



## Vaccine Preventable Disease Outbreak and Vaccine Hesitancy

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### Disclosures

- Candice Robinson is a federal government employee with no financial interest in or conflict with the manufacturer of any product named in this presentation
- The speaker will not discuss the off-label use of any vaccines
- The speaker will not discuss a vaccine not currently licensed by the FDA

## Vaccine Preventable Disease Outbreaks

### Comparison of 20th Century Annual Morbidity and Current Morbidity: Vaccine-Preventable Diseases

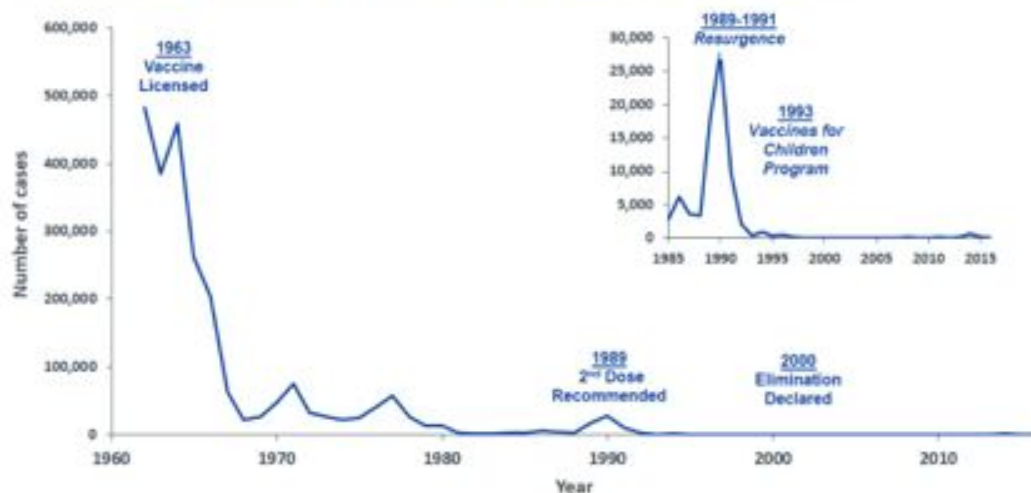
Disease	20th Century Annual Morbidity <sup>†</sup>	2014 Reported Cases <sup>††</sup>	Percent Decrease
Diphtheria	21,053	1	> 99%
Measles	530,217	628	> 99%
Mumps	162,344	1,151	99%
Pertussis	200,752	32,971	86%
Polio (paralytic)	16,316	0	100%
Rubella	47,745	8	> 99%
Congenital Rubella Syndrome	152	0	100%
Tetanus	580	21	96%
<i>Haemophilus influenzae</i>	20,000	27*	> 99%
Total	999,159	34,807	97%
Vaccine Adverse Events	Not available	~30,000	Not available

†† CDC. MMWR. January 9, 2015 / 63(53);ND-733-ND-746. (MMWR 2014 provisional week 53 data)

† JAMA. 2007;298(18):2155-2163

\* *Haemophilus influenzae* type b (Hib) < 5 years of age. An additional 12 cases of Hib are estimated to have occurred among the 226 reports of Hi (< 5 years of age) with unknown serotype.

## Measles Cases, United States, 1962-2016\*



\*2016 data is preliminary and subject to change

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## Measles Cases by Year Since 2010

Year	Reported Cases
2010	63
2011	220
2012	55
2013	187
2014	667
2015	188
2016*	86
2017**	120

- The majority of people who got measles were unvaccinated
- Measles is still common in many parts of the world including some countries in Europe, Asia, the Pacific, and Africa
- Travelers with measles continue to bring the disease into the U.S.

