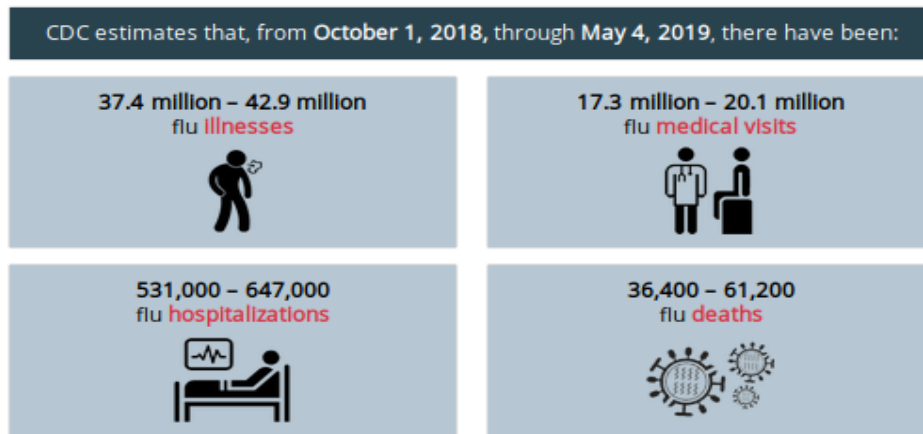


# STANDARD DEVIATIONS: Taking a Shot at Influenza

Greetings,

September is **Preparedness Month**. If we're going to talk about preparedness (and I am), we should acknowledge the elephant in the room. Influenza, seasonal or pandemic, is a threat to everyone. But it's something we can, and do, prepare for.

Last year, 2018, was not horrible, and certainly not as bad as 2017. Here's what the CDC posted for numbers:



(Maybe horror is relative?)

CDC estimates 79,000 deaths in the previous year and an upper total of 61,000 last year. The US recorded 130 pediatric deaths in 2018, compared to 187 in 2017. Is that more palatable? Don't get comfy. It was the longest flu season in the past decade, at 21 weeks. H1N1 viruses predominated from October to mid-February, followed by H3N2 until May.

Okay, thing is...flu is everywhere. Are we more susceptible because we work in the lab?

OSHA says it like this, “**Any workers who have reasonably anticipated contact with blood or OPIM (other potentially infectious materials) during performance of their jobs are considered to have occupational exposure and to be at risk of being infected.**” So, yeah, we're more exposed than most.

This is where I shout, “Let's throw some biosafety at the problem!”

One early preparedness action we'll all take is influenza **vaccination**. It's typically mandated by our facilities and for good reasons. The cornerstone of both seasonal and pandemic influenza prevention and control is the development of vaccines against specific influenza strains that pose a potentially significant risk to the public.



Here's the skinny on what's in the pipeline.

This year's vaccine contains new components of the H1N1 and H3N2 strains, which are influenza A viruses. The two influenza B strains included in the vaccine are the same as last year.

For 2019-2020, **trivalent** (three-component) vaccines are recommended to contain:

- A/Brisbane/02/2018 (H1N1)pdm09-like virus (updated)
- A/Kansas/14/2017 (H3N2)-like virus (updated)
- B/Colorado/06/2017-like (Victoria lineage) virus

**Quadrivalent** (four-component) vaccines, which protect against a second lineage of B viruses, are recommended to contain:

- the three recommended viruses above, plus B/Phuket/3073/2013-like (Yamagata lineage) virus.

YAY for vaccines, right? Well.....not so fast. The CDC thinks last year's brew was about 47% effective, overall. Better than 2017 but still..... And, there will be around 160-170 million doses manufactured for the US, so about half the population won't be getting a sore arm..... or vaccine coverage.

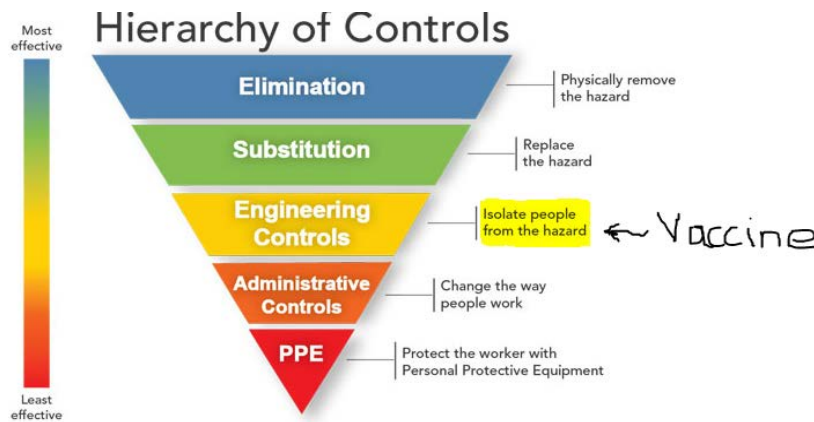
But, the vaccine reduces severity of disease, too. So, it's a good thing. Matter of fact, vaccination's the best, one, thing we can throw at influenza before we see it. Despite its hindsight approach and questionable efficacy, the vaccine is our first line of defense.



Now the biosafety business.



The following diagram is an explanation of how biosafety works with influenza. The hierarchy is the backbone of biosafety. I'm going to try and boil it down into a reduction we can eat in a few leather-tough bites (it's not too bad, I hope).



- **Elimination.** Yeah, well good luck with that. The virus is ubiquitous, world-wide, and inescapable.
- **Substitution.** With what? Again, we can't get away.
- **Engineering Controls.** We're down the scale a-ways before we can make a dent, but here is where vaccine finally comes in. I'd throw in BSCs, centrifuge covers, negative air pressure and a bunch of other jargon IF this were just simply a lab issue; it's not.
- **Administrative Controls.** **You reading this is an example of an administrative control.** All the news, public service announcements, posters, and your in-house safety policies fall into this area.
- **PPE.** Last and least. We depend on PPE, but it's the last line of defense and just a thin barrier between you and infection.

Today's epistle is about how vaccine prepares us for the coming flu season. There are some other Engineering Control steps we use. We'll break those down in later letters.

Have a great week and be safe,

Bryan



p.s. CDC graphic of influenza burden, by season (2010-2018)

