COVID-19 for Pediatric Populations

November 16, 2021

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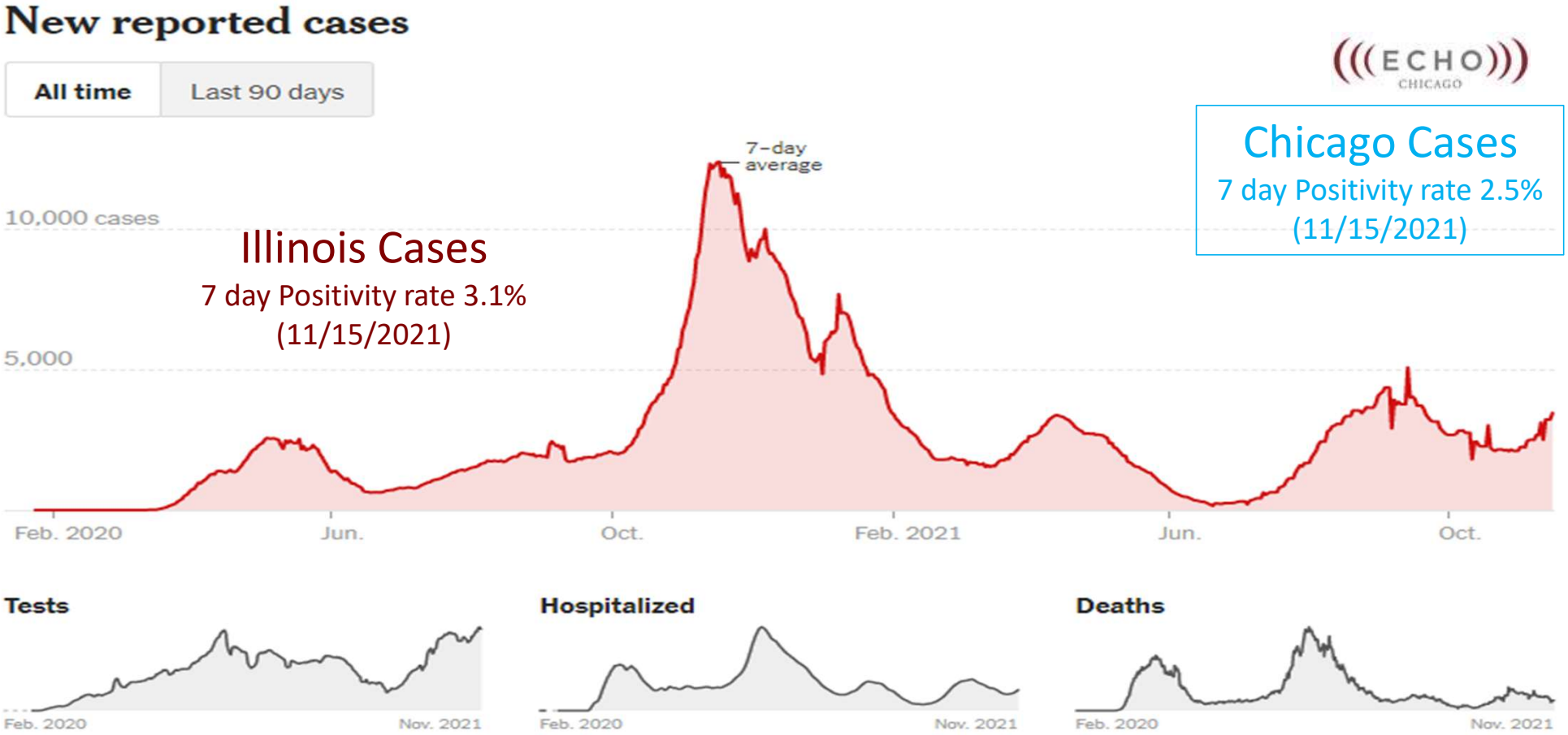
Disclosures

- No financial disclosures
- What gets said here today may change based on new data and recommendations
  - Knowledge is shared more rapidly through ECHO

Agenda

- Demographics
- COVID vaccines
  - Boosters
  - Overview of 5-11 y/o vaccine
  - Myocarditis
  - Hesitancy
- Q & A

Demographics



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Chicago Cases

7 day Positivity rate 2.5%
(11/15/2021)

Illinois Cases

7 day Positivity rate 3.1%
(11/15/2021)

https://www.nytimes.com/interactive/2020/us/illinois-coronavirus-cases.html
https://covidactnow.org/us/illinois-il?s=1330330
https://www.chicago.gov/city/en/sites/covid-19/home/covid-dashboard.html

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The Texas "Experiment"

COVID-19 Cases And Deaths by Vaccination Status

(((ECHO)))
CHICAGO

Table 2: Age-specific case rates by vaccination status, Jan. 15, 2021 – Oct. 1, 2021

Age Group	Unvacci with Po 1
12-17 years	1
18-29 years	3
30-39 years	2
40-49 years	2
50-64 years	2
65-74 years	
75+ years	

ELR = Ele

Table 11: Numbers and percentages of COVID-19 cases (ages 12+) by vaccination status

	January 15, 2021 - October 1, 2021		September 4, 2021 - October 1, 2021	
Status	Number of Cases	Percent of Cases	Number of Cases	Percent of Cases
Fully Vaccinated	46,321	3.0%	19,548	8.4%
Partially Vaccinated	184,732	12.0%	45,271	19.3%
Unvaccinated	1,314,337	85.0%	169,391	72.3%

000	Impact
	37 times higher in unvaccinated
	23 times higher in unvaccinated
	55 times higher in unvaccinated
	28 times higher in unvaccinated
	24 times higher in unvaccinated
	12 times higher in unvaccinated

