Building COVID-19 Vaccine Confidence in the Viral Hepatitis Community

An Expert Q&A with NVHR Patient and Provider Advocates

MARCH 2, 2021

NVHR
National Viral Hepatitis Roundtable

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AGENDA

All About the COVID-19 Vaccine - Dr. Jay Kostman

Expert Q&A - Adrienne, Anthony, Ivette, Jacki, Jay, Peter

Resources and Closing

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About the COVID-19 Vaccine

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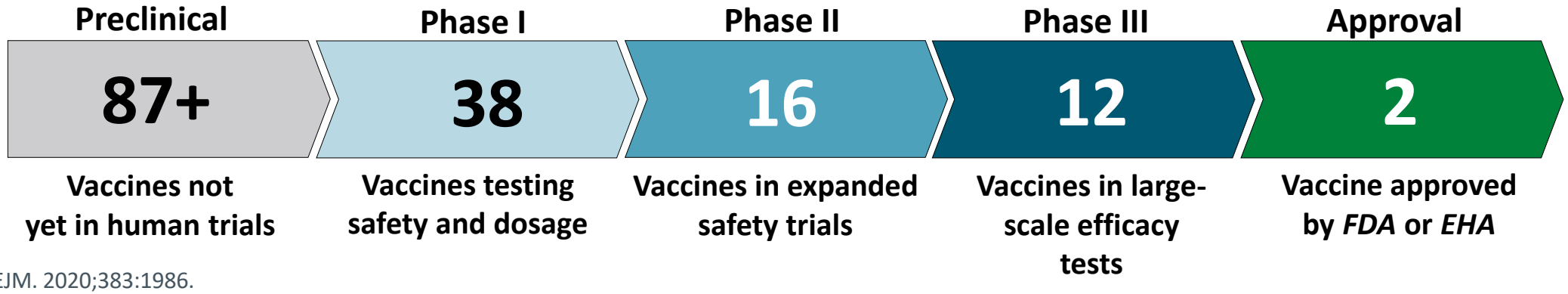
COMMON QUESTIONS WE WILL ADDRESS:

- How do we know the vaccine is effective and safe?
- Why should we trust the vaccine?
- Is there new technology being used and is that dangerous to me?
- What is an EUA and what does that mean for me?
- When and how long will I be protected?
- Will I still need to wear a mask?
- What are the expected side effects?
- What if I've already had COVID-19?
- Where should I look to get accurate information?

Vaccine Development Pathway

- **Traditional vaccine development pathway[1]**
  - Target discovery/validation, preclinical stage, manufacturing development, clinical assay optimization: **3-8 yrs**
  - Phase I (safety), phase II (safety/immunogenicity), phase III (safety/efficacy) clinical trials: **2-10 yrs**
  - Regulatory review: **1-2 yrs**

SARS-CoV-2 Vaccine Candidates in Development[2]



1. Heaton. NEJM. 2020;383:1986.
2. The New York Times. Coronavirus Vaccine Tracker. https://www.nytimes.com/interactive/2020/science/coronavirus-vaccine-tracker.html

Slide credit: clinicaloptions.com

HOW WAS THE VACCINE DEVELOPED SO QUICKLY?

Major reasons we were able to get these vaccines developed more quickly than usual include :

- Global effort with the world's leading scientists focused on a single task
- Nearly unlimited resources (money, knowledge, manpower, technology)
- A large pool of diverse adult volunteer trial participants

WHAT IS AN EUA AND WHAT DOES THAT MEAN FOR ME?

- **An Emergency Use Authorization (EUA)** for a vaccine is based on the need to use a vaccine quickly to save lives during a public health emergency
- EUA is a shorter process **but <u>no steps are skipped</u> in the safety evaluation process**
- The FDA will assess if the vaccine known and potential benefits outweigh the known and potential risks
- **An EUA does NOT imply that the authorization was done too quickly or that the vaccine is not safe**

WHY SHOULD I GET VACCINATED?