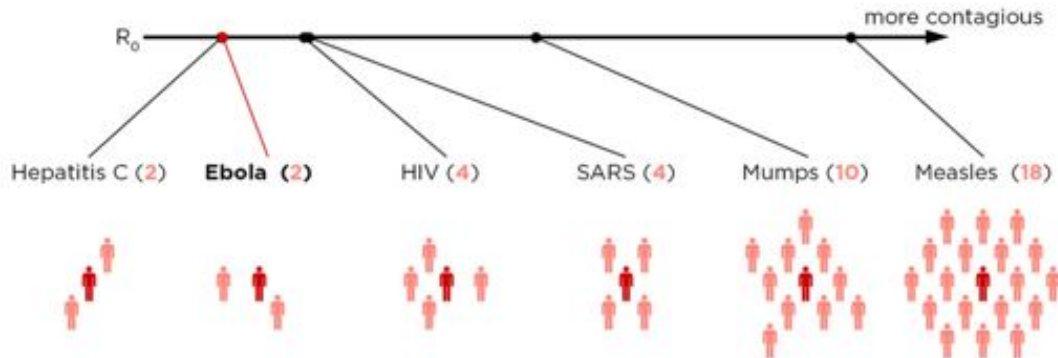
\*Preliminary cases as of 12/31/2016

\*\*Preliminary cases as of 10/07/2017

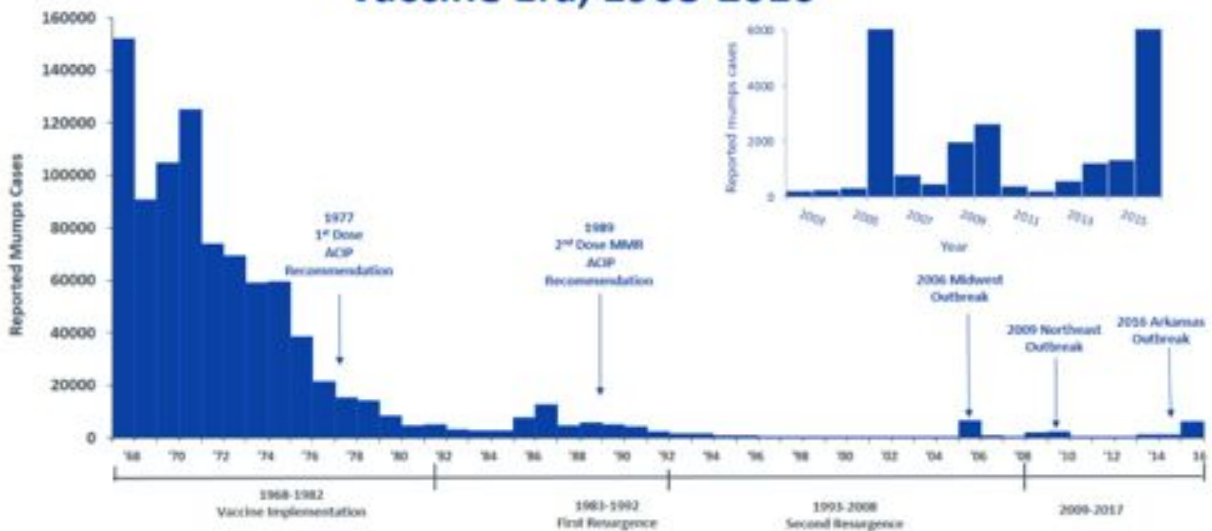
[www.cdc.gov/measles/cases-outbreaks.html](http://www.cdc.gov/measles/cases-outbreaks.html)

## How contagious is measles?

The number of **people** that **one sick person** will infect (on average) is called  $R_0$ . Here are the maximum  $R_0$  values for a few viruses.

