



HOSPITAL INFECTION CONTROL & PREVENTION

THE TRUSTED SOURCE FOR THE INFECTION PREVENTIONIST FOR MORE THAN FOUR DECADES

FEBRUARY 2018

Vol. 45, No. 2; p. 13-24

➔ INSIDE

Antivirals: CDC says break them out in light of flu vaccine mismatch . . . 15

Zika Virus: Not gone, not forgotten, but as cases fall CDC stands down emergency 17

Changing Human Behavior: It's not easy for antibiotic stewardship or anything else 19

Green Light on Deadly Research: NIH, seeking to prevent pandemics, may allow research that enhances deadly pathogens. 21

Pediatric IC Guidelines: The AAP has published infection prevention guidelines. 22

CDC Controversy: Some may have been understandably concerned and somewhat confused about a reported CDC "word ban" that apparently had more to do with politics than clinical science . . 23

RELIAS
Formerly AHC Media

Severe Flu Season a Call to Action for Infection Preventionists

CDC recommends antiviral treatments due to vaccine mismatch

By Gary Evans, Medical Writer

With public health officials giving clinicians essentially a standing order to administer antivirals to high-risk patients with influenza due to a vaccine mismatch, infection preventionists are stepping up to play critical roles in response to a severe flu season.

IPs can help communicate and implement key recommendations¹ by the CDC, including those advising administering antivirals to high-risk hospitalized patients that develop flu-like illness, says **Linda Greene**, RN, president of the Association for Professionals in Infection Control and Epidemiology

(APIC). (See *CDC recommendations, page 15.*)

"We are well aware that the flu is widespread and we know there is not a good match with the vaccine, so from the antiviral perspective, people in high-risk categories who have flu-like symptoms really need to seek medical help," she says. "The antivirals are most effective within the first 48 hours. The people in the high-risk groups include the elderly, pregnant women, and others. I think most providers know this, but it is important that we reiterate these messages. As infection preventionists, it is part of our role that goes beyond our facility as a part of public health."

INFECTION PREVENTIONISTS ARE STEPPING UP TO PLAY CRITICAL ROLES IN RESPONSE TO A SEVERE FLU SEASON.

NOW AVAILABLE ONLINE! VISIT AHCMedia.com or **CALL** (800) 688-2421

Financial Disclosure: Senior Writer Gary Evans, Editor Jesse Saffron, Editor Jill Drachenberg, Nurse Planner Patti Grant, RN, BSN, MS, CIC, Peer Reviewer Patrick Joseph, MD, and Editorial Group Manager Terrey L. Hatcher report no consultant, stockholder, speaker's bureau, research, or other financial relationships with companies having ties to this field of study.



HOSPITAL INFECTION CONTROL & PREVENTION

Hospital Infection Control & Prevention®, ISSN 0098-180X, is published monthly by AHC Media, a Relias Learning company, 111 Coming Road, Suite 250, Cary, NC 27518-9238.

Periodicals Postage Paid at Cary, NC, and at additional mailing offices.

POSTMASTER: Send address changes to: *Hospital Infection Control & Prevention* Relias Learning 111 Coming Road, Suite 250 Cary, NC 27518-9238

SUBSCRIBER INFORMATION:
Customer Service: (800) 688-2421
Customer.Service@AHCMedia.com
AHCMedia.com

EDITOR: Jesse Saffron
(919) 377-9427
jsaffron@reliaslearning.com

SUBSCRIPTION PRICES:
U.S., Print: 1 year with Nursing Contact Hours (12 issues), \$499. Add \$19.99 for shipping & handling. Online only, single user: 1 year with Nursing Contact Hours, \$449. Outside U.S., add \$30 per year, total prepaid in U.S. funds.

Discounts are available for group subscriptions, multiple copies, site-licenses, or electronic distribution. For pricing information, please contact our Group Account Managers at Groups@AHCMedia.com or (866) 213-0844.

ACCREDITATION:
Relias Learning LLC is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation. Contact hours [1.5] will be awarded to participants who meet the criteria for successful completion. California Board of Registered Nursing, Provider CEP#13791.

This activity is effective for 36 months from the date of publication.

Opinions expressed are not necessarily those of this publication. Mention of products or services does not constitute endorsement. Clinical, legal, tax, and other comments are offered for general guidance only; professional counsel should be sought for specific situations.

Copyright© 2018 by AHC Media, LLC, a Relias Learning company. All rights reserved. No part of this newsletter may be reproduced in any form or incorporated into any information-retrieval system without the written permission of the copyright owner.

In particular, IPs can spread the word that the old “48-hour rule” on administering antivirals should be strongly reconsidered due to new data and prevailing circumstances, says **William Schaffner**, MD, professor of preventive medicine at Vanderbilt University in Nashville.

“IPs should encourage treatment,” he says. “So many physicians learned the 48-hour rule — that antivirals works best if administered 48 hours from the onset of flu symptoms. There are now studies showing that there continues to be some benefit if the antiviral is administered beyond 48 hours, but that notion really hasn’t penetrated at every level.”

Indeed, the CDC cites a study of more than 29,000 hospitalized flu patients that found that, while antivirals delivered within 48 hours were most effective, there was a “survival benefit” to initiating patients after the first two days.² In addition, another study³ reported clinical benefit when an antiviral was initiated 72 hours after flu onset among febrile children, the CDC reported.

