

What Is Vaccine Confidence?

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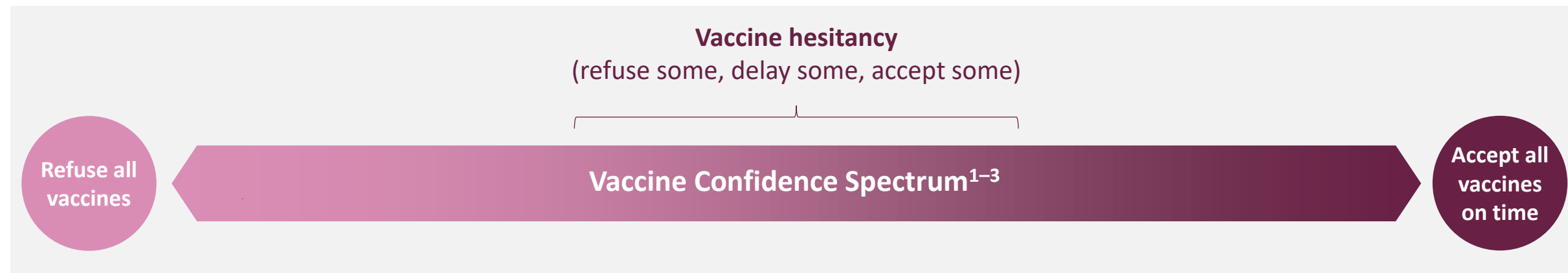
Vaccine Confidence Spectrum

Vaccine Confidence¹

- Refers to the trust that parents, patients, or HCPs have in:
 - Recommended vaccinations
 - Providers who administer vaccines
 - Processes that lead to vaccine licensure and the recommended vaccination schedule

Vaccine Hesitancy²

- Refers to delay in the acceptance or refusal of vaccination despite availability of vaccination services
- Varies across time, place, and vaccines
- Influenced by factors such as **complacency, convenience, and confidence**



HCP=health care provider.

1. National Vaccine Advisory Committee (NVAC). *Public Health Rep.* 2015;130(6):573–595. 2. Smith MJ. *Infect Dis Clin North Am.* 2015;29(4):759–769. 3. Allen A et al. The challenge of vaccination hesitancy and acceptance: an overview. In: Meeting the challenge of vaccine hesitancy. Aspen, CO: Sabin-Aspen Vaccine Science & Policy Group; 2020:1–175.

Determinants of Vaccine Confidence¹

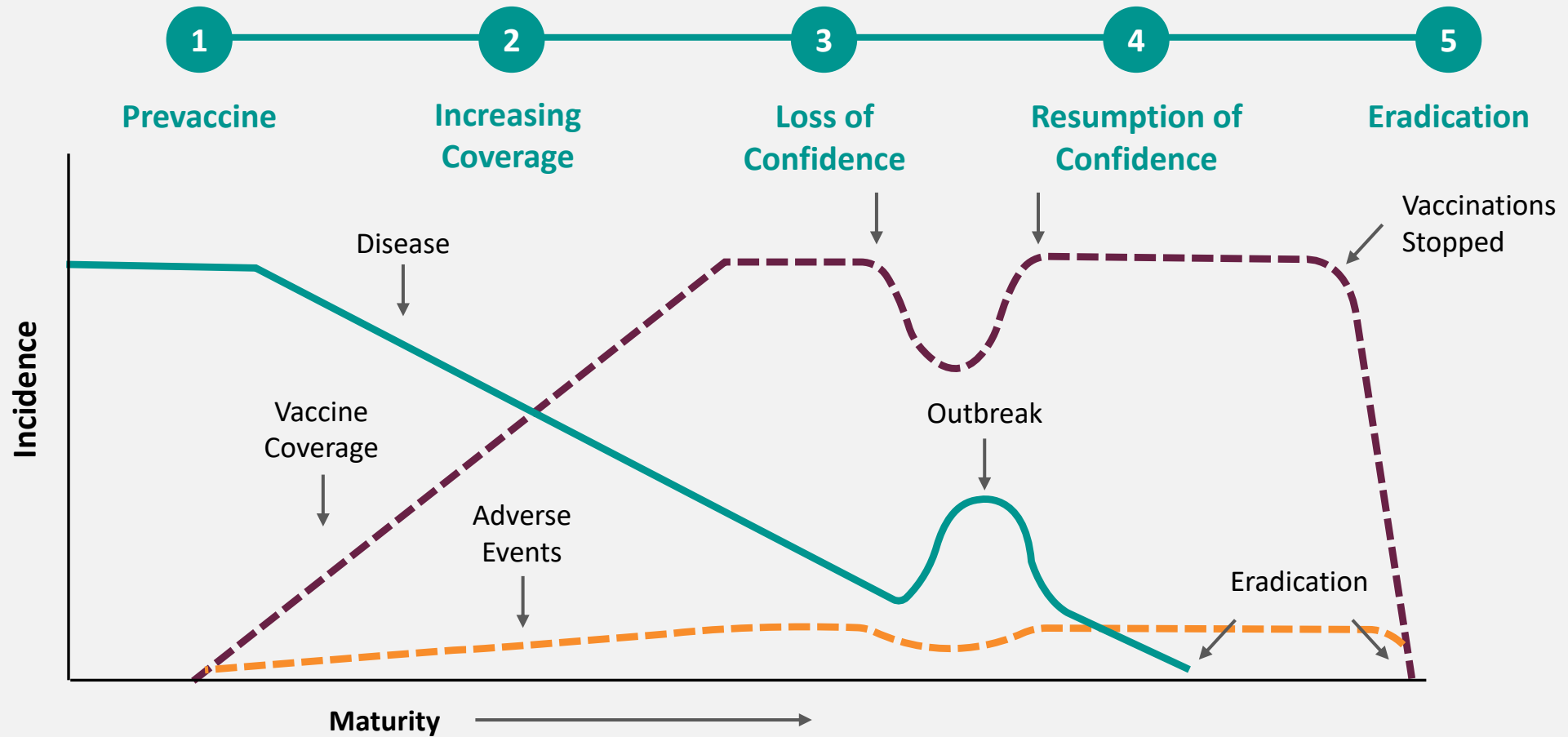
Notable factors influencing parental confidence in, and acceptance of, childhood vaccines:

