

# Addressing Vaccine Hesitancy: Getting to Yes (Vaccine Acceptance)

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Our beliefs arise from

- **Subjective, emotional and psychological** reasons
- Environmental context with
  - **Family, friends, colleagues**
  - **Culture and society at large**

After forming our beliefs, we then

- **Defend, justify and rationalize** them with
  - **Intellectual reasons, cogent arguments and rational explanations.**

*Beliefs come first; explanations for beliefs follow.*

Shermer M. The believing brain: from ghosts and gods to politics and conspiracies-how we construct beliefs and reinforce them as truths. New York: Times Books; 2011.

Poland CM, Matthews AKS, Poland GA. Improving COVID-19 vaccine acceptance: Including insights from human decision-making under conditions of uncertainty and human-centered design. Vaccine. 2021 Mar 12;39(11):1547-1550. doi: 10.1016/j.vaccine.2021.02.008. Epub 2021 Feb 10. PMID: 33612343; PMCID: PMC7875011.

**NOTE:** As of April 13, 2024, the Coronavirus Tracker is no longer being updated due to the unfeasibility of providing statistically valid global totals, as the majority of countries have now stopped reporting. However, historical data remain accessible. Worldometer delivered the most accurate and timely global statistics to users and institutions around the world at a time when this was extremely challenging. We thank everyone who participated in this extraordinary collaborative effort.

## Coronavirus Death Toll

# 7,010,681 deaths

7,010,681 people have died so far from the coronavirus COVID-19 outbreak as of April 13, 2024, 01:00 GMT.

There are currently [704,753,890 confirmed cases](#) in [229 countries and territories](#). The [fatality rate is still being assessed](#).

## The first confirmed death from COVID-19 in the United States occurred on February 6, 2020, in Santa Clara County, California

Deaths:

# 1,219,487

The combined total of American military deaths in World War I, World War II, the Vietnam War, the Korean War, and the Middle East conflicts is as follows:

- World War I: 116,516 deaths (53,402 battle deaths and 63,114 other deaths in service) <sup>4</sup>.
- World War II: 405,399 deaths <sup>3</sup> <sup>4</sup>.
- Vietnam War: 58,220 deaths (47,434 battle deaths and 10,786 other deaths in theater) <sup>3</sup> <sup>4</sup>.
- Korean War: 36,516 deaths (33,739 battle deaths and 2,777 other deaths in theater) <sup>3</sup> <sup>4</sup>.
- Middle East conflicts (including the Gulf War, Iraq War, and War on Terror): Approximately 7,000 deaths (4,431 in Iraq and 2,401 in Afghanistan) <sup>3</sup>.

Adding these figures together, the total number of American military deaths in these conflicts is approximately 623,651.

## More Americans have died in 4 years from COVID-19 than from WWI, WWII, Vietnam, Korean, and Middle East conflicts combined

Poland CM, Matthews AKS, Poland GA. Improving COVID-19 vaccine acceptance: Including insights from human decision-making under conditions of uncertainty and human-centered design. *Vaccine*. 2021 Mar 12;39(11):1547-1550. doi: 10.1016/j.vaccine.2021.02.008. Epub 2021 Feb 10. PMID: 33612343; PMCID: PMC7875011.

<https://www.worldometers.info/coronavirus/coronavirus-death-toll/>

# Learning Objectives

The learner will:

- Understand cognitive styles for vaccine education
- Be able to identify effective strategies to improve vaccine acceptance  
(presumptive vs participatory language)

# Definitions

- **Vaccine hesitancy (VH)** is a state of indecision, delay in acceptance or reluctance to vaccinate despite the availability of vaccination services
- **Vaccine acceptance (VA)** refers to the willingness of individuals to receive vaccines when they are available

Bussink-Voorend, D., Hautvast, J.L.A., Vandeberg, L. *et al.* A systematic literature review to clarify the concept of vaccine hesitancy. *Nat Hum Behav* 6, 1634–1648 (2022). <https://doi.org/10.1038/s41562-022-01431-6>

Roy DN, Biswas M, Islam E, Azam M.S (2022) Potential factors influencing COVID-19 vaccine acceptance and hesitancy: A systematic review. *PLoS ONE* 17(3): e0265496. <https://doi.org/10.1371/journal.pone.0265496>