50-64 years	1,191	80.96	100	2.85	28 times higher in unvaccinated
65-74 years	847	213.25	162	8.77	24 times higher in unvaccinated
75+ years	793	303.91	324	26.38	12 times higher in unvaccinated

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texas.gov/immunize/covid19/data/Cases-a

Few COVID Facts for Kids 5-11 Years Old

- CDC data as of October, 2021
  - 1.9 million COVID-19 cases
  - 8,300 hospitalizations; 28.6 per 100,000 population, similar to influenza in 2017-2019
  - 2,300 cases of MIS-C had been reported to the CDC (44% of MIS-C cases), 1 per 3200 SARS-CoV-2 infections
  - 94 deaths due to COVID, single most deadly pathogen and the 8th leading cause of death during the last 2 years
    - Compared to other vaccine-preventable diseases (varicella, rotavirus, rubella, mumps, hepatitis A, etc.), the mortality burden for SARS-CoV-2 is substantially higher than these other diseases prior to introduction of their preventive vaccines
  - >10% of COVID infections, a proportion larger than their percentage of the US population
  - Children contribute to transmission of SARS-CoV-2 in households and communities similar to adults
  - During the current school year, approximately 2,350 schools faced COVID-19–related closures, half due to student this age

- CDC's National Center for Health Statistics data
- *ACIP Interim Recommendation for Use of Pfizer-BioNTech COVID-19 Vaccine in Children Aged 5–11 Years — United States, November 2021*
  https://www.cdc.gov/mmwr/volumes/70/wr/mm7045e1.htm

RESEARCH ARTICLE

The Impact of Obesity on Disease Severity and Outcomes Among Hospitalized Children With COVID-19

HOSPITAL PEDIATRICS Volume 11, Issue 11, November 2021

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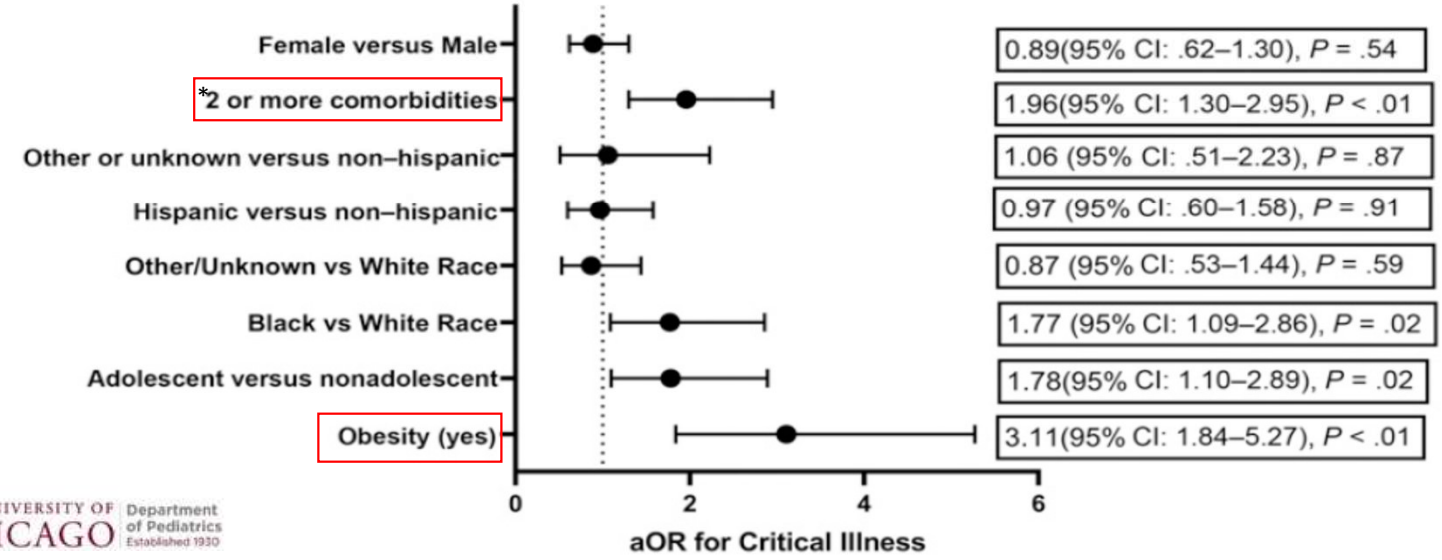

*Co-morbidities:

- Asthma
- Seizures
- Developmental delay
- Diabetes
- Chronic lung disease/BPD

https://publications.aap.org/hospitalpediatrics/article/11/11/e297/179738/The-Impact-of-Obesity-on-Disease-Severity-and

COVID Vaccine

How do COVID-19 Vaccine Boosters Compare?

Initial Vaccine Administered	Pfizer BioNTech			moderna			janssen Johnson & Johnson		
Initial Dose Regime	2			2			1		
Booster Shot Type	moderna	Pfizer BioNTech	janssen Johnson & Johnson	Pfizer BioNTech	moderna	janssen Johnson & Johnson	moderna	Pfizer BioNTech	janssen Johnson & Johnson
Binding & Neutralizing Antibody Assays (Geometric mean fold rise)	17.3 x	14.9 x	6.2 x	9.7 x	7.9 x	4.7 x	56.1 x	32.8 x	4.6 x
Rank	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd

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Atmar et al. doi: https://doi.org/10.1101/2021.10.10.21264827

The Vaccine 5-11 Y/O's

- No serious side effects in the study of 3,000 children
  - No cases of MIS-C
- 91% efficacy at preventing COVID
- 99% antibody response
- **So far so good**

