

***Public Health Live!* TRANSCRIPT**  
**What's New With the Flu: 2020-2021**  
**November 5, 2020**

**Moderator Rachel Breidster:** Hello and welcome to *Public Health Live!* I'm Rachel Breidster and I'll be your moderator today. Before we get started, I would like to ask that you please fill out your online evaluation at the end of the webcast. Continuing education credits are available for a limited time after you take our short post-test and your feedback is helpful in planning future programs. I also want to let you know that Dr. Domachowske is a Consultant and Ad-hoc Advisory Board member for Sanofi Pasteur and a Researcher or Site Investigator for Clinical Vaccine and Treatment Trials for Astra Zeneca, Pfizer, GlaxoSmithKline and Merck, and Ms. Hershey's spouse has stock in Bristol Meyers Squib. No other planners or presenters have any financial arrangements or affiliations with any commercial entities whose products, research or services may be discussed in this activity, and all relevant financial relationships have been mitigated.

As for today's program, we will be taking your questions throughout the hour by email at: [phlive.ny@gmail.com](mailto:phlive.ny@gmail.com). Handouts of slides presented today are available on the program webpage.

Today's program is entitled, *What's New With The Flu – 2020-2021*, and our guests today are Dr. Joseph Domachowske, who is a Professor of Pediatrics and Professor of Microbiology and Immunology as well as the Director of the Global Maternal-Child and Pediatric Health Program at SUNY Upstate Medical University in Syracuse, New York. Dr. Domachowske is the Immunization Liaison for the American Academy of Pediatrics District 2/Chapter 1 and the Chair of the New York State Immunization Advisory Council. Also speaking with us today is Ms. Sarah Hershey, who is the Adult and Adolescent Immunization Coordinator in the Bureau of Immunization at the New York State Department of Health. Thank you for joining us.

Good morning. Thank you both for being here. Dr. Domachowske, to start the discussion this morning, would you review for us the objectives that we have for today's program?

**Dr. Domachowske:** Sure, Rachel. We would like to have the participants be able to describe the burden of influenza disease, to discuss the benefits of influenza vaccination, and to talk about the recommendations for this 2020-2021 influenza season.

**Moderator Breidster:** Terrific, thank you. Now, before we start the discussion, I want to point out there's many acronyms used throughout our discussion today, and we have a glossary and slide references and resources available to viewers with the slide handouts for today's program at [www.phlive.org](http://www.phlive.org). Now, just to frame the discussion we are going to be having this morning, can you explain the disease process for us?

**Dr. Domachowske:** Influenza infection is a respiratory infection - it comes through the respiratory tract. Influenza causes seasonal and somewhat predictable epidemics every year. We

know it's coming, [but] we just don't always know exactly when. These epidemics are caused by different strains of both influenza "a" and influenza "b."

**Moderator Breidster:** Can you tell us what influenza infection looks like? Because, as I understand it, a lot of people confuse it with the common cold.

**Dr. Domachowske:** Right. We're talking today about *What's New With The Flu* – well, let's call it influenza, because it is not like every other respiratory virus, and there are dozens of respiratory viruses that can cause illnesses, right, respiratory illnesses with fever and cough. But the classic influenza infection typically will last a week, with a very abrupt onset of fever and muscle aches, then, the cough, the sore throat, and the other respiratory symptoms will start. The complications certainly can prolong the convalescence for up to six weeks, or even longer.

**Moderator Breidster:** Sarah, let me ask you to give us a sense of what last year's flu season or influenza season looked like?

**Sarah Hershey:** I'll start off with some national data from the CDC. This is from their FluView website. On this chart, you can see, the orange bars on top were primarily H1N1 viruses. The red is the H3N2s. And the green was "b" viruses that were not subtyped and the lighter green was the influence b-Victoria lineages. You can see here on the national level, there was really two waves - towards the beginning of the season, you saw quite a bit of "b" Victoria, which isn't typical, in an influenza season, but it does happen sometimes, and then there was a second wave that was predominantly H1N1.

**Moderator Breidster:** What can you tell us about mortality due to influenza?

**Sarah Hershey:** Adult mortality due to influenza, is not reportable to the CDC. So what they do is they take death certificates and those that have pneumonia or influenza listed as a cause of death or a contributing factor, and they plot those out on a chart - the chart you see here. That middle spike that you see was that severe 2017-2019 season. All the way to the right, you see that really big spike. That was mostly due to coronavirus. That one is indicative of more than just influenza this year, but we were seeing it go above the epidemic threshold prior to the coronavirus.

**Moderator Breidster:** Did it look different in children?

**Sarah Hershey:** Yes. Especially this season. The "b" viruses tend to hit kids a little harder than adults. This shows you the last four seasons, the chart we have here. You can see, it's anywhere from about 110 to 188 pediatric deaths. These are reportable to the CDC. You see for the 2017-2018 season, there were 188 pediatric deaths. That was a very severe flu season across all age groups. But you see for this past season, the 2019-2020 season, there were also 188 deaths. It was a more severe season for children.

**Moderator Breidster:** How did New York State's rates compare to rates across the nation?

**Sarah Hershey:** These charts are available on the New York State Department of Health Influenza Surveillance web page. It looked slightly different for New York State. Those maroon

bars on the top are for influenza "b" viruses and the lighter purple on the bottom is influenza "a." So at the beginning, instead of seeing predominant influenza "b," we saw about 50/50, as there was more influenza H1N1 across the country, we did start to see a higher percentage of influenza "a" in New York State.

**Moderator Breidster:** Thank you. How does that compare over time?

**Sarah Hershey:** This chart shows you four different seasons. The thick red line is last season, 2019-2020. You can see at the peak, it almost reached that peak of the severe 1917-18 season on the brown line. However what is different between those two seasons is that the 2019-20 season lasted longer. And you can see the other two seasons look very different. One of the things this can show is, when you've seen one flu season, you've seen one flu season. You can't really take from one to say, "Oh, what's going to happen this year?"

