Vaccine Hesitancy

MODERATOR: Jason G. Newland, MD, MEd—Associate Professor of Pediatrics, Division of Infectious Diseases, Washington University School of Medicine; Director, Antimicrobial Stewardship Program, St. Louis Children’s Hospital, St. Louis, Missouri

DISCUSSANTS: Rachel C. Orscheln, MD—Assistant Professor of Pediatrics, Division of Infectious Diseases, Washington University School of Medicine; Pediatric Infectious Diseases Physician, St. Louis Children’s Hospital, St. Louis, Missouri
Michael J. Smith, MD, MSCE—Associate Professor of Pediatrics, Division of Infectious Diseases; Director of the Pediatric Health Services Research Unit; Pediatric Infectious Disease Physician, University of Louisville, Louisville, Kentucky

Editor-in-Chief: Kirstin A. Campbell, MD
Instructor, Pediatrics
Division of Hospitalist Medicine
Washington University School of Medicine
St. Louis, Missouri

This continuing medical education program includes:
■ Statement of learning objectives
■ Pretest questions and answers
■ Audio recording and printed transcript of panel discussion
■ Post-test questions
■ Post-test response form
■ List of recommended supplementary reading materials

Washington University designates this enduring material for a maximum of 3 AMA PRA Category 1 Credit(s)™ towards the AMA Physician’s Recognition Award.
Learning Objectives

This enduring material is designed for pediatricians, nurse practitioners and other allied health professionals who care for children. The intended result of this activity is to achieve a change in competence, performance, and patient care. After completing this activity, the participant should be better able to:

1. Describe the factors associated with the largest outbreak of measles in the United States during 2014.
2. List the characteristics of vaccine-resistant families.
3. List the mechanisms that are used to monitor vaccine safety.
4. Describe the two vaccine safety systems in place in the United States.
5. Answer common questions families will ask related to vaccine administration.

Pretest Questions

Before listening to the audio CD or examining the transcript of the panel discussion, you will find it useful to test your general understanding of the subject of this program with this brief introductory quiz. (The correct answers can be found on page 9 of this booklet.)

1. Smallpox was the first vaccine ever developed.  
   - True  
   - False

2. Undervaccinated individuals refer to patients/children who haven’t received vaccines due resource limitations.  
   - True  
   - False

3. Twenty states only allow medical exemptions for the receipt of vaccines.  
   - True  
   - False

4. The Food and Drug Administration assures vaccines are tested thoroughly prior to being approved.  
   - True  
   - False

5. The Vaccine Adverse Events Reporting System is comprised of millions of medical claims to identify potential adverse events caused by vaccines.  
   - True  
   - False

6. The chances of getting encephalitis from the measles vaccine is 1 in a million.  
   - True  
   - False

This course can be completed by listening to the audio CD and by reading the transcript. A multiple-choice test must be completed to earn CME credits. In order to receive credit, a participant must have a designated passing grade of 75%. The estimated time to complete this activity is 3 hours.
Transcript of the Panel Discussion

(Assumed in the audio CD)

DR. JASON G. NEWLAND: I am Jason Newland, a Pediatric Infectious Diseases Physician at St. Louis Children's Hospital. I am also an Associate Professor of Pediatrics at Washington University School of Medicine in St. Louis, Missouri.

DR. RACHEL C. ORSCHELN: I'm Rachel Orscheln. I'm a Pediatric Infectious Diseases Physician at St. Louis Children's Hospital, and I am an Assistant Professor of Pediatrics at Washington University in St. Louis, Missouri.

DR. MICHAEL J. SMITH: I'm Mike Smith. I'm a Pediatric Infectious Diseases Doc- tor at the University of Louisville in Louis- ville, Kentucky and an Associate Professor in the Department of Pediatrics. I am also an ep- demiologist by training and the Director of the Pediatric Health Services Research Unit at the University of Louisville.

DR. ORSCHELN: Today, we will be discuss- ing “Vaccine Hesitancy.” I’m very excited to be sitting here with Rachel Orscheln and Mike Smith. Today, we hope to provide you with an understanding of drivers of vaccine hesitancy. We also will explore the ways in which we monitor vaccine safety and address common concerns and reasons that lead to families delaying or refusing vaccines. Finally, we hope to provide you helpful tips to address these individuals that are considered vaccine hesitant.

To get started, I want us to step back and think about why we are where we are today with vaccine hesitancy and think back to our own thoughts on vaccines and why we have them today. I remember talking to my father who remembers standing in line to receive his polio vaccine. So I decided to go back and look even further to say, “Okay. When did we even start vaccinating?” Prob- ably many of the people listening and you guys know this right? It started with Edward Jen- ners, who in 1796 took some pus from a milk- maid’s lesion because it was cowpox, and inoculated it into James Phipps. He then was found to be protected against smallpox, and smallpox was considered eradicated in 1800.

So, I thought that’s obviously very fascinating. Then I think about our own clinical practices and all the outbreaks we’re seeing. So Rachel, what do we know about more recent vaccine-preventable disease outbreaks that we’ve expe- rienced in the last couple years?