- Protect myself and my family
- Keep my clients and patients safe
- Help stop spread in the community
- Set the example for others, including residents, families, co-workers, and the community-at-large

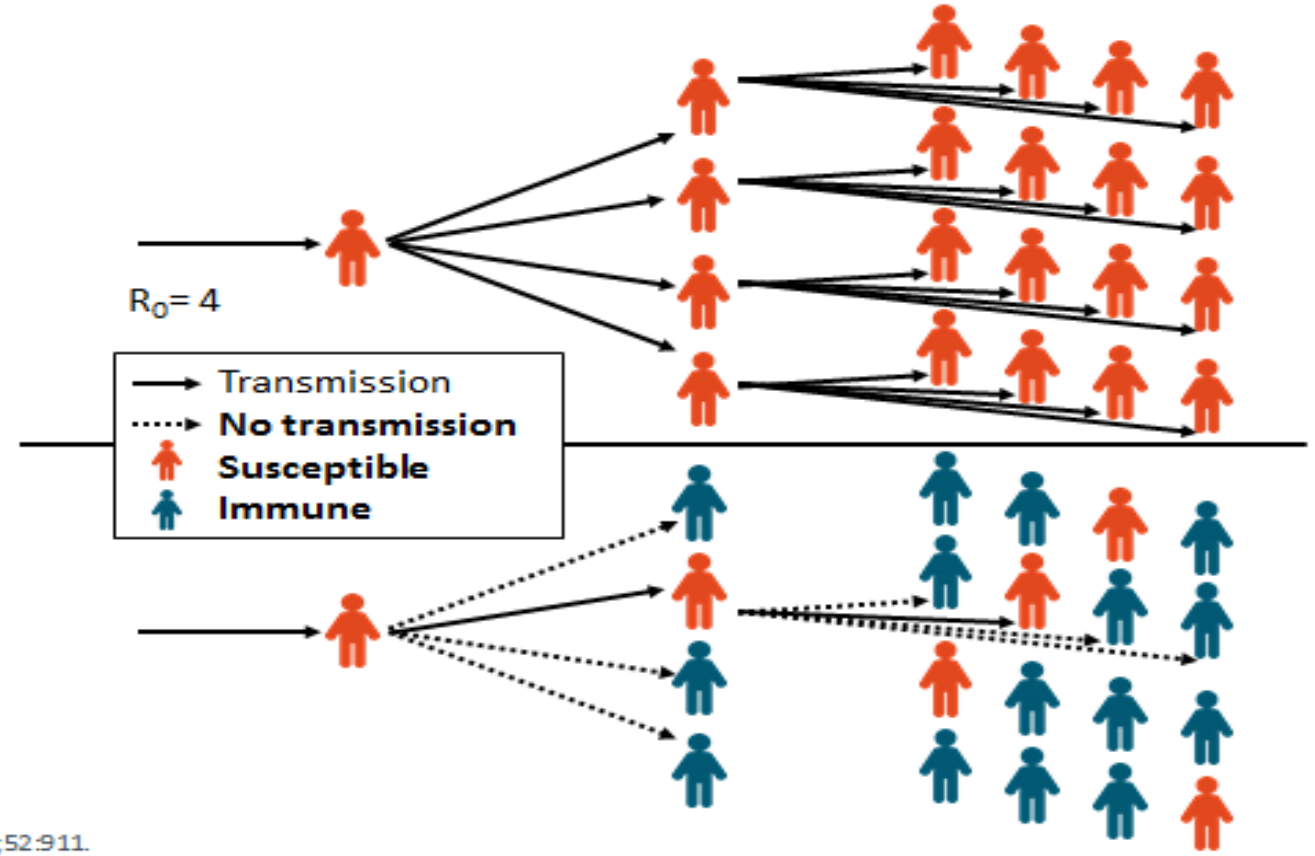
Herd Immunity Definitions

Term	Definitions
Herd immunity	▪ The indirect protection of susceptible individuals from infection when a sufficient portion of the population is immune
Herd immunity threshold	▪ The point at which the proportion of a population that is susceptible falls below the level needed for transmission
R_0	▪ The average number of secondary infections caused by a single infectious individual in a completely susceptible population

Randolph. Immunity. 2020;52:737.

Slide credit: clinicaloptions.com

Herd Immunity Concept



Fine. Vaccines. 2011;52:911.