**Moderator Breidster:** Sure. What age groups were most severely impacted by influenza last year?

**Sarah Hershey:** The two pie charts that you see here - I like to put side-by-side - because they tell a different story and to be able to compare them together. On the left, these are the positive influenza laboratory results that were reported to the New York State Department of Health by age group. And as you can see, the bigger pieces of this pie are the 5 to 17 year age group and the 18 to 49 age group. Those two age groups are going to come up later on in the presentation. Because, when you go over to the right-hand side, those numbers change, those age groups change. The right pie chart is the patients who are hospitalized with laboratory confirmed influenza. That moves the larger pie pieces to that 50-64 age range and the 65+ age group, making up over 50% of patients hospitalized with influenza.

**Moderator Breidster:** So, talk to us a bit about people with underlying health conditions and how they're impacted by influenza.

**Sarah Hershey:** The influenza report does also break these down by selected underlying medical conditions. On the next chart, you'll see that the red bars are for the pediatric population - those 0-17 years old. The blue are adults, 18-plus, and there's a bar for pregnancy because we know that there can be more severe outcomes if someone were to get influenza while pregnant. For the adults, we typically - there are four top ones that we see - this is very typical for influenza season - the cardiovascular disease, chronic lung disease, metabolic disorder and obesity seem to have the severe outcomes, and we know those are the same underlying conditions for severe outcomes for COVID-19. But when we look at the pediatric bars, it's a little bit of a different story. We do see a significant amount of asthma. However, most of the pediatric patients who are hospitalized for influenza have no underlying conditions, with almost 50% of children hospitalized for influenza having no underlying health conditions.

**Moderator Breidster:** Thank you. Have influenza-related deaths in New York State in children changed over time?

**Sarah Hershey:** Yes. This next chart shows you the last four years, like what we saw for the national data. In the previous three years, you saw it was about six to eight pediatric influenza

deaths in New York State. Last year, we did see an increase in that. There were 13 pediatric deaths last season in New York State due to influenza.

**Moderator Breidster:** Certainly, that is a lot of helpful information, helpful numbers to frame the discussion we're having this morning, and the importance of the discussion that we are having. Dr. Domachowske, the numbers help us understand really, the impact of what we are talking about. Can you help us understand this a bit more, and really articulate who is most impacted by influenza?

**Dr. Domachowske:** Certainly, anyone can get influenza and have a really severe illness. Anyone can get influenza and die from that infection. So we have to keep that in mind. But severe illnesses are most common among people in the sixth, seventh, eighth decade or later, so the elderly folks. Women who are pregnant have a particular predisposition to severe illness and even mortality. Children under 5, but particularly those under 2 years of age are more likely to be hospitalized because their infection is particularly severe. Certain racial and ethnic minority groups are disproportionately affected. And certainly any chronic underlying disease can be triggered and exacerbated by an inter-current infection, including influenza. We've also recently learned that individuals who are overweight in the range of moderate to severe obesity, with a BMI of 40 or higher, are at high risk.

**Moderator Breidster:** Can you give us an example of what that might look like?

**Dr. Domachowske:** Sure. I remember seeing a 29-year-old woman who was pregnant. She was about 32 weeks into her pregnancy. She was hospitalized in the month of February with influenza "a" infection. At home, her husband and her twin daughters were sick the previous week, but for the most part, were getting better. The twins were still coughing a little bit and a little bit grumpy. But this mom, she got infected. She was 32 weeks pregnant. She entered the hospital and needed oxygen pretty much right away. And over the first couple days of hospitalization, really deteriorated and required mechanical ventilation, intubation/mechanical ventilation. The obstetrician decided to surgically deliver her to try to save her life. The baby was born by Cesarean section at 32 weeks gestational age. Despite that effort, the mom died on day four of hospitalization. That 32-week gestational age infant was in the neonatal intensive care unit for several months before discharge from the hospital.

**Moderator Breidster:** That underscores the compounding factors of things that might complicate influenza. What kinds of issues impact those that do contract influenza?

**Dr. Domachowske:** You can have uncomplicated disease, but you're sick as a dog for a week, right? You're in bed with the pillow over your head and you just don't feel good. If you have a complication, it just prolongs things. And the most common complication is when you think you are starting to feel better and then "pow," you're sick again. That's a bacterial-super-infection, often caused by the strep pneumococcus organism or by staph infection, infections of the lung and middle ears or the sinuses. That's fairly common. We also see people become dehydrated, especially very young children and the elderly. We see folks with Myocitis, where virus gets in and irritates the skeletal muscles. But sometimes, rarely, the virus can also affect the heart muscle and cause cardiac dysfunction. We do occasionally see neurologic complications and even multi-organ dysfunction that leads to a progression of illness, ultimately leading to death.

**Moderator Breidster:** Do you have another example that can draw a picture for our viewers about this impact you're discussing?

**Dr. Domachowske:** Sure. I told you about the adult woman who was pregnant. We also saw, around mid-January, we saw a toddler, about 19 months old or so, who was seen acutely because he refused to walk. Every time his mom tried to get him to bear weight or take some steps, he would just scream like he was in pain. He would have a temper tantrum. He had been well other than having an influenza "a" infection back the previous – around Thanksgiving and recovered from that. Otherwise, he was doing fine, except this febrile illness he had with the pain. The diagnostic testing revealed he had influenza "b" this time. He got influenza twice during the same season. And his pain was secondary to a severe Myositis of his calf muscles. He needed to be hospitalized because the inflammation was so great.

**Moderator Breidster:** All of the examples, the information, it's hard to take in. I think often, influenza comes up casually and then you learn about how very serious it can be. So thank you for sharing those examples. Sarah, is there information available regarding the effectiveness of the influenza vaccine for last season?