DR. ORSCHEL N: So, we do continue to see outbreaks occurring of a variety of vaccine-preventable diseases. One outbreak that took place recently that gained a lot of media atten- tion involved measles. Everyone knows measles is a respiratory virus that’s transmitted by droplet. Generally, the incidence is low in the United States, less than 120 cases per year; and these are usually imported from other countries. It’s important to realize that many of the infectious diseases that we see rarely in this country continue to circulate throughout the world. The index case in this particular outbreak was an 11-year-old who had visited two theme parks in California and subse- quently was hospitalized with measles in December of 2014. After that episode, there were at least 125 people who were confirmed to have measles in connection with this out- break. When they were evaluated by the Cali- fornia Department of Health, most of these cases had no documented measles vaccine. Forty-five percent were completely unvacci- nated; 67% of those were intentionally unvacci- nated whereas 23% were too young to be vaccinated. Twenty percent of the people in this particular outbreak were hospitalized.

Prior to this large outbreak in 2015, the largest outbreak of measles in 20 years occurred in 2014 with over 600 cases. The interesting thing about that outbreak was that the largest number of affected people were a group of Amish in Ohio, where 381 people were infected with measles. That outbreak started after a missionary who was unvacci- nated traveled to the Philippines and brought measles back to the United States. So we know, again, that measles is in transmission widely in other places in the world. In the Philippines in 2014, there were almost 60,000 cases of suspected measles and that was imported back to the United States at least 22 times.

So, we also continue to see outbreaks of other infectious diseases. Pertussis—we com- e continue to see widespread outbreaks of pertussis in the United States. There was a large study in Pediatrics that looked at outbreaks of per- tussis and then overlaid that with places where people have high levels of nonmedical excep- tions for vaccination, and you can see that these areas overlapped substantially. So, in areas where we have vaccination rates that fall, we tend to see outbreaks of infectious diseases like pertussis.

DR. NEWLAND: So, Rachel, these are com- mon diseases that we don’t see often, but when we do see them, they come in these outbreaks. I think of others such as chickenpox. It was considered a common disease, and probably all of us in this room experienced it. Mike, are there other things that you think of that maybe our microbes aren’t used to seeing in regards to vaccine-preventable diseases because vaccines are so good?

DR. SMITH: Yes. I think the latest example is actually rotavirus. I remember when I was a resident, this was something that was a rite of passage for all children every spring. These kids would come in with intractable vomiting and diarrhea, often stay in the hospital 2 or 3 days, getting IV [intravenous] fluids. Most of our residents now have never seen a case of rotavirus. But I agree with you completely about varicella as well. I think that’s the rare exception. Everyone in the hospital comes to see children who get admitt- ed with varicella just for teaching purposes, because it’s so less common than it used to be. That’s the other big disease that I think of. Of course, I’m an infectious disease doctor, and I’ve never seen a case of Hib. Hib is Haem- ophilus influenzae type B. It’s something that our mentors, when they were residents, saw every day, admitting 20 to 30 kids with meningitis, needed spinal taps. You start the spinal tap, and pus shoots out. This is something they saw day to day. I’ve never seen a case in my career.

DR. ORSCHEL N: It’s a really great point. We don’t even have to think of it. I’ve seen maybe one or two type B meningitis in a child that was hospitalized. We only see type B meningitis, and we don’t see type B meningitis in children.

So the question I have for both of you—maybe we start with Mike—is that a factor that leads to vaccine hesitancy? Or, otherwise stated, the fact that people of our generation aren’t used to seeing these sorts of illnesses that were so severe, therefore we started to see more vaccine hesitancy?

DR. SMITH: Yes. I think that is one of the big problems. It’s actually a good problem to have, when you think about it. But to a certain extent, vaccines have become victims of their success. They’re so successful, I will go on record as saying they’re the most success-
ful public health interventions of all time. Because they’ve worked so well, people don’t see these diseases anymore, and they’re not perceived as threats.1 On the other hand, what parents read about or talk to their friends about or see on the Internet or now more and more on Facebook and Pinterest even, and Twitter is stories of children who had something bad happen to them after they got vaccines. We’ll talk more about this later. It’s not the vaccines that caused that thing to happen, but from a parent’s perspective, there’s concern that the vaccines could possibly be causing harm. When you weigh that from a parent’s perspective that “Well, maybe something bad is going to happen to my child if they give them a vaccine,” I do think it’s understandable, the hesitancy to vaccinate.

DR. NEWLAND: Rachel, do you have anything else to add in regards to things that have driven even this term that we’ve now brought up in our conversation, which is vaccine hesitancy?