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Description	Current Adult/Adolescent Formulation (1170 and 450 packs)	Future Pediatric Formulation
	Dilute Prior to Use	***Dilute Prior to Use***
Age Group	12 years and older	5 to <12 years**
Vial Cap Color	PURPLE 	ORANGE 
Dose	30 mcg	10 mcg
Injection Volume	0.3 mL	0.2 mL
Fill Volume (before dilution)	0.45 mL	1.3 mL
Amount of Diluent* Needed per Vial	1.8 mL	1.3 mL
Doses per Vial	6 doses per vial (after dilution)	10 doses per vial (after dilution)
Storage Conditions		
ULT Freezer (-90°C to -60°C)	9 months	6 months
Freezer (-25°C to -15°C)	2 weeks	N/A
Refrigerator (2°C to 8°C)	1 month	10 weeks

Myocarditis

Clinical Characteristics of Adolescents with Myocarditis After COVID-19 Vaccination: 12-20 Y/O's

Characteristic	Overall (N = 63)	12–15 y (n = 31)	16–20 y (n = 32)	P
Age, y	15.6 ± 1.8 (12–20)	14.4 ± 1.1	16.9 ± 1.0	—
Height, cm	172 ± 11	169 ± 11	176 ± 10	.01
Wt, kg	73.3 ± 19.4	67.5 ± 16.6	79 ± 20.5	.02
BSA, m^2	1.86 ± 0.30	1.77 ± 0.30	1.95 ± 0.30	.008
Male sex, n (%)	58 (92)	27 (87)	31 (97)	.16
Second dose, n (%)	62 (98)	30	32	.32
Days from recent vaccination to symptoms onset	2.1 ± 1.3 (0–7)	1.9 ± 0.9 (1–3)	2.3 ± 1.7 (0–7)	.15
Symptoms, n (%)				
Onset <2 d since vaccination	45 (71)	22 (71)	23 (72)	.94
Fever (≥100.4°F)	28 (44)	13 (42)	15 (47)	.70
Shortness of breath	22 (35)	9 (29)	13 (41)	.34
Chest pain	63 (100)	31 (100)	32 (100)	.98
Nausea or emesis	15 (24)	7 (23)	8 (25)	.82
Headache	16 (25)	7 (23)	9 (28)	.62
Fatigue, myalgias, or arthralgias	24 (38)	8 (26)	16 (50)	.05
Laboratory values				
Troponin, ng/mL	8.8 ± 9.1	7.7 ± 8.4	9.9 ± 9.9	.34
C-reactive protein, mg/L	37 ± 35	28 ± 23	46 ± 43	.05
BNP, pg/mL	94 ± 147	109 ± 168	68 ± 107	.50
Treatment and hospital course				
IVIg, n (%)	17 (27)	5 (16)	12 (38)	.05
Steroids, n (%)	15 (24)	5 (16)	10 (31)	.14
NSAIDs, n (%)	54 (86)	28 (90)	26 (81)	.31
Colchicine, n (%)	4 (6)	1 (3)	3 (9)	.32
ICU admissions, n (%)	27 (43)	10 (32)	17 (53)	.09
Length of ICU stay, d	2.5 ± 1.5 (1–7)	2.1 ± 1.1 (1–4)	2.7 ± 1.6 (1–7)	.23
Length of hospital stay, d	3.0 ± 1.4 (1–7)	2.8 ± 1 (1–5)	3.3 ± 1.7 (1–7)	.18
Inotropic, mechanical, or circulatory support; ECMO; or mortality	0	—	—	—

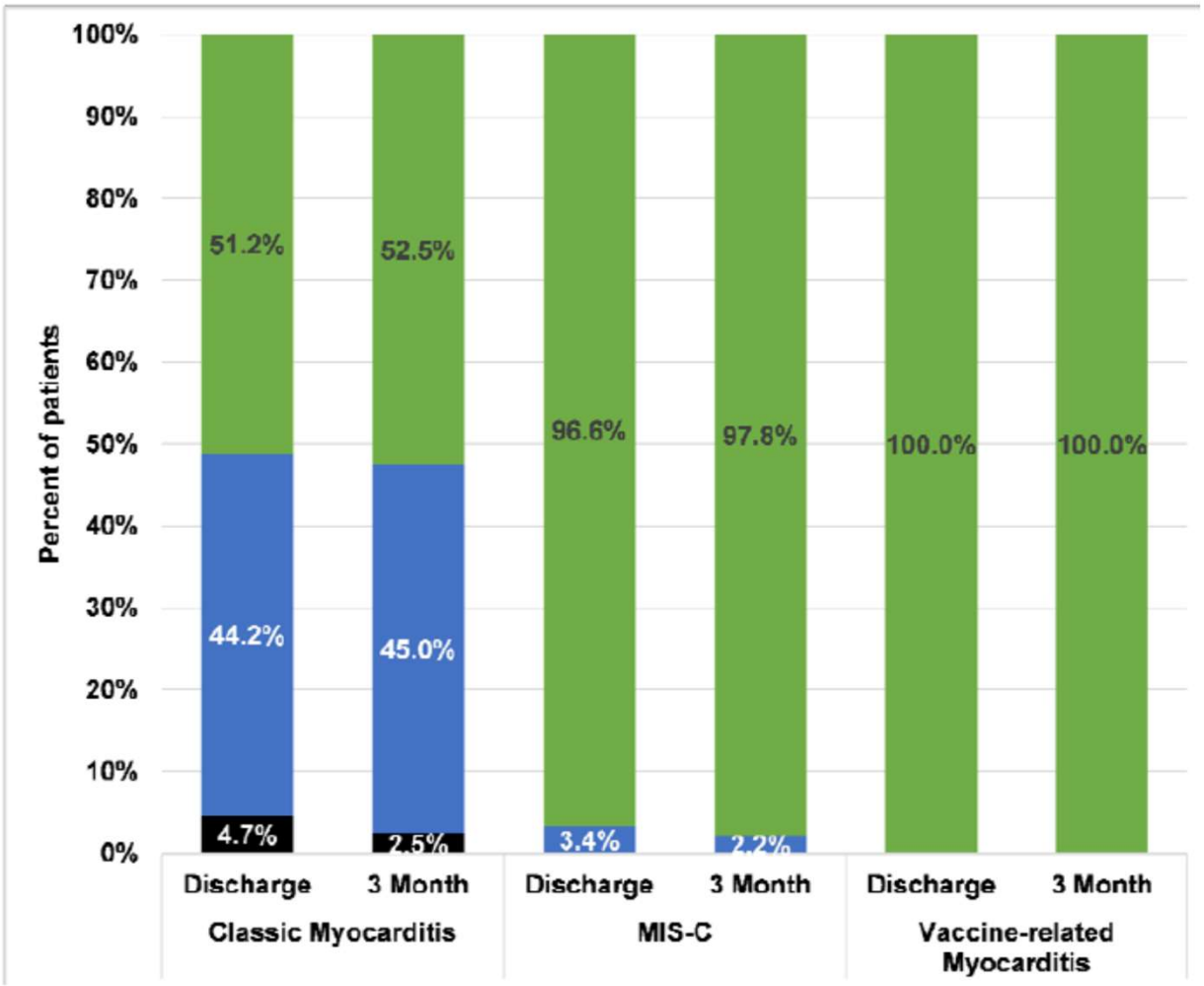
Cardiovascular Testing and Imaging of 12-20 Y/O's with Myocarditis After COVID-19 Vaccination