- Trust** → Willingness to rely on someone else's expertise and advice (eg, their vaccine recommendation)
- Attitudes & Beliefs** → Thoughts that parents have regarding vaccine-preventable diseases, vaccine safety, vaccine effectiveness, and vaccination benefits
- HCP Confidence** → A provider's confidence both in vaccines and in their ability to communicate effectively to parents about vaccines
- Information Environment** → The significant role that news and entertainment media and parents' social network can play in influencing knowledge, beliefs, and behaviors associated with vaccines

HCP=health care provider.

1. National Vaccine Advisory Committee (NVAC). *Public Health Rep.* 2015;130(6):573–595.

Evolution of Vaccine Confidence in a Vaccine Program¹



1. Edwards KM et al. *Pediatrics*. 2016;139(3):e20162146. Figure adapted from Chen RT, Orenstein WA. Epidemiologic methods in immunization programs. *Epidemiol Rev*. 1996;18(2):102., by permission of Oxford University Press.

Who Is Lacking Vaccine Confidence?

Vaccine Hesitancy and Undervaccination Are Observed in All Age Groups



Children born during 2015–2016¹



1.3% unvaccinated
(NIS-Child, N=25,059)



Kindergarteners²



2.5% with an exemption from ≥ 1 vaccine
(2018–2019 school year, N=3,643,598)



Adults, ≥ 18 years³



54.7% unvaccinated against influenza
(BRFSS 2018–2019 flu season, N=302,148)

BRFSS=Behavioral Risk Factor Surveillance System; NIS=National Immunization Survey.

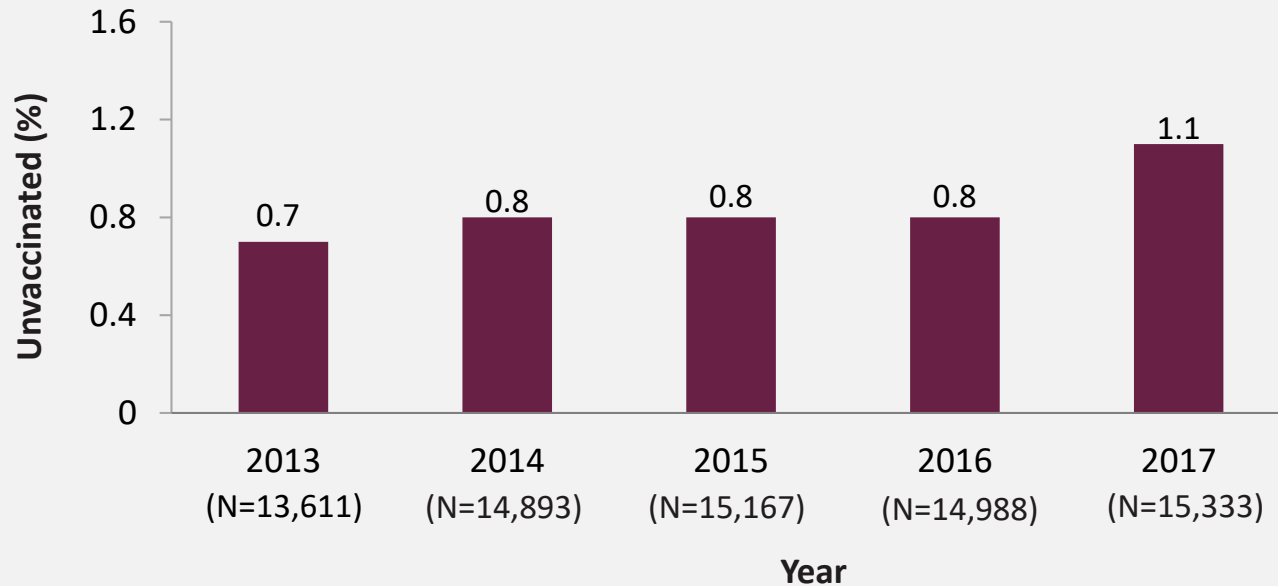
1. Hill H et al. *MMWR Morb Mortal Wkly Rep.* 2019;68(41):913–918. 2. Seither R et al. *MMWR Morb Mortal Wkly Rep.* 2019; 68(41):905–912. 3. Centers for Disease Control and Prevention (CDC). Flu vaccination coverage, United States, 2018–19 influenza season. [cdc.gov/flu/fluview/coverage-1819estimates.htm](https://www.cdc.gov/flu/fluview/coverage-1819estimates.htm). Accessed August 14, 2020.

