**IMMUNIZATIONS NEWSLETTER**

**PROVIDING GSA MEMBERS WITH UPDATES ON ADULT IMMUNIZATIONS**

**MARCH 2017**

Developed by The Gerontological Society of America

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**BREAKING NEWS**

- **Influenza activity** picked up starting in mid-December, the Centers for Disease Control and Prevention (CDC) reported, and it remained elevated through early February. Data through February 4 from five outpatient study sites showed a preliminary 2016–17 influenza vaccine effectiveness figure around 50%, CDC reported in the February 17 issue of *Morbidity and Mortality Weekly Report*.

- **Bruce G. Gellin, MD, MPH**, stepped down as head of the National Vaccine Program Office (NVPO) at the end of February to become President, Global Immunization, at the Sabin Vaccine Institute. Gellin, who had been Deputy Assistant Secretary for Health and NVPO Director, joined the agency in 2002. He led the nation’s responses to the 2005 spread of highly pathogenic H5 avian influenza and the 2009 influenza pandemic. In 2010, the National Vaccine Plan was updated under Gellin’s leadership, and most recently, he envisioned the need for the National Adult Immunization Plan, which was adopted last year.

- A reduction in hospitalizations of nursing home residents of as little as 1% through use of **high-dose influenza vaccine** can be cost saving, according to a presentation to the CDC Advisory Committee on Immunization Practices (ACIP) by Stefan Gravenstein, MD, MPH, of the University Hospitals Cleveland Medical Center and Case Western Reserve University School of Medicine. Speaking on February 22 in Atlanta, Gravenstein reported results of a pilot study conducted in the 2012–13 influenza season and a full study from the 2013–14 season. The first was a more severe season in which A/H3N2 predominated; data from 39 nursing facilities showed that residents receiving the high-dose influenza vaccine had an absolute reduction in index hospitalizations of 6.7% (20.2% of those receiving standard-dose influenza vaccine and 13.5% with high-dose product). The full study, conducted in 122 nursing facilities using cluster randomization, found an absolute reduction in index hospitalizations of 1.2% in the less severe, A/H1N1-dominated 2013–14 season (20.9% versus 19.7%, respectively). This yielded a number needed to treat of 81. Given the expense of a hospitalization, Gravenstein said that even at this small difference in hospitalizations, immunization would lower total medical costs because of the affordability of high-dose influenza vaccine. The research was funded by Sanofi Pasteur, manufacturer of Fluzone High-Dose Influenza Vaccine.
• MedImmune presented to the ACIP meeting on its efforts to identify the cause of vaccine effectiveness shortcomings of the intranasal live attenuated influenza vaccine (LAIV; FluMist). Particularly in the United States, LAIV has shown poor effectiveness against A/H1N1 strains in recent seasons, even while performing well against other influenza viral strains. ACIP voted last June to not recommend LAIV during the current influenza season. After listening to the MedImmune presentation, ACIP members expressed concerns about recommending the product until solid evidence is generated that the problems have been resolved, and they noted that such substantiation will not be possible until the vaccine performs well in more than one H1N1-dominated season. As reported in a STAT news article, the question is how long MedImmune can keep LAIV in production “when its major market remains out of reach.”

COMMUNICATIONS

What is vaccine confidence and why is it important?

The National Vaccine Advisory Committee commissioned a Vaccine Confidence Working Group, which defined vaccine confidence as “the trust that parents or health-care providers have (1) in the [ACIP-] recommended immunizations, (2) in the provider(s) who administers vaccines, and (3) in the process that leads to vaccine licensure and the recommended vaccination schedule.”

While some stories and publications refer to vaccine hesitancy and solutions to convince those with questions to vaccinate, vaccine confidence includes discussions of what is needed to “instill, build, and maintain” trust. Left unaddressed, levels of trust erode over time, particularly when hesitancy and concerns are frequently featured in public discourse. As health care providers, an opportunity exists to reinforce the cultural norm to vaccinate even if a patient has no questions.

One place to begin is by understanding various health education theories. The Transtheoretical Model, self-efficacy theory, Health Belief Model, and ecological theories all have roles to play in helping move adults toward action.

To learn more about what the working group recommended to increase vaccine confidence, read the full report.
PSEUDOSCIENCE AND STATISTICS:
DEALING WITH INCORRECT INFORMATION ABOUT IMMUNIZATIONS

Vaccines and the diseases they target are complicated. Take influenza for instance. The vaccines have several components about which even well-trained health professionals sometimes lack knowledge. The virus itself mutates frequently, can be passed between people before any symptoms are evident, and symptoms can vary, especially among older adults. In complex patients with pre-existing chronic diseases, influenza infections are more likely to lead to hospitalizations or death; however, the role of the virus is many times obscured because the other conditions are cited as admitting diagnoses and causes of death.