# Introduction

- Importance of vaccination and vaccine hesitancy
  - Vaccines prevent ~ 3.5-5 mm annual global deaths
  - U.S. COVID-19 vaccination prevented > 3 mm deaths, 18.5 mm hospitalizations DEC 2020-NOV 2022
- VH named a top-10 global health threats by WHO in 2019

Meagan C. Fitzpatrick et al., "Two Years of U.S. COVID-19 Vaccines Have Prevented Millions of Hospitalizations and Deaths," *To the Point* (blog), Commonwealth Fund, Dec. 13, 2022. <https://doi.org/10.26099/whsf-fp90>  
[https://www.who.int/health-topics/vaccines-and-immunization#tab=tab\\_1](https://www.who.int/health-topics/vaccines-and-immunization#tab=tab_1)

# Conceptualization of Vaccine Hesitancy

- Components: VH involves
  - Cognitions or affect
  - Behavior
  - Decision-making
- Complexity: Influenced by
  - Complacency: Perception of low risk of vaccine-preventable diseases
  - Convenience: Accessibility and availability of vaccines
  - Confidence: Trust in vaccines, healthcare systems, and policymakers



# Challenges with Vaccine Hesitancy

- Kaiser Family Foundation survey found that, in US
  - 32% of adults took a "**wait and see**" approach to COVID-19 vaccinations as of May 2021

# Factors Influencing Vaccine Hesitancy

- **Internal Factors**
  - Knowledge/Information
  - Past Experiences
  - Perceived Importance of Vaccination
  - Risk Perception and Trust
  - Subjective Norms
  - Religious and Moral Conviction

# Factors Influencing Vaccine Hesitancy

- **External Factors**

- Public Health and Vaccine Policies
- Health Professionals' Recommendations
- Communication and Media Portrayals
- What everybody else is doing

# Factors Influencing Vaccine Hesitancy

- **Psychological Factors**
  - Conspiratorial Thinking
  - Reactance
  - Disgust Toward Blood and Needles
  - Individualistic/Hierarchical Worldviews

# Misinformation-Disinformation-Mixed Information

- **Definitions:**

- **Misinformation:**

- Shared false information without intent to mislead
  - Example: Shared wrong vaccine side effect info believed true

- **Disinformation:**

- False information deliberately created to mislead
  - Example: A coordinated campaign spreading false claims about vaccine dangers to undermine public trust

- **Mixed Information:**

- A combination of true and false information
- Can be particularly confusing and misleading
  - Example: A social media post with accurate efficacy but also false severe side effects claims

# Misinformation-Disinformation

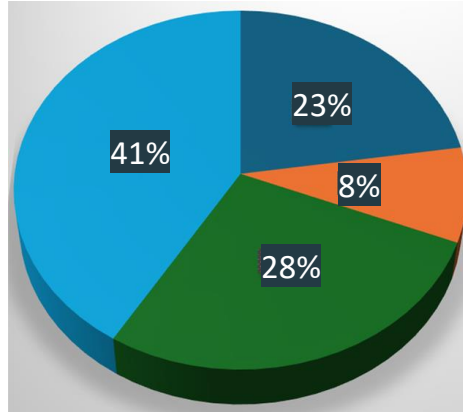
- **Impact**

- Both misinformation and disinformation can significantly affect and lead
  - Vaccine confidence
  - Vaccination rates
  - Increased hesitancy
  - Reduced public health outcomes

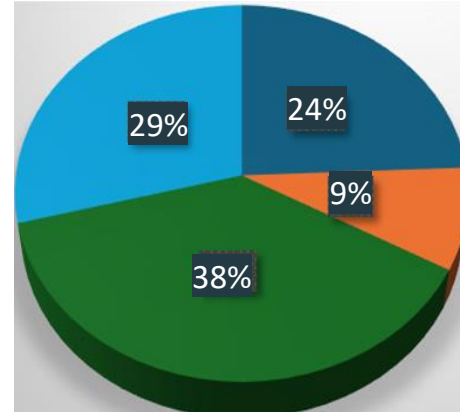
<https://www.cdc.gov/vaccines/covid-19/health-departments/addressing-vaccine-misinformation.html>

