glutaraldehyde (inactivates and detoxifies).
- Purified by sequential filtration, salt-precipitation, ultrafiltration and chromatography.

# Vaccine example: DTaP

- Acellular Pertussis bacteria
- Inactivated diphtheria and tetanus toxoids
- Aluminum
- 2-phenoxyethanol (buffer)

# Aluminum: what is it?

- “Light” metal
- 3rd most abundant element in Earth’s crust
- Acts as adjuvant, only in vaccines where needed

Rank ⇄	Z ⇄	Element ⇄	Symbol ⇄
1	8	oxygen	O
2	14	silicon <sup>[A]</sup>	Si
3	13	aluminium	Al
4	26	iron	Fe
5	20	calcium	Ca
6	11	sodium	Na
7	19	potassium	K
8	12	magnesium	Mg
9	22	titanium	Ti
10	1	hydrogen	H
11	15	phosphorus	P
12	25	manganese	Mn

# Compare

## Acetaminophen

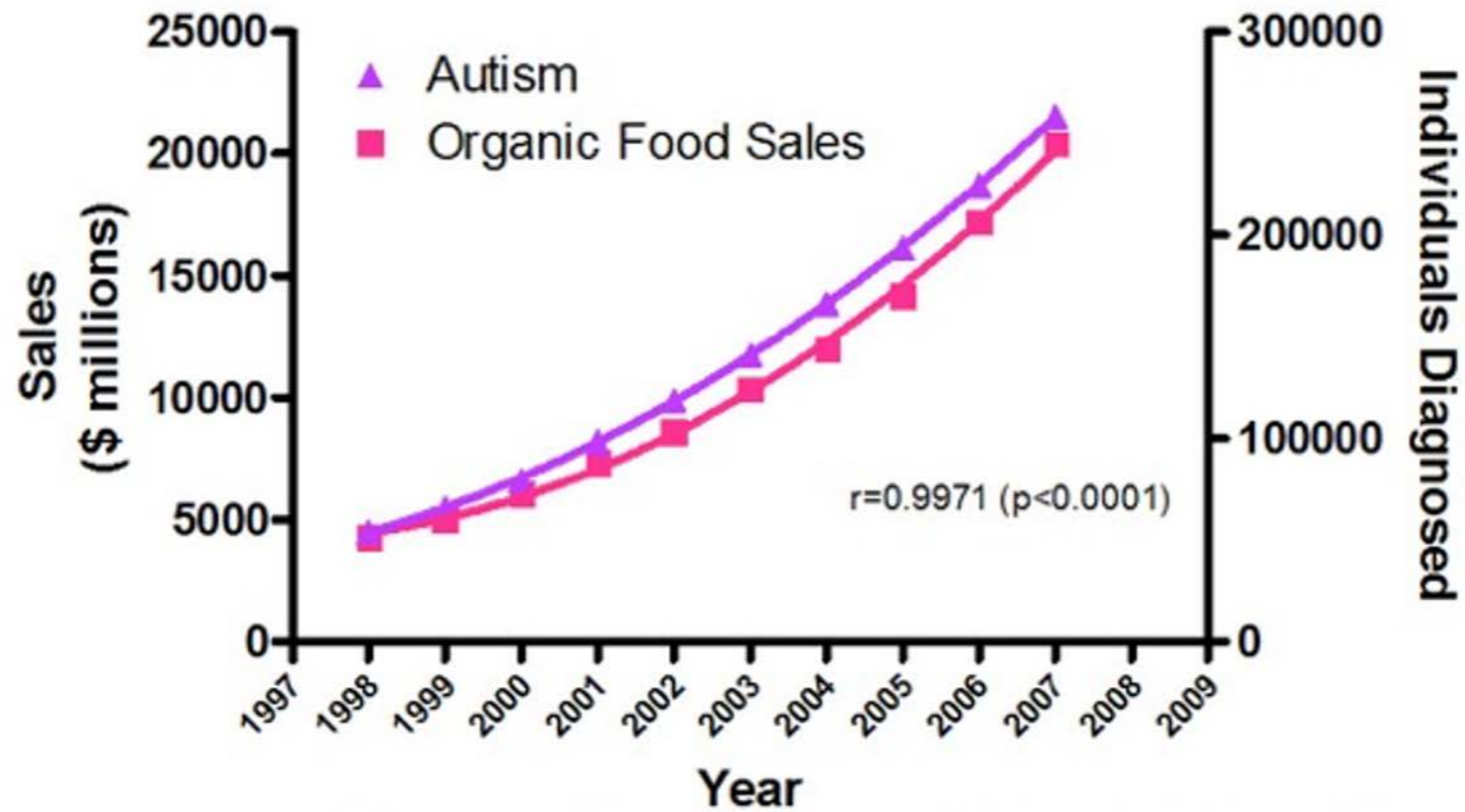
- N-(4-Hydroxyphenyl)acetamide
- Reactive intermediate: n-acetyl-p-benzoquinone imine (NAPQI)
- Anhydrous citric acid
- Butylparaben
- D&C red no. 33
- FD&C blue no. 1
- Flavors
- Glycerin
- High fructose corn syrup
- Microcrystalline cellulose
- Carboxymethylcellulose
- Propylene glycol
- Sodium benzoate
- Sorbitol solution
- Sucralose
- Xanthan gum