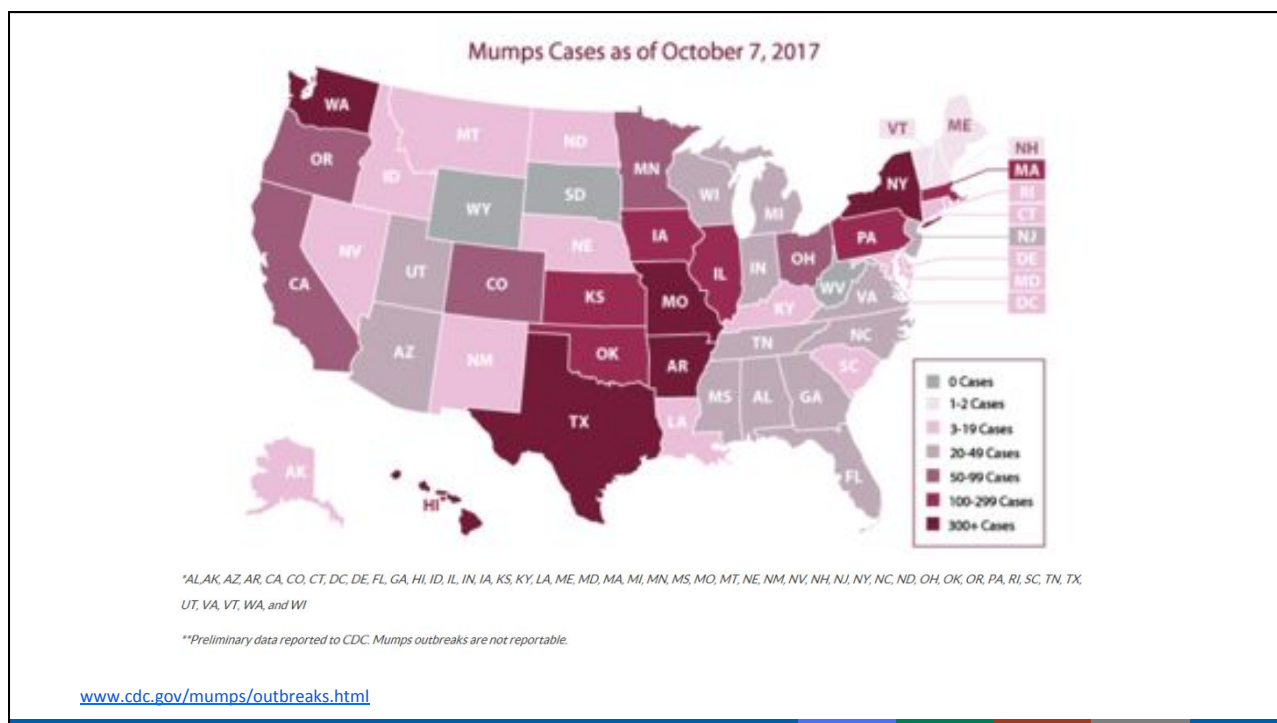


## Reported Mumps Cases, United States, Vaccine Era, 1968-2016\*



Source: National Notifiable Disease Surveillance System (passive surveillance); 2016 data is preliminary and subject to change





# Hepatitis A

CDC A-Z INDEX ▾

## Viral Hepatitis

Outbreaks

Hepatitis A Outbreaks -

Outbreaks of hepatitis A in multiple states among people who are homeless and people who use drugs - 2017

Interim outbreak-specific guidance on hepatitis A vaccine administration

Multistate outbreak of hepatitis A linked to frozen strawberries - 2016

Hawaii outbreak of hepatitis A - 2016

Multistate outbreak of hepatitis A virus infections - 2013

Outbreaks Related to Healthcare through 2015

Healthcare Investigation Checklist

Viral Hepatitis > Outbreaks > Hepatitis A Outbreaks

### 2017 - Outbreaks of hepatitis A in multiple states among people who are homeless and people who use drugs

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#### Overview

Since March 2017, CDC's Division of Viral Hepatitis (DVH) has been assisting several state and local health departments with hepatitis A outbreaks, spread through person to person contact, that have occurred primarily among persons who are homeless, persons who use injection and non-injection drugs, and their close direct contacts. Information on local hepatitis A case counts and outbreak response is available on web pages for the locations affected by the outbreak ([California](#), [Michigan](#), [Utah](#)).

#### CDC's Response:

In response to these and all hepatitis A outbreaks, CDC provides ongoing epidemiology and laboratory support as well as support on vaccine supply and vaccine policy development. When requested, CDC sends "disease detectives" to affected areas to evaluate and assist in the outbreak response.