“Frequently, adult patients in particular come in day four or day five, and so the doctors — knowing the 48-hour rule — choose not to treat for influenza because they think it is valueless,” Schaffner says. “But now there are data suggesting that even after four or five days it will have some benefit. Obviously, it is not as good as initiating treatment within the first 24 hours, but nonetheless there is still value to treating many of those patients. I agree with the CDC’s recommendation that if someone is hospitalized with influenza we ought to be strongly treating them with an antiviral

while we are assessing for bacterial complications.”

An Ounce of Prevention

The CDC recommends administering antiviral treatment before flu is confirmed, if the clinical assessment warrants. “Empiric antiviral treatment should generally be initiated as soon as possible when there is known influenza activity in the community,” the CDC states.

Using this technique, a gerontologist colleague of Schaffner’s stopped an influenza outbreak in a long-term care facility.

“He had experienced the introduction of influenza in one of his nursing homes, and used prophylactic [antiviral] treatment in addition to treating actual cases,” Schaffner says. “He first gave it to one wing of the nursing home and then when it was evident that the flu had spread beyond that wing, he gave it to all patients in the nursing home. He thinks he aborted a much larger outbreak in that nursing home, and that is consistent with the CDC recommendations when you have a population that is confined to an institution like that.”

The flu shot is never universally effective, but it seems particularly appropriate this year for the CDC to repeat a standard admonition: “A history of current season influenza vaccination does not exclude a diagnosis of influenza in an ill child or adult.”

The H3N2 influenza A strain, which is causing the lion’s share of infections this season, is poorly matched with the H3N2 strain in

the current vaccine. While some efficacy estimates out of Australia are in the 10% range, the CDC is projecting that, based on last year's data, the vaccine could achieve efficacy of 32% in the U.S.

"The effective estimate comes from Australia and we had not yet had an interim efficacy estimate of the vaccine here in the U.S.," Schaffner says. "I suspect the CDC will provide one at the end of January or in February. The [32% efficacy] is a hope, but we really don't know what it is going to be yet."

However, it is important to underscore that the common epidemiological measure of efficacy is flu *prevention*, meaning the benefits of minimizing the severity of an infection are not factored into the equation, Schaffner says.

"We measure efficacy by the complete prevention of the illness," he emphasizes. "We do that for measles, polio, diphtheria, and all of the others. That is certainly a valid measure, but it undervalues the vaccine," he says.

Even though people may get influenza after receiving a vaccination, "studies over the years have shown that they are less likely to have a severe case." Schaffner notes that studies at the population level have shown that people who get sick after receiving the vaccine are less likely to have complications of pneumonia, be hospitalized, or die. "Complete prevention is one measure of efficacy," he notes, "but we should also remember that there are other benefits to the vaccine."

An important corollary to this is that partial efficacy reduces circulating flu virus and reduces transmission to others.

"You become less likely to transmit it to others, and that is

CDC: At-Risk Flu Patients Should Receive Antivirals

All hospitalized patients with suspected or confirmed flu

Neuraminidase inhibitor (NAI) antiviral medications should be brought to bear early and often to stave off severe and fatal flu infections due to a vaccine mismatch this season, the CDC recommends.¹

"The CDC recommends antiviral medications for treatment of influenza as an important adjunct to annual influenza vaccination," the agency stated in its health advisory. "Treatment with neuraminidase inhibitors has been shown to have clinical and public health benefit in reducing illness and severe outcomes of influenza based on evidence from randomized controlled trials, meta-analyses of randomized controlled trials, and observational studies during past influenza seasons and during the 2009 H1N1 pandemic... All hospitalized, severely ill, and high-risk patients with suspected or confirmed influenza should be treated with antivirals."

Some of the key CDC recommendations are summarized as follows.

Any patient with suspected or confirmed influenza in the following categories should be treated as soon as possible with a neuraminidase inhibitor:

- a patient who has severe, complicated, or progressive illness — this may include outpatients with severe or prolonged progressive symptoms or who develop complications such as pneumonia but are not hospitalized;
- a patient who is at higher risk for influenza complications but not hospitalized. Patients in this group include children younger than two years;
 - people with chronic pulmonary problems, including asthma; cardiovascular, renal, hepatic, hematological, and metabolic disorders, or neurologic and neurodevelopment conditions such as stroke, intellectual disability, moderate to severe developmental delay, muscular dystrophy, or spinal cord injury;
 - people with immunosuppression, including that caused by medications or by HIV infection;
 - women who are pregnant or postpartum (within two weeks after delivery);
 - people aged younger than 19 years who are receiving long-term aspirin therapy;
 - American Indians and Alaska Natives;
 - people with extreme obesity (i.e., body mass index equal to or greater than 40);
 - residents of nursing homes and other chronic care facilities. ■

REFERENCE

1. CDC. Seasonal Influenza A(H3N2) Activity and Antiviral Treatment of Patients with Influenza. Health Alert Network. Dec. 27, 2017. Available at: <http://bit.ly/2E9AstE>.

something of value to most people,” he says. “Nobody wants to be a spreader of the virus.”

Particularly not H3N2, which often causes more hospitalizations and deaths when it prevails as the predominant strain in a flu season, the CDC notes.

A Vaccine Not Given...