## Hib

- Purified bacteria polysaccharide
- Inactivated tetanus toxoid
- Sucrose

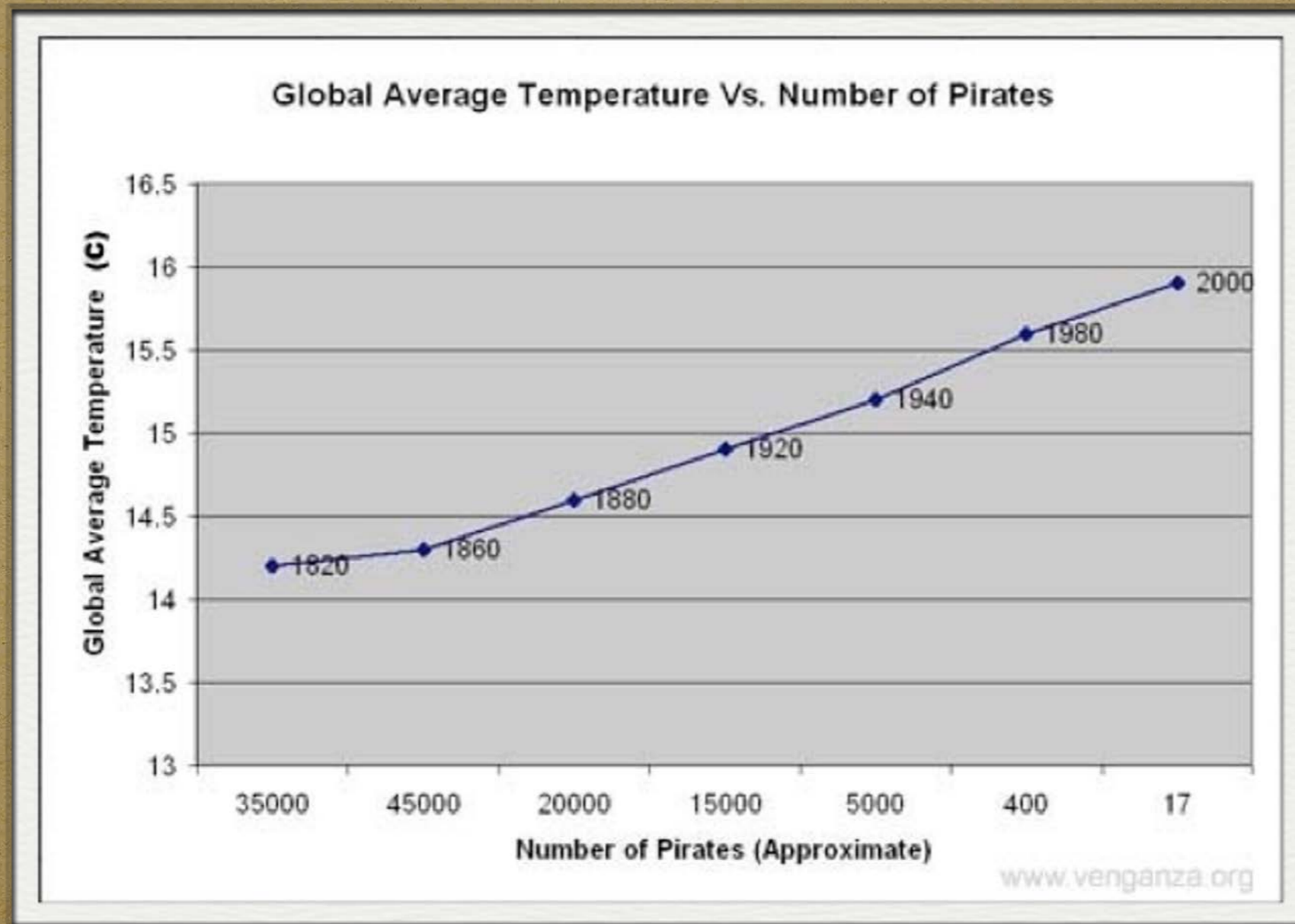
# How to Make Things Sound Scary

### The real cause of increasing autism prevalence?



Sources: Organic Trade Association, 2011 Organic Industry Survey; U.S. Department of Education, Office of Special Education Programs, Data Analysis System (DANS), OMB# 1820-0043: "Children with Disabilities Receiving Special Education Under Part B of the Individuals with Disabilities Education Act"

Eating organic food causes autism



A pirate shortage caused global warming



# Musa acuminata Colla

## Would you eat this?

**Ingredients:** Water (75%), **Sugars (12%)** (Glucose (48%), Fructose (40%), Sucrose (2%), Maltose (<1%)), Starch (5%), **Fiber (3%)** (E460, E461, E462, E464, E466, E467), **Amino Acids** (Glutamic Acid (19%), Aspartic Acid (16%), Histidine (11%), Leucine (7%), Lysine (5%), Phenylalanine (4%), Arginine (4%), Valine (4%), Alanine (4%), Serine (4%), Glycine (3%), Threonine (3%), Isoleucine (3%), Proline (3%), Tryptophan (1%), Cystine (1%), Tyrosine (1%), Methionine (1%)), **Fatty Acids (1%)** (Palmitic Acid (30%), Omega-6 Fatty Acid: Linoleic Acid (14%), Omega-3 Fatty Acid: Linolenic Acid (8%), Oleic Acid (7%), Palmitoleic Acid (3%), Stearic Acid (2%), Lauric Acid (1%), Myristic Acid (1%), Capric Acid (<1%)), Ash (<1%), Phytosterols, E515, Oxalic Acid, E300, E306 (Tocopherol), Phylloquinone, Thiamin, **Colors** (Yellow-orange E101 (Riboflavin), Yellow-Brown E160a), **Flavors** (Ethyl Hexanoate, Ethyl Butanoate, 3-Methylbut-1-yl Ethanoate, Pentyl Acetate), E1510, Natural Ripening Agent (Ethene Gas).



# DHMO

## Material Safety Data Sheet: Health Hazard Information

Eye: Irritant in sensitive persons

Skin Contact: May cause discomfort depending on temperature

Skin Absorption: May cause temporary wrinkling of skin.