#### At A Glance

[California](#)

- Case Count (as of October 27): 486
- Hospitalizations: 413
- Deaths: 21

[Michigan](#)

- Case Count (as of November 2): 457
- Hospitalizations: 409
- Deaths: 19

[Utah](#)

- Case Count (as of November 6): 57
- Hospitalizations: 30
- Deaths: 0

**Estimated number and percentage of children enrolled in kindergarten with an exemption from one or more vaccines by State and the United States, School Vaccination Assessment Report, 2016-17 school year**



**Vaccine Hesitancy**

**Vaccines Are Good 😊**

**Disease is Bad ☹️**

- Vaccines protect children and adults from 16 serious diseases and potential complications
- There are record low rates of vaccine-preventable diseases

**And yet . . .**



Flu vaccine gave me the flu!

Flu vaccine doesn't work.

Immunity from disease is better!

I don't need a flu shot... I never get the flu.

Influenza is not a serious illness.

The side effects from a vaccine are worse than the disease!

I'm pregnant so I can't get vaccinated.

Vaccines can make people walk backwards.

I am allergic to eggs so I can't be vaccinated.

Vaccines cause Alzheimer's disease.

Vaccines weaken your body's immune response.

## What Do You Think?

- You are administering Tdap vaccine today to a patient. You offer a flu shot, too, but she declines flu vaccine. Would you consider her “vaccine-hesitant”?
  - Yes
  - No
  - Maybe

## Hesitant Patients

- Doubt the value or necessity of the recommended *vaccination schedule*
- Want information to make the best choice
- BUT may not identify themselves as vaccine-hesitate



## Vaccine Hesitancy

- Vaccine hesitancy refers to refusal or delay in acceptance despite the availability of vaccination services
- Vaccine hesitancy is complex and varies across time, place, and vaccines
- It includes factors such as complacency, convenience, and confidence



Image: James Gillray, The Cow-Pock—or—the Wonderful Effects of the New Inoculation! (1802)

## Costs of Vaccine Hesitancy

- **Increased levels of under-vaccination**
  - Undervaccinated tend to remain undervaccinated
  - Outbreaks of vaccine preventable diseases
    - Pertussis
    - Varicella
    - Pneumococcal disease
    - MEASLES!!!!

## Costs of Vaccine Hesitancy

- **Increased pain/trauma for children from multiple visits**
  - 84% of pediatricians think it is more painful for children to administer vaccines over multiple visits than to give them simultaneously
- **Less time to spend on other preventive health issues**
  - Average visit = 18 minutes
- **Reports of physician burnout**

O'Leary, S. Strategies for talking to Vaccine-Hesitant Parents. Mar 2017

## Vaccine Hesitancy and Health Care Providers

- **Recent survey among pediatricians nationally**
  - 46% agreed that their job was less satisfying because of the need to discuss vaccines with vaccine-hesitant parents
  - 60% reported spending more than 10 minutes discussing vaccines in visits with vaccine-hesitant parents
- **When talking about vaccines, we want to be effective but also efficient**

Kempe A, et al. Physician Response to Parental Requests to Spread Out the Recommended Vaccine Schedule. *Pediatrics* 2015;135(4)

## Vaccine Conversations

- **Answering questions can be challenging**
  - Staff is not always prepared for questions
  - Inconsistent messages from staff
  - Real-life time constraints
  - Frustrating! Correcting misconceptions can successfully reduce misperceptions, but does not always result in vaccination

2007 National Survey of Children's Health. Factors associated with human papillomavirus vaccine-series initiation and health care provider recommendation in U.S. adolescent females. *Vaccine* 2012;30(20):3112-3118

Communication Research

## Communicating About Vaccines

- There is much research on parents' knowledge, attitudes, and beliefs about vaccines
- Little research on what communication techniques actually *change parents' behavior*
- Research in this area is complicated
- We've been focused on the "what" more than the "how"