Vaccine Hesitancy and Undervaccination Are Observed in All Age Groups

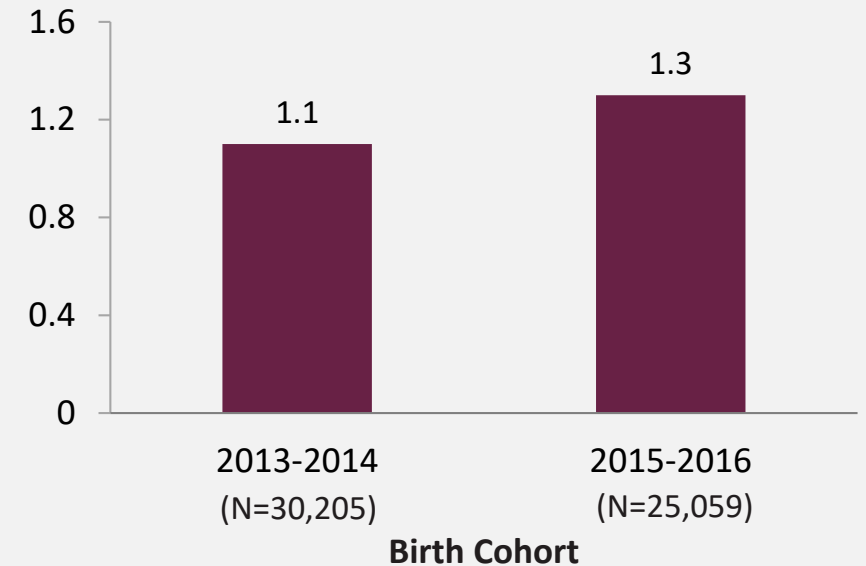


Estimated Percentage of Unvaccinated Children

Estimated percentage of unvaccinated children aged 19–35 months, NIS-Child, United States, 2013–2017^{1–5}



Estimated percentage of unvaccinated children by age 24 months born during 2013–2016, NIS-Child, United States^{6,7,a}



NIS=National Immunization Survey.

^aNote that CDC has transitioned to reporting NIS-Child data by birth year rather than survey year.

1. Elam-Evans LD et al. *MMWR Morb Mortal Wkly Rep.* 2014;63(34):741–748. 2. Hill H et al. *MMWR Morb Mortal Wkly Rep.* 2015;64(33):889–896. 3. Hill H et al. *MMWR Morb Mortal Wkly Rep.* 2016;65(39):1065–1071. 4. Hill H et al. *MMWR Morb Mortal Wkly Rep.* 2017;66(43):1171–1177. 5. Hill H et al. *MMWR Morb Mortal Wkly Rep.* 2018;67(40):1123–1128. 6. Hill H et al. *MMWR Morb Mortal Wkly Rep.* 2019;68(41):913–918. 7. Centers for Disease Control and Prevention (CDC). ChildVaxView. cdc.gov/vaccines/imz-managers/coverage/childvaxview/interactive-reports/dashboards/2013-2014.html. Accessed September 3, 2020. 8. *Healthy People 2030*. health.gov/healthypeople/objectives-and-data/browse-objectives/vaccination/reduce-proportion-children-who-get-no-recommended-vaccines-age-2-years-iid-02. Accessed September 4, 2020.

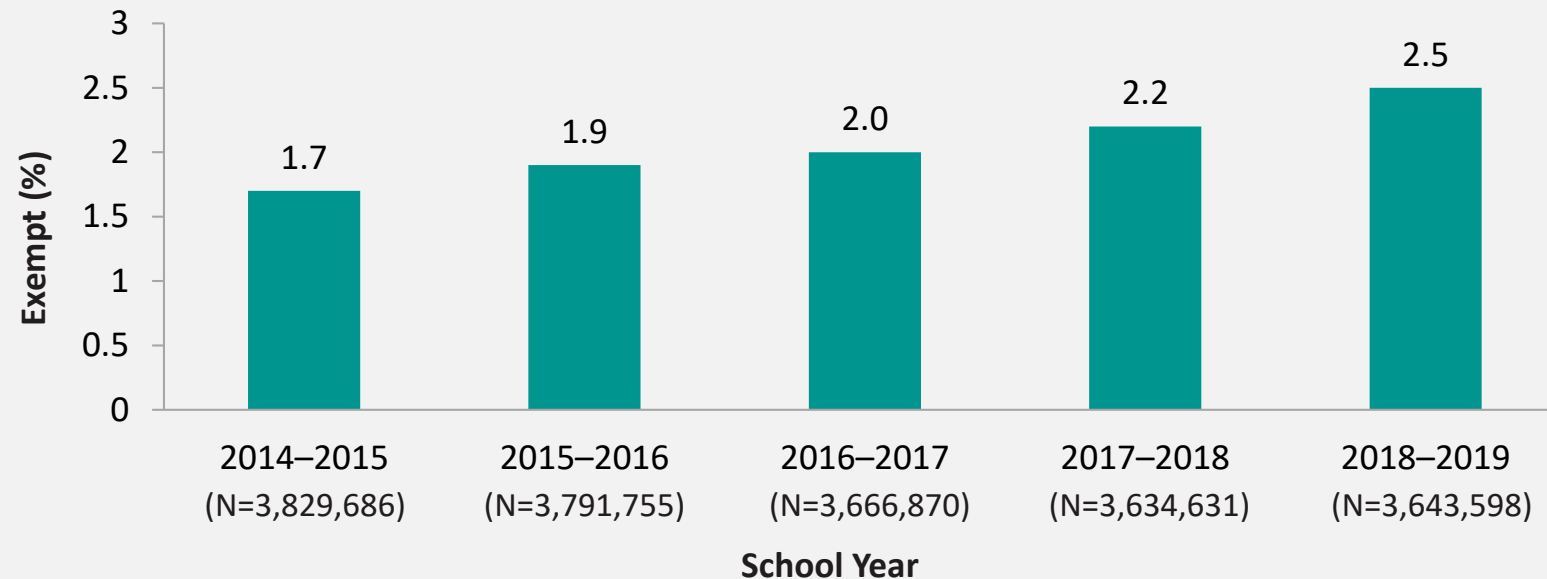
Vaccine Hesitancy and Undervaccination Are Observed in All Age Groups