DR. ORSCHELN: Well, I think the lack of widespread infectious diseases that we now prevent with vaccinations leads to people declining those vaccinations. But I think also people have false beliefs. They have beliefs that the diseases aren’t dangerous overall. They haven’t seen the diseases, and they don’t believe they’re dangerous. They believe that natural immunity is better. Certainly, for long-term antibody production, maybe natural immunity is better, but you actually have to get sick first. I think people don’t realize that sickness has its consequences. An example of that is I had a child in the hospital recently who died from chickenpox and recovered from that illness but then subsequently had a stroke. We know that varicella infection actually is associated with stroke in about 1 in 15,000 children. So, despite the fact that many of us had chickenpox during our own childhood, it continues to be a disease that has consequences, and some of them are serious and permanent.

DR. NEWLAND: Definitely an understi- mated and underappreciated aspect of having one of these vaccine-preventable diseases.

Talking about vaccine hesitancy, in order for us to be prepared to have the conversations with these individuals, is there a description of who people who are more likely to be hesitant?

DR. ORSCHELN: I think that’s a great question. Let’s start with the definition of this term, “vaccine hesitancy.” It’s actually a fairly new term. It was used to be much more black-and-white. You were either provaccine or antivaccine. It used to be much more black-and-white. “Vaccine hesitancy” is actually a fairly new term. They defined “vaccine hesitancy” as “a behavior influenced by a number of factors, including issues of confidence (do not trust a vaccine or a provider), complacency (do not perceive a need for a vaccine or do not value the vaccine), and convenience (access)”. So, you see it’s a multifaceted definition. I think that’s important because there’s not a one-size-fits-all communication strategy to talk to parents. It really depends on what their specific concerns are. So, the term vaccine hesitancy is intentionally vague because it covers a wide range of parental concerns and questions.

Fortunately, a very small number of parents refuse all vaccines completely. 3% perhaps, hopefully less than that. But then on the other hand, you have parents who have concerns about vaccines but who can be convinced, especially if they have a trusting relationship with their pediatrician. Then, somewhere in the middle you have parents who refuse one or two vaccines.

So far, we’ve talked about vaccines for diseases that don’t exist anymore. But I do want to remind everyone listening that influenza is the most common vaccine-preventable disease. It causes hundreds of thousands of hospitalizations each year, thousands of deaths, including children. In fact, one of the reasons I became interested in vaccine hesitancy is I’ve had two patients who succumbed to influenza infection. One was during my fellowship training in infectious diseases and actually was the child of two pediatricians. So, I think it’s important for parents, but also for all of us as health care professionals, to remember that these diseases are, in fact, very dangerous.

DR. NEWLAND: In addition to individuals that don’t get vaccinated, there’s a group that undervaccinate. Rachel, you do want to comment on that?

DR. ORSCHELN: I think you’re referring to the fact that there are certain people who are completely unvaccinated, and then there is a group of people that are undervaccinated, and that typically is related to resource limitations. So, patients who are undervaccinated as compared to unvaccinated often live in resource-limited settings; they might have a single-parent family, a young mother; they often live in inner city with limited access to health care; and there is limited education.2 This is in comparison to the people who are completely unvaccinated, which often come from two-parent families, college-educated parents, high household incomes.2 Also, I think it’s important to mention, compared to those who are undervaccinated, those that are unvaccinated often live in states who allow exemptions to vaccination.

DR. NEWLAND: The exemptions that allow folks not to be vaccinated—let’s get into that a little bit. Would one of you like to discuss the different exemptions that are out there that different states utilize?

DR. ORSCHELN: Certainly, there are medical exemptions. Rarely some people can’t be vaccinated due to a health concern. There are also religious exemptions. Certain religious groups have a belief against vaccination, and there is an exemption for that. Then, there’s a personal belief exemption, and that allows people to state, based on their own personal beliefs, that they would like to be exempted from vaccinations. Sometimes in states that allow religious exemptions but not personal belief exemptions, there is an increased rate of people who sign a religious exemption despite the fact that they do not belong to a religious community that holds that belief. So, when states increase their restrictions on personal belief exemptions, we see increased rates of vaccination.

DR. NEWLAND: Mike, do you have anything else you want to add to the exemption aspects of vaccine hesitancy?

DR. SMITH: It’s important to point out that three states now only allow medical exemptions. That’s West Virginia, Mississippi, and more recently, California. That’s an example of having the recent measles outbreak in the backyard really convinced the government in California of the importance of vaccines.

DR. NEWLAND: So, we have this group of people that are vaccine hesitant, and we’ve discussed why there are those with infectious diseases that we no longer see due to vaccines. But there is something driving those vaccine-hesitant people, and it’s usually fear, and it’s fear of the unknown. So, I think it would be helpful to review a little bit about the science of vaccine safety and how that is done so that our colleagues can really understand where a lot of the data comes and what people could possibly see in regards to the safety of our vaccines.