## Conventional Wisdom

- Improve parents' knowledge and they will make the right decision
- This educational approach assumes human decision-making is rational (when it often is not)
- Behavioral economics: human behavior is influenced by deep-seated cognitive biases and heuristics resistant to rational influence



## What Does This Mean?

- **Becoming increasingly clear that simply correcting knowledge gaps—whether through informational brochures, community campaigns, or direct provider conversations— is often not enough to address parents’ concerns about vaccines**
- **Investigators are now focusing on developing interventions to improve vaccination uptake focused on how people actually think rather than how they ought to think**
  - Remember—correcting misconceptions, can successfully reduce misperceptions but does not always result in vaccination

O’Leary, S. Strategies for Talking to Vaccine-Hesitant Parents. *NFID Clinical Vaccinology Course* Mar 2017

## What are the three most important sources of information that have helped you make decisions about your youngest child’s vaccinations?

- **Child’s health care provider (90.2%)**
- **Family (52.6%)**
- **Child’s other parent (32.2%)**
- **American Academy of Pediatrics (28.9%)**
- **CDC (26.7%)**
- **Friends (24.9%)**
- **Internet (22.5%)**
- **Traditional media (6.4%)**
- **Complementary healthcare provider (2.1%)**

Source: 2012 Consumerstyles Survey

## What You Say Matters

- Providers are a patient's most trusted source of information on vaccines
- Research shows a patient who receives a strong recommendation from a provider is 4–5 times more likely to be vaccinated\*
- “Bundle” all needed vaccines into the same recommendation

\*2007 National Survey of Children's Health. Factors associated with human papillomavirus vaccine-series initiation and health care provider recommendation in U.S. adolescent females. *Vaccine* 2012;30(20):3112-3118

## What You Say Matters AND How You Say It Matters

- Good recommendation = simple, strong and personalized

★ “Its time for John's flu shot. I recommend he is vaccinated today. I get vaccinated and my children do, too. It's the healthy thing to do.”

VERSUS

- “Research suggests that persons vaccinated with influenza vaccine have a decreased chance of contracting disease and complications associated with influenza. Would you like John vaccinated today?”

## How You Start the Conversation Matters, Too

- **The best predictor of vaccination was how the provider started the conversation**
  - For both vaccine hesitant and non-hesitant patients



Opel DJ, Smith R, et al. The Influence of Provider Communication Behaviors on Parental Vaccine Acceptance and Visit Experience. *American Journal of Public Health* Oct 2015

## Participatory versus Presumptive Approach

- **Participatory: provides more decision-making latitude**
  - Example: “Have you thought about what shots you’d like today?”
- **Presumptive: presupposes that parents would get the child vaccinated**
  - Example: “We have some vaccines due today.”

## What Do You Think?

- **Which approach is associated with higher vaccine uptake?**
  - Participatory
    - Example: “Have you thought about what shots you’d like today?”
  - Presumptive
    - Example: “We have some vaccines due today.”

## Participatory versus Presumptive

- **Among all parents, a larger proportion resisted vaccine recommendations when providers used a participatory rather than presumptive initiation format (83% vs 26%;  $P < .001$ )**
- **This finding remained true among vaccine-hesitant parents (89% vs 30%;  $P < .001$ )**

## Why Presumptive Style Might Be Better

- Most patients perceive decisions about vaccination to be complicated
- As humans, when we make decisions we perceive to be complicated, we tend to have a status quo bias (also called a default bias), meaning we go with what is expected or “normal”
- Using a presumptive approach, patients are made to feel that vaccination is what most people do, and it is the socially acceptable “norm”

O'Leary, S. Strategies for Talking to Vaccine-Hesitant Parents. *NFID Clinical Vaccinology Course* Mar 2017

## Can Social Norms Affect Decision-Making?

- Researchers looked at messaging and how it could affect towel reuse in hotels



Goldstein NJ, et al. *J Consum Res* 2008;35:472-482  
© 2008 by JOURNAL OF CONSUMER RESEARCH, Inc

