

Transcript Details

This is a transcript of an educational program. Details about the program and additional media formats for the program are accessible by visiting: <https://reachmd.com/programs/vaccination/beyond-infection-the-broader-clinical-impact-of-influenza/61052/>

ReachMD

www.reachmd.com
info@reachmd.com
(866) 423-7849

Beyond Infection: The Broader Clinical Impact of Influenza

Announcer:

This is *VacciNation* on ReachMD. Today's episode is sponsored by CSL Seqirus. Now, here's your host, Dr. Charles Turck.

Dr. Turck:

Welcome to *VacciNation* on ReachMD. I'm Dr. Charles Turck, and today, we're exploring the broader clinical impact of influenza and how it shapes vaccination recommendations with Dr. Rachael Lee. She's a Professor of Medicine in the Division of Infectious Diseases at the University of Alabama at Birmingham School of Medicine, where she also serves as Chief Healthcare Epidemiologist. Dr. Lee, thanks so much for being here today.

Dr. Lee:

Thank you for having me.

Dr. Turck:

Well, to start with some context, Dr. Lee, influenza is often approached as a short-term respiratory illness, but its impacts can extend well beyond the acute infection. So with that being said, what aspects of its broader clinical burden do clinicians sometimes underestimate?

Dr. Lee:

I think the most commonly underestimated point is that influenza is not confined to the respiratory tract, and it doesn't necessarily end when fever and cough resolve. The acute infection may last for a few days, but the clinical consequences really can last for weeks and months depending on the patient.

We have clear evidence about the direct pulmonary burden, right? Influenza can cause a primary viral pneumonia, respiratory failure, and acute respiratory distress syndrome. But there are other kinds of secondary consequences with that, like secondary bacterial pneumonia. It can cause sepsis. It can worsen your kidney function, and then trigger these downstream effects like cardiac, neurologic, or metabolic complications. We also frequently see exacerbations of chronic illnesses like asthma and COPD.

And so the diagnosis written on the admission may be pneumonia, heart failure, or myocardial infarction, although influenza was the event that triggered all of it.

I think another thing is that we know about pneumonia, but we can also see ear infections. I've seen patients with meningitis. There are things outside of the respiratory system that can be a direct consequence of influenza.

And then finally, we know that there is an under-recognized burden and loss of physiologic reserve in some of our older patients. So if you have an older or frail patient with several days of not eating well, and then you add on top of that not breathing well, that can lead to weakness, falls, delirium, and loss of function. There was actually a study that looked at adults age over 65 that had influenza or some other acute respiratory infection, and about 18 percent or so experienced this kind of persistent moderate functional decline after hospitalization. So we really want to try to do our best to prevent all of that.

Dr. Turck:

Digging a little deeper into that, as you've been discussing, for patients with chronic pulmonary disease, diabetes, or other underlying conditions, the consequences of an influenza-triggered exacerbation can have lasting effects on overall health. So how else can these episodes affect subsequent recovery and ongoing disease control?

Dr. Lee:

We know some patients may return quickly to baseline, but others have this really prolonged illness, particularly after a severe exacerbation or hospitalization. So acute influenza infection really places stress on several systems all at once.

There's airway inflammation. You can get increased mucus production. You may not want to eat. That disrupts your sleep. It reduces your activity. And that may also affect how you respond to some of your usual medications. So, with someone that doesn't have as much reserve, that can really lead to downstream consequences. In an asthma patient or a patient with COPD, that intense airway inflammation and bronchospasm can lead to exacerbation, and then that leads to receiving steroids, oxygen, and hospitalization. After the virus clears and you're no longer infectious, you may still have that deconditioning because of that chronic illness.

We've also seen, outside of lung disease and heart disease, in patients with diabetes, that can increase your counterregulatory hormones. It leads to insulin resistance. It leads to difficulty with controlling your blood sugar, and that dehydration can lead to diabetic ketoacidosis as well. So if you have someone who's maybe a brittle diabetic, they may present with diabetic ketoacidosis, but influenza is the cause.

Dr. Turck:

So I want to bring this back for a moment to how influenza can also increase a patient's susceptibility to secondary bacterial infections, including pneumonia. What is it about influenza that creates that vulnerability, and why can these infections lead to a particularly severe clinical course?

Dr. Lee:

Right. So influenza directly damages the lungs' physical defenses. It disrupts our antibacterial immune defenses at the same time. So there's clear data that shows damage to those ciliated airway cells. It impairs your mucociliary clearance, so that bacteria that normally is removed from the airway really has this easier path directly into the lower respiratory tract. We tried to identify if COVID-19 does the same thing, and I think the data is not as strong as it is with influenza.

The other piece to this is that our immune response becomes temporarily reprogrammed, so the antiviral response that's necessary for controlling influenza can actually impair some of our antibacterial defense. Influenza reduces the ability of the alveolar macrophages, which are the cells that really phagocytose bacteria. And so that can disrupt your neutrophil recruitment and then lead to changes in bacterial killing.

So, in other words, our immune system is not really weakened. It just is focused on a different threat, and then that leads to potentially seeing an infection with a secondary bacterial source.