“The vaccine is certainly not 100% effective, but a vaccine not given is 100% ineffective,” Greene says. “You really have to realize that even with minimal efficacy, vaccines often can lessen the severity of disease. Some people don’t understand that, saying, ‘Why should I even get vaccinated — it is going to be a poor match.’ Nonetheless, vaccination is still recommended because that percentage of protection is still important.”

Even if those vaccinated come down with flu symptoms and need antivirals, the partial efficacy of the vaccine may help prevent one of the gravest flu complications — pneumonia, Greene says.

“People can get primary influenza pneumonia, or secondary bacterial pneumonia,” she says. “In the elderly, particularly people with heart disease and lung disease, pneumonia can lead to death. I think this year we really have to be on our guard.”

As of Dec. 27, 2017, influenza A was the primary cause of flu infections and H3N2 had caused about 80% of all influenza in the U.S.

Overall, 21 states reported high levels of flu activity. Among the infected are healthcare workers, who historically have shown a propensity to report for work ill.

“When flu is widespread, healthcare providers will come to work ill — this idea of presenteeism,” Greene says.

“In our own organization, we are sending messages that reiterate the fact that if you are a young, healthy adult you may have minimal symptoms, but you can still transmit the disease to vulnerable patients — and that can be devastating,” she says. Therefore it is important for healthcare providers to stay home when ill.

Greene says healthcare providers often ask, “‘Who is going to take care of patients if I’m not there?’ But there has to be a very robust message from the infection preventionists on this. It is so important that especially febrile workers not show up for work. It is important that they really think about that and refrain from exposing the fragile patients that we take care of.”

Greene cites a recent study in the APIC journal, which found that 41.4% of 1,914 healthcare workers with influenza-like illness (ILI) still showed up for work for a median of three days.⁴

The findings underscore the need for sick leave policies, with ILI defined in the study as fever, cough, and sore throat.

“The CDC recommends that people not work until they have been afebrile for at least 24 hours,” says lead author, **Sophia Chiu**, MD, MPH, of the National Institute for Occupational Safety and Health.

“Some of the most common reasons [sick workers] gave is that they could still perform their job duties, and they didn’t feel badly enough to miss work,” Chiu says.

To protect workers on the job and the patients they are caring

for, it is imperative that infection preventionists keep sick workers home. But there are other factors to keep in mind.

“Obviously, good handwashing goes across all these things,” Greene says. “We talk about it every year, but this year flu is widespread. We want to identify those patients who come into our organization as quickly as possible and get them in appropriate precautions — usually droplet isolation, wearing a mask, and what have you,” Greene adds.

“Also, we encourage people who are on the antivirals — usually they are prescribed for about five days if they are prescribed in the outpatient settings — to take them for the entire time,” Greene says. “People start feeling better, and they don’t complete the course.”

APIC has also created a visitor handout that urges the public to not come to the hospital if they have symptoms that include fever, cough, runny or congested nose, body aches, chills, nausea, and diarrhea. (*Available at: <http://bit.ly/2CRkQ00>.*)

“It’s important to do the things we talk about all the time — good hand hygiene, covering coughs, staying home if sick, and certainly educating not only our patients, but the public,” Greene says. ■

REFERENCES

1. CDC. Seasonal Influenza A(H3N2) Activity and Antiviral Treatment of Patients with Influenza. Health Alert Network. Dec. 27, 2017. Available at: <http://bit.ly/2E9AstE>.
2. Muthuri SG, Venkatesan S, Myles PR, et al. Effectiveness of neuraminidase inhibitors in reducing mortality in patients admitted to hospital with influenza A H1N1pdm09 virus infection:

a meta-analysis of individual participant data. *Lancet Respir Med* 2014;2(5):395-404.

3. Fry AM, Goswami D, Nahar K, et al. Efficacy of oseltamivir treatment started within 5 days of symptom

onset to reduce influenza illness duration and virus shedding in an urban setting in Bangladesh: a randomised placebo-controlled trial. *Lancet Infect Dis* 2014;4(2):109-118.

4. Chiu S, Black CL, Greby SM, et al. Working with influenza-like illness: Presenteeism among US health care personnel during the 2014-2015 influenza season. *Am J Infect Control* 2017;45(11):1254-1258.

Zika Virus: Not Gone, Certainly Not Forgotten

As cases fall, CDC stands down emergency response

After emerging dramatically in Brazil in 2015, Zika, a virus that can cause devastating birth defects, spread fear across the United States as the weather warmed and mosquitoes took flight. However, 2017 saw a dramatic decline, and at the end of September the CDC shut down its emergency response to Zika. Is the threat over?

Unfortunately, no. While the virus is in retreat, the CDC still warns pregnant women against traveling to Brazil and other areas in South America and the Caribbean. (See CDC map at: <http://bit.ly/2m50Lf7>.) Also, men who travel to such areas are advised to either abstain from sex or use condoms for at least six months upon return. The Zika virus is primarily spread by female *Aedes aegypti* seeking blood meals necessary to successfully reproduce. In the summer months, this mosquito has a broad range over much of the country and is known as an aggressive daytime feeder.

An *A. aegypti* mosquito carrying Zika can inject the virus into the bloodstream during a quick feeding. A mosquito bite, typically a mere nuisance, becomes something else entirely when the mosquito carries Zika. It sets off a series of risks and variables that

reach their most dire consequence if the virus reaches a human fetus, particularly during the first trimester of pregnancy.