Findings	Overall (N = 63)	12–15 y (n = 31)	16–20 y (n = 32)	P
ECG, n (%)				
Abnormalities on ECG	44 (70)	19 (61)	25 (78)	.38
Complete heart block	1 (2)	0 (0)	1 (3)	.32
Nonsustained VT	3 (5)	1 (3)	2 (6)	.57
Echocardiography				
LV EF %	61 ± 6.5 (45–73)	61 ± 6 (45–73)	60 ± 7 (45–83)	.51
Reduced LV EF, n (%)				
Mild (EF: 45%–54%)	9 (14)	4 (13)	5 (16)	.80
Moderate (EF: 35%–44%)	0	—	—	—
Severe (EF <35%)	0	—	—	—
CMR				
Days from recent vaccination to CMR	4.9 ± 2.3 (2–15)	5.0 ± 2.8 (2–15)	5.2 ± 3.2 (2–15)	.68
Myocardial edema (T2-weighted imaging or T2 mapping), n/N (%)	50/56 (89)	24/28 (86)	26/28 (93)	.40
ECV %	32.6 ± 9	36.3 ± 11	28.9 ± 4	.05
Presence of LGE, n/N (%)	49/56 (88)	24/28 (86)	25/28 (89)	.69
LV EF %	58 ± 6 (46–73)	59 ± 6 (46–73)	57 ± 5 (47–64)	.21
Reduced LV EF, n/N (%)				
Mild (EF: 45%–54%)	13/56 (23)	6/28 (21)	7/28 (25)	.83
Moderate (EF: 35%–44%)	0	—	—	—
Severe (EF <35%)	0	—	—	—
LV EDV, mL/m^2	86 ± 12 (55–111)	85 ± 11 (57–105)	88 ± 14 (55–111)	.40
RV EF %	56 ± 9 (43–105)	56 ± 5 (47–65)	55 ± 12 (43–105)	.68
Reduced RV EF (EF <49%), n/N (%)	3/45 (7)	1/22 (5)	3/23 (13)	.58
RV EDV, mL/m^2	89 ± 15 (48–123)	87 ± 13 (56–107)	91 ± 16 (48–123)	.36

Outcomes

- None of the patients required inotropic, mechanical, or circulatory support
- There were no deaths
- Follow-up data obtained in 86% of patients at a mean of 35 days revealed resolution of symptoms, arrhythmias, and ventricular dysfunction