Kindergarteners



Estimated median percentage of children enrolled in kindergarten with an exemption from one or more vaccines, United States, school years 2014–15 through 2018–2019^{1–5}



1. Seither R et al. *MMWR Morb Mortal Wkly Rep.* 2015;64(33):897–904. 2. Seither R et al. *MMWR Morb Mortal Wkly Rep.* 2016;65(39):1057–1064. 3. Seither R et al. *MMWR Morb Mortal Wkly Rep.* 2017;60(40):1073–1080. 4. Mellerson JL et al. *MMWR Morb Mortal Wkly Rep.* 2018;67(40):1115–1122. 5. Seither R et al. *MMWR Morb Mortal Wkly Rep.* 2019; 68(41):905–912.

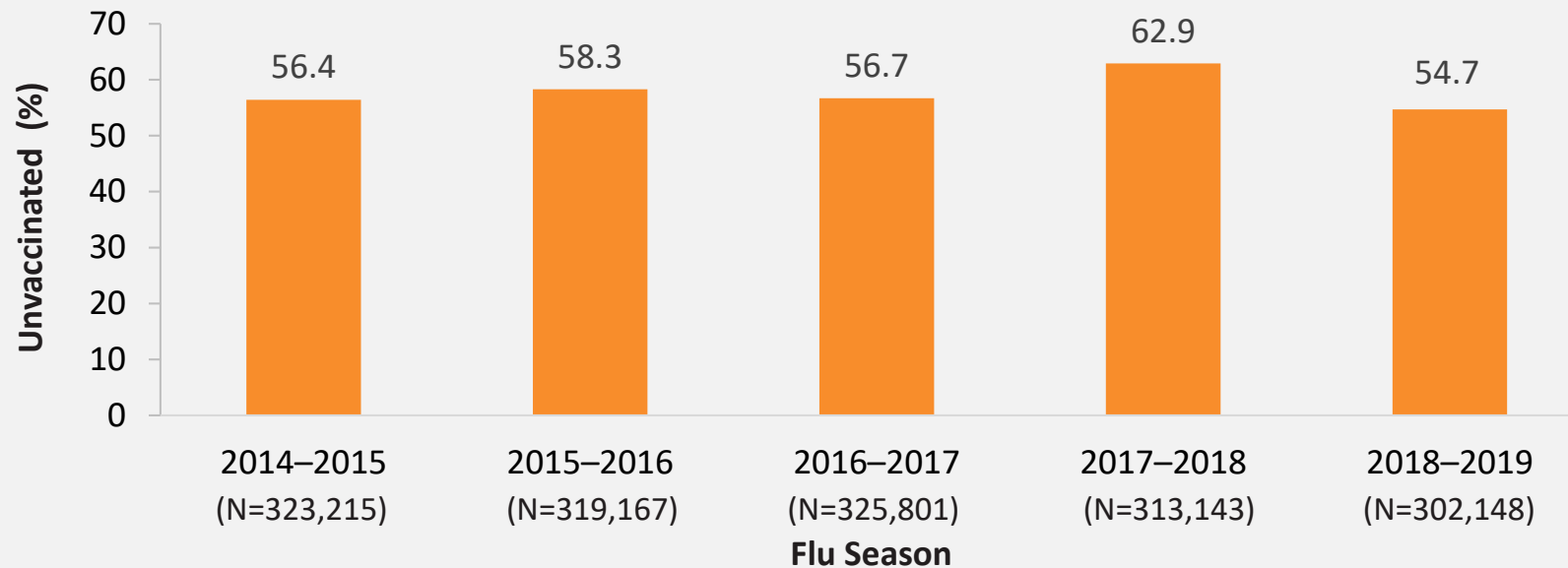
Vaccine Hesitancy and Undervaccination Are Observed in All Age Groups



Adults, ≥18 years



Estimated percentage of **adults aged ≥18 years unvaccinated against influenza**, BRFSS, United States, flu seasons 2014–2015 through 2018–2019^{1–5}



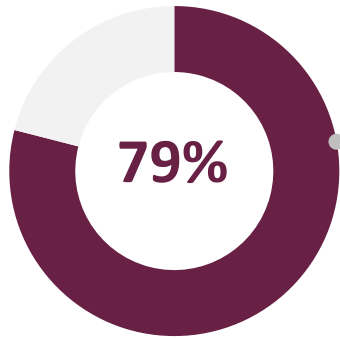
BRFSS=Behavioral Risk Factor Surveillance System.