Estimating Herd Immunity Thresholds for SARS-CoV-2

- Estimates of herd immunity threshold for SARS-CoV-2 use various assumptions of R_0 varying rates of heterogenous contact[1,2]
- Various epidemiological models of the herd immunity threshold for SARS-CoV-2 currently range from 50% to 75% of the population[1,2]
  - Assume that infection provides lasting protection against reinfection
  - This equates to 200 million people in the US and 5.6 billion people worldwide[1]

1. Bloom. NEJM. 2020:[Epub]. 2. Britton. Science. 2020;369:846.

THE FIRST TWO COVID-19 VACCINES

Both are mRNA vaccines

- Pfizer (BNT162b2)
- Moderna (mRNA-1273)

They Do <u>NOT</u> contain COVID-19 virus

mRNA COVID-19 Vaccines

- mRNA technology is new in vaccine production but is already being used in cancer treatment. It has been studied for more than ten years.
- COVID-19 mRNA vaccines give instructions for our cells to make **a harmless piece** that looks like the "spike protein." The spike protein is found on the surface of the COVID-19 virus.
- Our bodies recognize that this protein should not be there, so they build antibodies that will remember how to fight the virus that causes COVID-19 if we are infected in the future.

Can mRNA vaccine give me COVID-19? NO
Can mRNA vaccine change my DNA? NO

mRNA Vaccines Against SARS-CoV-2

New

Vaccine	Description	Phase (Total N)	Case Count, n	Primary Endpoint: Prevention of Symptomatic COVID-19	Additional Analyses Reported
BNT162b2 (Pfizer)[1]	Vaccinations on Day 1 and Day 21 in persons ≥ 12 yrs of age with nucleoside-modified mRNA (modRNA) encoding the membrane-bound full-length spike protein	II/III (43,661)*	170 (final)	95% 7 days after second dose ($P < .0001$)	▪ > 94% efficacy in adults > 65 yrs of age ▪ 9/10 severe cases occurred in placebo group
mRNA-1273 (Moderna)[2-4]	Vaccinations on Day 1 and Day 29 in persons ≥ 18 yrs of age with mRNA encoding a prefusion stabilized spike protein	III (30,000)†	95 (interim)	94.5% 14 days after second dose ($P < .0001$)	▪ 11/11 severe cases occurred in placebo group

*41,135 had received second dose as of November 13, 2020. 42% of volunteers had diverse ethnic backgrounds; 41% were 56-85 yrs of age.
†Includes more than 7000 persons > 65 yrs of age and more than 5000 < 65 yrs of age with high-risk chronic diseases, such as diabetes, severe obesity, and cardiac disease. 37% of volunteers from racial and ethnic minorities.

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WHO WAS INCLUDED IN THE COVID-19 VACCINE TRIALS?

	Pfizer (BNT162b2)	**Moderna (mRNA-1273)**
Number of people enrolled	**Over 40,000**	**Over 25,000**
Race and ethnicity of participants	Total 30% racially diverse 10% black, 13% Hispanic	37% racially diverse 10% black, 20% Hispanic/Latino
Older adults	45% were 56-85 years	23% were >65 years

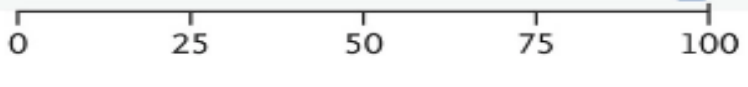
HOW EFFECTIVE ARE THE COVID-19 VACCINES?

	Pfizer (BNT162b2)	**Moderna (mRNA-1273)**
Efficacy Overall	95% protection from having an infection	94.1% protection from having an infection

Similar efficacy with different race, ethnicity and age

Subgroup Effectiveness of COVID vaccine

Subgroup	Placebo (N=14,073)	mRNA-1273 (N=14,134)	Vaccine Efficacy (95% CI)
	no. of events/total no.		
All patients	185/14,073	11/14,134	94.1 (89.3–96.8)
Age			
≥18 to <65 yr	156/10,521	7/10,551	95.6 (90.6–97.9)
≥65 yr	29/3552	4/3583	86.4 (61.4–95.2)
Age, risk for severe Covid-19			
18 to <65 yr, not at risk	121/8403	5/8396	95.9 (90.0–98.3)
18 to <65 yr, at risk	35/2118	2/2155	94.4 (76.9–98.7)
≥65 yr	29/3552	4/3583	86.4 (61.4–95.2)
Sex			
Male	87/7462	4/7366	95.4 (87.4–98.3)
Female	98/6611	7/6768	93.1 (85.2–96.8)
At risk for severe Covid-19			
Yes	43/3167	4/3206	90.9 (74.7–96.7)
No	142/10,906	7/10,928	95.1 (89.6–97.7)
Race and ethnic group			
White	144/8916	10/9023	93.2 (87.1–96.4)
Communities of color	41/5132	1/5088	97.5 (82.2–99.7)



WHAT SHOULD I EXPECT WHEN I GET THE VACCINE?