## Example of Towel Reuse Sign

**“HELP SAVE THE ENVIRONMENT.”**

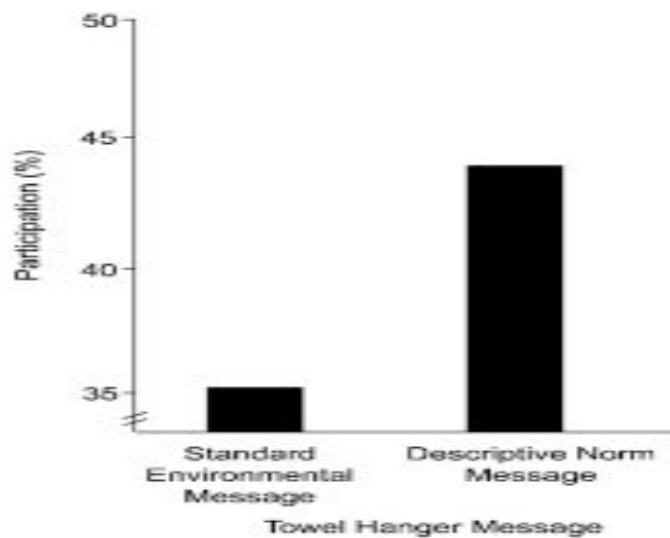
You can show your respect for nature and help save the environment by reusing your towels during your stay.

OR

**“JOIN YOUR FELLOW GUESTS IN HELPING TO SAVE THE ENVIRONMENT.”**

Almost 75% of guests who are asked to participate in our new resource savings program do help by using their towels more than once. You can join your fellow guests in this program to help save the environment by reusing your towels during your stay.

## Towel Reuse Rates as a Function of Sign in Room



Goldstein NJ, et al. *J Consum Res* 2008;35:472-482  
 © 2008 by JOURNAL OF CONSUMER RESEARCH, Inc

## Could Social Norms Influence a Decision to Vaccinate?

- Increasing attention to this as a strategy
- Fits with the “presumptive” recommendation
- Study from 1990s suggested university students were more likely to receive influenza vaccine if they were told most students got it

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## What Do You Think?

- Your mother is moving to an assisted living facility
- Facility A is 30 minutes from your home. Flu vaccination is required for all staff without a medical contraindication
- Facility B is 15 minutes from your home. Flu vaccination is promoted to staff but not required
- Which facility would you choose?
  - Facility A
  - Facility B
  - Want additional information

## Social Norms and Social Media

- Could this help change the conversation?
- Will it mobilize the “silent majority”, giving a voice to all of those who actually choose to vaccinate?
- Will patients use vaccination information as part of the decision about where to seek health care?

## Vaccine Conversations





## What Usually Happens When a Patient is Hesitant?

- The provider might ask why the patient does not want the vaccine
- Often patients will state all the reasons they do not want to be vaccinated
  - In the process, the patient strengthen their resolve against the vaccination
- The provider is vulnerable to falling into conversation traps

## Communication Traps



**Persuasion  
trap**



**Data  
dump trap**



**Q and A  
trap**

O'Leary, S. Strategies for Talking to Vaccine-Hesitant Parents. *NFID Clinical Vaccinology Course* Mar 2017

## Persuasion Trap

- When the provider becomes the champion for the vaccine and tries to convince the hesitant or resistant patient of the benefits
- This usually ends up in an argumentative type of “yes, but” cycle



## The Lecture (Data Dump) Trap

- The tendency here is to provide the full story about some aspect of the vaccine
- This often ends up putting people off and raising resistance because it implies that they don't know the full story and you're going to give it to them
- Also, it can be counterproductive because you end up raising concerns that the patient had not previously considered



## The Question and Answer Trap

- When the provider begins asking a series of closed questions that require a yes or no answer and does not invite any additional information or thoughts



## In Summary

- Directive patient/provider recommendations followed by a closed question work fine for the patient who is ready to be vaccinated or for the patient who expects the doctor to tell him or her what to do
- For patients who are unsure or resistant, a closed-ended question following a recommendation can lead to less productive conversations