# US Vaccination Status and Intent: 7/20/2024

## COVID-19

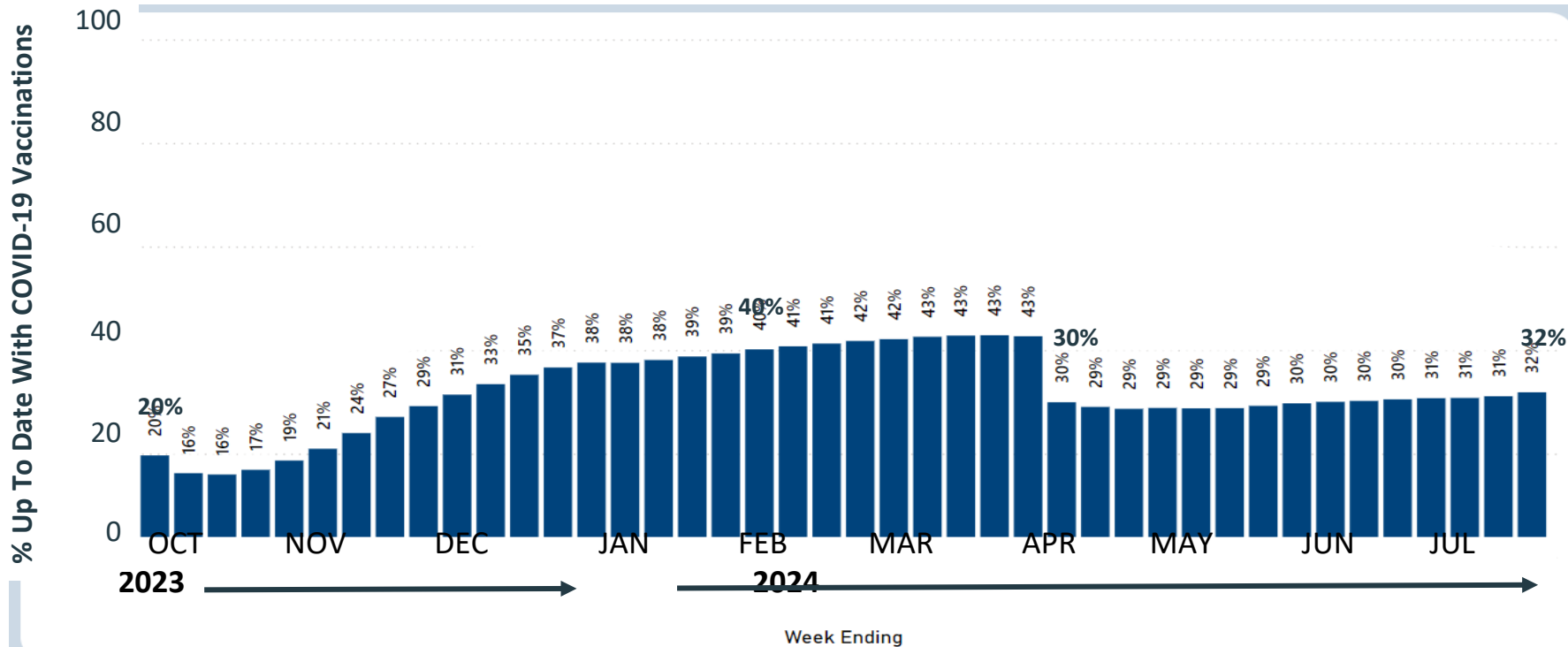


## RSV



- Received vaccine (%)
- Definitely will get a vaccine (%)
- Probably will get a vaccine or are unsure (%)
- Probably or definitely will not get a vaccine (%)

# Percentage of Nursing Home Residents who are Up to Date with COVID-19 Vaccines





# Factors Influencing Vaccine Hesitancy: Are current vaccine educational efforts effective?

- Current vaccine educational efforts:
  - From government and public health authorities
    - Adopt a unimodal, fact-based, left-brain cognitive style

→ Has not changed vaccine acceptance behavior in the population

# Factors Influencing Vaccine Hesitancy

- Current vaccine educational efforts:
  - Reflects cognitive style of developers and approvers
  - May not align with intended recipients' preferences

Poland CM, Matthews AKS, Poland GA. Improving COVID-19 vaccine acceptance: Including insights from human decision-making under conditions of uncertainty and human-centered design. *Vaccine*. 2021 Mar 12;39(11):1547-1550. doi: 10.1016/j.vaccine.2021.02.008. Epub 2021 Feb 10. PMID: 33612343; PMCID: PMC7875011

# Healthcare Decision-Making Success

- **Foundation:** Based on HCPs' ability and skill
- Key Actions
  - Adapting information-sharing
  - Tailoring educational efforts
- Patient-Centric Approach
  - Understanding how the patient thinks
  - Recognizing how the patient synthesizes information
  - Identifying how the patient makes decisions

