

What Is Vaccine Confidence?

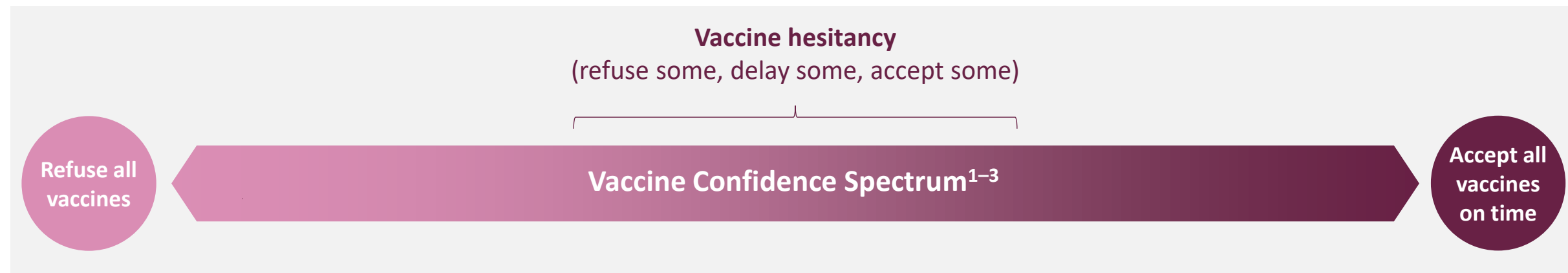
Vaccine Confidence Spectrum

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

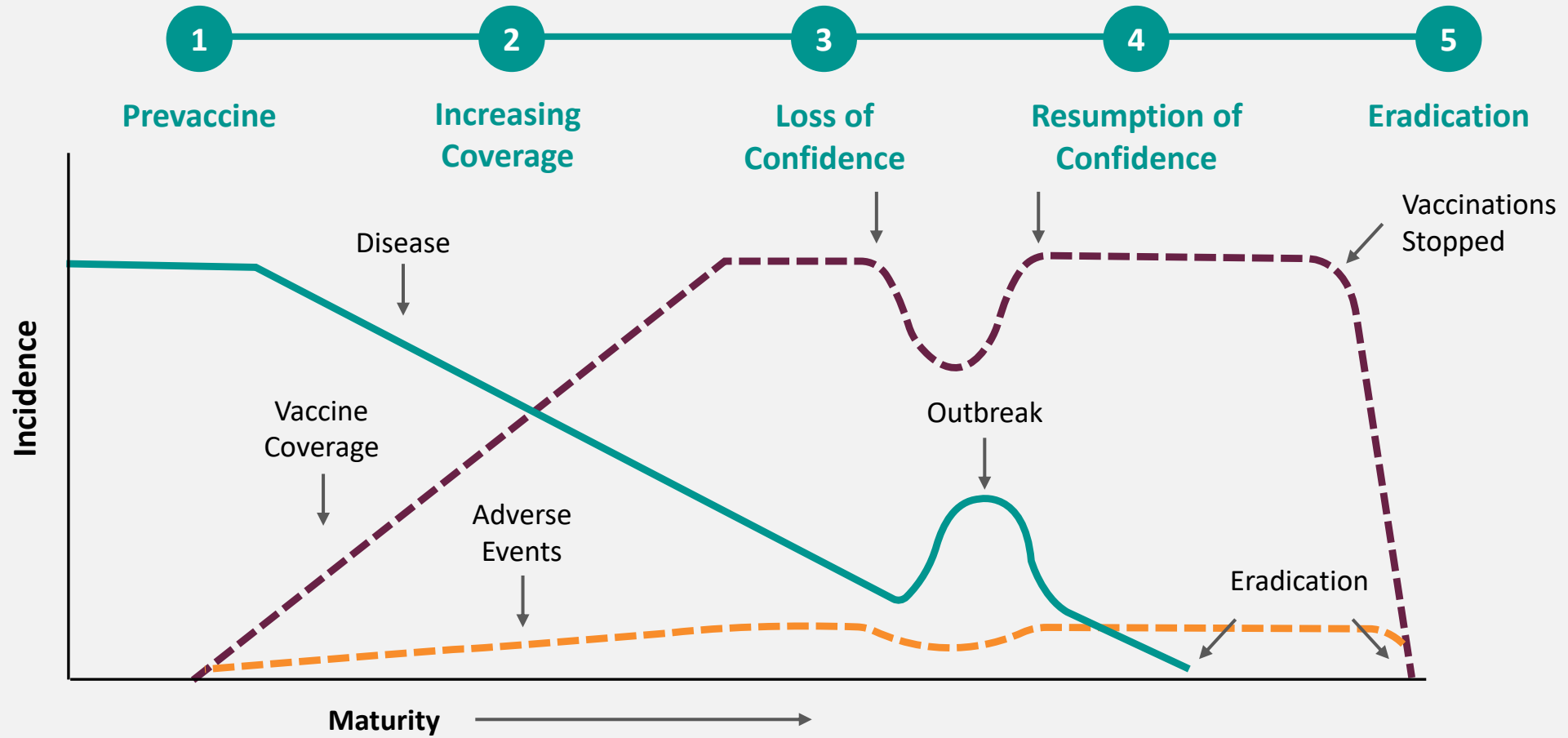
Notable factors influencing parental confidence in, and acceptance of, childhood vaccines:

- 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.

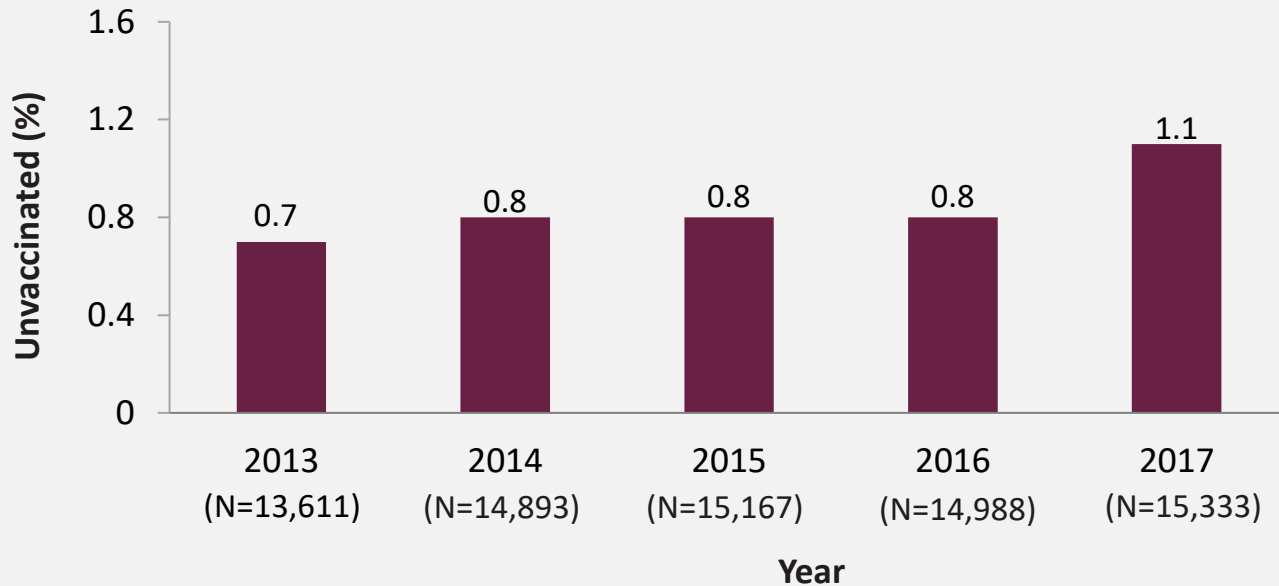
1. Hill H et al. *MMWR Morb Mortal Wkly Rep.* 2019;68(41):913–918. 2. Seither R et al. *MMWR Morb Mortal Wkly Rep.* 2019; 68(41);905–912. 3. Centers for Disease Control and Prevention (CDC). Flu vaccination coverage, United States, 2018–19 influenza season. [cdc.gov/flu/fluview/coverage-1819estimates.htm](https://www.cdc.gov/flu/fluview/coverage-1819estimates.ht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