## Motivational Interviewing

- Motivational interviewing (MI) is a patient-centered, guiding communication style for enhancing a person's own motivation for change or behavioral activation
- Engages the patient respectfully and fully in the discussion
- The 4 elements include:
  - Empathy
  - Collaboration
  - Evocation
  - Support for autonomy

## Motivational Interviewing

- **Motivational interviewing has not been tested and proven effective for convincing those who are hesitant about vaccination**
- **HOWEVER, it has been shown to be effective in other health interventions, including:**
  - Diabetes self care
  - Smoking cessation
  - Cognitive behavioral therapy

O'Leary, S. Strategies for Talking to Vaccine-Hesitant Parents. *NFID Clinical Vaccinology Course* Mar 2017

## Using Motivational Interviewing for Vaccine Discussions

- **Motivational interviewing includes:**
  - Open-ended questions
  - Affirmations
  - Reflection
  - Summary
- **Remember to:**
  - Include simple, strong, and personalized recommendation
  - Highlight social norms

O'Leary, S. Strategies for Talking to Vaccine-Hesitant Parents. *NFID Clinical Vaccinology Course* Mar 2017

## Motivational Interviewing and Vaccine Conversations

- HCP asks in a non-threatening way to share the patient's concerns
- **Example:**
  - HCP to patient: "You seem to be concerned about influenza vaccine. We are asked a lot of questions about flu vaccine. Would you mind sharing what your particular concerns are?"
  - Patient's response: "The flu shot doesn't work because last time I got it, I got the flu anyway."

## Motivational Interview and Vaccine Conversations

- HCP reflects back what the patient is saying to be sure he/she understands (empathy) and summarizes what has been heard before proceeding, again with permission, to make a recommendation
- **Example:**
  - HCP to patient: "So I can hear you are concerned the vaccine will give you influenza. I've had this question a lot so I did some research on it. Is it okay if I share with you what I learned?"

## Motivational Interviewing and Vaccine Conversations

### ■ Example:

- “The flu shot cannot offer 100 percent protection against the flu, but it reduces the risk of getting it. Many people mistake symptoms from colds and other illnesses for the flu. Influenza is a serious illness—for healthy children, too, not just those with a chronic health problem.”

- **If possible, put the concern into a perspective the family can relate to**

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## Motivational Interviewing and Vaccine Conversations

**“I think about flu vaccine like a savings account for a rainy day. The immune system has antibodies ‘in the bank’ to use when they are needed. Most of the patients in my practice are vaccinated.”**

## Motivational Interview and Vaccine Conversations

- **Now, its time for a simple, strong, and personalized recommendation**
- **End the conversation with an open-ended question**
- **Example**
  - “I get flu vaccine to protect myself, my family and patients. I make sure my children are vaccinated and recommend my friends vaccinate their children. However, this is a decision only you can make. What do you think?”

O'Leary, S. Strategies for Talking to Vaccine-Hesitant Parents. *NFID Clinical Vaccinology Course* Mar 2017

## Motivational Interviewing Summary

- **Engage the patient respectfully and fully in the discussion**
- **The four elements of the MI spirit—empathy, collaboration, evocation, and support for autonomy**
- **Core MI skills like open-ended questions and reflections**
- **Use of behavior change principles like emphasizing social norms and focusing on the disease that is prevented rather than negatives (like side effects)**
- **Don't forget—a simple, strong, and personalized recommendation**



## Consistent Messages

- **Consistent messages from ALL staff are critical**
  - Don't forget front desk/ support staff
- **Use talking points to get everyone on the same page**



## Summary

- Be mindful of the structure of the conversation
- Presumptive recommendations are useful (most of the time)
- Avoid arguments—spend as little time as you can refuting
- Emphasize social norms
- Open-ended questions
- Remember to ask permission to share

# Communication Resources

## CDC Vaccine Communication Resources

**CDC** Centers for Disease Control and Prevention  
CDC 24/7: Saving Lives, Protecting People™

SEARCH

CDC A-Z INDEX

**Provider Resources for Vaccine Conversations with Parents**

Conversations Home CDC - Conversations Home

**Talking to Parents about Vaccines**

Understanding Vaccines and Vaccine Safety

Vaccine-preventable Diseases

About Vaccine Conversations with Parents

Provider Resources Web Tools

Resources to Share with Parents

**Get Email Updates**

To receive email updates about this page, enter your email address.