While emerging epidemics all have their particular aspects of anguish and dread, Zika threatens the quintessence of vulnerability — the unborn. It is hard to shake the first images of live infants with microcephaly, a congenital defect in which brain formation is limited by partial collapse of the skull. Other physical and neurological blights appeared thereafter, undermining a broad spectrum of child development. From 2015 through Dec. 19, 2017, the CDC reported 2,364 pregnant women with any laboratory evidence of Zika virus in the U.S. There were 101 liveborn infants with Zika-associated birth defects in the U.S., and nine pregnancy losses.¹

“Microcephaly is kind of the most phenotypical, obvious manifestation of congenital Zika syndrome,” says **Tyler Sharp**, MD, a CDC epidemiologist and Zika outbreak investigator in Puerto Rico. “It is not something that babies will grow out of. Those babies will be affected for life. There are a variety of other conditions across the spectrum as well, many of which are going to be lifelong conditions. So, at least for

those babies that have been born with congenital Zika syndrome, the expectations are that they will need additional healthcare the rest of their lives.”

About 6% of infants born to Zika-infected mothers had defects in 2016, with the CDC estimating that the risk of fetal harm increases twenty-fold compared to a non-Zika pregnancy. Another report² on infectious threats and natural disasters said, “[T]here is currently no vaccine or medicine approved for Zika. The cost of care for an infant with severe microcephaly to adulthood is up to \$10 million, and in just one year, the total costs for hospital care of people with birth defects exceeds \$23 billion.”

Indeed, though several lines of research are underway, the lack of an approved vaccine gives Zika an opening to resurge in a susceptible population. Zika, first detected in Africa in the 1940s, was afterward detected in other regions, but never the Americas. Now, Zika has been detected in 49 states, three U.S. territories, most of South and Central America, Africa, South Asia, and the Pacific Islands, the aforementioned report states.

This is the first time Zika or any other mosquito-borne virus has been associated with birth defects, so there is some suggestion a mutation

has occurred. Still, the general consensus remains that most Zika infections are largely asymptomatic and inconsequential unless the infected person is pregnant or has had unprotected sex while the virus is circulating in the blood or persisting in a human reservoir like semen. The question now is whether it can simmer quietly and strike again when enough susceptible people — those not previously infected — accumulate in an area where *A. aegypti* has a habitat, which unfortunately includes much of the planet.

“It is still on our radar, but we do not expect to see additional large outbreaks in the next couple of years — somewhere in that time frame,” Sharp says. “That becomes relevant to the U.S. because a very large majority of infections that occur in the continental U.S. are imported. [An individual was] on vacation somewhere in the tropics, got infected, and then came to the U.S. and got sick or presented for care in the U.S. In some cases, not very common but it does happen, those infected individuals are bitten locally, [and] then you get local transmission. With infections abroad decreasing dramatically, then the risk of local transmission to occur in the U.S. is lower as well.”

The Epidemic Curve

There were 261 Zika virus infections in returning travelers in 2015 in the U.S., but the outbreak exploded to more than 5,000 cases the following year. Overall, 2016 saw 5,102 symptomatic Zika cases in the U.S., with 4,830 cases in travelers returning from affected areas. There were 218 cases of mosquito-borne transmission in Florida and six cases in Texas in 2016. There were 46 cases of sexual transmission, including one

from a female to a male, and one case of a healthcare worker infected by a needlestick. In addition, 2016 saw the strange case of a 73-year-old patient in the U.S. who apparently transmitted Zika to a visiting acquaintance — possibly through tears — before dying with an incredibly high level of circulating virus in the blood.³ The secondary case developed symptomatic Zika infection, but subsequently recovered. It is possible that hormonal treatment for prostate cancer somehow accelerated viral replication in the index case, investigators concluded.

From Jan. 1 to Dec. 20, 2017, the CDC reported 385 symptomatic Zika virus disease cases in the U.S. Of those, 378 were in travelers returning from affected areas. There were three cases of local transmission by mosquitoes in the U.S. in 2017, with two in Texas and one in Florida. In addition, there were four cases of Zika acquired via sexual transmission last year in the U.S.

The CDC appropriately called for full vigilance in the U.S. last spring as the summer months neared, warning that Zika virus could dramatically return. It came back, albeit in much reduced numbers. Moreover, the case count has dropped dramatically in the epicenter in South America, making imported cases via travelers less likely.

“Vigilance is important. We continue to monitor activities throughout our state, but in particular South Florida where we have seen active transmission from mosquitoes,” says **Celeste Philip**, MD, Florida Surgeon General and secretary of the state department of health.

Philip fielded a Zika question from *Hospital Infection Control & Prevention* at a recent press conference assessing national readiness for emerging diseases and natural disasters.

“We use the numbers from other countries to predict what kind of

activity we will see in our state,” Philip says. “When we look at [2017’s] number of travel-related cases, we are in the two-hundreds compared to [2016] when we had over 1,000 cases. A decrease in Zika internationally means a decrease in travel-related cases in Florida, so fortunately we have not seen any ongoing local transmission in our state.”

Given the propensity of infectious diseases to re-emerge when healthcare responses become complacent, public health must remain alert for a reintroduction of Zika.

“We continue our testing to identify travel-related cases,” Philip says. “Our mosquito control districts go out to where that individual lives and works and conduct mosquito control activities. We are hopeful, at least for now, that we will continue to see lower numbers and that meanwhile there is progress toward a potential vaccine.”

Will Zika Resurge?