Myocarditis Outcome Comparison: Classic, MIS-C, Vaccine Associated



Patel et al. published in medRxiv
https://doi.org/10.1101/2021.10.05.21264581

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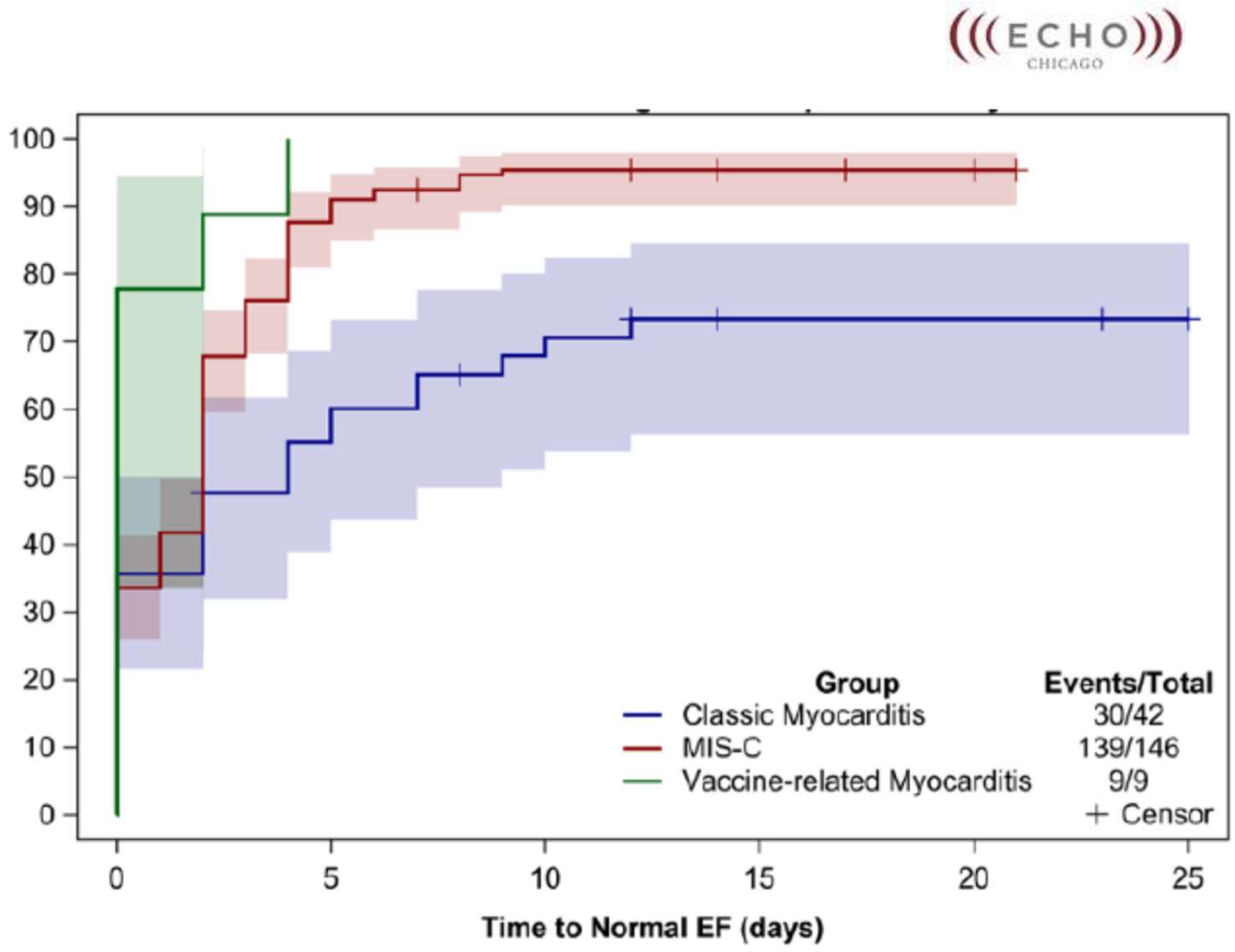

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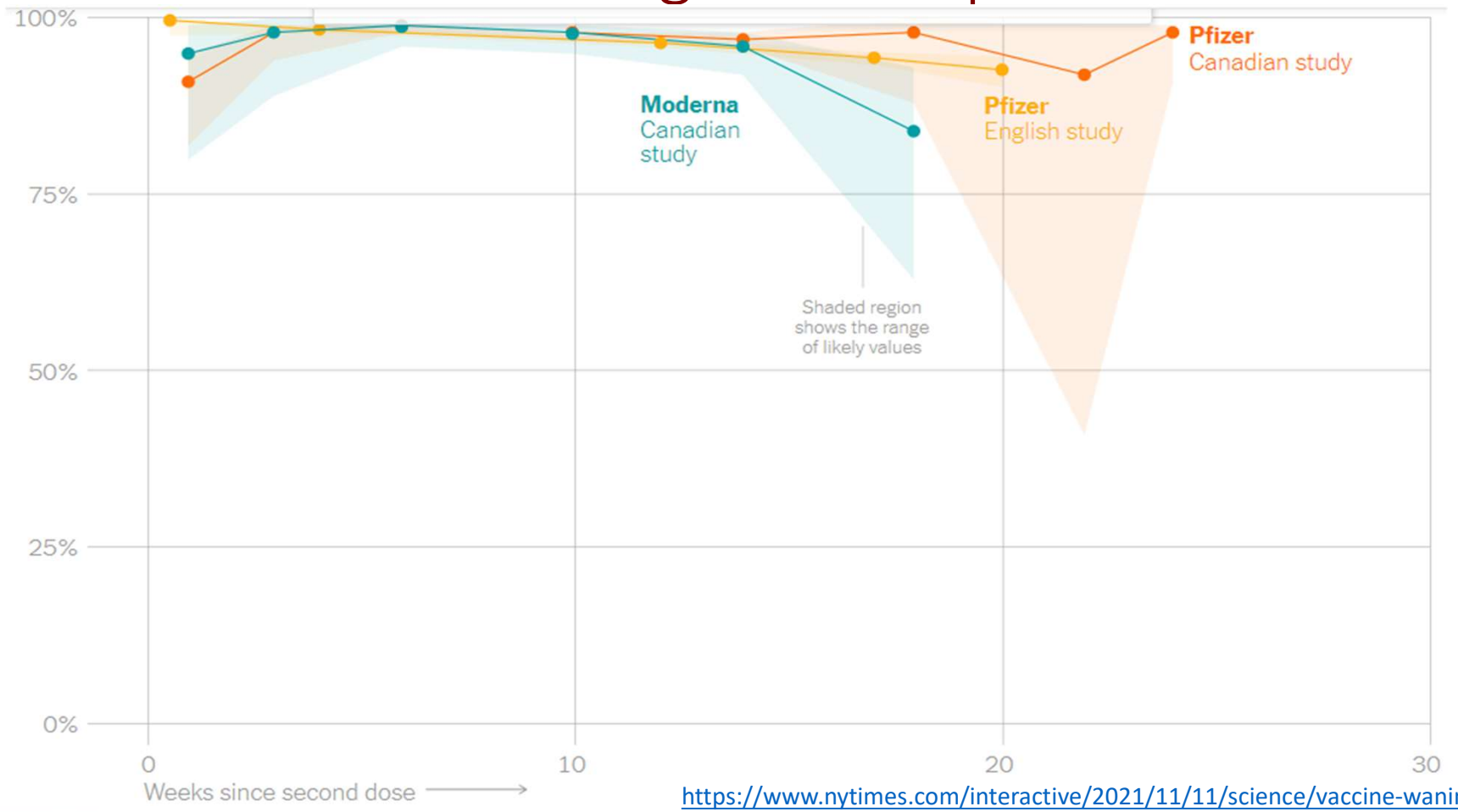
What are the Goals of Vaccination