Dr. Turck:

As you touched on a bit earlier, evidence has also linked influenza infection with acute cardiovascular events as well, including myocardial infarction, stroke, and worsening heart failure. What else can you tell us to help us better understand the cause of that relationship and which patients are most vulnerable?

Dr. Lee:

I think a lot of this has to do with our hyperactive immune system that is dealing with influenza. When we have a systemic inflammatory response, that can lead to a prothrombotic state. It activates the vascular endothelium, increases your platelet activity, and alters coagulation, all of the things that you learned in medical school or pharmacy school. If you can remember those different pathways, that's what we see.

At the same time, with fever, tachycardia is really almost like a physiologic stress test, right? You're testing your myocardial oxygen demand, hypoxemia, impaired pulmonary function, and reduced oxygen supply. And so that supply-demand mismatch can really produce myocardial injury without actually having a true plaque rupture.

So we've seen clinically, in some data out there, that the incidence of hospitalization for myocardial infarction after you've been diagnosed with influenza is six times the incidence compared to people without. That's quite high. There's a huge temporal association early on, right after influenza. And that was a study that was in the *New England Journal of Medicine* that identified those risk factors.

We know the most vulnerable patients are older adults, those with known heart disease, heart failure, etc. But some patients may not have that recognized coronary artery disease until they develop an acute infection.

Dr. Turck:

For those just tuning in, you're listening to *VacciNation* on ReachMD. I'm Dr. Charles Turck, and I'm speaking with Dr. Rachael Lee about the importance of influenza vaccination beyond infection prevention.

So, Dr. Lee, we've discussed several complications that can ultimately result in hospitalization. Although most influenza-associated

hospitalizations occur in patients with underlying conditions, they can also occur in patients without recognized risk factors. So what does that tell us about the limits of relying on traditional high-risk categories to anticipate severe influenza?

Dr. Lee:

So what I tell my patients is that high risk doesn't mean exclusive risk. These categories are really helpful for clinicians to identify increased probability, but it's not a force field around everyone else.

There was a study from the 2024-2025 season that looked at the FluSurv-NET data about under-recognized, underlying conditions. And about 89 percent of those patients that had developed influenza had an underlying condition. But that means, on the flip side of that, 11 percent did not. And then if you look at pediatric influenza deaths, 44 percent occurred in kids who had previously been healthy. So there is something there, particularly in the young, that puts you at higher risk of being hospitalized.

Risk depends on so many factors: age, pregnancy, what kind of strain of influenza you've been exposed to, your prior immunity, whether or not you've had vaccines. All of those really play a role in whether or not someone's going to develop severe pneumonia. And so occasionally, a healthy host can just have an unusually severe inflammatory response, and that then subsequently leads to other kind of infections like bacterial pneumonia.

Dr. Turck:

Now, studies have associated influenza vaccination with lower rates of hospitalization and other severe outcomes, including among patients with diabetes, chronic airway disease, and cardiovascular disease. Knowing that, how can clinicians translate those findings into a conversation that helps patients understand the potential value of vaccination beyond acute infection?

Dr. Lee:

I think this is hard, because a lot of people have already had influenza, so they may remember when they were young, a teenager, being on the bed for a few days, and then getting over it. So that kind of misunderstanding of the consequences of influenza as you get older can lead to them saying, "Well, I've had flu before. I can handle it." I do a lot of work to correct that viewpoint and say, "Yes, you did okay that one time, but things have changed. We want to make sure that we're doing everything that we can to protect you from losing time at work, getting really sick and being hospitalized, or spreading it to your loved ones, which is a big deal, especially if you are a parent and you want to make sure that your kids stay safe, or your spouse or elderly parents may have other comorbidities."

From there, I then connect to a patient's underlying condition. So for someone with COPD or asthma, the goal would not only be to avoid days of fever, it's also to prevent a potential exacerbation that leads to steroids and oxygen, emergency visit, or hospitalization. And I think patients understand that viewpoint a little bit better, because they may have been through something similar to that, and they don't want to go through that again.

Dr. Turck:

And finally, Dr. Lee, what's the most important message you'd like clinicians to take away from our conversation today?

Dr. Lee:

I think the hardest thing that clinicians have to do is talk about something that is a potential, right? So we recognize how difficult it is, and hopefully, conversations like this give you some of the verbiage that you can use to then help the patient that's directly in front of you.

I think underlying conditions are important, and they identify people who are vulnerable, but we really want to do the work for people who are healthy as well and give them the opportunity to know why we want to vaccinate them.

I think we have to communicate vaccination benefits realistically. We know influenza vaccines are imperfect. Effectiveness varies season by season, and you'll sometimes see a story that will come out about how low the effectiveness is. But imperfect protection can still prevent a substantial amount of hospitalization, illness, and death, and that's what we want to do as clinicians: to at least provide as much information that we can and also prevent any harm to other people that may not be able to get that vaccine.

Dr. Turck:

With those takeaways in mind, I want to thank my guest, Dr. Rachael Lee, for joining me to discuss the important role of influenza vaccination in reducing serious complications across patient populations. Dr. Lee, it was great having you on the program.

Dr. Lee

Thanks again.

Announcer:

This episode of *VacciNation* was sponsored by CSL Seqirus. To access this and other episodes in our series, visit *VacciNation* on ReachMD.com, where you can Be Part of the Knowledge. Thanks for listening!