Though the threat has waned, Zika did not mysteriously vanish like the global outbreak of SARS coronavirus in 2003. Zika still exists in nature along with the thousands of other endemic infectious threats for which public health officials must remain vigilant. Zika virus is in remission, having passed through susceptible populations in Brazil and other temperate climes in an immense epidemic wave that has left those infected now immune.

“If you go three to four years back, Zika had not circulated in the Americas as far as we can tell,” Sharp says. “Basically, everybody was susceptible and that creates a very ripe territory. If you introduce Zika, chances are very good you are going to get a lot of people infected. That

is what occurred. It was introduced into Brazil as far as we can tell and it was spread from there to basically everywhere [in the Americas] that has *Aedes aegypti* mosquitoes.”

It remains somewhat unresolved, as research continues on the virus, how long someone asymptotically infected can transfer the virus from their blood via a mosquito bite. Nor is there any exact science on what percentage of herd immunity must be lost for Zika to again begin spreading widely and causing outbreak.

“In most regions, for a variety of reasons, where Zika has been introduced, basically all of them have had large outbreaks,” Sharp says. “Those outbreaks are probably sufficient now to prevent additional large outbreaks from occurring in the near future. That does not mean Zika is gone, however. In most regions where Zika has been introduced it now probably is still circulating, but at relatively low levels. We don’t know how long that will last. It may become like Dengue or other mosquito-borne viruses that favor warmer climates and are occasionally imported to other lands by returning travelers.”

“The most common reservoir that we know of, by far, is humans,” Sharp says. “Just like we see with Dengue virus, Zika will probably circulate between mosquitoes and humans in relatively low rates for months, potentially years. As long as you

have a large enough population that still has immunologic susceptibility to infection — we’re talking about infection rates in the [Caribbean and South American] population[s] to date being anywhere from 20% to 70% — that still leaves a good chunk that is susceptible. In most cases, that probably is going to be sufficient for the human-mosquito transmission cycle to continue, but not at levels that would manifest an outbreak.”

The key difference is that Zika, in addition to being the first mosquito-borne virus to cause birth defects, is the first of these types of viruses to be sexually transmitted.

“We do anticipate that there is going to be continued risk to travelers and other people in the area who are still susceptible to Zika,” Sharp says.

The CDC still recommends that pregnant women not travel to areas with an endemic level of Zika (e.g., Brazil). In addition, women who travel to such areas should abstain or have only protected sex for two months. Men should abstain or have only protected sex with condoms for six months after travel to a Zika area. There have been some reports of carriage of Zika in semen for longer periods, but the CDC is confident these are outliers, some of which deal with viral fragments, and should not be a basis for public health policy.

“The CDC recommendations for men cover the very large majority of

individuals that have been identified with Zika virus infection and how long they have viral nucleic acid detectable in their semen,” he says.

Researchers have found some outliers that have had nucleic acid detectable in their semen for longer than six months, Sharp says, “but it is very, very few.”

Sharp says the CDC’s timeframe is appropriate to “capture the overwhelming majority with Zika virus infections. If you have nucleic acid detectable in your semen, that means you are infectious to your partner if you are not following those guidelines. Having infectious virus in semen versus having some small component of the virus being detectable are not necessarily the same thing, so we are still trying to work out what that correlation is.” ■

REFERENCES

1. CDC. Zika Virus. Available at: <http://bit.ly/2kvWeQD>.
2. Trust for America’s Health. Ready or Not? Protecting the Public’s Health From Diseases, Disasters, and Bioterrorism. 2017. Available at: <http://bit.ly/2FpqZif>.
3. Swaminathan S, Schlaberg R, Lewis J, et al. Correspondence: Fatal Zika Virus Infection with Secondary Nonsexual Transmission. *New Engl Jrl Med* 2016;375(19):1907-1909.

Changing Human Behavior on Antibiotic Stewardship

For all the clinical measures and medical interventions used in infection control, much of the task of protecting the patient comes down to the arcane art of changing human behavior. Thus, infection preventionists are turning to social scientists to better

understand why it is so difficult to get people to consistently wash their hands or, in a more recent example, stop them from overprescribing drugs or inappropriately using broad-spectrum antibiotics that will select out resistant organisms.

In that regard, a question-and-answer discussion was held at a recent antibiotic stewardship workshop convened by the Society for Healthcare Epidemiology of America. **Preeti N. Malani**, MD, MSJ, chief health officer and a professor of medicine in

infectious diseases at the University of Michigan, posed questions to **Julia E. Szymczak**, PhD, a social science researcher and assistant professor of epidemiology and medicine at the University of Pennsylvania. The exchange was edited for length and clarity.

Malani: There are a lot of studies that look at behavioral change. These include topics like feedback, restricting workers, prior authorization. Some of these are really good studies, as rigorous a study as you can do, but the results are variable. It surprises my colleagues that behavioral change doesn't work and if it works sometimes it doesn't last. What is your view as a social scientist on some of these studies?

Szymczak: When you look at the literature about stewardship, at its core this is about changing prescribing behavior of clinicians, who are highly educated and powerful people in the hierarchy of the hospitals. Those dynamics are not always incorporated into our stewardship interventions. We have things like education, which might improve the problem a little but doesn't move the dial as far as we would like to. We can put restrictive policies in place — requiring that people get approval or stopping them from using particular drugs. These highly autonomous, highly educated people work around those kinds of interventions.