Vaccine Hesitancy and Undervaccination Are Observed in All Age Groups

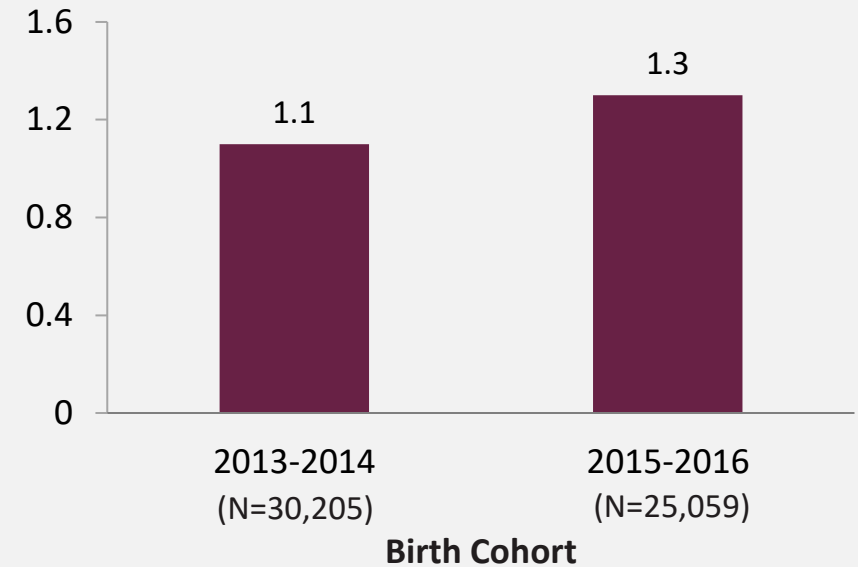


Estimated Percentage of Unvaccinated Children

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.

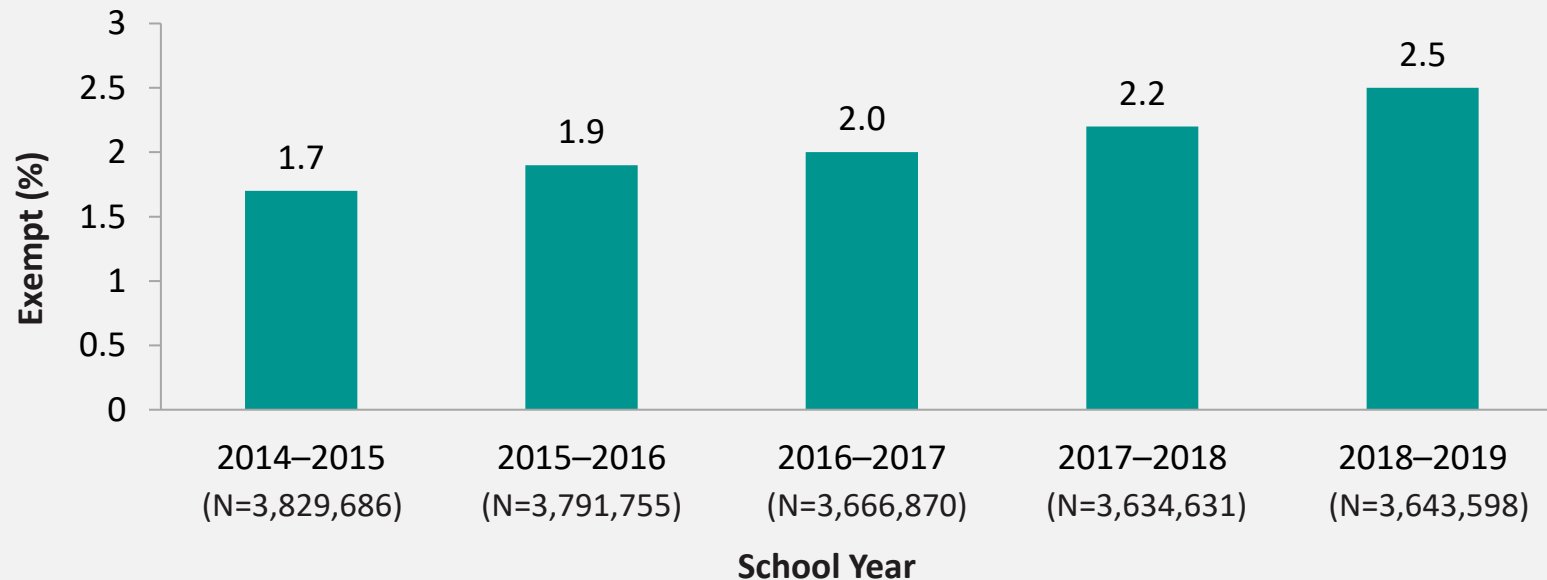
Vaccine Hesitancy and Undervaccination Are Observed in All Age Groups