## Six Cognitive Styles for Vaccine Education

- **Denialist**
- Innumerate
- Fear based
- Heuristic
- Bandwagoning
- Analytical

Main Effect	Verbal Expression	Approach
Disbelieves accepted scientific facts, despite overwhelming evidence. Prone to believe conspiracy theories	"I don't care what the data show, I don't believe the vaccine is safe"	Provide consistent messaging repeatedly over time from trustworthy sources, provide educational materials, solicit questions, avoid "hard sell" approach, use motivational interviewing approaches

Table from Poland CM, Poland GA. Vaccine education spectrum disorder: the importance of incorporating psychological and cognitive models into vaccine education. *Vaccine*. 2011 Aug 26;29(37):6145–8

# Six Cognitive Styles for Vaccine Education

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Main Effect	Verbal Expression	Approach
Cannot understand or has difficulty manipulating numbers, probabilities, or risks	"One in a million risk sounds high, for sure I'll be the 1 in a million that has a side effect, I'll avoid the vaccine"	Provide nonmathematical information, analogies, or comparators using a more holistic "right brain" or emotive approach

Table from Poland CM, Poland GA. Vaccine education spectrum disorder: the importance of incorporating psychological and cognitive models into vaccine education. *Vaccine*. 2011 Aug 26;29(37):6145–8

# Six Cognitive Styles for Vaccine Education

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- Innumerate
- **Fear based**
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- Bandwagon
- Analytical

Cognitive Style	Main Effect	Verbal Expression	Approach
Fear-based	Decision making based on fears	"I heard vaccines are harmful and I'm not going to get them"	Understand source of fear, provide consistent positive approach, show risks in comparison to other daily risks, demonstrate risks of not receiving vaccines, use social norming approaches

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# Six Cognitive Styles for Vaccine Education

- Denialist
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Cognitive Style	Main Effect	Verbal Expression	Approach
Heuristic	Often appeals to availability heuristic (what I can recall equates with how commonly it occurs)	"I remember GBS happened in 1977 after flu vaccines, that must be common, and therefore I'm not getting a flu vaccine"	Point out inconsistencies and fallacy of heuristic thinking, provide educational materials, appeal to other heuristics
Mental shortcuts bypassing detailed analysis and processing			

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# Six Cognitive Styles for Vaccine Education

- Denialist
- Innumerate
- Fear based
- Heuristic
- **Bandwagoning**
- Analytical

Cognitive Style	Main Effect	Verbal Expression	Approach
Bandwagoning	Primarily influenced by what others are doing or saying	"If others are refusing the vaccine there must be something to it, I'm going to skip getting the vaccine"	Understand primary influencers, point out logical inconsistencies, use social norming and self-efficacy approaches



# Six Cognitive Styles for Vaccine Education

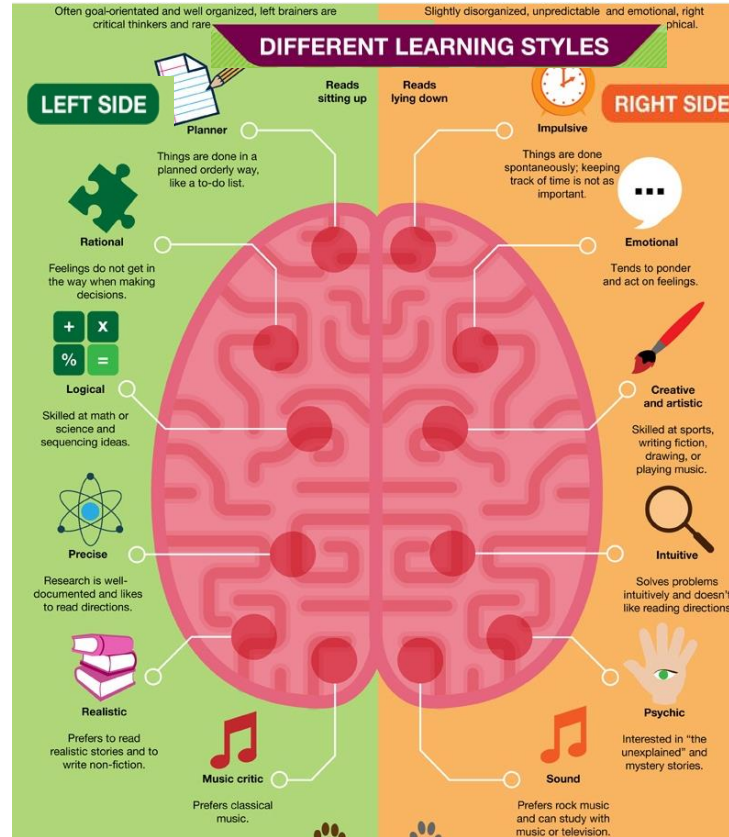
- Denialist
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- Heuristic
- Bandwagoning
- **Analytical**