DR. SMITH: Absolutely. I think that’s a very important point. First of all, like all pharmaceutical agents, vaccines are thoroughly tested by the FDA [Food and Drug Administration]…
before they’re even licensed for use. Basically, before any drug, including vaccines, gets approved for use, it has to go through Phase 1, Phase 2, and Phase 3 testing in people; and before any drug, including vaccines, including medical claims, partnered with HMOs [health maintenance organizations] across the country, and it is more of a cohort because it includes information on children who receive the vaccine of interest and those who didn’t. The incidence of an adverse effect can be studied, rates of that event can be compared in children who receive the vaccine with those who did not, and a true incidence of adverse effects after a vaccination can be detected. When you look at these large population analyses, vaccines are, for the most part, one of the safest interventions that we have. A lot of the concerns that we hear about vaccines anecdotally—’My child got this vaccine, and something happened to them’—really don’t pan out at the population level.

15. See Ruiz-Palacios (20) and Vesikari et al (22) testing in animals. Phase 2, and Phase 3 testing in people; and before any drug, including vaccines, partnered with HMOs [health safety is the Vaccine Safety Datalink. The Vaccination. A more robust way to assess vaccine could have happened. It does not prove causation. Many children are vaccinated. More important, it doesn’t prove causality. It just means that something happened after a child was vac-

16. See Offit (16) in List of Supplementary Reading Materials.
DR. ORSCHELN: In the paper, the patients were reported to have symptoms that were reported to have occurred after a child receives a vaccine. It’s very difficult to convince a family that it’s not due to the vaccine, especially if they have other children. Very interesting studies have been done looking at younger siblings of children with autism. The older children were vaccinated, got autism, and a lot of the parents are not wanting to vaccinate their younger children. So I think the power of temporal association is very, very strong.

DR. NEWLAND: You started the conversation talking about outbreaks, and you focused on measles. Is there any link to this autism and vaccine and the fact we’ve had a lot more outbreaks of measles?

DR. ORSCHELN: I think there’s definitely a link, especially in places like the United Kingdom where vaccination rates have fallen. We know that this happens when vaccination rates fall in a given area, such as has happened with the MMR vaccine, then rates of measles increase in those areas. 19. See Dier (8) in List of Supplementary Reading Materials. 20. See Derschel et al (9) in List of Supplementary Reading Materials.

They didn’t prevent bad things from happening to our children. That’s one of the main challenges of talking to parents about vaccine safety. Because children receive so many vaccines, and, again, I would argue that’s a great thing. Look at all these diseases that we’re preventing. However, nothing bad that happens in the first 2 years of life is going to happen shortly after a child receives a vaccine. It’s very difficult to convince a family that it’s not due to the vaccine, especially if they have other children. Very interesting studies have been done looking at younger siblings of children with autism. The older children were vaccinated, got autism, and a lot of the parents are not wanting to vaccinate their younger children. So I think the power of temporal association is very, very strong.

Interestingly, though, the MMR autism paper did not have as big an impact in the United States as did in the UK. Rachel, you had talked about this earlier, but remember, measles was declared eliminated in the UK before this MMR autism debate started and is back with sustained person-to-person transmission. I think in the United States the bigger story with autism was surrounding thimerosal, which is a vaccine preservative that’s been used for many years. The story about that is quite interesting, actually. It comes out from the FDA Modernization Act of 1997, which really focused on the amount of methylmercury—in other words, the environmental mercury—in all pharmaceutical agents. When the FDA required that all pharmaceutical agents have their mercury content evaluated, it turns out that the levels of ethylmercury in vaccines exceeded recommendations from the Environmental Protection Agency for methylmercury. Now, it’s important to point out, however, that thimerosal is metabolized to ethylmercury, which is different than methylmercury. You don’t think of the difference between ethanol and methanol, it’s just one letter, but one is something that you can safely ingest, the other one will kill you. Mercury’s the same thing. Methylmercury, which is found in fish, is a known potent neurotoxin. Ethylmercury, in contrast, is eliminated quickly from the body and is not known to have any long-term effects. However, at the time that this act went through, the rates of autism in the United States were increasing, and there was considerable pressure to remove thimerosal from all childhood vaccines. In fact, that happened. By 2001, thimerosal was no longer in any childhood vaccines except for some multivalent vaccines for influenza vaccine. From a vaccine safety perspective, it’s important to point out that rates of autism did not decrease after thimerosal was removed from vaccines. So I think that’s good when you talk to families. Remember that we took the thimerosal out, and there was no difference. Unfortunately, that does not provide much reassuring data for parents of children who suffer from autism because it wasn’t the thimerosal.

DR. NEWLAND: Mike, what do you think the impact of making the recommendation to remove thimerosal without solid data has done to the vaccine hesitancy movement?

DR. SMITH: I think it really confused things, actually. When you look at the statement that the AAP and the American Academy of Pediatrics put out, basically said that there’s no evidence that thimerosal causes any problems, but to make a safe product, we’re going to remove this ethylmercury. I firmly believe in the safety of vaccines. I’ve been vaccinated. My child was fully vaccinated. But I care so much that parents could be concerned that there’s a potential conspiracy theory when they hear something like that.

DR. NEWLAND: Yes. It’s an excellent discussion because it’s these subtleties that make it hard for our colleagues and us to push forward to provide these—I would say life-saving therapeutics. Thimerosal being an antidepressant, Rachel, thoughts on other additives or other aspects of vaccine safety that is important that we consider?