- Prevent serious disease and death
- Reduce the load on healthcare systems, especially hospital beds

Vaccine Effectiveness Against Hospitalization

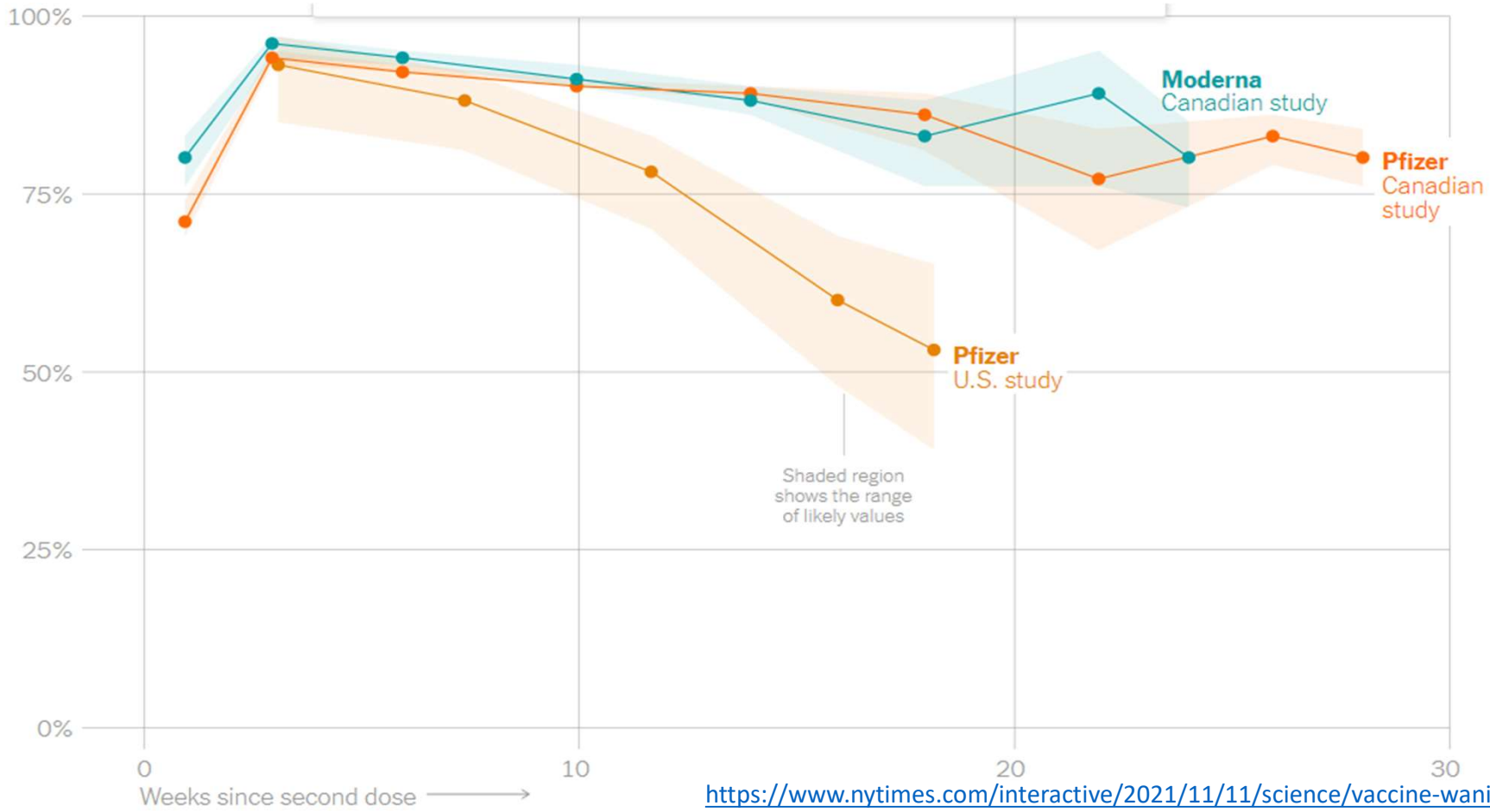


https://www.nytimes.com/interactive/2021/11/11/science/vaccine-waning-immunity.html?referringSource=articleShare

What are the Goals of Vaccination

- Prevent serious disease and death
- Reduce the load on healthcare systems, especially hospital beds
- Reduce risk of spread and infection is a bonus, not a requirement