**Sarah Hershey:** Yes. The CDC does preliminary estimates of the vaccine effectiveness for each flu season. I'm going to just show quickly three tables that show some of these numbers. First, this table is for all influenza "a" or "b." All ages saw about a 39% adjusted vaccine effectiveness for last year. Six months to eight year olds saw about 33% effectiveness, nine to seventeen – 37%, eighteen to forty-nine years – 35%, fifty to sixty-five year olds – 42%, and 65 and older saw 37% vaccine effectiveness.

The next table will show the vaccine effectiveness they estimated for H1N1, since that was the predominant influenza "a" strain we saw last year. So, for all ages, they saw 31% vaccine effectiveness. For the next two age groups, however, the six months to eight years, and nine to seventeen, they are low numbers, but they are not statistically significant as they do cross zero. Eighteen to forty-nine year-olds, about 28% vaccine effectiveness against H1N1, fifty to sixty-four years - 45%, and the 65 and older is listed at 38% but you do see that zero is included in that confidence interval; not quite as statistically significant.

And then the last slide I'm going to show you is a table is for influenza "b" Victoria, which was the primary influenza "b" strain that we saw last year and had a strong impact on children. For all ages, there was 44% vaccine effectiveness. For six months to eight years old – 38%, for nine to seventeen years - 39%, eighteen to forty-nine years old - 44%. And then, in the last two, the fifty to sixty-four and sixty-five and older, those were not statistically significant as they crossed that zero.

**Moderator Breidster:** Thank you. That's quite a lot of data and information you presented. Can you summarize the effectiveness of the influenza vaccine for us?

**Sarah Hershey:** So, during the June 2020 Advisory Committee on Immunization Practices (ACIP) meeting, they presented this information on this next slide. The preliminary results for the 2019-2020 season indicated a 39% effectiveness against medically attended influenza. It was

very important protection against that influenza “b” virus given the severity of the season for children. Protection against the H1N1 virus was lower than the previous season, and investigation for contributing factors is ongoing at CDC. The preliminary end of season estimates used the best available information they have at the time. Estimates will be revised as more data are finalized. And three vaccine components have been adjusted for the 2020-2021 influenza vaccine.

**Moderator Breidster:** Thank you. Can you talk to us a bit about providing information on vaccine safety? That's a concern that some people raise.

**Sarah Hershey:** Right. This information was also presented at the same ACIP meeting that I mentioned. There were no new safety concerns identified, either in the Vaccine Adverse Effects Reporting System (VAERS) or in the Vaccine Safety Data link. Clinical Immunization Safety Assessment Project looked at the safety of the recombinant influenza vaccine, versus the inactivated influenza vaccine in pregnant women. Two hundred and thirty-three pregnant women were enrolled and randomized during that season. Maternal and infant safety outcomes were collected through 90 days postpartum, and there were no substantial concerns identified. They do plan to continue the study and enroll more women in the 2020-2021 influenza season.

**Moderator Breidster:** Terrific. Thank you. Can you talk to us about what does coverage of influenza vaccination look like across the country?

**Sarah Hershey:** Yes. The first slide here is from the CDC Flu Vax View website. It's a map of the country - you see each state given a color based on their overall vaccine coverage last year. And off to the side you can see that the U.S. coverage overall for everybody 6 months and older was 51.8% and for New York it was 52.9%.

**Moderator Breidster:** How would you say that New York State compares to the United States?

**Sarah Hershey:** From the same website, we can break this down by age groups. So, that red bar across the top is the Healthy People 2020 target. I know it looks near 80%. It's supposed to be 70%. You see the bars down below. The blue represents U.S. rates. The green represents New York rates. That first bar is the numbers that we already have showed for those aged six months and older. But for the 6 months to 4 year aged children, New York is doing really good in that age group. We're at 69%. It almost reached the Healthy People 2020 target. But the 5 through 12-year-olds and as you move down, 13 to 17, 18 to 49, 50 to 64 and 65-plus, are all well below the Healthy People 2020 target. In the older populations, the 50 to 64 and 65-plus, they were also slightly below the U.S. rates. But what I do want to point out is those in the middle, the 5 through 12, the 13 through 17, and the 18 to 49 year olds, those are the age groups that we saw the highest number of influenza positives in the pie charts earlier on.

**Moderator Breidster:** Thank you. Now, I want to pause for a moment to remind the audience that if you have questions for our speakers, you may e-mail them to us at any time during the webcast, to [phlive.ny@gmail.com](mailto:phlive.ny@gmail.com).

**Moderator Breidster:** Now Sarah, are there trends by age that you want to share with us?

**Sarah Hershey:** The next line graph shows the trends from the 2012-13 season through last season. Again, the red line is that Healthy People 2020 goal of 70%. The darker blue line is for U.S. children, the green line is for New York children, the yellow line is for U.S. adults, and the lighter blue line for New York adults. You can see for children, New York has done consistently better than the U.S. average, and over the last two seasons has pretty much been very close to that Healthy People 2020 goal. However, for U.S. adults, you're not necessarily doing as well – we've stayed about average with the U.S. adults. There was a dip in 2017-18 – that did go up in the next two seasons – but overall, the trend over time, there hasn't been much movement in those rates for U.S. adults or New York State adults.

**Moderator Breidster:** Thank you. Now, Dr. Domachowske, let's make sure we're all on the same page about the different types of influenza that circulate each year. Can you provide a bit of information on that?

**Dr. Domachowske:** Yeah, sure. Sarah was talking about last season being predominantly H1N1, which is an influenza "a," and the "b" Victoria lineage strain virus, but as many as four different viruses can circulate each influenza season. The influenza "b" viruses are broken down into two major lineages, Victoria, which was the big one last year, and Yamagata, which does circulate as well. Influenza "a" viruses are further named by their "h"s and their "n"s. That's why you hear about H1N1 being the predominant influenza "a" of last year. But I should mention all four of those – H3N2, H1N1, "b" Victoria and "b" Yamagata – they all circulated last year. Two of them predominated, but we had all four of them. If you get infected by one, you don't get cross any cross-protection or cross-immunity for the other ones. You can get influenza more than once in a season.