1. Centers for Disease Control and Prevention (CDC). Flu vaccination coverage. United States, 2014–15 influenza season. [cdc.gov/flu/pdf/fluview/NFID-coverage-2014-15-final.pdf](https://www.cdc.gov/flu/pdf/fluview/NFID-coverage-2014-15-final.pdf). Accessed August 14, 2020. 2. CDC. Flu vaccination coverage. United States, 2015–16 influenza season. [cdc.gov/flu/pdf/fluview/2015-16/nfid-coverage-2015-16-final.pdf](https://www.cdc.gov/flu/pdf/fluview/2015-16/nfid-coverage-2015-16-final.pdf). Accessed August 14, 2020. 3. CDC. Flu vaccination coverage, United States, 2016–17 influenza season. [cdc.gov/flu/fluview/coverage-1617estimates.htm](https://www.cdc.gov/flu/fluview/coverage-1617estimates.htm). Accessed August 14, 2020. 4. CDC. Estimates of influenza vaccination coverage among adults—United States, 2017–18 flu season. [cdc.gov/flu/fluview/coverage-1718estimates.htm](https://www.cdc.gov/flu/fluview/coverage-1718estimates.htm). Accessed August 14, 2020. 5. CDC. Flu vaccination coverage, United States, 2018–19 influenza season. [cdc.gov/flu/fluview/coverage-1819estimates.htm](https://www.cdc.gov/flu/fluview/coverage-1819estimates.htm). Accessed August 14, 2020.

Most Parents Have Positive Attitudes Toward Vaccines¹

In an online survey, 4,369 parents of 7,984 children ages 0 to 18 years in the United States were asked about their general attitude towards vaccines

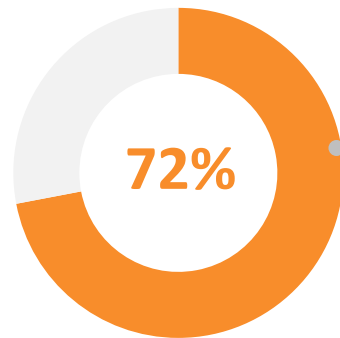
Babies, young
children



responded “**My attitude is positive**—I believe that vaccines play an important role in healthcare” regarding vaccines **for babies and young children**



Teens



responded “**My attitude is positive**—I believe that vaccines play an important role in healthcare” regarding vaccines **for teens**



However, Many Individuals May Be Misinformed About Vaccines^{1,a}

18%

mistakenly state that it is very or somewhat accurate to say that **vaccines cause autism**

15%

mistakenly agree that it is very or somewhat accurate to say that **vaccines are full of toxins**

20%

inaccurately report that it is very or somewhat accurate to say **it makes no difference whether parents choose to delay or spread out vaccines** instead of relying on the official CDC vaccine schedule

19%

incorrectly hold that it is very or somewhat accurate to say that **it is better to develop immunity by getting the disease** than by vaccination

Many who reported low trust in medical authorities
also believed vaccine misinformation

This belief in vaccine misinformation was true
across different demographic groups and political beliefs

^aSurvey of Americans conducted from February 28–March 25, 2019 and September 13–October 2, 2019 designed to study how anti-vaccination claims are widely held, persist, and relate to an individual's media consumption and levels of trust in medical experts.
1. Stecula DA et al. How trust in experts and media use affect acceptance of common anti-vaccination claims. *The Harvard Kennedy School (HKS) Misinformation Review*. misinforeview.hks.harvard.edu/wp-content/uploads/2020/01/v2_vaccinessocialmedia_jan29-1.pdf. Accessed August 14, 2020.

Vaccine Confidence May Vary Among Racial or Ethnic Groups

There are **disparities in vaccination uptake among ethnic and racial groups in the United States**^{1,2}

A **study** exploring **racial differences in African Americans' and Whites' vaccine acceptance** showed that¹:

- African American adults have **lower confidence** in vaccines than White adults: the clearest racial divide is the **level of trust in the government's role in vaccination**.
- **Cost** is a greater **barrier to vaccination uptake** in African American adults than in White adults.



African American participants have a higher level of trust in HCPs who share similar racial, ethnic, or cultural backgrounds than in HCPs who do not³

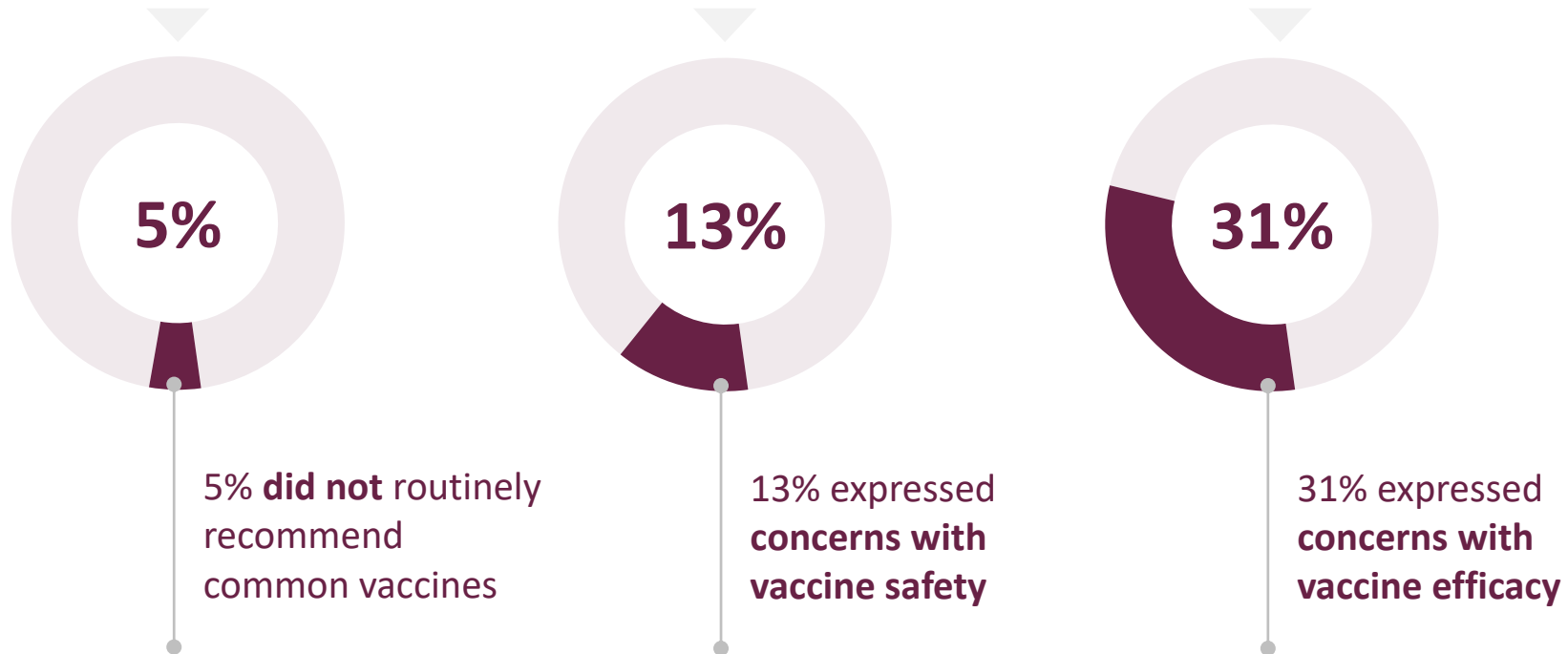
HCP=health care provider.