In such situations, even well-meaning researchers, health reporters, medical professionals, and patients can innocently or inadvertently misrepresent facts about diseases and vaccines. Add to that a preconceived notion that vaccines are good or bad, and the possibilities increase for news to morph into “fake news,” studies to be set up to prove a point, or data to be manipulated to support one’s argument (“pseudoscience”).

As vaccine advocates who want people to enjoy longer, healthier lives, GSA members need to know what vaccine messages people are receiving and how to provide more accurate advice to them. Let’s look at two recent examples of controversial reports in peer-reviewed literature.

SOCIAL RESEARCH/POLICY/PRACTICE

Following licensing of the human papillomavirus (HPV) vaccine in Japan in 2009, “uptake was robust,” according to a news article in the December 23, 2016, issue of Science. About 70% of Japanese girls born in 1994 through 1998 completed the three-dose regimen, and in April 2013 the health ministry added the vaccine to its recommended list and began offering it for free.

Around that time, however, the Japanese media started picking up on reports that girls receiving the vaccine in Japan and elsewhere were complaining of “debilitating symptoms, reminiscent of chronic fatigue syndrome,” the Science article reports. Specific symptoms included headache, difficulty walking, chronic fatigue, poor concentration, myalgia, and arthralgia. This has been termed the autoimmune/inflammatory syndrome induced by adjuvants (ASIA) by some researchers.

While other countries responded to declines in HPV vaccination rates with aggressive promotions, Japan did not, and the number of girls receiving this anticancer vaccine there is approaching zero. The health ministry continues to provide HPV vaccine for free, but it never “restored its proactive recommendation,” the Science writer notes, and did not encourage clinicians to promote HPV vaccination.
A group of Japanese scientists recently reported results of a mouse study that sought to assess whether these symptoms — which they called HPV vaccination–associated neuro-immunopathetic (sic) syndrome (HANS) — could be linked to the vaccine. In addition to five doses of HPV vaccine given every 2 weeks, the researchers gave the mice every-4-week doses of pertussis toxin 2 and 24 hours after HPV vaccine. The toxin allowed the vaccine to penetrate the central nervous system, as required by the “active experimental autoimmune encephalitis model,” the authors wrote.

Mice receiving the vaccine and the toxin developed low responsiveness of the tail reflex and locomotive mobility, some within 2 weeks, the research group reported. Postmortem findings included damage to the hypothalamus and circumventricular regions around the third ventricle in mice in experimental groups.

Following November publication of the study in Scientific Reports, the Nature.com online journal was criticized on ScienceBlogs by surgical oncologist David Gorski. After noting flaws in the study — with specific attention to lack of details in the methodology and the inclusion of the pertussis toxin to create “a totally artificial system” by inducing “leakiness” of the blood-brain barrier — Gorski wrote, “I’m increasingly getting the impression that Scientific Reports is the new go-to journal for pseudoscience… Open access journals are a mixed bag. PLOS One, for instance, has published some really good science, but it’s also published some truly terrible science.”

Speaking of PLOS One, a research article published in late January calls into question the “underpinning policies of enforced [health care worker] influenza vaccination.” Instead of a number needed to vaccinate (NNV) of 8 to avert a patient death, the authors of this new report calculate an NNV of “6000 to 32,000 hospital workers… before a single patient death could potentially be averted.”

In a response published by the online journal concurrently, a researcher, Andrew C. Hayward, whose data were used by the PLOS One authors, wrote that the new analysis relied on data from the most debilitated residents in long-term care facilities and “[appeared] to project the findings of our study to the whole of the U.S. Long Term Care Sector.” He noted the authors also “recalibrated the NNV for the hospital sector.” Hayward concluded, “Regardless of… enforcement measures health care workers need to consider their professional duty to take reasonable actions to protect their patients from infection… Avoiding influenza through vaccination is an important approach for health care workers to take to avoid unnecessarily passing infection on to their vulnerable patients.”
BEHAVIORAL/SOCIAL SCIENCES

In the current political and social environment — where the distinction between “news” and “fake news” is blurred and “alternative facts” are presented — pseudoscience and poorly conducted research can go viral and reinforce people’s negative assumptions about the value of vaccines. Given the complexity of infectious diseases and vaccinology — and of the studies in journals that publish valid research alongside articles using questionable methodology — patients and health professionals can be confused. They need valid information from trusted sources that is presented in a way that overcomes their objections.

In the Communications column of this and future issues of the NAVP Immunizations Newsletter, theories and applications will be presented to help vaccine advocates tailor their messages based on specific attitudes and concerns about vaccines. By understanding concepts such as vaccine confidence, resistance, and hesitancy, advocates can be maximally effective in encouraging patients, family, and friends to get the protection they need from the invisible pathogens they often don’t know to fear.

SOURCES AND RESOURCES

- Hayward AC. Influenza vaccination of healthcare workers is an important approach for reducing transmission of influenza from staff to vulnerable patients. PLoS One. 2017;12(1):e0169023.