- **YOU MUST GET THE SECOND DOSE** because the vaccine will not protect you if only get one dose
- It is important to get the **SAME VACCINE** as the first dose

J&J/JANSSEN VACCINE

- Adenovirus modified so it can not cause human disease
- Virus is modified to deliver a piece of DNA that will make the spike protein of COVID-19
- Trial conducted in South Africa, South America, Mexico and US
- Side effects similar and lasted 1-2 days
- Single dose vaccine, stored at normal refrigeration temperatures
- 66% effective in preventing moderate to severe/critical COVID-19 occurring at least 28 days after vaccination
- 85% effective in preventing severe/critical COVID-19 occurring at least 28 days after vaccination

Are the COVID-19 vaccines safe?

- Safety is the most important priority in vaccine approval
- Most adverse side effects occur within 6 weeks of vaccine administration, and the FDA has required 8 weeks of safety monitoring
- FDA advises a minimum of 3,000 participants to assess safety. The current phase 3 trials have 30,000 to 50,000 participants. This really demonstrates how safety is a top priority for the FDA and the medical community.

WHAT'S IN THE MRNA VACCINE

- The mRNA—the "ticker tape" that leads to the production of the COVID-19 protein by your cells
- The lipid—Encases the RNA allowing it to get inside cells
- Salts—Like table salt—keep the acid level of the vaccine close to the acid level of the human body
- Sugars—Like table sugar—keeps the particles including the lipids and the mRNA together
- No mercury or other preservative

Important: warn about possible side effects

Will the vaccine make me sick?

- short-term discomfort : headache, muscle pains, fatigue, chills, fever and pain at injection site
- 1-2 days
- Same symptoms as COVID-19 – Emphasize that the vaccine cannot give you COVID-19
- May be more pronounced with second dose
- Normal and common
- It means your body is doing its job and making antibodies (IT IS A GOOD THING)
- MUST COME BACK FOR SECOND DOSE FOR THE VACCINE TO BE EFFECTIVE
- Must be the same vaccine as the first dose

MOST COMMON SIDE EFFECTS

BASED ON DATA FROM CLINICAL TRIAL OF PFIZER COVID-19 VACCINE

- Fever: 4-16%
- Fatigue 34-59%
- Headache: 25-52%
- Muscular pain: 14-37%

Side effects were more common after the second dose of the vaccine.

Reference: Data published in the New England Journal of Medicine: https://www.nejm.org/doi/full/10.1056/NEJMoa2034577

WHAT SHOULD I EXPECT WHEN I GET THE VACCINE?

THE VACCINE CANNOT GIVE YOU COVID-19!

- You can expect to have short-term discomfort: fatigue, headache, muscle pain, chills, fever and pain at injection site after vaccination
- These reactions will last for 24-48 hours and are typically more pronounced after the second dose
- Side effects mean your body is doing its job and making antibodies (IT IS A GOOD THING)
- These side effects are normal, common and expected