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.

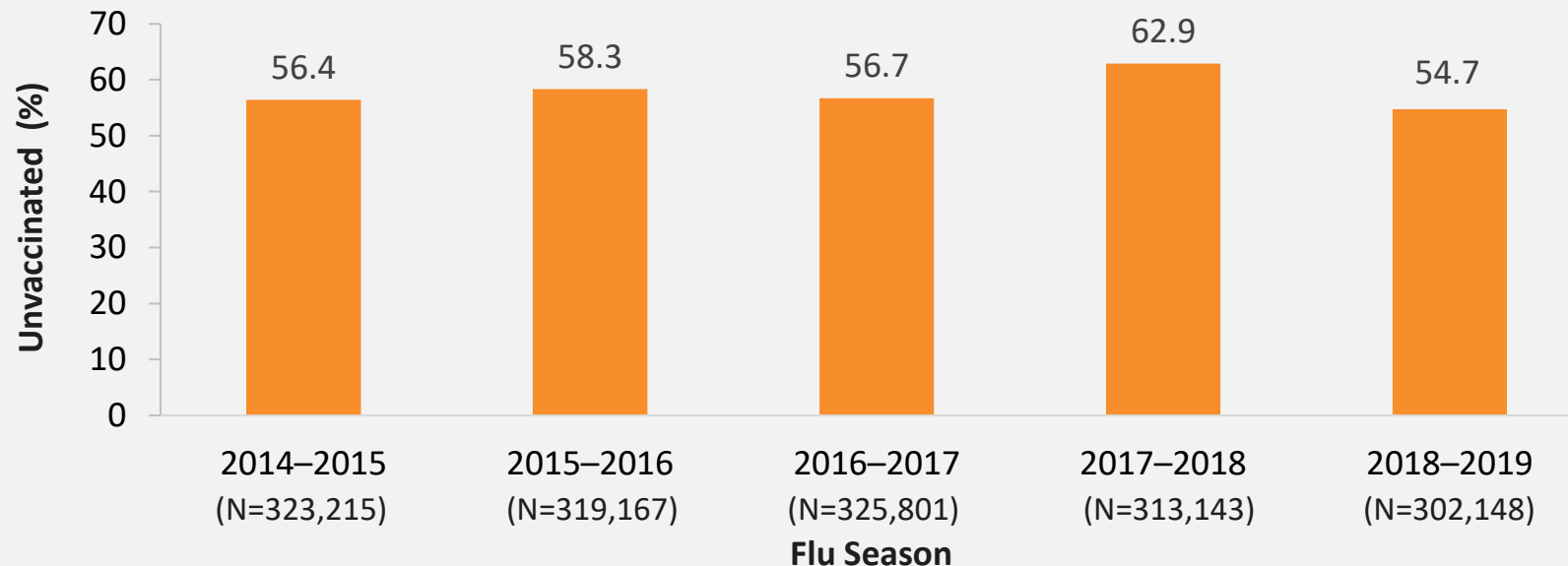
Vaccine Hesitancy and Undervaccination Are Observed in All Age Groups