1. Quinn S et al. *PLoS Curr.* 2016;8:eurrents.outbreaks.3e4a5ea39d8620494e2a2c874a3c4201. 2. Centers for Disease Control and Prevention (CDC). Flu vaccination coverage, United States, 2018–19 influenza Season. [cdc.gov/flu/fluview/coverage-1819estimates.htm](https://www.cdc.gov/flu/fluview/coverage-1819estimates.htm). Accessed August 14, 2020. 3. Fu LY et al. *Hum Vaccin Immunother.* 2019;15(7–8):1715–1722.

Vaccine Hesitancy Also Exists With Health Care Providers

➤ While HCPs are the most trusted influencers of vaccination decisions, their own hesitancy impacts their recommendations¹

Questionnaires completed **anonymously** by 680 HCPs regarding their **views on vaccination** showed that²:



Factors that can increase HCPs' confidence in vaccines¹:

- ✓ Vaccine knowledge
- ✓ Professional society endorsement
- ✓ Support from colleagues

HCP=health care provider.

1. Paterson P et al. *Vaccine*. 2016;34(52):6700–6706. 2. Suryadevara M et al. *Vaccine*. 2015;33(48):6629–6634.

The Types of Mistrust May Be Rooted in Human Psychology¹

The **Moral Foundation Theory** proposes that a **set of innate intuitions lead humans to certain emotional responses** to particular interpersonal events. **Six foundations** have been shown to be involved in vaccine hesitancy:

Foundation	Relation to vaccine hesitancy
Care/harm	May underlie concerns about the harm that might result from vaccines, particularly if it affects vulnerable children
Authority/subversion	May be associated with distrust of scientists and government officials who promote vaccinations
Liberty/oppression	May be associated with the belief that mandatory vaccination policies violate parental civil liberties
Purity/degradation	May underlie concerns that vaccines are unnatural and that exposing children to diseases “naturally” is preferable
Fairness/cheating	May fuel outrage in response to the perception that pharmaceutical companies motivated by profit have an unfair voice in vaccine policy
Loyalty/betrayal	May be associated with virtues of in-group loyalty, patriotism, and sacrificing oneself for the group. Least likely to be associated with vaccine hesitancy.

Purity and liberty assumptions predict hesitancy

➤ **Medium-hesitancy** parents were **twice as likely** as low-hesitancy parents to **highly emphasize purity**

➤ **High-hesitancy** parents were **twice as likely** as low-hesitancy parents to **strongly emphasize purity and liberty**

Vaccination Uptake Is Influenced by 3 Psychological Realms¹

Thoughts and Feelings

- Include risk beliefs and anticipated regret
- Correlate to getting vaccinated
- Can motivate but the impact on actual vaccination behavior is not known

Social Processes

- Are influenced by:
 - Patient/provider and parent/child relationships
 - Social networks and social norms
- Can motivate through desire to protect others or defer vaccination by taking advantage of the protection provided by others

Behavior

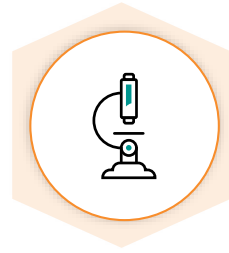
- Bypassing any attempt to change what people think and feel
- Direct interventions on behavior without trying to change thoughts and feelings or social context are effective
- Incentives, sanctions, and requirements can change behavior

Challenges and Factors of Vaccine Hesitancy

Key challenges to hesitancy¹



**Diminished prioritization
of vaccination¹**



**Lack of confidence
in vaccine safety
and efficacy¹**



**Lack of uniform
state policies on
vaccination^{1,2}**



**Apprehension over
following vaccine
schedules^{1,3}**

Factors influencing vaccination uptake⁴:

Access, affordability, awareness, acceptance, and activation

1. Nabet B et al. Addressing vaccine hesitancy to protect children and communities against preventable diseases. PolicyLab at Children's Hospital of Philadelphia;2017. policylab.chop.edu/sites/default/files/pdf/publications/Addressing_Vaccine_Hesitancy.pdf. Accessed August 14, 2020. 2. Smith MJ. *Infect Dis Clin North Am.* 2015;29(4):759–769. 3. Hough-Telford C et al. *Pediatrics.* 2016;138(3):e20162127. 4. Thomson A et al. *Vaccine.* 2016;34(8):1018–1024.