**Moderator Breidster:** Let's hope we all stay healthy this season. How do these different viruses – and you're going through each of the different names – how do they get their names?

**Dr. Domachowske:** Yea, its like alphabet soup, right?

**Moderator Breidster:** A little bit.

**Dr. Domachowske:** We have influenza "a"s and influenza "b"s. The "b"s are named a little bit easier, so I have focused here on this slide on influenza "a," where we have the influenza type listed first. Now, by convention, if there's no animal that's named before that influenza type, it's a human virus. In other words, it's a virus that was obtained from culture of a human being that was infected with it. So here we have an influenza "a." The geographic source came from California. It was the seventh isolate that was pulled that met those criteria, and it was discovered and isolated in 2009. It is an influenza "a," so we have to give it an "h" and an "n" – this happened to be H1N1, and this whole name – A/California/7/2009 (H1N1) - was the pandemic 2009 strain.

**Moderator Breidster:** Thank you. That is certainly helpful information for those of us who aren't immersed in it, to explain where that naming convention came from. Now, Sarah, can you tell us a bit more about the influenza vaccine for this season?

**Sarah Hershey:** Yes. Here, you see the vaccine strains that are in this year's influenza vaccine for the 2020-2021 season. And as Dr. Domachowske let us know, you can see the very long names, particularly for those "a" that are listed first. The top three have been updated for this season, which includes the H1N1 strain, the H3N2 strain, and the "b" Victoria lineage. Those are the three that are in the trivalent vaccines. And then, the "b" Yamagata strain has stayed the same for this flu season - that's the strain that's also in the quadrivalent vaccines.

**Moderator Breidster:** What does the Advisory Committee on Immunization Practice, also known as ACIP, recommend for this influenza season?

**Sarah Hershey:** The core recommendation for this year has not changed - all persons 6 months of age and older who do not have a contraindication are recommended for influenza vaccine annually. There are two new vaccine licensures that occurred after the 2019-2020 season recommendations came out. This includes Fluzone High-Dose Quadrivalent, that's for patients 65 years and older. This replaces the previous trivalent vaccine. Fluvad Quadrivalent Attenuated Vaccine is also a vaccine for age 65 and older, both the trivalent and the quadrivalent vaccines are available this season. There's also been an update to the LAIV4 - the live attenuated vaccine, also known as Flu Mist or the nasal spray vaccine. There have been some contra- indications added into those recommendations, including anatomic and functional asplenia and active communication between cerebral spinal fluid, and the oropharynx, nasopharynx, nose or ear or any other cranial CSF leak, and cochlear implants have all been added.

**Moderator Breidster:** What about people who might have allergies to certain components of the vaccine?

**Sarah Hershey:** A very good question. There was an update on this, particularly for persons with egg allergies. They updated the language to include mentioning the recombinant influenza vaccine and the cell cultured inactivated influenza vaccine are egg-free options for these patients. The additional measures that have been recommended in the past for egg allergy are only needed if a vaccine other than those two types are used.

They also updated the use of antiviral medications for the live attenuated flu mist vaccine to address some newer influenza antiviral agents to that have differing half-lives. There's different time periods between when an antiviral vaccine should be used and the flu mist should be used, based on which antiviral is to be used.

**Moderator Breidster:** Are there any New York State regulations that pertain to influenza vaccination?

**Sarah Hershey:** Yes, you see those here on the next slide. In the interest of time, I will give a high-level overview. There's more information on each of these requirements in one of the handouts that you mentioned earlier, Rachel. The most important thing is there's no changes from last season. Just a high level overview of a few things. Pharmacists as vaccinators - in New York State, the education law had been amended previously to allow pharmacists to vaccinate for influenza for everyone aged 2 years and older, and that will remain in effect until June of 2022, unless it's renewed prior to that date. The New York State Public Health Law 2805-h requires all hospitals to offer influenza pneumococcal vaccine to all patients 65 years and older



between September 1 and April 1 of each year. And all hospitals with NICUs [neonatal intensive care units] to offer influenza vaccine to parents of any neonate treated in the NICU, and hospitals with newborn nurseries to offer TDaP to every parent of newborns. The New York State Article 21-A, requires nursing homes, adult homes and enriched housing and health care programs to document the influenza and pneumococcal status of all of the residents and employees, and to annually provide them to and residents or employees who have not had them. The flu mask regulation is for Article 2836 or 40, health care facilities, and it requires them to document the influenza status of all personnel and require unvaccinated personnel to wear surgical or procedural masks when influenza is declared prevalent in New York State. And then the last one is the New York State Public Health Section 2112. This prohibits the administration of vaccines containing 1.25 five micrograms of mercury per 5 mls to pregnant women, or 0.625 micrograms of mercury per 0.25 mls to children less than 3 years of age. All single-dose vials and pre-filled syringes meet this requirement. Multi-dose vials, though, of influenza vaccine, do still contain Thimerosal in excess of this requirement. But the vaccine supply for this year appears to be adequate. Providers should be able to find appropriate vaccine that does meet this requirement.

**Moderator Breidster:** Thank you. Thank you for all of that information and I think that's very helpful and we've got resources for additional information. Now, you mentioned Thimerosal; can you talk to us a bit about vaccine safety as it relates to Thimerosal?