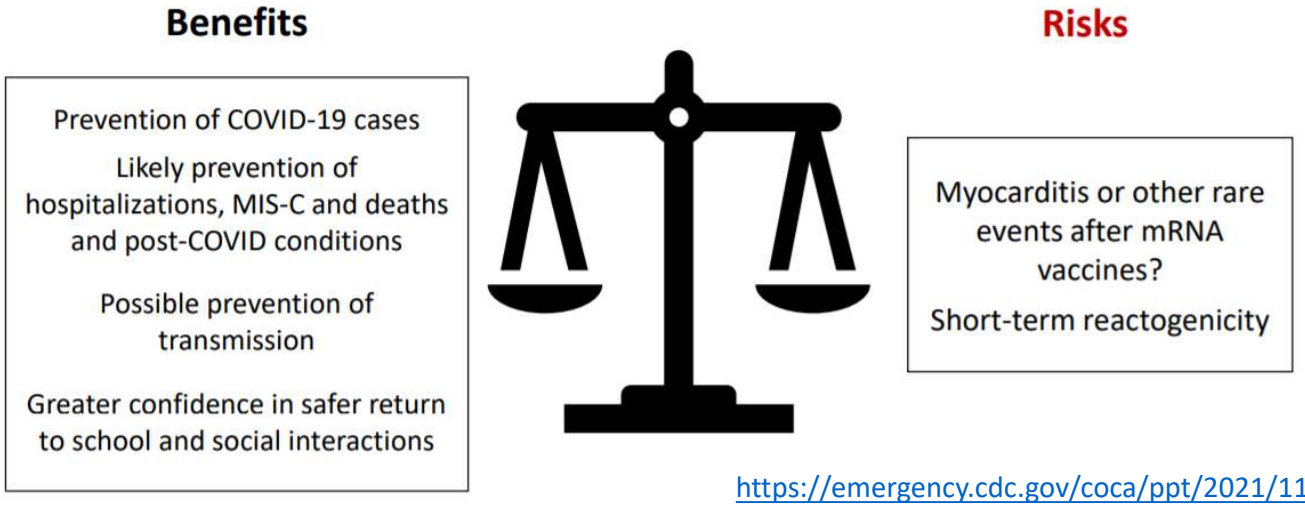
Vaccine Effectiveness Against SARS-CoV-2 Infection



https://www.nytimes.com/interactive/2021/11/11/science/vaccine-waning-immunity.html?referringSource=articleShare

What are the Goals of Vaccination

- Prevent serious disease and death
- Reduce the load on healthcare systems, especially hospital beds
- Reduce risk of spread and infection is a bonus, not a requirement
- Reduce complications and anxiety

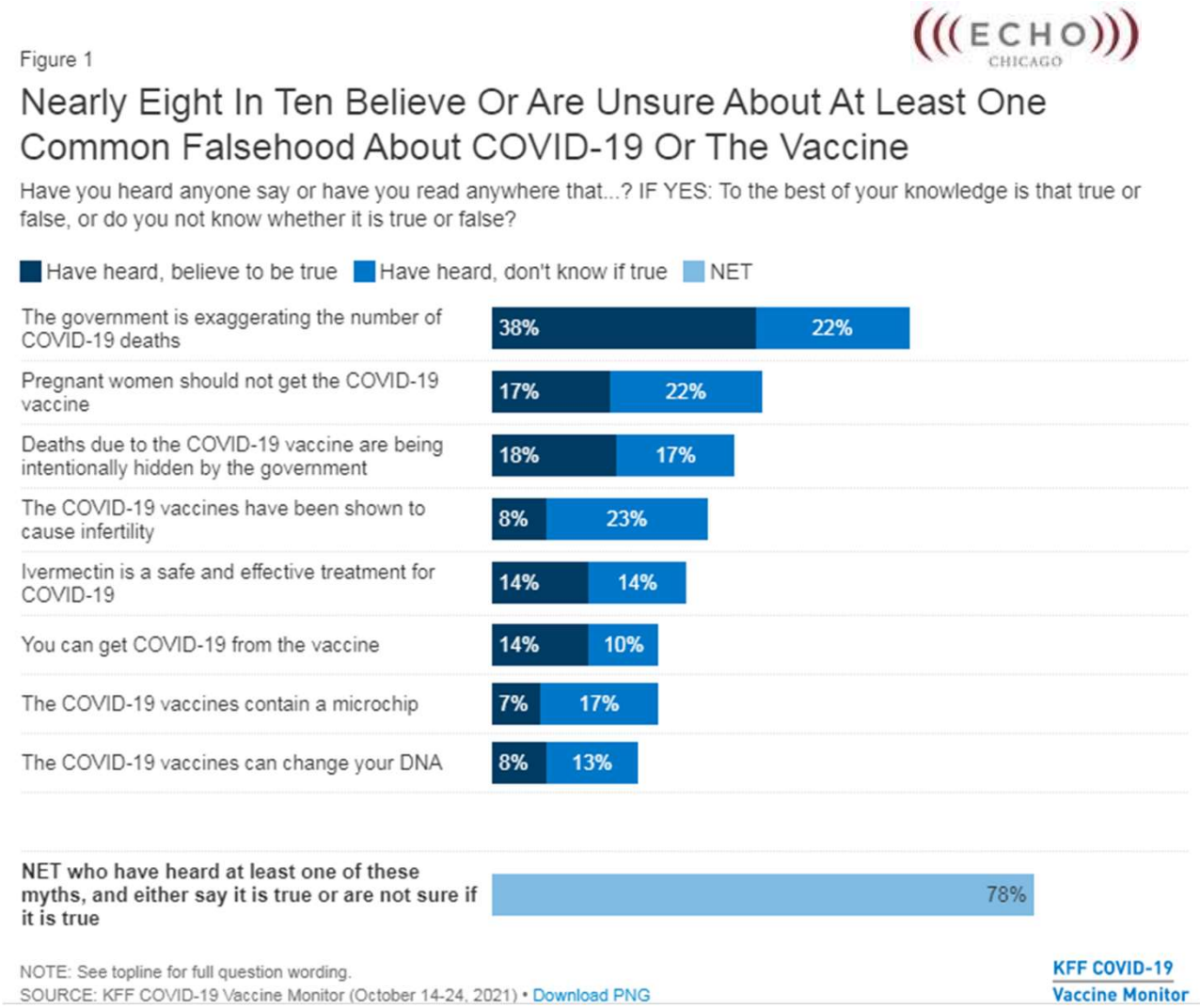


https://emergency.cdc.gov/coca/ppt/2021/110421_slide.pdf

Vaccine Hesitancy

What You Are Up Against

https://www.kff.org/coronavirus-covid-19/poll-finding/kff-covid-19-vaccine-monitor-media-and-misinformation/?utm_campaign=KFF-2021-polling-surve%E2%80%A6