I think the missing link is that if you think about antimicrobial prescribing as a knowledge deficit or as a sort of a resource deficit — people don't have access to the laboratory testing or the information at their fingertips that they need. [We need to] think of it that way and not as a social or

emotional issue by a physician, or a PA, or a nurse practitioner, making the choice to give a drug to a patient. That is a highly social interaction and it's influenced by human behavior. I think a lot of our interventions previously have not really taken that into account. I think we have some great examples now of people starting to incorporate elements of the behavioral sciences into the design of an intervention.

Malani: The term “stewardship” is relatively new. We used to use the term “antibiotic restriction,” probably to our detriment. People today, when I think about the antimicrobial stewardship team, [might have] some hostility at times to [and a perception of] the “antibiotic police.” What are some of your thoughts on how we might handle this better?

Szymczak: An anecdote that has arisen in one of my research studies [regards] this idea of [what] was called antibiotic restrictions. There has been sort of a transition in the language that we use to describe this work from restriction, to antibiotic controls in the era of managed care, and people are moving to this idea of stewardship. I had someone tell me they started antibiotic stewardship in an ICU and the intensivist said, “Look, we agree with the idea of doing this, but we don't want to call it stewardship.” When you think of the word “stewardship,” it is about protecting resources. We recognize that is a resource that we need to protect and care for and steward for future patients. But that intent is not being communicated. So, this idea of antibiotic police or getting resistance from frontline physicians is an opportunity for us to go to them and ask them what they

believe and what are their concerns about what we are asking them to do. We don't ignore the people who are calling us the antibiotic police. We go to them and try to uncover what is it that they believe about what we are asking them to do.

Malani: One of the things I have heard is that the next iteration of this might be “antimicrobial safety,” which may be a better term. Stewardship is not just preserving resources, it is actually about protecting patients.

Szymczak: Absolutely, and one of the things I try to make part of my work is [the importance] of the way we frame the goal. Everyone wants patients to do well. That's not an issue. When clinicians start to think of stewardship as cost containment or [being based on] other motivations, [there may be less buy-in]. The clinician cares about the patient, so the way we frame and explain what we are doing is of crucial importance.

Malani: Sometimes these drugs are used inappropriately because patients and parents of children demand them. What can we do to better educate families about why antibiotics are not always good?

Szymczak: I think this phenomenon is really an interesting and complex one to unpack. When you talk to clinicians about why they are giving antibiotics, [they often say], “My patients demand it,” particularly in ambulatory settings or the emergency room. I think you might feel, “Well, we just need to educate patients and families.”

But I actually think there is a more complex issue at work here, and that is what is happening in that doctor-patient interaction, that communication space. There has been some really excellent work done on what parents of children

with respiratory tract infections symptoms expect going to the doctor visit. What we see is a real mismatch. In many cases, the pediatricians perceived that the parents were asking for antibiotics when they actually didn't. What is happening is that the pediatrician is assuming they know what the patient wants, when actually they may not.

We have a communication mismatch, and I think we need to teach clinicians and families strategies about how to communicate their expectations and concerns in a more efficient and clear way. We are starting to see in recent research that the public is becoming a bit more savvy than we may perceive them to be and they

may be a more willing partner. It is a partnership, though.

Malani: As a clinician I am particularly interested in relationships among my providers. What can be done to leverage these relationships to further stewardship efforts?

Szymczak: When I talk about relationships between clinicians being a social determinant in antibiotic prescribing, what I mean is that group interactions, expectations, and norms around what is OK to say to your colleagues very powerfully influence the kind of decisions that people make. For example, we know that antibiotic prescribing is sensitive to a hierarchy. So, if you are a resident and you are caring for your patients

and your attending [physician] wants to use an antibiotic longer or a different kind of antibiotic that you know really isn't the best choice, you are reluctant to say something. They are your superior and they are judging you. This comes up a lot, not only in training settings, but in other areas. If this person made a decision, I am not going to question it.

Try to create a culture in which it is OK to talk about each other's prescribing decisions so that you are comfortable asking questions and being questioned. Half of it is just bringing the decision-making out into the open. You may still do the same thing, but if people don't talk about it you don't have an opportunity to make change. ■

NIH Approves Research to Enhance Pandemic Pathogens

Disconcerting to some, but idea is to create countermeasures

“Gain-of-function” research designed to make pathogens deadlier in order to develop treatments and countermeasures has been given a green light by the National Institutes of Health (NIH).

The NIH pulled the plug on such research three years ago after several incidents that could have led to public health threats, not the least of which were breaches in working with anthrax in the prestigious labs at the CDC.

“The purpose of this guide notice is to notify applicants that in accordance with the December 2017 issuance of the Department of Health and Human Services’ ‘HHS Framework for Guiding Funding Decisions about Proposed Research Involving Enhanced Potential Pandemic Pathogens (HHS P3CO Framework),’ the NIH is removing

the funding pause on the provision of new or continuation funding for gain-of-function research projects,” the NIH stated in a Dec. 19, 2017, announcement.¹

The research could include studying simmering potential pandemic threats such as MERS coronavirus or H5N1 avian influenza, both of which could cause considerable human suffering and mortality if they mutate to improve transmissibility. Enhancing these deadly pathogens in high-containment labs could anticipate such a mutation, allowing for the development of treatments and vaccines if the viruses eventually mutate in nature. Of course, the risks include an enhanced pathogen escaping the lab and the possibility that the methods will be malevolently replicated by bioterrorists.