Cognitive Style	Main Effect	Verbal Expression	Approach
Analytical	Left brain thinking, facts are paramount	"I want to see the data so I can make a decision"	Provide data requested, review analytically with patient

# Learning styles and models in general

## LEFT SIDE STYLE

- Reads upright
- Planner
- Rational
- Logical
- Precise
- Realistic
- Music Critic



## RIGHT SIDE STYLE

- Reads supine
- Impulsive
- Emotional
- Creative/artistic
- Intuitive
- Psychic
- Sound

# What works

- Strong recommendation by healthcare provider
- Nursing home visits with personalized education
- Motivational interviews
- Reducing patient out-of-pocket costs
- Vaccination clinics (bandwagoning); coordinated with DOH?
- Patient reminder and recall systems
- Implementation of vaccine related anxiety reduction program
- Immunization information systems
- Health care provider assessment and feedback
- Health care provider reminders
- Standing orders for nursing home residents
- Payment policy, facility quality metrics tied to vaccination rates

# Presumptive or Participatory Language

- Presumptive Language:
  - “You are due for flu and COVID vaccines today. We will give you these vaccines before you leave today.”
- Participatory Language:
  - “What would you like to do about your COVID vaccine today?”
  - “How do you feel about getting flu shot today?”

**Studies consistently show that presumptive language is more effective than participatory language in increasing vaccine uptake**

# Presumptive or Participatory Language

- Presumptive Language:
  - “You are due for flu and COVID vaccines today. We will give you these vaccines before you leave today”
- Participatory Language:
  - “What would you like to do about your COVID vaccine today?”
  - “How do you feel about getting flu shot today?”

Studies consistently show that **presumptive language** is **more effective than participatory language** in increasing vaccine uptake. **A strong recommendation from a healthcare provider is one of the most effective strategies** for reducing vaccine hesitancy

# Facility-level strategies to improve uptake

- Expectation to provide standard recommended vaccines as they are recommended - a standard of care, in nursing home policy and in admission orders
  - Avoid annual “consenting” for vaccination for those vaccines
  - Set standards of care at the facility level
- Promote a culture of vaccination
  - A responsibility to patients for healthcare workers to be vaccinated to protect them from infection
  - A benefit to the organization to limit short staffing situations when outbreaks occur
  - A responsibility of patients to roommates and healthcare workers to promote an environment that cocoons vulnerable individuals and each other
- Measuring vaccine uptake: publicize!
  - Can't improve what you don't count
  - Set targets for vaccine uptake: setting targets improves uptake
  - Set aggressive targets: more aggressive targets generate higher uptake

## References:

1. Baier RR, Butterfield K, Harris Y, Gravenstein S. Aiming for star performance: the relationship between setting targets and improved nursing home quality of care. *J Am Med Dir Assoc.* 2008;9(8):594-8. doi: 10.1016/j.jamda.2008.06.008. PubMed PMID: 19083294.
2. Baier R, Butterfield K, Patry G, Harris Y, Gravenstein S. Identifying star performers: the relationship between ambitious targets and nursing home quality improvement. *Journal of the American Geriatrics Society.* 2009;57(8):1498-503. doi: 10.1111/j.1532-5415.2009.02362.x. PubMed PMID: 19549019.

# Summary

- Vaccines prevent 3.5-5 million global deaths annually
  - In the U.S. alone, COVID-19 vaccination prevented
    - > 3 million deaths
    - 18.5 million hospitalizations (Dec 2020 - Nov 2022).
- Vaccine Hesitancy influenced by:
  - Cognition, affect, behavior, and decision-making
  - Complacency, convenience, vaccine confidence, and healthcare systems
- Strategies to Improve Vaccine Acceptance:
  - Strong healthcare provider recommendations
  - Personalized education and motivational interviews
  - Reducing patient costs and implementing vaccination clinics
  - Use of presumptive language over participatory language in vaccine offer