Vaccine Hesitancy


OPINION

Meet the Four Kinds of People Holding Us Back From Full Vaccination

By Sema Sgaier

May 18, 2021

- COVID skeptics
  - Emphasize that vaccination is their own, personal choice — one that can help them protect friends and family members
- Cost anxious
  - Vaccination is totally free
  - See if getting time off is acceptable for this reason as some business will
- System disruptors
  - Making vaccinations of people they know as visible as possible
  - Tracking and illuminating efforts to ensure the vaccine rollout is equitable and sharing that with the community is key
- Watchful
  - Opt-in to vaccines when ready
  - Making vaccinations of people they know as visible as possible

https://www.nytimes.com/interactive/2021/05/18/opinion/covid-19-vaccine-hesitancy.html

How to Talk to Patients About COVID Vaccine

- Process of approval
  - Well tested as very large trials
- You as healthcare provider can impact others by recommending it and that you are taking the vaccine
  - Best approach to getting patients onboard is knowing you are taking it
- Personalize the value to patient's health and of those they love
  - Spouses
  - Parents
  - Siblings
  - Friends
  - Co-workers
- Compare vaccine to risk of getting COVID
  - Emphasize morbidity, long and short term, as well as mortality
- Anticipate side effects and how to manage

Vaccine Hesitancy

- Some opening lines
  - The vaccines are highly effective in preventing illness -- even more effective than the annual flu vaccine
  - COVID vaccine will help protect you from getting sick
  - The quickest way for life to return to normal is for most people to get vaccinated
  - Nearly all providers who have been offered the vaccine have taken it
  - Millions of people have been vaccinated safely
  - The COVID vaccines have been held to the same rigorous standards as other vaccines; corners were not cut, red tape was eliminated to expedite the approval process
  - Have you talked to your child about the vaccine and how they feel about it
- Follow the conversation with an offer to direct them to how to get vaccinated

Vaccine Hesitancy

Annals of Internal Medicine IDEAS AND OPINIONS

Addressing Mistrust About COVID-19 Vaccines Among Patients of Color

Douglas J. Opel, MD, MPH; Bernard Lo, MD; and Monica E. Peek, MD, MPH, MS

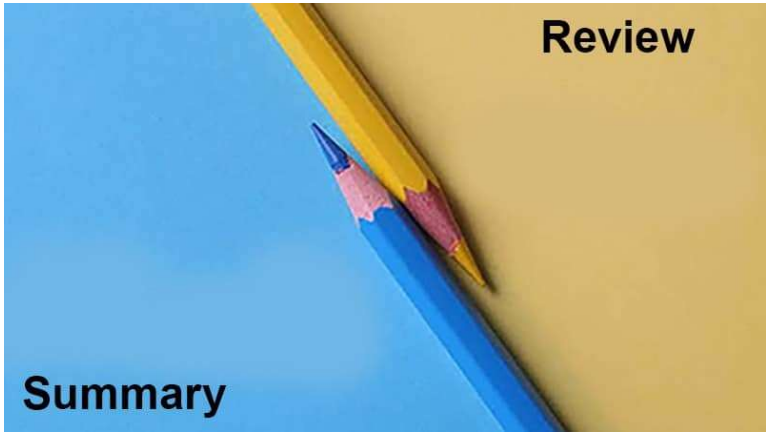
Motivational Interviewing Techniques

Technique	Rationale	Example
Open-ended questions	Helps identify, explore, and understand patients' COVID-19 vaccine concerns	"Can you tell me more about what is worrying you?"
Reflection statements	Encourages partnerships, deepens rapport, and broadens understanding of patient motivations	"I hear that you want to be sure that the COVID vaccine is safe for you."
Affirmation statements	Helps patients feel supported, appreciated, and understood, which can improve their engagement in an open discussion	"You're not alone. Several of my patients have similar concerns."
Ask permission to share	Puts patients in a less defensive posture and improves receptivity to information being shared	"May I share my view with you?"
Statements that support patient autonomy	Enhances a patient's sense of control and helps them feel more at ease with the conversation	"I want you to know that this is your decision to make."
Rolling with resistance	Meeting patient resistance with curiosity (an opportunity to understand more about the patient's perspective in a nonjudgmental, respectful way) rather than confrontation encourages continued patient engagement	"I am hearing that you don't think you'll get the COVID vaccine anytime soon. Tell me more about what is concerning you."

Opal DJ, et al. https://www.acpjournals.org/doi/10.7326/M21-0055

Summary

- Talk to your patients, bring it up
- Give them the facts, talk about risk benefit and compare to COVID risks
  - Explain risk factors that might help in decision making
- Work in a recommendation and tell them you got it too!
- Individualize your approach
- Don’t be judgmental



I-VAC
ILLINOIS VACCINATES AGAINST COVID-19

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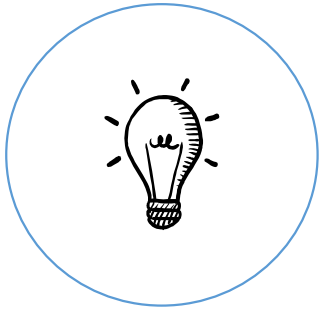
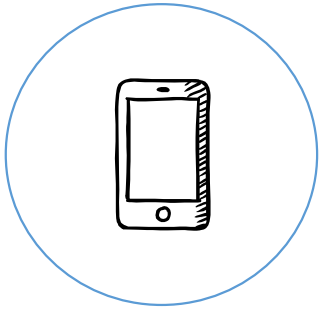
Foundational Training



Learning Collaboratives



Technical Assistance

Toolkit & Outreach Materials

Website: https://illinoisaap.org/covid19-immunization-campaign/

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Discussion
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