DR. ORSCHELN: I also think parents have a question. “Does vaccine contain unnecessary additives?” We know that vaccines contain preservatives and other additives, but they keep them sterile and also increase their efficacy. But these things have to be put in perspective. So vaccines can contain aluminum salts. These increase vaccine efficacy. The
Dr. Orschen: Just to emphasize what you just said, the immune system is primed in utero for response to antigens. I always have people think about the time of birth. If you’ve ever watched a delivery or had a delivery, that’s when vaccine technology has really helped us. We now have pentavalent and hexavalent vaccines coming out; so your child can be protected against five or six different diseases with just one injection. That’s another good thing to reassure parents about. Rotavirus vaccine is something that you swallow. It’s not an owie.

Dr. Smith: Absolutely not. So why is that? When you look at the number of antigens, two things are very important to point out. One is the challenge from vaccines, the amount of antigens in the number of antigens that’s being delivered. Do we need to be worried about that?

Dr. Newland: Thank you. It’s important that people know that we have to have these kinds of products to help us make the vaccines. We know in the developing world, the measles vaccine is hard to deliver because it needs to be refrigerated, and you don’t have the ability to refrigerate. Therefore, we still see hundreds of thousands of deaths worldwide to measles.

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paper came out because you lost a large por-
tion of the herd.

DR. SMITH: That’s absolutely correct.

DR. NEWLAND: It would argue mumps is the same way. If you get the herd down just a little bit now, you can trigger impressive mumps outbreaks. I’ve been neat or practicing in an area where there was a mumps out-
break, and you see meningitis, you see these other illnesses that you didn’t realize, and they’re quite severe.

DR. SMITH: We’re talking about measles a lot today, and I think that’s because measles is one of the most infectious or contagious vac-
cine-preventable diseases. So, when you start to see erosion of faith in the vaccine system, that’s really the first disease to rear its head.

DR. ORSCHELN: While it’s true that no vac-
cine is perfect, you’re about, I think, 30 times more likely to get measles if you’re unvaccin-
at versus vaccinated, if you have a contact. So we do see breakthrough cases in the vacci-
nated individuals, but you’re far more likely to get measles if you’re unvaccinated.

DR. NEWLAND: You’re right. We talked a lot about measles. I’m petrified of measles. I’ve actually seen two cases of measles. As I mentioned earlier, they were sick. A provider told me, “Measles kids are scary.” It’s not just that they feel bad, but they’re nearly—I saw these children and it’s really true. What was intriguing about these kids was that one of them—likely both of them—were super-
infected with Streptococcus pneumoniae or pneumococcus, which harkens me back to thinking about pneumococcus and pneumo-
ococcal-resistant infections. Being some-
one that is very engaged in the appropriate use of antibiotics and antibiotic stewardship, vaccines are key development. 23

23 See Pichichero and Casey (18) in List of Sup-
plementary Reading Materials.

So we can all remember when the pneum-
ococcal conjugate vaccine began to be admin-
istered around 2000. We saw a signific-
antly lower incidence in invasive pneumococcal dis-
bate. But then 2008/2009, we started seeing an upswing in invasive S. pneumoniae infec-
tions, such as meningitis, mastoiditis. What was intriguing about them, the [JAMA] paper showing that they were located with a resis-
tant serotype of S. pneumoniae. 19A,23 That’s what we’ve seen. We saw a number of those cases to the effect that it changed the way we treated patients, that we didn’t have a positive culture that we thought had pneumo-
ococcal disease. Then, lo and behold, they were smart, and they had developed the pneumo-
ococcal 13-valent vaccine, and the same story happened again, as we have seen, inva-
sive S. pneumoniae disease decrease signifi-
cantly. Therefore, we’re also seeing the rate of meningococcal disease decrease reflecting essentially almost go away to the point that some experts have suggested do we even need vancomycin for empiric therapy for S. pneu-
moniae or suspected bacterial meningitis? Now, I’m not suggesting that our colleagues not use vancomycin still with concern for bacterial meningitis. But I think the point is that these vaccines impact beyond just side of the viral infections we’re worried about—but also but also impact resistance or antibiotic use and many other things.

Okay. What do you think the impact of social media has been on vaccine hesitancy?

DR. SMITH: I’m going to answer that ques-
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Things have gotten worse with the advent of social media but I think before that the Internet. The key point here is you should be active in social media from your practice per-
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25 See Pichichero and Casey (18) in List of Sup-
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26 Sue Wolfs and Sharp (24) in List of Sup-
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So you’re talking to parents who are skeptical about vaccines and do want to do their own research, it’s really important that you give them a list of suggested websites for appropri-
at information rather than letting them go to Google. If some parents are concerned that the CDC [Centers for Disease Control and Preven-
tion] is not trustworthy or the government is not trustworthy, there’s another great site called POGs [Parents of Kids with Infectious Diseases]. That really gives you a nonpharma-
critical company, nongovernment, but stories from parents of kids who suffer from vaccine-
preventable diseases and what happened to those children and how those parents feel about vaccines now. The media and the Inter-
net are important, at least in the history of this. Social media is a whole different beast. It’s kind of scary. There’s lots of research for Facebook, sure, Pinterest, all of these plat-
forms have considerable antivaccine informa-
tion. I think, in general, it’s important to caution parents not to believe everything they see on social media. I do know that the CDC and others and a lot of the pro-vaccine advo-
cacy groups have very active social media campaigns going on to counter that.