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}



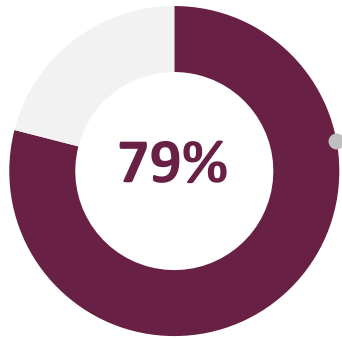
BRFSS=Behavioral Risk Factor Surveillance System.

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

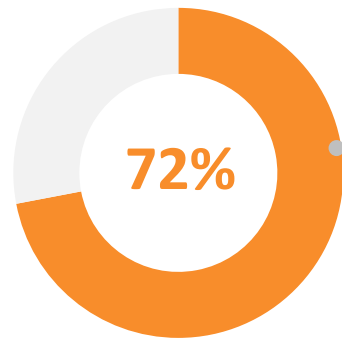
Babies, young
children



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

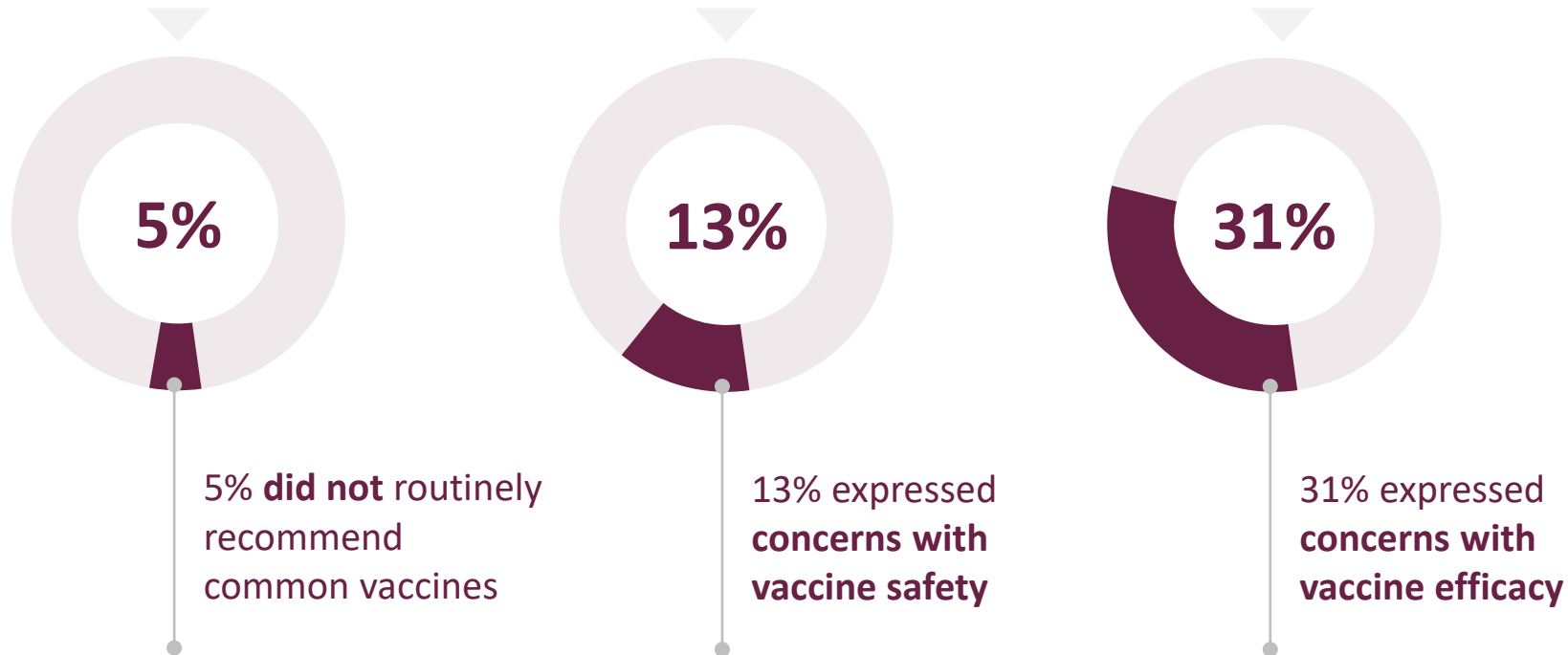
HCP=health care provider.