Inhalation: Inhalation of liquid can be fatal

Ingestion: Ingestion of large quantities may result in excessive micturition

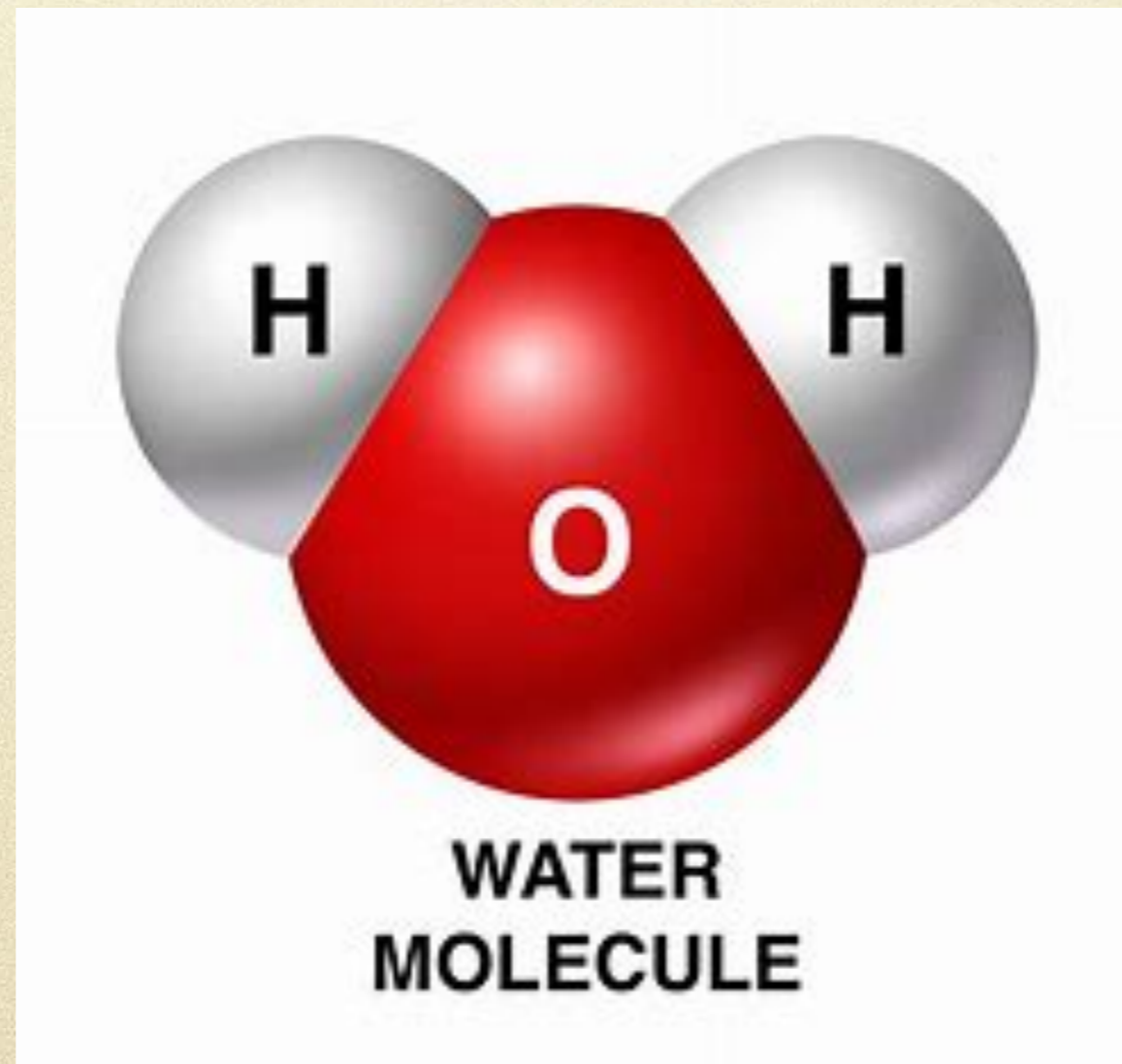
The atomic components of DHMO are found in a number of caustic, explosive and poisonous compounds such as Sulfuric Acid, Nitroglycerine and Ethyl Alcohol.

Given to vicious dogs recently involved in deadly attacks; associated with cyclones and hurricanes; major component of acid rain; found in cancer cells; used in animal research, pesticide production, and nuclear power plants.

Used by: athletes to improve performance, Congressmen charged with corruption, murderers, rapists, pedophiles, members of the KKK, Al Qaeda, and other known terrorist groups.

Research conducted by award-winning U.S. scientist Nathan Zohner concluded that roughly 86 percent of the population supports a ban on dihydrogen monoxide

# Dihydrogen Monoxide



# The Dangers of Pickles

- Nearly all sick people have eaten pickles; therefore, the effects are obviously cumulative.
- Of all the people who die from cancer, 99% have eaten pickles.
- 100% of all soldiers have eaten pickles; therefore, pickles must be related to wars.
- 98.8% of all Communist sympathizers have eaten pickles.
- 99.7% of all the people involved in the air and auto accidents ate pickles within 14 days preceding the tragedy.
- 93.1% of all juvenile delinquents come from homes where pickles are served frequently.
- Evidence points to some startling long term effects of pickle eating:
- Of all the people born in 1865 who later dined on pickles, there has been a 100% mortality rate.
- All pickle eaters born between 1890 and 1900 have wrinkled skin, brittle bones, have lost most of their teeth and are afflicted by failing eyesight... if the ills that come from eating pickles have not already resulted in their death.
- Even more convincing is the report from a noted team of medical specialists. They found that rats which were force-fed with 20 pounds of pickles per day developed bulging abdomens. It was further noted that the rat's appetites for wholesome food was completely destroyed.

# How not to be Fooled

- Question yourself
- Trust “I don’t know”; mistrust certainty
- When in doubt, Google “debunk...”
- If someone seems to be trying to scare you, find a different source

# Boost Oregon Projects

- Community workshops and parents' guides
- Website with accurate, easy to understand information about childhood vaccines ([www.boostoregon.org](http://www.boostoregon.org))
- Seminars and manuals for medical providers
- Network of supportive parents