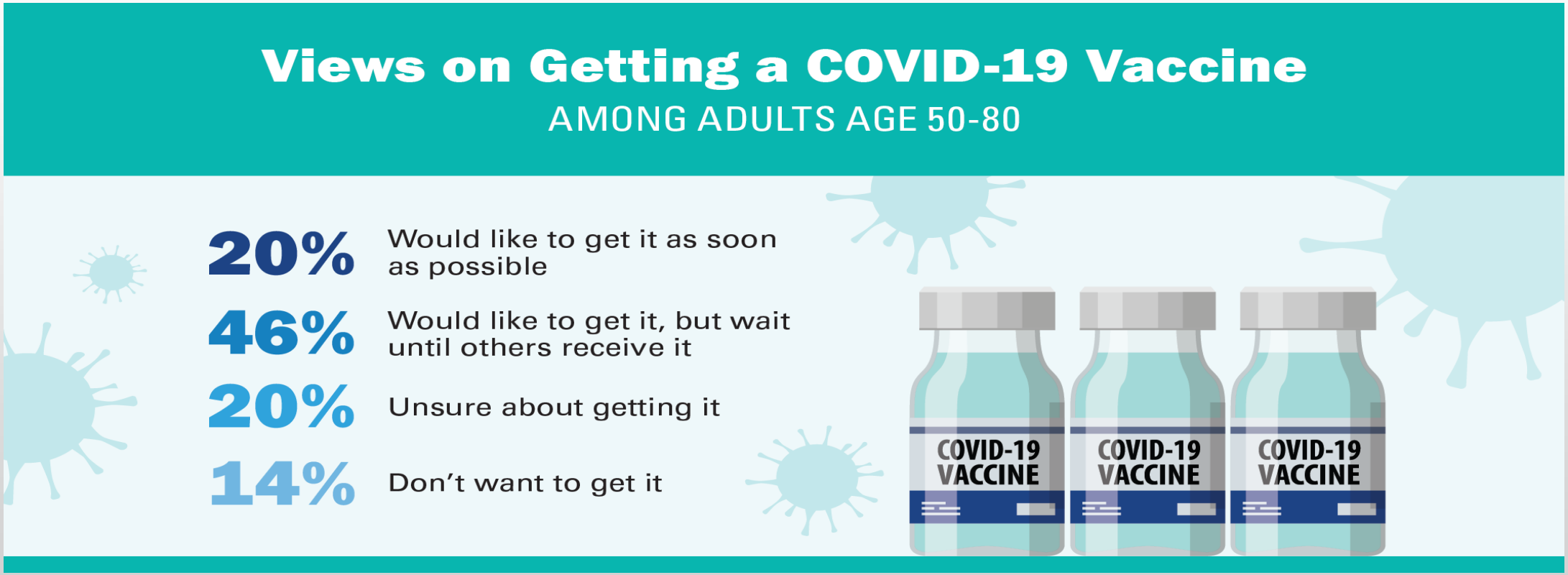
COVID-19 vaccine hesitation is real

- Kreps et al found in his survey published in JAMA 10/20/20 that the most important factors for acceptance are efficacy, duration of protection and lower incidence of major side effects
- Other factors: EUA (Emergency Use Authorization) and a vaccine developed outside the United States.
- Specific staff concerns:
  - "being first"
  - Safety
  - Not being represented in the vaccine trials