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.

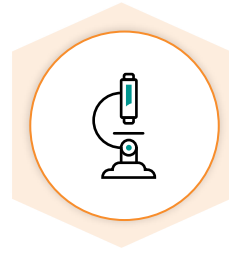
1. Paterson P et al. *Vaccine*. 2016;34(52):6700–6706. 2. Suryadevara M et al. *Vaccine*. 2015;33(48):6629–6634.

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:

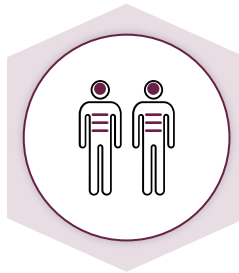


When **high levels of immunity in a community** are induced by vaccination, a person with a transmissible, vaccine-preventable disease is **unlikely to find a susceptible host** to continue the transmission⁵

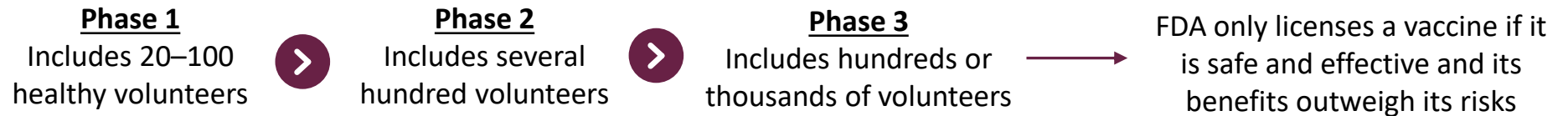


Vaccine coverage within the community must be high to achieve and sustain protection of those vulnerable to the disease, including children and those with underlying medical conditions^{4,5}

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:



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

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

1. National Vaccine Advisory Committee (NVAC). *Public Health Rep.* 2015;130(6):573–595. 2. Hill H et al. *MMWR Morb Mortal Wkly Rep.* 2018;67(40):1123–1128. 3. Seither R et al. *MMWR Morb Mortal Wkly Rep.* 2019; 68(41):905–912. 4. 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. 5. Smith MJ. *Infect Dis Clin North Am.* 2015;29(4):759–769. 6. Thomson A et al. *Vaccine.* 2016;34(8):1018–1024. 7. 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. 8. CDC. The Journey of Your Child’s Vaccine. [cdc.gov/vaccines/parents/infographics/journey-of-child-vaccine.html](https://www.cdc.gov/vaccines/parents/infographics/journey-of-child-vaccine.html). Accessed August 14, 2020. 9. Amin AB et al. *Nat Hum Behav.* 2017;1(12):873–880. 10. Brewer NT et al. *Psychol Sci Public Interest.* 2017;18(3):149–207. 11. Dudley MZ et al. *Vaccine* 2020;38(4):709–711. 12. 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. 13. Edwards KM et al. *Pediatrics.* 2016;139(3):e20162146. 14. Reno JE et al. *J Health Commun.* 2018;23(4):313–320.



Copyright © 2020 Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc.

All rights reserved.

US-NON-05839 08/20