**Sarah Hershey:** This is a really important topic, because when people think of mercury they think of methyl mercury. This is a mercury that can be found in certain fish and it can be toxic to humans at high doses. Thimerosal contains a different type of mercury called ethyl mercury. It is rapidly cleared from the human body and does not build up to harmful levels. Thimerosal was removed from all childhood vaccines except for those multi-dose vials of influenza vaccine. That occurred in 2001. Multiple well-conducted studies have failed to find any causative link between Thimerosal containing vaccines and autism, or other safety concerns. And the rates of autism actually continued to rise after Thimerosal was removed from vaccines.

**Moderator Breidster:** Thank you. Now, Dr. Domachowske, can you put all of the information into perspective for us, from your position at Upstate Medical?

**Dr. Domachowske:** Yes. I think the influenza disease burden is high, and each season is a little different. Of the 330 million or so Americans that live in the United States, between 8% and 10% will get infected with influenza every single year. And there is a vaccine for infection. I'm also interested in just reminding everyone that pandemics occur. They are completely unpredictable. When they do occur, you see things like on this slide. You can walk through a cemetery and see gravestone after gravestone with a 1918-1919 date on it, sometimes whole families. That's related of course to the Spanish influenza pandemic that happened back then. We were perhaps fortunate in the 2009 pandemic that we didn't see the high rates of mortality, but we did certainly see some, and we saw a very high burden of disease.

**Moderator Breidster:** Absolutely. Thank you. Now, to learn more about how one health care facility is approaching this year's flu season and their experience last year as the COVID crisis emerged, we spoke with Dr. Allen Sanders, and infectious disease specialist and Chief Medical Officer for St. Peter's Partners Acute Care Division.

**Dr. Sanders:** The issue, the curiosity about being dually infected with influenza and COVID at the same time, thankfully by the time COVID hit here, late March and peaked in early April, flu almost disappeared, and it wasn't really an issue here. In the experience in Washington State where they had nursing home outbreaks in that state in the mid-part of February, they did find a 7% co-infection rate with their COVID patients with flu. That was when flu was still prevalent in the communities. I found that pretty interesting, I think it's a pretty high rate – we never found that. I think we may have had one patient who had dual infection with both flu and COVID. There's always a concern because it would be additive, meaning people would get more ill from COVID if they have flu and obviously more ill with flu if they have COVID.

But, we're hopeful right now at this point, with what has gone on in the Southern Hemisphere over the last flu season, which was really our Summer/their Winter, extremely low levels of influenza in South Africa, Australia, New Zealand, even South America. Probably all due to the fact that people were masking and social distancing because of COVID. That's how influenza is spread, similarly from respiratory secretions. We're advocating mandatory flu vaccinations for our staff. We are hoping the community takes it just as seriously, getting flu vaccines. It's not always 100% sure that the flu shot is going to prevent flu, but it is a good insurance against it. And we're hoping that we have a light flu season because people are keeping their distance. The impact of influenza season rolling up at the end of September into now, end of October, we usually see the most prevalent time being late December, to January, and it can roll on even into April. When flu becomes prevalent, we are going to have to, obviously, admit a lot of patients to the hospital. Most of the time they're more infirmed, but we have to test everybody that has got COVID or we think has COVID for the flu and vice versa. Everybody we think has the flu has to get tested for COVID. There's really no treatment issues that overlap. We have a little bit of concern - you want to actually give somebody with both infections at the same time things like steroids. And we know that dexamethasone has been an indicated treatment for COVID. It improves mortality. We never really considered it an adjunct to treatment for influenza, so nuanced decisions will have to be made by clinicians when we have to approach both diseases at once. I think its going to happen very rarely, that people will have both infections. But it may need to be considered. They may receive two antiviral medications - Remdesivir for COVID and Tamiflu for the flu. There's no concern that way that the two medications will interact in a negative fashion. There's nothing additive about the two of them together to make their outcome better. We may encounter people that have both diseases. Again, knock on wood, we're really hoping that the flu season is light because we are clearly escalating with COVID activity in the hospital right now. We've had about a 25% to 50% rise in activity in the last week's time, and it is disconcerting. One thankful piece of that is people are presenting in a fashion they're not as critically ill as they were during the peak of the pandemic last spring, with fewer people in the ICU, many fewer people on ventilators around the area.

**Moderator Breidster:** I understand there may have been some audio issues with the video. So, just to let our audience know, you will be able to view that entire video on our website after this program is completed.

So, Dr. Domachowske, are there any lessons that we can take away from the experience over time?

**Dr. Domachowske:** Absolutely. I mentioned earlier that about 8% to 10% of the U.S. population will be infected and symptomatic with influenza, taken as a whole group, every single year. But have a look at the numbers on this slide. This gives us a sense for six years of influenza data, based on symptomatic influenza infection by age group and by season severity. More severe seasons, like that 2012-2013 season, showed that almost 19% of children who were from birth to 4 years of age, had symptomatic infection. And we have lighter years. But taken as a whole group, those who are most likely infected are the youngest children, and those that are least likely symptomatically infected are the folks who are older than 65. It's counterintuitive, right? We always think about people over 65 as having the highest morbidity from influenza. That's still true, but fewer of them are infected.

**Moderator Breidster:** That's very interesting. Are there other ways to look at the data?

**Dr. Domachowske:** I pulled this nice graphic slide that gives you a visual for how severe influenza is from season-to-season. We have between 20 million and 30 million symptomatic cases of infection every year. That's a lot of disease for something that is vaccine-preventable, especially. About 500,000 hospitalizations every year, and somewhere between 12,000 and 60,000 deaths from influenza every year. It just depends on how bad the flu season is.

**Moderator Breidster:** Now, Sarah talked a bit about last year's influenza season, can you share a bit from your perspective, from where you sit, what last year looked like?