JAMA Network Open. 2020;3(10):e2025594. doi:10.1001/jamanetworkopen.2020.25594

COVID-19 Hesitancy and Older Adults

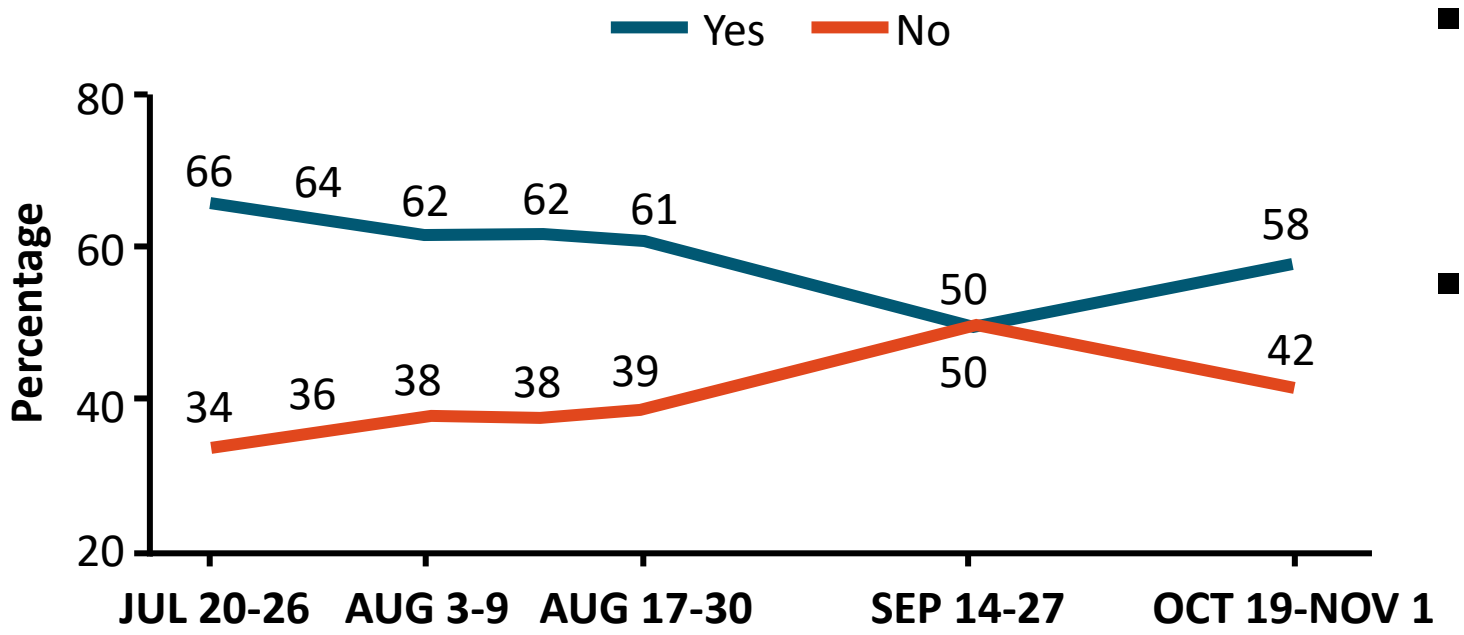
National Poll on Healthy Aging report, University of Michigan (November, 2020)



Malani P, Singer D, Solway E, Kirch M, Kullgren J. Older Adults' Perspectives on a COVID-19 Vaccine. University of Michigan National Poll on Healthy Aging. November 2020. Available at: http://hdl.handle.net/2027.42/163523

US Data: July to November 2020

- ***"If an FDA-approved vaccine to prevent COVID-19 was available right now at no cost, would you take it?"***



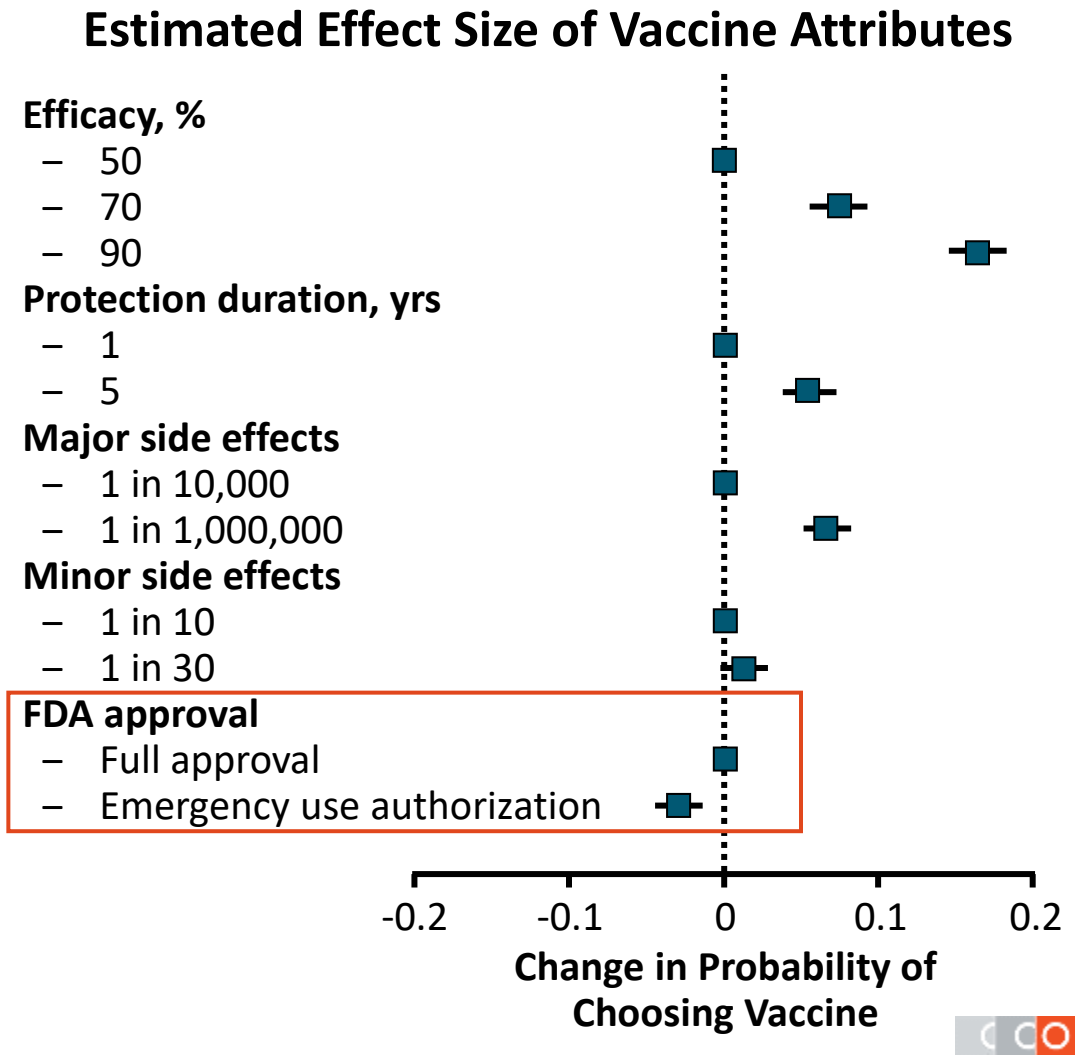
- Online survey of 2985 US adults; weighted sample to match US demographics
- Response was binary *yes-no;* in Oct, 58% would take the vaccine
- This survey found vaccine intent increased between Sep and Oct