DR. NEWLAND: I worry about social media and Facebook, and if you are on Facebook, you all know the conversation that Facebook can drive in almost a herd effect to those folks. Do you all think that, if our colleagues had websites that address these things or were active in social media from their practice per-
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DR. NEWLAND: One advantage of having resources available online is it does give the family and the patient the opportunity to become familiar with vaccines before you get into that very limited office visit. Some people find that very helpful. If parents are exposed to information about vaccines, they’re kind of prepared for the talk, whether it’s online or perhaps during a prenatal visit or in that first postpartum visit, giving some information and saying, “Hey, when your child is 1 or 2 months old, we’re going to talk about vaccines. Here’s some information. Here’s some research that you can look at.” That has been shown to be very helpful. It gives the parents information, and it does relieve some of that time crunch in the office setting.

DR. NEWLAND: Thanks, Mike. One of the newer vaccines I wanted us to talk about in regards to vaccine hesitancy, and that’s the HPV or human papillomavirus vaccine. There has been a lot of discussion around this and a lot of different sides of that case, one saying, “This is a cancer-preventive vaccine”; another side saying, “No, this is encouraging my children to have sex.” Can you guys provide some information or thoughts regarding the HPV vaccine uptake and what you think about the importance of this vaccine?

DR. SMITH: Sure. I think it’s a critically important vaccine. As you said, Jason, a HPV or human papillomavirus cancer prevention vaccine. I think that’s the key message that we need to get across to parents. Unfortunately, it has been linked to sexual activity. Just to clarify that, there have been a couple of studies that have looked at an association between receipt of this vaccine and the ACP term is “sexual debut.” There is really no association between those two things. One concern about this vaccine is it lags behind meningococcal vaccine and Tdap [tetanus, diphtheria, acellular pertussis] in the adolescent platform. I think we’re finding out that, although it’s easy for us to blame parents, a lot of the times it’s actually the pediatrician who is a little nervous to initiate the discussion. One common thing we hear from parents is, “Well, my child’s not having sex yet. They don’t need this vaccine.” I would argue, well, that’s exactly the point. You want to get this vaccine in before sexual debut because we know that young adolescents are at the highest risk to acquire this infection.

DR. OSCRICHEN: Piggy-backing on that comment about how we talk to our kids about vaccines and what we say about this vaccine, I think you can’t overemphasize that this is one of two vaccines we give that prevents cancer.26 The extent to which you want to go into which type of cancer and how you get it with your child, I think, is up to a parent. My personal bias is that we should talk to our children about our family’s beliefs around sexual practices early and often. I think it’s a perfect opportunity to talk about what your family believes about that. But I think you can also present the vaccine as a vaccine that prevents cancer, so the discussion around this vaccine can be tailored to what the parent feels most comfortable with.

DR. NEWLAND: Do you think the sexual debut link and the HPV vaccine is more due to just the age of the children or the teenagers that are receiving this more than the vaccine is really driving people to have this sexual debut?

DR. OSCRICHEN: There isn’t a link between sexual debut. What I would say about it is that we know that giving this vaccine does not cause any change in when children have a debut of sexual activity. There have been a number of studies where you look at either condom use or HPV prevention and certainly administering these vaccines. We show no association between going this information or this vaccine and early onset of sexual activity. It’s a vaccine that prevents a sexually transmitted infection. It’s not at all linked to early initiations of sexual activity.

DR. NEWLAND: HPV, obviously, is an important vaccine for any of us who have children. I’m definitely pushing it as that cancer-preventive vaccine. Do you believe that we’re going to start to see increases in uptake of this vaccine? Because it definitely has been delayed in its initial usage in the 3 or 4 years it’s been out.

DR. SMITH: I do. I think we’re doing better and better each year. When you look at the National Immunization Survey–Teen, which is how the CDC assesses vaccine uptake, we’re doing a much better job than we were. I think a very active line of research right now is how do you talk to parents not only about this vaccine but vaccines in general? We’ve talked a lot so far about what are the talking points, what are the facts that you can use when you’re discussing some of these vaccine safety myths with parents. But equally important is how you deliver the message. Particularly around HPV vaccine, that’s a very active area of research. We’re learning more and more about it each day.

DR. OSCRICHEN: Moving on to another topic, you just mentioned one of the more recent vaccines that have had a delay in uptake. We also know that some pediatric practices or other practices have strategies to make sure vaccines are given always. This is the whole concept around dismissing patients from your practice or not accepting patients into your practice if they’re not going to abide by or go with the recommended vaccine schedule. What are your thoughts in regards to this type of practice?