**Dr. Domachowske:** Yeah, so last year, as I mentioned, all four of those influenza strains circulated, but it was predominantly an H1N1 influenza "a" year and predominately a Victoria influenza "b" year. There were between 39 million and 56 million symptomatic infections, higher than what would be considered average. That was associated with somewhere between 18 and 26 million medical visits, up to 62,000 influenza-related deaths, representing 7% of all deaths in the U.S. for that year. Influenza and pneumonia has pretty much consistently ranked around eighth as the leading cause of death. That's where it ranked last year. We estimate it to be over 500,000 influenza related hospitalizations. That's a half a million people.

**Moderator Breidster:** Like you said, very high numbers, very startling, especially given that it is vaccine preventable. So Sarah, on that train of thought, I wonder if you can review for us the benefits of the flu vaccine.

**Sarah Hershey:** The benefit everybody thinks about is that it reduces the risk of getting the flu. It can also reduce the risk of spreading the flu to others, including those that are at increased risk, like Dr. Domachowske mentioned, the really young and the really old and those with serious underlying medical conditions that put them at higher risk for severe complications. And you can reduce time missed from work and from school. The CDC website does list some studies that have shown a reduced severity of disease, and the illness is likely to be milder. A 2014 study showed a reduce risk of flu-related pediatric ICU admissions by 74%. A 2017 study showed a reduced risk of flu-related deaths in children, with underlying medical conditions by 51%, and healthy children, by 65%. We saw almost 50% of New York State children who were

hospitalized had no underlying health conditions. Sixty-five percent of those children could have been helped with flu vaccine. It is also associated with lower risk of major adverse cardiac events in adults and reduced hospitalizations among people with diabetes and chronic lung disease.

**Moderator Breidster:** Those are some note-worthy numbers you're presenting. Can you tell us about how the vaccination reduces the severity of illness?

**Dr. Domachowske:** Yes. On my next slide, I have some points about three different studies. There was a 2016 study in the *Journal of Clinical Infectious Disease* that showed a reduce risk of hospitalizations in those 50 years and older by 56.8%. A 2017 study also in the *Journal of Clinical Infectious Disease* looked at the effect of flu vaccination on disease severity in adults aged 18 years and older who were hospitalized with the flu. Overall, the risk of in-hospital deaths was reduced by 52% to 79%, ICU admissions were reduced by 37% for those 18-49 ages and 65 and older, and there was a shortened ICU length of stay for those over 50. A 2018 study that was in the *Journal of Vaccine* looked at the effect of flu vaccination on disease severity in adults. In the risk of hospitalization admission with flu was reduced by 37% if they received influenza vaccine, the influenza vaccine reduced the risk of ICU admissions by 82%. The risk of transfer to ICU if they were hospitalized was reduced by 59%, and the length of stay in the hospital for ICU patients was reduced by four days.

**Moderator Breidster:** Can you share with us recommendations for pregnant women?

**Sarah Hershey:** Pregnant women and their infants are at an increased risk for severe influenza-related illness, as we have heard from Dr. Domachowske's case study. And the ACIP recommends that all women who are or may become pregnant during the influenza season receive an influenza vaccine, and that can be given at any time during pregnancy. In a 2017 study that was also in the *Journal of Clinical and Infectious Diseases*, there was found to be a reduced risk of flu associated acute respiratory infections by pregnant women by up to one-half, and 41% to 63% effective in preventing influenza infection, and 39% to 91.5% effective in preventing hospitalizations during the first six months of life, due to that transplacental transfer of antibodies from the mom. [Influenza vaccination] also decreased all-cause acute lower respiratory infection hospitalizations during the first three months of life.

**Moderator Breidster:** Thank you. Can you talk more about what studies show regarding influenza vaccination during pregnancy?

**Sarah Hershey:** In a July 2019 article in the *British Medical Journal*, children that were born to mothers who received the 2009 pandemic H1N1 vaccine were observed for adverse health outcomes. The children were followed for five years. There was a weak association for increased asthma risk and for decreased GI infection. However, there was no association found for upper respiratory infection, otitis media, any other infectious diseases, neoplasm, sensory disorders, urgent or inpatient health service use, pediatric complex conditions, or mortality. In a 2019 study in *The Lancet*, the effects of maternal immunization during pregnancy were studied to see the effects on infant vaccine responses. So, Tdap and flu vaccine administration during pregnancy were investigated, and Tdap maternal vaccine showed an effect on infant vaccine response to diphtheria, pertussis, polio and pneumococcal vaccines, as has been seen in previous studies. However, this was the first study to evaluate the effect of influenza vaccine during pregnancy on

infant antibody responses. And there was no consistent effect of maternal influenza vaccine on the infant antibody responses to vaccines.

**Moderator Breidster:** Terrific. Thank you. We heard about the projected burden of the influenza illness; do we have information on the projected benefits of the influenza vaccine?

**Sarah Hershey:** The CDC does estimates each year on the projected benefits for the influenza vaccine that season. And, previously, we showed approximately 52% of the U.S. population of six months and older did receive a vaccine last year. And the CDC projects that this prevented an estimated 7.5 million influenza-related illnesses, 105,000 influenza hospitalizations, and 6,300 influenza-related deaths.

**Moderator Breidster:** What does the health department tell providers about flu vaccination recommendations?

**Sarah Hershey:** Flu vaccination is the best way to protect against influenza and influenza-complications. Make a strong recommendations to all of your patients to get an influenza vaccine each year. That's the strongest predictor that your patients will get the vaccine – a strong recommendation from their healthcare provider. Children with a provider recommendation for influenza vaccine were twice as likely to be vaccinated as those without, and we saw the 5 to 17-year-olds was one of the largest populations that tested positive for influenza last year. Younger children are more likely to get a provider recommendation for influenza vaccine than older children. Make it easy for your patients to get influenza vaccine this year.

**Moderator Breidster:** And Dr. Domachowske, what would you advise your colleagues regarding this year's flu season and vaccination?