Reinhart. Gallup News. https://news.gallup.com/poll/325208/americans-willing-covid-vaccine.aspx.

Slide credit: clinicaloptions.com

Factors That Affect COVID-19 Vaccine Hesitancy

- Vaccine characteristics: efficacy, duration, safety, side effects
- Concerns about the approval process: too fast, political influence
- Sources of information: healthcare providers, public health officials more trusted than politicians
- Demographics: on average, older people, black people, and women less willing to be vaccinated



Kreps. JAMA Netw Open. 2020;3(10):e2025594.

Slide credit: clinicaloptions.com

How to Frame the Conversation

- Most Important: This is what we have been waiting for!
  - This is how we save lives, our own and everyone around us
- Meet people where they are
  - Everyone has questions and concerns
  - Listen and respond compassionately
  - Answer questions with respect and honesty

Why should we trust the COVID-19 vaccine?

- The FDA is using the same standards that it has for decades
- There are no steps being "skipped"
- 2 advisory committees:
  - 1) The Vaccine and Related Biological Products Advisory Committee (VRBPAC) that advises the FDA
  - 2) The Advisory Committee on Immunization Practices (ACIP) that advises the CDC.

Vaccine Uptake: Recommendations

- **Build trust** with transparent and informative communication about vaccine safety and efficacy
  - To achieve herd immunity, the public needs vaccine literacy and confidence
- **Provide culturally relevant vaccine education**
  - Public health officials and healthcare providers are more trusted than politicians
- Until the clinical trials have published, data can be found on the FDA website
  - https://www.fda.gov/advisory-committees/advisory-committee-calendar/vaccines-and-related-biological-products-advisory-committee-december-10-2020-meeting-announcement
  - https://www.fda.gov/advisory-committees/advisory-committee-calendar/vaccines-and-related-biological-products-advisory-committee-december-17-2020-meeting-announcement

Kreps. JAMA Netw Open. 2020;3(10):e2025594. Lazarus. Nat Med. 2020;20:1.

WHEN AND HOW LONG WILL I BE PROTECTED BY THE COVID-19 VACCINE?

- Pfizer and Moderna vaccines are **2 doses**, 3-4 weeks apart
- Protection occurs **1-2 weeks after the second dose**
- We will most likely not know how long the vaccine will be protective once we receive it. We will know more as more time passes in the current research
- May need to have vaccine shots for COVID-19 on a regular basis (like the flu shot)

WILL I STILL NEED TO WEAR A MASK?

YES !