What Are Some Possible Solutions?

Remind Patients About the Power to Help Protect

- Viruses and bacteria that cause vaccine-preventable diseases still exist and can be transmitted by unprotected persons¹
- Outbreaks of vaccine-preventable diseases still occur²
- Infection may lead to illness and complications, which can be serious and life-threatening^{2,3}

Vaccinations protect the individual vaccinated and those around them^{4,5}

Community protection⁵:

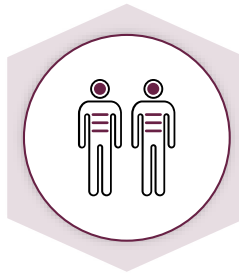


When **high levels of immunity in a community** are induced by vaccination, a person with a transmissible, vaccine-preventable disease is **unlikely to find a susceptible host** to continue the transmission⁵



Vaccine coverage within the community must be high to achieve and sustain protection of those vulnerable to the disease, including children and those with underlying medical conditions^{4,5}

Educate Patients About the Risks and Benefits of Vaccines¹



The FDA sets rules for 3 phases of clinical trials which test for the safety and efficacy of a new vaccine prior to licensure. The traditional phases include:

Phase 1
Includes 20–100
healthy volunteers



Phase 2
Includes several
hundred volunteers



Phase 3
Includes hundreds or
thousands of volunteers



FDA only licenses a vaccine if it is safe and effective and its benefits outweigh its risks



If licensed, CDC carefully reviews all data about the vaccine from clinical trials and other studies to develop recommendations for the vaccine's routine use

Considerations for vaccine recommendation:

○ How safe and effective is the vaccine at specific ages?

○ How serious is the disease it prevents?

○ How many people would get the disease if there was no vaccine?



After licensure and recommendation, FDA and CDC continue to monitor vaccine safety

○ Vaccine Adverse Event Reporting System (VAERS)

○ Vaccine Safety Datalink (VSD)

○ Clinical Immunization Safety Assessment Project (CISA)

Words Matter in Vaccine Advocacy and Communication



Vaccine decision-making may be an emotional experience that is informed by **thoughts** and **feelings**¹



Using **words** that are **easily misinterpreted** or that put people into **categories** may **counter the goal** of achieving **high vaccine coverage** and **community support for vaccination**²



Engaging in **positive talk** and **addressing concerns about vaccines** is helpful^{1,3}

Widely used vaccination terms may elicit strong reactions and consequences²

“vaccine hesitancy” “anti-vaccine”

“anti-vaxxer”

“herd immunity” “mandatory vaccination”

“vaccine demand”

Words matter when trying to achieve a common goal of healthy communities through optimal vaccination uptake²

What and How to Communicate About Vaccines

The Information-Deficit Model

The information-deficit model suggests that vaccine hesitancy and/or refusal may be due to a lack of understanding that can be overcome with educational intervention¹⁻³:



For example, *“if only the public would understand the dangers of this disease, they would vaccinate against it”*¹

Communication of scientific facts alone is unlikely to improve vaccine confidence¹

- **There is a lack of evidence** supporting the presumption that hesitancy and/or opposition are primarily driven by insufficient understanding of the facts³

- **Providing more information may unintentionally cause** those presented with the facts to hold more tightly to their opposing beliefs¹

Correcting Vaccine Misinformation



Vaccine misinformation may lead to poor decision-making, with potentially serious implications^{1,2}



Meta-analyses have shown that vaccine misinformation may persist and be difficult to correct^{1,2}



Countering false vaccine information in ways that repeat it (eg, myths vs facts) may paradoxically amplify and perpetuate misinformation, increasing its influence²

Corrective strategies may have unintended opposite effects, reinforcing misconceptions and reducing intentions to vaccinate²

If well handled (using terms that accurately represent their intended meaning), conversation addressing patient concerns about vaccination can lead to greater understanding of the benefits and risks and the importance of vaccination.

This conversation may correspond with positive influences on vaccine acceptance and coverage.³

Deliver a Strong Recommendation

The use of presumptive language has been shown to be an effective way to increase vaccination uptake¹

Presumptive formats presuppose that parents will vaccinate
“We have some shots to do today.”

VS

Participatory formats provide parents with more decision-making latitude
“Are we doing shots today?”

A strong provider recommendation is a key predictor of a patient receiving a vaccine and can significantly increase vaccination rates^{2,3}

Two-thirds of patients who received a provider recommendation for influenza vaccine received the vaccine within 12 months; 84% of those without a recommendation remained unvaccinated^{4,a}

^aBased on a nationally representative survey of 1005 US adults ≥19 years old and older.


1. Opel DJ et al. *Pediatrics*. 2013;132(6):1037–1046. 2. Nabet B et al. Addressing Vaccine Hesitancy to Protect Children and Communities Against Preventable Diseases. PolicyLab at Children’s Hospital of Philadelphia;2017. policylab.chop.edu/sites/default/files/pdf/publications/Addressing_Vaccine_Hesitancy.pdf. Accessed August 14, 2020. 3. CDC. Immunization Strategies for Healthcare Practices and Providers. In: Hamborsky J, Kroger A, Wolfe S, eds. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. 13th ed. Washington, DC: Public Health Foundation; 2015:33–46. 4. Nowak GJ et al. *Int J Environ Res Public Health*. 2018;15(4):711.