DR. OSCRICHEN: We know that discussions around vaccines, especially with vaccine-hesitant families, can be difficult and time-consuming for our colleagues. But I think it is important to remember—and I think this can’t be emphasized enough—that the ongoing recommendation from a pediatric provider to a family to vaccinate will eventually lead some of those families to vaccinate.

The AAP has had a position for a long time that pediatricians shouldn’t dismiss families based on their refusal to vaccinate their children. But there are some responsibilities when a family chooses not to vaccinate. Families have to be instructed that, if their child is ill, they need to tell people around them, including other providers, that their child is unvaccinated. There also may be some circumstances where that child will need to be quarantined if there is an outbreak of a vaccine-preventable disease in their child care or in their school environment. So it’s not without certainly health risks but also risks in terms of your family’s functionality or your ability to work if your child is sick. Pediatricians shouldn’t dismiss families based on their refusal to vaccinate their child. I think that’s something pediatric providers have to discuss with families.

DR. SMITH: I think it’s a very difficult ethical discussion that we’re having. Can you actually fire a patient from your practice for refusing to get vaccines? It needs to be individualized to each patient and to each family. As Rachel said, the AAP for a long time has argued that you shouldn’t do this, that as a pediatrician it’s important that you provide the maximum care for these patients. What you don’t want to happen is you dismiss a patient from your practice, and they go to a different practice where vaccines are not considered to be important. Then you’ve really lost the opportunity to vaccinate that child.

That said, there are some real risks for having unvaccinated children in your practice. When you look at some of the recent measles epidemics, a lot of those cases were transmitted in the doctor’s office in the waiting room because practices allowed children who were unvaccinated to continue in the practice. I


27. See Markowitz et al (15) in List of Supplementary Reading Materials.
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I watched this a few years ago when we saw a number of cases of measles in the community I was practicing in. It led to a lot of animosity among pediatricians who, obviously, we all think similarly about these issues, but it’s far better to see how this goes and how the AAP continues to handle these discussions. I don’t know if either one of you want to make a prediction of what you think will happen with this, or will it still be as it is now?

DR. NEWLAND: Great. I struggle with this concept. I can see both sides of the issue. I can see exactly why the American Academy of Pediatrics would be on the side of inclusiveness and the continued discussion so that we can make sure that we care for these children. I’ve heard some prominent pediatricians or pediatric ethicists who feel vehemently that this is the right thing to do, that even if they’re not going to do the normal schedule, they must keep them in your practice. On the other hand, I have great colleagues who have a practice where, if you don’t do the vaccine schedule, you’re not in the practice. They feel very safe, and have strong, strong beliefs that this is the right thing to do for their patients.

DR. SMITH: I think one way around this issue is making your vaccine practices known up front. We’re talking about firing a patient, but it’s much easier on the front end making an open house or even the first visit to say, “Our practice follows the ACIP, and AAP-recommended vaccine schedule. If you’re not comfortable with this, you want to consider looking into another practice.” I think that takes that ethical dilemma of, “Okay, I’m going to kick this kid out of my practice,” but also the benefit of not having unvaccinated children in your practice.

DR. NEWLAND: I think it’s a good point to use that. I do know that, in the setting of an outbreak, there is competition for patients. Our health care system is still built upon the more we see, the more money that we bring into our practices. People have utilized the strategy during a measles outbreak to say, “Hey, look, your child will be safest here because all of our kids are vaccinated because they have to.”

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Another important point when we’re talking about this is a family. When you’re considering dismissing a patient from your practice is what are their alternative options? Is practice in a largely rural state, Kentucky, where there might be one doctor in town. In a situation like that, I would argue that it’s not ethical to dismiss a patient because there’s really no other options for them. If, however, you’re in a large suburban area where there’s tens and tens of pediatric practices, that’s okay. The AAP recently released guidelines for vaccine hesitancy.

There’s an interesting discussion about that, and I encourage our colleagues to take a look at those because it nicely outlines considerations for when you’re considering dismissing a family from your practice.

DR. NEWLAND: We talked about not getting vaccinated, now those that are delaying the schedule. Bringing this all together with this vaccine hesitancy, we talked about a number of different issues, what are the key tips for our colleagues that are on the front line, that are having to have these conversations on a daily basis. What can reassure them about why it’s so important? I guess what I’m asking is strategies to address the vaccine hesitancy and words of encouragement for those who are doing that?

DR. ORSCHELN: Like Mike said, it’s really important to take advantage of early opportunities to provide vaccine information. This includes prenatal visits, newborn checkups, certainly the early infancy checkups. It’s also important to provide both written and accredited online resources.

DR. NEWLAND: Yes.