Similar to other vaccines, a large number of people in the community will need to get vaccinated before transmission drops enough to stop the use of masks

- It is safe to get the COVID-19 vaccine even if you have had COVID-19
- Even if you have had COVID-19, it is important to get vaccinated. It could give you longer or better protection against the disease
- Even if you have positive antibodies, you should get the COVID-19 vaccine

SPECIAL CIRCUMSTANCE

WHAT IF I ALREADY HAD COVID-19?

Work Group Proposed Interim Phase 1 Sequence

Phase1c
Adults with high -risk medical conditions
Adults 65+

Phase 1b
Essential workers
(examples: Education Sector, Food & Agriculture, Utilities, Police, Firefighters, Corrections Officers, Transportation)

Phase 1a
Health care personnel
LTCF residents

Potential Consequences of Emerging Variants

New

- Faster spread due to increased transmissibility but no evidence of increased disease severity with currently identified variants[1,2]
- Ability to evade detection by diagnostic tests[1,2]
  - Less likely with PCR tests that assess multiple targets to detect virus
- Decreased susceptibility to therapeutic agents such as monoclonal antibodies remains unknown[1]
- Evasion of natural or vaccine-induced immunity[1-3]
  - Currently not enough information to assess potential impact on vaccine efficacy
  - Vaccination and natural infection induce polyclonal response so virus would need to likely accumulate many mutations to evade immunity
  - Some evidence that the E484K substitution in 501Y.V2 may confer resistance to immunity acquired from natural infection

1. CDC. Emerging SARS-CoV-2 Variants. January 3, 2021. 2. Public Health England. Investigation of Novel SARS-CoV-2 Variant. Variant of Concern 202012/01. Technical Briefing 2. December 28, 2020. 3. Andreano. bioRxiv. 2020;[Preprint]. Note: this study has not been peer reviewed.

Summary

- To date, reported safety and efficacy of COVID-19 vaccines in development have exceeded expectations
- Open questions include vaccine efficacy in special populations and durability of the vaccine immune response
- A major challenge going forward will be fair and efficient vaccine distribution to all persons in all countries
- Vaccine hesitancy is a threat to adequate vaccine uptake, which is necessary to control the COVID-19 pandemic
- No evidence, currently, that SARS-CoV-2 variants detected in isolates around the world affect disease severity or vaccine efficacy

Slide credit: clinicaloptions.com

COVID-19 Vaccines: Unanswered Questions

- Primary endpoint in mRNA vaccine trials was *symptomatic* illness, therefore not yet known if these effectively prevent transmission
- Duration of vaccine immunity still unknown
- Long-term safety data will require years of vaccination follow-up
- No data yet on efficacy or safety in children and pregnant women
- < 200 participants/trial developed symptomatic COVID-19, ie, too few to draw conclusions about efficacy in subpopulations
- SARS-CoV-2 genome appears relatively stable, but not known how virus will respond to selection pressure of mass vaccination

Ledford. Nature. 2020;588(7837):205.

VACCINES ARE THE ONLY WAY TO CONTROL THE COVID-19 PANDEMIC

- Everyone has to do their part and get vaccinated to get back to a normal life

Resources for Building Vaccine Confidence

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Resources for Building Vaccine Confidence

- AASLD Expert Panel Consensus Statement on COVID-19 Infection in Patients with Liver Disease
- Ad Council Common Questions and Answers
- Ad Council COVID-19 Vaccine Media Toolkit - includes videos, banners, radio PSAs etc.
- Black Coalition Against COVID-19
- CDC Frequently Asked Questions
- CDC Vaccine Finder - helpful for finding locations offering vaccines by zip code
- CDC COVID-19 Pre-vaccination Screening Form - includes rationale behind each question on screening form
- CDC Toolkit for Community-Based Organizations - includes key messages, posters, stickers, myths and facts
- CDC V-Safe After Vaccination Health Checker - optional program to monitor side effects post-vaccination
- Community Education Group Presentation on COVID-19 Vaccine by Dr. Nab Dasgupta
- Crackdown Podcast on COVID-19 Vaccine for People Who Use Drugs
- Hepatitis B Foundation Statement on COVID-19 in Patients Living with Hepatitis B
- Insider Cheatsheet for COVID Vaccine Safety by Dr. Nab Dasgupta

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