Suggested Flow of Vaccine Communication^{1,2}

Make a strong recommendation




Patient responds in 1 of 3 ways:

 **Yes**
No resistance



Vaccinate

 **Not sure**
Ambivalence



 **No**
Resistance

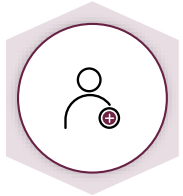
Spirit and Core Skills of Motivational Interviewing

Motivational interviewing is a **guiding** style of communication, built around **3 components**^{1,a}



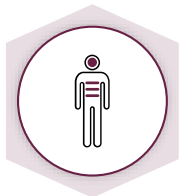
Collaboration:

Using a comfortable, non-confrontational tone and language



Evocation:

Leading patients (or parents) to draw their own conclusions



Honoring patient's autonomy:

Supporting patients in making their own decisions

O-A-R-S

are the core communication skills for motivational interviewing^{2,3}



Open-ended questions

“What concerns do you have about vaccines?”



Affirmations

“You have thought a lot about this.”



Reflective listening

“I hear you saying that...”



Summarization

“Let me summarize...”

^aMotivational interviewing requires specialized training to be effective.

1. Rollnick S et al. Motivational interviewing principles and evidence. In: Rollnick S et al, eds. *Motivational Interviewing in Health Care: Helping Patients Change Behavior*. New York, NY: The Guilford Press. 2008;3–10. **2.** Miller WR et al. The method of motivational interviewing. In: Miller WR, Rollnick S, eds. *Motivational Interviewing: Helping People Change*. 3rd ed. New York, NY: The Guilford Press; 2013:25–36. **3.** Reno JE et al. *J Health Commun*. 2018;23(4):313–320.

Using Motivational Interviewing to Foster Change



Ambivalence

- > Normal part of human nature and a step toward change¹⁻³
- > Has 2 incompatible sides¹⁻³:
 - Reasons for change (change talk)
 - Reasons against change (sustain or non-change talk)
- > Must be resolved **before** moving to change^{1,2}
- > Can be a form of resistance³
- > Could develop into resistance if HCP pushes too hard before patient is ready for change³

MI solution: evoking (eliciting patient's own motivations for change), by strategically reflecting change talk over non-change talk^{2,3}

Patient: "I think prevention is important, but I am worried about experiencing side effects."

HCP: "You're more than just a little worried about the side-effects of the vaccine, AND prevention is important to you. Tell me more about why prevention is a priority for you."



Resistance

- > Reflects opposition to a treatment^{3,4}
- > Common cues⁴:
 - Arguing
 - Interrupting
 - Ignoring, not paying attention
 - Crossing arms
 - Being dismissive ("whatever")

MI solution: rolling with resistance and coming alongside, by reflecting on what you hear, trying to understand, and supporting autonomy^{3,4}

Parent: "I think my child is too young for this vaccine. Someday, she may consider it, but not now."

HCP: "It is hard for you to believe the vaccine is right for your child when she's so young."
"I can certainly understand why you feel that way. May I share the reasoning behind vaccinating early, and then you can tell me what you think?"

HCP=health care provider; MI=motivational interviewing.

1. Miller WR et al. Conversations about change. In: Miller WR, Rollnick S, eds. *Motivational interviewing: helping people change*. 3rd ed. New York, NY: The Guilford Press; 2013:3–13. 2. Miller WR et al. Ambivalence. Change talk and sustain talk. In: Miller WR, Rollnick S, eds. *Motivational interviewing: helping people change*. 3rd ed. New York, NY: The Guilford Press; 2013:157–166. 3. Westra HA & Aviram A. *Psychotherapy (Chic)*. 2013;50(3):273–278. 4. Miller WR et al. Responding to sustain talk and discord. In: Miller WR, Rollnick S, eds. *Motivational interviewing: helping people change*. 3rd ed. New York, NY: The Guilford Press; 2013:196–211.

Motivational Interviewing Framework:

Use the Elicit–Provide–Elicit Script To Exchange Information^{1,2}

Elicit

- Ask patients what they already know or would like to know more about
- Ask them permission to offer information

Provide

- Give information in a neutral, non-judgmental way (avoid “I” and “you”)
- Be clear, avoid jargon (eg, herd immunity³), and offer information in small amounts with time to reflect

Elicit

- Gather understanding from the patient of the information provided
- Ask open questions and reflect on the patient’s reactions



What do you know about...?

What would you like to know about...?

May I give you information on...?

Research suggests...

Studies have shown...

We know that...

So what do you make of that?

What else would you like to know?

What do you think is the next step for you?

Readiness Ruler Gives an Opportunity for Evocative Questions¹



“On a scale from 0 to 10, where 0 means ‘not at all important’ and 10 means ‘the most important thing for me right now,’ how important would you say it is for you to vaccinate your child?”

“

And why are you at a __ and not 0 [or a lower number]?

”

Summary



Vaccine confidence is an important factor for achieving and maintaining the high vaccination rates needed to sustain community-level protection against vaccine-preventable disease¹



Vaccine hesitancy is present in all age groups²⁻⁴ and involves many factors and challenges, such as:

- Complacency, convenience, and confidence⁵
- Access, affordability, awareness, acceptance, activation⁶



Providers and stakeholders must act to boost vaccine confidence and help reduce vaccine hesitancy, increasing vaccination rates to levels that will protect entire populations⁷

- Providers can focus on the benefits of vaccines, as well as vaccine safety and efficacy^{7,8}



It is important to understand the causes of vaccine hesitancy when trying to increase vaccination uptake^{9,10}



When communicating with patients and parents, it is important to be mindful of how you discuss vaccines¹¹



Motivational interviewing tools may assist with conversations with vaccine hesitant patients or parents¹²⁻¹⁴

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