To prevent such incidents and ensure the work is conducted under controlled conditions, the aforementioned HHS Framework² calls for the following criteria for research on a potential pandemic pathogen (PPP):

- the research has been evaluated by an independent expert review process (whether internal or external) and has been determined to be scientifically sound;
- the pathogen that is anticipated to be created, transferred, or used by the research must be reasonably judged to be a credible source of a potential future human pandemic;
- an assessment of the overall potential risks and benefits associated with the research determines that the potential

risks as compared to the potential benefits to society are justified;

- there are no feasible, equally efficacious alternative methods to address the same question in a manner that poses less risk than does the proposed approach;
- the investigator and the institution where the research would be carried out have the demonstrated capacity and commitment to conduct it safely and securely, and have the ability to respond rapidly, mitigate potential risks, and take corrective actions in response to laboratory accidents, lapses in protocol and procedures, and potential security breaches;
- the research results are anticipated to be responsibly communicated, in compliance with applicable laws, regulations, and policies, and any terms and conditions of funding, in order to realize their potential benefit;

• the research will be supported through funding mechanisms that allow for appropriate management of risks and ongoing federal and institutional oversight of all aspects of the research throughout the course of the research;

• the research is ethically justifiable. Nonmaleficence, beneficence, justice, respect for persons, scientific freedom, and responsible stewardship are among the ethical values that should be considered by a multidisciplinary review process in making decisions about whether to fund research involving PPPs.

Though this will probably be determined on a case-by-case basis, it remains to be seen if possible bioterror agents would be approved for enhancement. The Department of Homeland Security lists 14 agents that meet the “material threat determination” as threats to

national security if weaponized. These pathogens include anthrax, glanders, melioidosis, botulism toxin, hemorrhagic fever, tularemia, MDR anthrax, typhus, smallpox, and plague. ■

REFERENCES

1. NIH. Announcing the Removal of the Funding Pause for Gain-of-Function Research Projects. December 19, 2017. Available at: <http://bit.ly/2z6aG5Q>.
2. HHS. Framework for Guiding Funding Decisions about Proposed Research Involving Enhanced Potential Pandemic Pathogens. 2017. Available at: <http://bit.ly/2EoC41J>.
3. Trust for America's Health. Ready or Not? Protecting the Public's Health From Diseases, Disasters, and Bioterrorism. 2017. Available at: <http://bit.ly/2FpqZif>.

Pediatricians Call for Mandated Flu Shots for Clinic Staff

New infection control guidelines include cystic fibrosis patients

Joining the Association for Professionals in Infection Control and Epidemiology and many other professional organizations, the American Academy of Pediatrics (AAP) has issued new guidelines for outpatient clinics that call for mandatory flu vaccination of healthcare staff.

In its first update for ambulatory settings in 10 years, the AAP has published infection prevention guidelines¹ that also include a section on patients with cystic fibrosis, guidance during outbreaks, and an emphasis on communication with other healthcare facilities

when transferring patients. While calling for mandated flu shots in ambulatory settings, the AAP left it to individual clinics to accomplish that according to their local situation.

“I think that it is important to leave the details to each individual facility because conditions vary from practice to practice,” says lead author **Mobeen H. Rathore**, MD, FAA. “There are unique challenges and needs to implementing these policies around the country.”

The AAP guidelines also focus on hand hygiene, the cardinal principle of infection control. “I think the

major emphasis is on hand hygiene, and how we tell our staff and patients to do that appropriately,” Rathore says.

The guidelines also draw attention to the special needs of pediatric patients with cystic fibrosis, who are at risk of respiratory infections with pathogens like drug-resistant *Pseudomonas aeruginosa* and *Burkholderia cepacia*.

“Patients with cystic fibrosis can also be a source of resistant pathogens that could spread to other patients with cystic fibrosis,” the AAP states. “In general, in

ambulatory medical settings, standard IPC guidelines should be followed. In addition, when caring for patients with cystic fibrosis, HCP should follow the ‘Contact Precautions,’ and all patients with cystic fibrosis should wear a mask throughout their visit except when in an examination room.”

A summary of some of the other AAP infection control recommendations includes the following:

- Written policies and procedures concerning IPC should be developed, incorporated into the ambulatory practice safety program, available at all times to office staff, and reviewed at least every two years.
- Educational programs for staff concerning IPC should be implemented, reinforced, and evaluated on a regular basis. All staff should be required to review the policies at the time of employment.
- In waiting rooms of

ambulatory care facilities, the use of respiratory hygiene and cough etiquette should be encouraged for patients and accompanying people, especially those with suspected respiratory infection.

- Patients with potentially contagious diseases and immunocompromised children should be promptly triaged. Contact between contagious children and uninfected children should be minimized. Policies to deal with children who present with highly contagious infections (such as varicella, measles, pertussis, influenza, mumps, and TB) should be devised and implemented; travel, immunization, and exposure history is key to identify patients who may be at increased risk for such infections.
- Alcohol is preferred for skin antisepsis before immunization and routine venipuncture. Skin preparation for incision, suture, and collection of blood for culture

requires either 2% CHG in 70% isopropyl alcohol-based solutions (for children older than two months) or iodine (1% or 2% tincture of iodine, 2% povidone-iodine). Most skin preparation agents must be allowed to dry before surface bacteria are killed.