**Dr. Domachowske:** I tell them exactly the same thing. I'm in line with this. If you want to prevent yourself from getting influenza, you should make sure you get your annual influenza vaccine, and make sure people around you are immunized. When you have a high-risk child in a household, my job is not to just focus on the child and make sure the child is vaccinated but to talk with the parents and try to reduce any vaccine hesitancy around the rest of the family to try to protect that most vulnerable person in the household.

**Moderator Breidster:** Sure. Thank you. Sarah, can you touch on the resources that providers can access to help with their annual influenza vaccination efforts?

**Sarah Hershey:** Sure, especially for this season being in the middle of the COVID-19 pandemic, we want to make sure that providers know what resources are available to them. These are all listed in that resource document, as well, as others. Along with links where you can find all these resources, the New York State Department of Health has their influenza web page and their COVID-19 web page. And the Centers for Disease Control and Prevention has guidance for vaccination during a pandemic - the vaccination clinics held at satellite, temporary or offsite locations. They also have a frequent asked questions document specific to this flu season, which is really important because it also has topics specific to COVID-19 and getting influenza vaccine during the pandemic. The VaccinateNY.org website has an influenza update webinar that was done in September, entitled *Influenza Update 2020-2021, Avoiding the Twindemic*, that has

continuing education credits attached with that, and there's also a Vaccine Communication Toolkit with many resources that can help you with communicating about vaccines with your patients. And the Immunization Action Coalition has a repository of resources for maintaining immunizations during the pandemic and for mass vaccination resources.

**Moderator Breidster:** Terrific, thank you so much. Thank you for all of the information that's been shared. Unsurprisingly, we have lots of questions from the audience. I'm going to start with the first question we have, asking how effective is the flu mist this year for kids and adults?

**Sarah Hershey:** For this year, we won't have data for this year yet. Last year, that was not specifically out; there wasn't as much flu mist given in the United States last year. So, we probably won't have a lot of data on that from the U.S. What we've used in the past in particular, why ACIP started recommending it, again, it was continued to be used in the U.K. and so, when we stopped using it, they continued. There was a lot of data out of the U.K. when they changed their formulation, it was more effective against the H1N1 virus that it had previously not been as effective with.

**Dr. Domachowske:** Exactly. It seems that the manufacturing glitch that happened when we saw that season or two where efficacy was so much lower than what we had experienced in the years prior, that that problem has finally been resolved.

**Moderator Breidster:** Terrific. Our next question, are we expecting less influenza cases with precautions being taken for COVID prevention?

**Dr. Domachowske:** I'm hoping so. You think about social distancing and using masks on a regular basis, a population basis, you expect the number of cases of other respiratory transmitted viruses to go down, not just influenza, but all of them. They did experience that in Australia - they are describing some very interesting data in Australia. Remember when the pandemic first hit in the U.S. in the middle of March, late March, early April, just as all of these social distancing and masking practices were put into place, all of these respiratory - the circulation of the respiratory viruses dropped like a rock. And, usually, they kind of fade away in the spring. It was there, influenza, RSV, some of the other viruses, they were there and they were gone. I think we did that with the protection that we were providing each other with the COVID precautions.

**Sarah Hershey:** Sure, hopefully, those have an impact. And, another thing that those studies that Dr. Domachowske referred to - the CDC released a study that looked at Chile, South Africa, and Australia. One of the things that they also did is they had a substantial increase in flu vaccination. They had their social distancing, the mitigation factors and an increase in vaccination. We're anecdotally hearing that there is an increased demand for flu vaccine this year, which is wonderful. So, keep it up. Keep recommending it to your patients.

**Dr. Domachowske:** Absolutely.

**Moderator Breidster:** Terrific. Our next question that has come in - the slides that you shared on efficacy, can you define if efficacy means [people] did not become ill with any flu strain included in the vaccine, or reduced symptoms or complications, even though they did become ill with the flu or diagnosed with the flu?

**Dr. Domachowske:** So, most of the data that were presented as part of this program, were effectiveness data, which isn't the same as efficacy data. Efficacy is what we can test in a clinical trial type circumstance, where we know what each individual has and we follow them and do very careful surveillance over a period of time and grab samples anytime they have any symptoms that could suggest an influenza infection. We look at the data afterwards - vaccinated, unvaccinated, influenza-positive, influenza-negative, and we can determine true efficacy for that particular vaccine for that particular season.

The effectiveness data doesn't have that same robust level of vigilance and surveillance. It looks at population-based effect of the vaccine, based on people who are vaccinated versus not vaccinated. We now know, which Sarah shared with us, that becoming vaccinated doesn't mean that you are completely protected from the influenza. But the influenza infection that you may get as a breakthrough infection, tends to be a whole lot less severe. When folks tell me, I used to get the vaccine but I don't do it anymore because I got the flu anyway. First, maybe it wasn't influenza, maybe it was a different respiratory infection - the flu isn't always influenza. But the second point is that, when you are immunized and you get a breakthrough infection, think how severe that infection may have been had you not been protecting yourself in the first place.

**Sarah Hershey:** Right. It would deal with both, making it so people don't get the infection, but also, a decrease in the severity of disease, that they can look at it at that population level.

**Dr. Domachowske:** Yeah. Just think, with the denominator of the symptomatic infections we have every year, just in the U.S. alone, with our overall vaccination rates barely approaching 50%, half of those who are eligible, how much better we can do if we bump that up 10% or 15%, right?

**Sarah Hershey:** It would make a big difference.

**Moderator Breidster:** Absolutely. Dr. Domachowske, we have a question for you - what can you recommend to other providers to help them communicate and urge patients to get the influenza vaccination?

**Dr. Domachowske:** It really depends on what the hesitancy centers on. The important discussion is stating, "I got the influenza vaccine, I do every year. I recommend that you and your family are fully immunized for this every year," whether there's an at-risk individual, a higher risk individual in the household or not. And then I try to explore, if there is hesitancy, where the hesitancy is coming from? Do they need scientific information which is uncommon, or do they need reassurance about something they heard or read about flu vaccine that may not be true?

