News

• Administered with or without oseltamivir, a first-in-class **inhibitor of influenza virus polymerase basic protein 2** significantly improved virologic endpoints in a phase 2b trial and produced a statistical trend toward improved clinical outcomes. Pimodivir is now in further development using a dose of 600 mg twice daily (*J Infect Dis. 2019;219:1026–34*). In an Editor’s Choice note published with the clinical trial results, writers note the “study provides a glimpse into the use of combination antiviral treatment to target different stages of the virus replication cycle.” They conclude that the study “demonstrates the antiviral efficacy of a novel polymerase inhibitor in clinical influenza infections, as well as possible synergistic effects when combined with [a neuraminidase inhibitor]” (*J Infect Dis. 2019;219:1013–5*).

• Substantial burden remains among adult Americans with regard to **community-acquired pneumonia** caused by serotypes included in the childhood 13-valent pneumococcal conjugate vaccine, an in-press study shows. The findings reinforce the limited benefits of herd immunity in protecting adults against this disease (*Vaccine. 2019 May 6. doi: 10.1016/j.vaccine.2019.04.087*).

Resources

• Updated Infectious Diseases Society of America clinical practice guidelines address diagnosis, treatment, chemoprophylaxis, and institutional outbreak management of **seasonal influenza** in children, pregnant and postpartum women, and nonpregnant adults. The document includes special considerations for patients who are severely immunocompromised such as hematopoietic stem cell and solid organ transplant recipients and is intended for primary care clinicians, obstetricians, emergency medicine providers, hospitalists, and infectious disease specialists (*Clin Infect Dis. 2019;68:895–902*).
Measles outbreaks have been propagated by specific outreach to certain communities that are vulnerable to the fear of vaccine side effects. Parents and community members spread misinformation within the community.

In these instances, leaders within a community are needed to reframe the discussion and emphasize the need for vaccination. Older adults in a community may feel particularly moved to share their perspective, having seen many diseases and their impact. When distrust of health professionals is high, a conversation with family and friends who are trusted is key.

An online intergenerational discussion guide from the American Academy of Pediatrics, Generations United, and GSA can help start a conversation about the positive benefits of vaccines.

In a world where facts can be viewed as negotiable, it is reassuring in some sense that science remains true to reality. When it comes to a highly contagious, virulent virus like measles, repeating false narratives and talking more loudly than others fail to protect against infection and disease.

With the United States and many other parts of the world now battling a pathogen declared “eliminated” two decades ago, the antivaxxer movement is dealing with a new level of scrutiny. But that does little good for the people suffering from the effects of measles (rubeola) and at risk for complications that are completely avoidable through recommended use of a highly effective vaccine.
Measles is highly contagious and is not “just a rash.” Infected people can transmit the virus for about 4 days before the rash appears and for another 4 days afterward, increasing the likelihood of transmission. The rubeola virus is spread primarily in respiratory droplets and small particle aerosols, and it is viable when exposed to air for up to 2 hours. People without immunity are highly likely to develop measles when they are exposed to the virus; as many as 90% of those without antibodies develop the disease following exposure. These factors result in a single infected person transmitting the virus to 9 to 18 others in a susceptible population. In comparison, a person with influenza transmits the virus to about 3 other people. A case of measles is thus a threat to children who have to rely on herd immunity: unvaccinated children, including those who have not reached the recommended age of first vaccination (12 months) and those whose parents elect not to have them vaccinated, and children who are immunocompromised, for whom live attenuated vaccines are not recommended.

Measles symptoms last about 1 week and begin with high fever, cough, runny nose (coryza) and red, watery eyes (conjunctivitis). Three to five days later, a maculopapular rash breaks out, usually beginning at the hairline and moving down the body to the feet. Fever can spike to 104°F (40°C). The condition usually resolves uneventfully. However, about 1 in 4 people with measles requires hospitalization, 1 in every 1,000 people develops encephalitis (brain swelling), and 1 to 2 of every 1,000 people die.

By mid-May, 839 cases of measles had been reported to the Centers for Disease Control and Prevention (CDC) during 2019 (Figure 1). Only 5 months into the year, this figure tops the total for every year since 1994. Cases had occurred in 23 states coast to coast; serious outbreaks had been reported in New York and three areas of California. Does this indicate that large numbers of children are not being vaccinated with the highly effective (97%), safe live attenuated measles–mumps–rubella (MMR) vaccine? Not really — the percentage of children who are current with the recommended two doses at ages 1 year and 4–6 years has held steady at 90% or higher. The problem is clustering of unvaccinated individuals, especially children but also adolescents and adults who were not immunized during childhood. One outbreak this year has
affected an Orthodox Jewish community in New York, in which religious beliefs have led families to decline vaccines and one reported to be targeted by antivaccine groups. Combined with travel to Israel — where an outbreak is occurring — this unvaccinated population is highly susceptible to the virus. Groups of school-aged children also have low vaccination rates, including those whose parents tend to prefer nongovernmental education, such as some Waldorf and Montessori communities and home-schooled children.

An additional problem is that the virulence of the measles virus limits the effectiveness of herd immunity in preventing illness in susceptible populations. Near-perfect herd immunity of 93% to 95% is required for this virus.

Because adults are also coming down with measles, the CDC has made these recommendations:

- **Providers do not need to actively screen adult patients for measles immunity.** This is because of high population immunity and low risk of disease among adults in nonoutbreak areas in the United States.

- **Providers should make sure patients have measles protection before international travel.** U.S. residents traveling internationally are at high risk for acquiring measles abroad. They can also transmit measles to susceptible persons, such as infants, when they return home. If a patient is traveling internationally and measles immunity is unknown, providers should vaccinate, unless there are contraindications. Serologic testing for measles immunity is not recommended.

- Adults (≥18 years of age) born in or after 1957 should receive at least one dose of measles vaccine unless laboratory tests indicate they are known to be immune as a result of prior infection or vaccination. Nearly everyone born before 1957 had measles in childhood and is considered fully protected. A few people born in or after 1957 may have received one dose of a killed measles vaccine in the 1960s, and they need to be revaccinated with two doses of the currently used attenuated product; since fewer than 1 million people received the killed vaccine, this situation is uncommon.

In addition, all people 6 months of age or older who are going to be in high-risk situations should be protected against measles. These situations include students at post–high school educational institutions, health care personnel, international travelers, and people determined by public health authorities to be at increased risk during an outbreak. At-risk infants ages 6 to 11 months should receive one dose of MMR vaccine; children 12 months of age or older should have documentation of two doses of MMR vaccine (one dose at age 12 months or older, and the second dose no earlier than 28 days after the first dose); and teenagers and adults born during or after 1957 without evidence of immunity should have documentation of two MMR vaccine doses, with the second dose no earlier than 28 days after the first dose.
The current measles outbreaks have resulted in health authorities using their quarantine and other powers to protect the public. Given the current atmosphere, this has reignited debate over the rights of individuals versus their obligations to society. In hard-hit Rockland County, New York, court cases have resulted.

“Unlike many infectious diseases, measles is a public health problem with a clear scientific solution,” three prominent infectious disease experts wrote in the *New England Journal of Medicine*. “Measles vaccination is highly effective and safe. Each complication or death related to measles is a preventable tragedy that could have been avoided through vaccination. The recent upsurge in U.S. measles cases, including the worrisome number seen thus far in 2019, represents an alarming step backward. If this trend is not reversed, measles may rebound in full force in both the United States and other countries and regions where it had been eliminated. Promoting measles vaccination is a societal responsibility, with the ultimate goal of global elimination and eradication — relegating measles to the history books.”

**SOURCES AND RESOURCES**