- Policies and procedures should be developed for communication with local and state health authorities regarding reportable diseases and suspected outbreaks.
- Antimicrobial agents should be used appropriately, and standard precautions should be observed to limit the emergence and spread of antimicrobial-resistant bacteria. ■

REFERENCE

1. Rathore MH, Jackson MA. AAP Committee on Infectious Diseases. Infection Prevention and Control in Pediatric Ambulatory Settings. *Pediatrics* 2017;140(5):e20172857. Available at: <http://bit.ly/2C7erOM>.

CDC: No Ban on Politically Charged Words

Infectious disease groups had reacted strongly

Infection preventionists may have been understandably concerned and somewhat confused about a recently reported “word ban” at the CDC that apparently had more to do with politics than clinical science.

In a response to questions after some medical groups were highly critical of a reported word ban at the CDC, **Brenda Fitzgerald, MD**, director of the agency, issued a statement Dec. 20, 2017, to *Hospital Infection Control & Prevention*:

“There are no banned, prohibited, or forbidden words at the CDC — period. I want to emphasize to anyone who may believe otherwise that we

continue to encourage open dialogue about all of the important public health work we do. CDC has a long-standing history of making public health and budget decisions that are based on the best available science and data that benefits all Americans — and we will continue to do so. I understand that confusion arose from a staff-level discussion at a routine meeting about how to present CDC’s budget. It was never intended as overall guidance for how we describe and conduct CDC’s work.”

Reports of censorship at the CDC prompted a strong reaction by the Infectious Diseases Society of

America (IDSA) and other medical groups. “We are deeply concerned about reports that budget documents submitted to Congress from the CDC may be censored for certain terms that include ‘science-’ and ‘evidence-based,’ ‘transgender,’ ‘diversity,’ ‘entitlement,’ ‘vulnerable,’ and ‘fetus,’” said a statement issued by the IDSA, the HIV Medicine Association, and the Pediatric Infectious Diseases Society.

“We find this unacceptable and disturbing. We strongly urge elected officials to prohibit any form of censorship that interferes with accurate communications by CDC,



EDITORIAL ADVISORY BOARD:

Kay Ball, PhD, RN, CNOR, FAAN
Professor, Nursing
Otterbein University
Westerville, OH

Allison McGeer, MD,
Professor,
Dalla Lana School of Public Health,
University of Toronto
Director, Infection Control and
Microbiologist, Mount Sinai Hospital,
Toronto

William Schaffner, MD
Chairman
Department of Preventive Medicine
Vanderbilt University
School of Medicine
Nashville, TN

Connie Steed, MSN, RN, CIC
Director, Infection Prevention
Greenville Health System
Greenville, SC

Katherine West, BSN, MEd, CIC
Infection Control Consultant
Infection Control/Emerging Concepts
Manassas, VA

REVIEWERS:

Patrick Joseph, MD
Chief of Epidemiology
San Ramon (CA) Regional Medical
Center and
President,
California Infection Control
Consultants
San Ramon

Patti Grant, RN, BSN, MS, CIC, FAPIC
Director: Infection Prevention/Quality
Methodist Hospital for Surgery
Addison, TX

Interested in reprints or posting an article to your company's site? There are numerous opportunities for you to leverage editorial recognition for the benefit of your brand.
Call: (800) 688-2421
Email: Reprints@AHCMedia.com

To reproduce any part of AHC newsletters for educational purposes, please contact:

The Copyright Clearance Center for permission
Email: Info@Copyright.com
Phone: (978) 750-8400

other Department of Health and Human Services agencies, and other federal agencies.”

An objective and neutral foundation of medical language is essential to establish patient trust in the healthcare system, IDSA noted.

“Suppression of language in budget documents suggests further intent — thwarting a federal agency from requesting funding for public health initiatives based on sound science, yet controversial in the political arena,” the medical groups stated. “When ideology,

fear, and ignorance dominate discourse in the public health arena, consequences are deadly. More than three decades ago when HIV first appeared in the U.S., the federal government’s unwillingness to acknowledge the epidemic and to allocate resources allowed the HIV epidemic to expand further and faster. These early, federal inactions were not based on science, but rather grounded in ideology and politics. Timely intervention could have saved many thousands of lives.” ■

CME/CE QUESTIONS

- Data have shown that the so-called “48-hour rule” for administering antivirals is based on solid science, as no benefit could be found in studies looking at later administration of antivirals.**
 - True
 - False
- Based on the performance of last year’s vaccine, the CDC is projecting what level of efficacy for the current vaccine against H3N2 influenza A?**
 - 10%
 - 23%
 - 32%
 - 40%
- Zika is the first mosquito-borne virus that can:**
 - cause birth defects.
 - be sexually transmitted.
 - be transmitted by a wide variety of mosquitoes.
 - A and B
- Though the threat has waned, Zika did not mysteriously vanish from all detection like the global outbreak of which of the following?**
 - MERS
 - Plague
 - SARS
 - Ebola

CME/CE OBJECTIVES

Upon completion of this educational activity, participants should be able to:

- Identify the clinical, legal, or educational issues encountered by infection preventionists and epidemiologists;
- Describe the effect of infection control and prevention issues on nurses, hospitals, or the healthcare industry in general;
- Cite solutions to the problems encountered by infection preventionists based on guidelines from the relevant regulatory authorities, and/or independent recommendations from clinicians at individual institutions.