**Moderator Breidster:** Sure. That makes sense. Our next question we have – do prior flu vaccines in the past years protect you over time for current strains of flu virus?

**Sarah Hershey:** Typically the vaccine effectiveness wains over time. There may be some that comes over but in general, most likely not. There are numerous flu strains that can circulate each year, and the strains can, particularly the influenza "a's," can mutate and change. And so with all of those different things, that's why there are changes in the strains for the influenza and one of

the main reasons it's recommended to be given each year. It's often a different vaccine than last year, based on what they saw last year to try to have, you know, a closer match in upcoming years. So, there may be a slight carry-over, but not really enough to provide the protection that you really need.

**Dr. Domachowske:** Yeah. The more sort of immune protection repertoire we develop over the years and our exposure to the vaccine or to infection, the less likely it is we will have a severe illness when we're exposed to a virus that's similar to maybe one that we have been exposed to before, either infected or vaccinated. And a good example happened in 2009. Remember, that the elderly folks were disproportionately unaffected during that pandemic. Why was that? It turned out the people in their seventh and eighth decade had actually been exposed to a cousin virus, many, many years ago, that probably induced enough immune memory that allowed them some level of protection. In a typical influenza season, those are the folks we would be the most concerned about.

**Moderator Breidster:** Sure. Thank you. Has the incidence of severe illness in pregnant women been linked to lack of immunization in that population?

**Dr. Domachowske:** Say that again.

**Moderator Breidster:** Has the incidence of severe illness in pregnant women been linked to lack of immunization in that population?

**Sarah Hershey:** The studies I've seen has shown there's a decrease in severity of illness in women. It looks like it's trying to go the other way with the link, so, the studies that I have seen are more looking at, if they received the vaccine, did they have less severe illness if they were to become infected with influenza. So, in a roundabout way, you might, but that's not the study that I've seen, they haven't looked at it in that particular way. But they – you know, they would be looking at, were they vaccinated or not vaccinated? So, then, you could say, yes, those who were vaccinated had less severe disease. Those that weren't, had more severe disease. There's studies that do link influenza vaccine with less severe disease in pregnancy.

**Dr. Domachowske:** Agreed. And I can understand why pregnant women might be hesitant to get influenza vaccine, because if they're talking to their parents or their grandparents, they may remember a time when we didn't recommend the influenza vaccine until the last trimester of pregnancy. But of all of the vaccines we have, this is the one, influenza vaccine, is the most scrutinized during pregnancy. The safety profile is excellent. We know that those babies that are born, have a lower rates of low birth weight, they have lower rates of morbidity in those first several months of life, from all causes of respiratory hospitalization, and it keeps the mom healthier. So, if she is healthier, the baby has got a higher birth weight and is healthier at birth and less likely to be premature. So, all sorts of benefits to getting influenza vaccine during pregnancy.

**Moderator Breidster:** Thank you. If someone has already had the flu during the season, but was not previously vaccinated, should they still get immunized?

**Sarah Hershey:** Yes.



**Moderator Breidster:** Yes, even I could jump in here and say yes from what I've learned on this show.

**Dr. Domachowske:** Proven it over and over.

**Sarah Hershey:** The case study of the little boy who got influenza "a" and then got influenza "b," or you could get to influenza "a"s. So yes, even if you've already had influenza, it is still important to get the shot. It's never too late, as long as the flu virus is circulating and there's unexpired vaccine in your community, it is never too late to get a vaccination.

**Dr. Domachowske:** That poor kid, you know, his first influenza infection was around Thanksgiving time the previous year, and he did okay, it was an uncomplicated one. But he had a high fever and was miserable for almost a week. The influenza vaccine was offered after that illness, and the folks declined because they said, well, he already had it. If it had been taken one step further, that hesitancy had been questioned just a little bit more by the people interacting with the family, they may have been able to convince them that he could get it again because there's other viruses that can do exactly the same thing. This one he had isn't going to protect him against those, but the vaccine will.

**Moderator Breidster:** We have time for just one more question - should individuals with chronic diseases get the influenza vaccine, or could it exacerbate their condition?

**Sarah Hershey:** They absolutely should get the vaccine, especially in these times of a pandemic. If they get influenza, they will be more likely to end up in the hospital, which nobody wants to do in a normal season, and definitely not in a pandemic season. It's more likely that if they have a really bad influenza illness, that it will exacerbate their underlying condition, sometimes to an extent that could make that condition worse after they recover from the influenza virus itself. So, the influenza vaccine has not been shown to increase problems with underlying chronic illnesses, but those underlying chronic illnesses do show increased severity of disease if they were to contract influenza.

**Moderator Breidster:** All right. I want to thank you both very much. I think we've covered a lot of information on the show this morning, and it could not be more timely, with everything that's going on in terms of the pandemic and being right here in the midst of flu season. Thank you, both, for all of the information you've shared this morning. And, I'd like to thank you for joining us today and for making us your ongoing resource for public health continuing education. Please remember to fill out your evaluations online because your feedback is helpful to the development of our program, and continuing education credits are available for a limited time. To obtain continuing education hours, learners must visit [www.phlive.org](http://www.phlive.org) and complete an evaluation and posttest for today's offering. This webcast will be on demand within two weeks of today's show. Our next webcast on December 22nd, is a Breast-feeding Grand Rounds, focused on Breast-Feeding Support in the time of Public Health Emergencies. Information on *Public Health Live!* and public health topics can be found on our CPHCE Facebook page and Twitter feed. Don't forget to like us on Facebook to stay up to date. You can let us know how you like *Public Health Live!* by taking a survey at [phlive.org](http://phlive.org). Thanks for joining us on *Public Health Live!*

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