DR. SMITH: I think being an example is important. I tell everyone I vaccinate not only myself annually against flu because I’m a health care worker, but I also do it. Actually, I’m the type of person who gets anxious if I’m a day late to bring my daughter in for whatever vaccine she needs. I think that’s really important. I’m a pediatrician, I care about the health of your child just as much as I care about my own, and this is why I think this is important. Building a culture in your office staff as well, making sure they know that your office staff, your nurses, the people at the front desk get their flu shots every year because vaccines are important. So getting this notion that vaccines are important, we do it, it’s key.

Another thing that comes up is how you deliver the message. A recent movement in medicine, often a good thing, is to include the parents in the decision-making. However, when it comes to vaccines, it really is not an option. There are some interesting studies that, when you take a persuasive delivery strategy, that makes a big difference encouraging people to get vaccinated. Not “Okay, well, there are these three shots going to be given today. Which one would you like?” but, “Your child needs three shots. Here they are.” End of discussion.
DR. NEWLAND: Do you guys have any last points before we wrap up this great session?

DR. ORSCHELN: I think it’s important when you’re approaching parents to acknowledge the risks and benefits of the vaccine, that no vaccine is completely without adverse events and no vaccine is 100% effective. You want to frame these risks and benefits with numbers. So, I think it’s important to have good science. Probably a thing that works best is using anecdotes. You have to respect the authority of good science. Probably a thing that works best is putting it to the parents and build a partnership. I think that goes a long way in having families comply with vaccination.

DR. SMITH: As we’ve discussed, point out that you care about these children as if you’re doing your own and that vaccines are important for them and where do they live?

DR. NEWLAND: I want to thank Rachel Orschen and Mike Smith. I’d also like to thank the Washington University School of Medicine and St. Louis Children’s Hospital for giving us the opportunity to discuss “Vaccine Hesitancy.”

List of Supplementary Reading Materials

To help you obtain more information on the subject of this program, the following supplementary reading materials are recommended:


8. Center B. How the case against the MMR vaccine was fixed. BMJ. 2011;342:c3547.


Answers to Pretest Questions

1. True
2. False
3. False
4. True
5. False
6. True
### Post-test Questions

After listening to the audio CD and reading the transcript of this panel discussion, measure your expanded knowledge of the subject by answering the multiple-choice questions below or online at [www.pedupdate.com](http://www.pedupdate.com).

1. Check only one answer for each of the 12 questions.
2. When you have completed the test, transfer all 12 responses to the Post-test Response Form.
3. Return your answers in the preaddressed envelope marked “Post-test Response.”
4. Your confidential score will be sent to you on a quarterly basis.
5. If any questions are answered incorrectly, the cumulative score card will indicate the pages and paragraph numbers where the correct answers will be found.

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**Release date: December 1, 2016. Test invalid for credit after December 1, 2019.**

<table>
<thead>
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<th>Question</th>
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| 1. In what year was smallpox eradicated? | a. 1964  
   b. 1969  
   c. 1975  
   d. 1980 |
| 2. Which of the following vaccine-preventable diseases was associated with a large outbreak originating from amusement parks in 2014? | a. Diphtheria  
   b. Measles  
   c. Mumps  
   d. Pertussis |
| 3. Which of the following is a factor associated with children that are completely unvaccinated? | a. Single parent  
   b. Live in inner city  
   c. College-educated parents  
   d. Limited access to healthcare |
| 4. Which of the following states only allow medical exemptions for vaccinations? | a. Alabama  
   b. California  
   c. New York  
   d. Oklahoma |
| 5. How many phases of testing are required prior to a vaccine being approved? | a. 1  
   b. 2  
   c. 3  
   d. 4 |
| 6. Which of the following groups determines the vaccine schedule? | a. Advisory Committee for Immunization Practices  
   b. American Academy of Pediatrics  
   c. Infectious Diseases Society of America  
   d. Food and Drug Administration |
| 7. Which of the following post licensure vaccine safety systems relies on passive reporting? | a. Vaccine Adverse Events Reporting System  
   b. Vaccine Safety Datalink  
   c. FDA Vaccine System  
   d. CDC Vaccine Safety Monitor |
| 8. Thimerosal is converted into which of the following compounds? | a. Methylmercury, a neurotoxin  
   b. Ethylmercury, not a neurotoxin  
   c. Carboxylmercury, not a neurotoxin  
   d. Methanol, a neurotoxin |
| 9. The amount of aluminum salts in vaccines is about the same as the amount in which product? | a. 1 cup of milk  
   b. 32 ounces of infant formula  
   c. 8 ounces of water  
   d. 12 ounces of soda |
| 10. Which of the following vaccines has been instrumental in reducing antibiotic resistance? | a. Influenza  
   b. Haemophilus influenzae type B  
   c. Streptococcus pneumoniae  
   d. Polio |
| 11. Who is the most influential source to provide information to vaccine-hesitant parents? | a. Local news  
   b. Celebrities  
   c. Pediatrician  
   d. Facebook |
| 12. Which of the following vaccines prevents cancer? | a. Human papillomavirus  
   b. Influenza  
   c. Measles  
   d. Polio |