What's this? **Submit**

**Talking to Parents about Vaccines**

Many parents have questions about their children's vaccines, and answering their questions can help parents feel confident in choosing to immunize their child according to the CDC's recommended immunization schedule. The materials below are intended to help health care professionals start or continue conversations with parents.

The materials include proven communication strategies and tips for effectively addressing questions you may hear from parents, as well as information for parents who choose not to vaccinate. There is also a video featuring a CDC pediatrician answering tough vaccine questions—it may be helpful for you as well as for parents in your practice.

**Talking with Parents about Vaccines for Infants**

For health care professionals

Offers communication strategies for successful vaccine conversations with parents and caregivers.

- [Color for office printing](#) (4 pages)
- [Black & white for office printing](#) (4 pages)

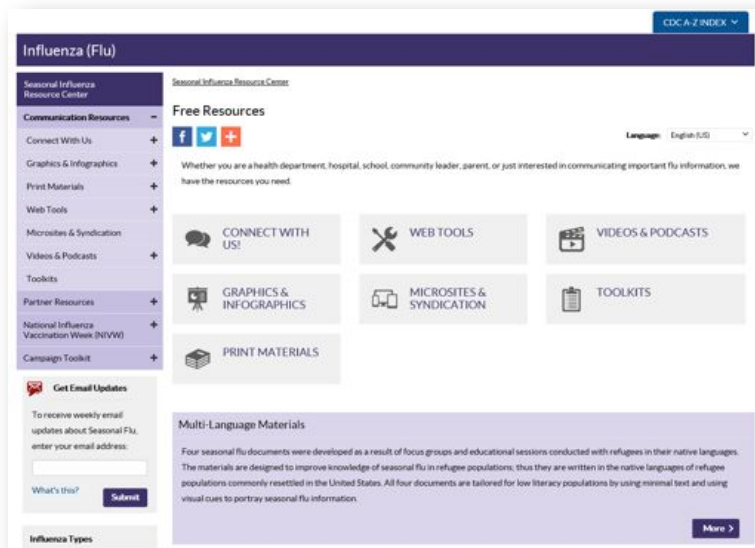
Printed size: 8.5" x 11", 4 pages

[Commercial printer files available \(400K, 288KB\)](#)

**If You Choose Not to Vaccinate Your Child, Understand the Risks and Responsibilities**

Provider Resources for Vaccine Conversations with Parents: [www.cdc.gov/vaccines/hcp/conversations/conv-materials.html](http://www.cdc.gov/vaccines/hcp/conversations/conv-materials.html)

## CDC Resources for Educating Patients on Flu Vaccine



<https://www.cdc.gov/flu/resource-center/freeresources/index.htm>

## Additional CDC Immunization Resources

- Questions? E-mail CDC  
[nipinfo@cdc.gov](mailto:nipinfo@cdc.gov) or [www.cdc.gov/cdcinfo](http://www.cdc.gov/cdcinfo)
- Vaccines and Immunizations website [www.cdc.gov/vaccines](http://www.cdc.gov/vaccines)
- Influenza website [www.cdc.gov/flu](http://www.cdc.gov/flu)
- Vaccine Safety website [www.cdc.gov/vaccinesafety](http://www.cdc.gov/vaccinesafety)

## Other Immunization Resources

- Immunization Action Coalition [www.immunize.org](http://www.immunize.org)
- Vaccine Education Center [www.vaccine.chop.edu](http://www.vaccine.chop.edu)
- National Foundation for Infectious Diseases [www.nfid.org](http://www.nfid.org)