Melissa Martinez MD FAAFP
February 19, 2022

Vaccine Update: COVID and More
40th Annual NMAFP Winter Refresher

Declarations

- Conflicts of Interest
  - Nothing to declare

- Off label
  - This presentation include information on COVID vaccines for children, which are not approved

Objectives

- List recommended vaccines for patients based on age, conditions and risk factors
- Compare and contrast pneumococcal vaccines
- Compare influenza vaccines for seniors
- ~~Use motivational interviewing to engage vaccine-hesitant patients~~
- ~~Explain contraindications to COVID vaccines~~
  - Discussion of COVID 19 ages 6 m to 4 years

High blood pressure, controlled with medication. She had shingles 4 years ago. She got a J&J COVID vaccine in July. She has three children and four grandchildren with a 5th due in a few months. She is not planning any trips.

What vaccines do you recommend for her? (Assume she does not need any “catch up” vaccines).

Useful Apps and Websites

https://www.cdc.gov/vaccines/schedules/

https://www.immunize.org/

8:30 PM Mon Jul 6

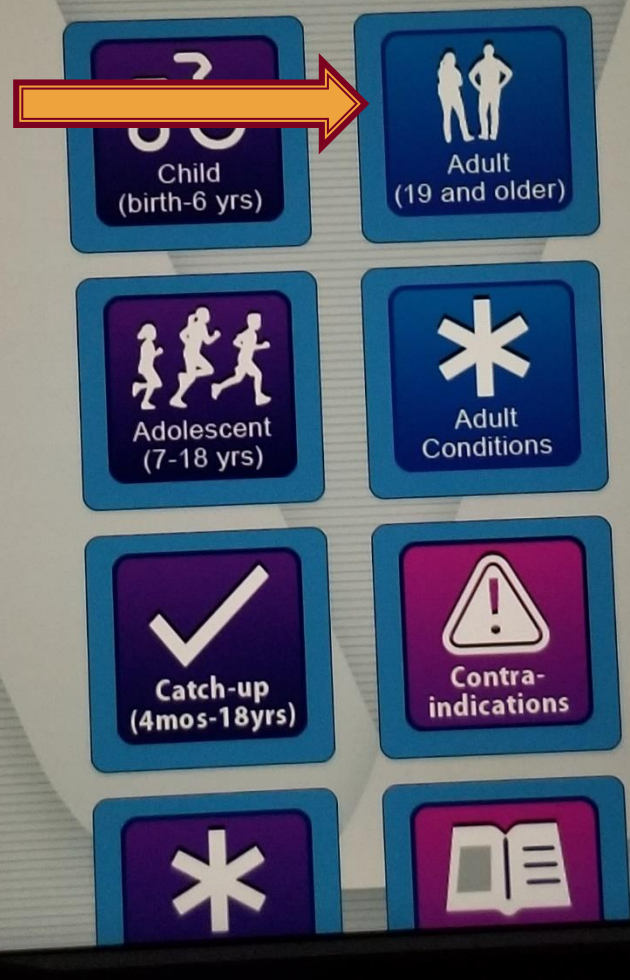
37%

About

CDC Vaccine Schedules

Share

Advisory Committee on Immunization Practices(ACIP) Recommended Immunization Schedules for Persons Ages Birth through 18 years and Adults Ages 19 years or older, 2020



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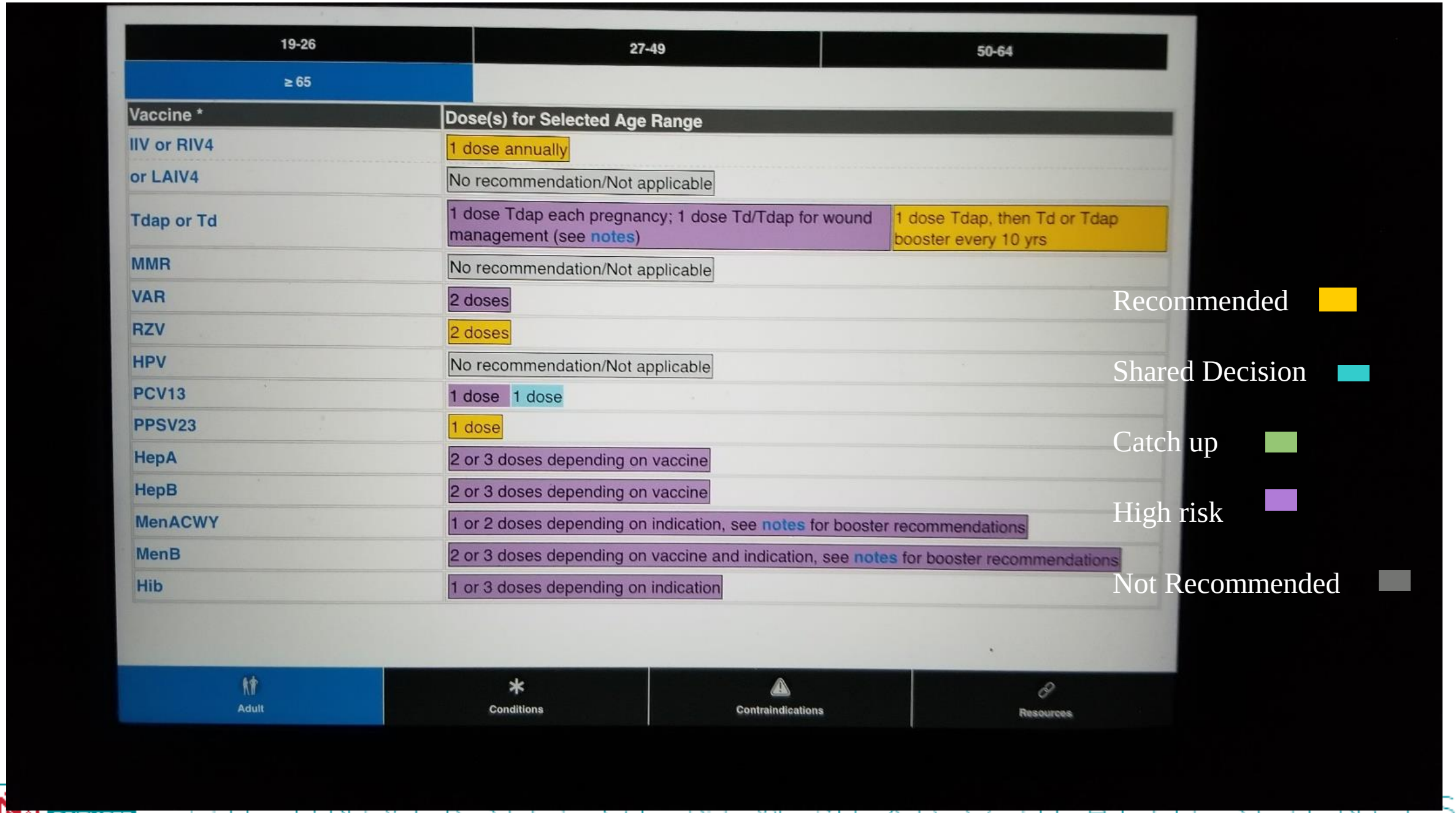
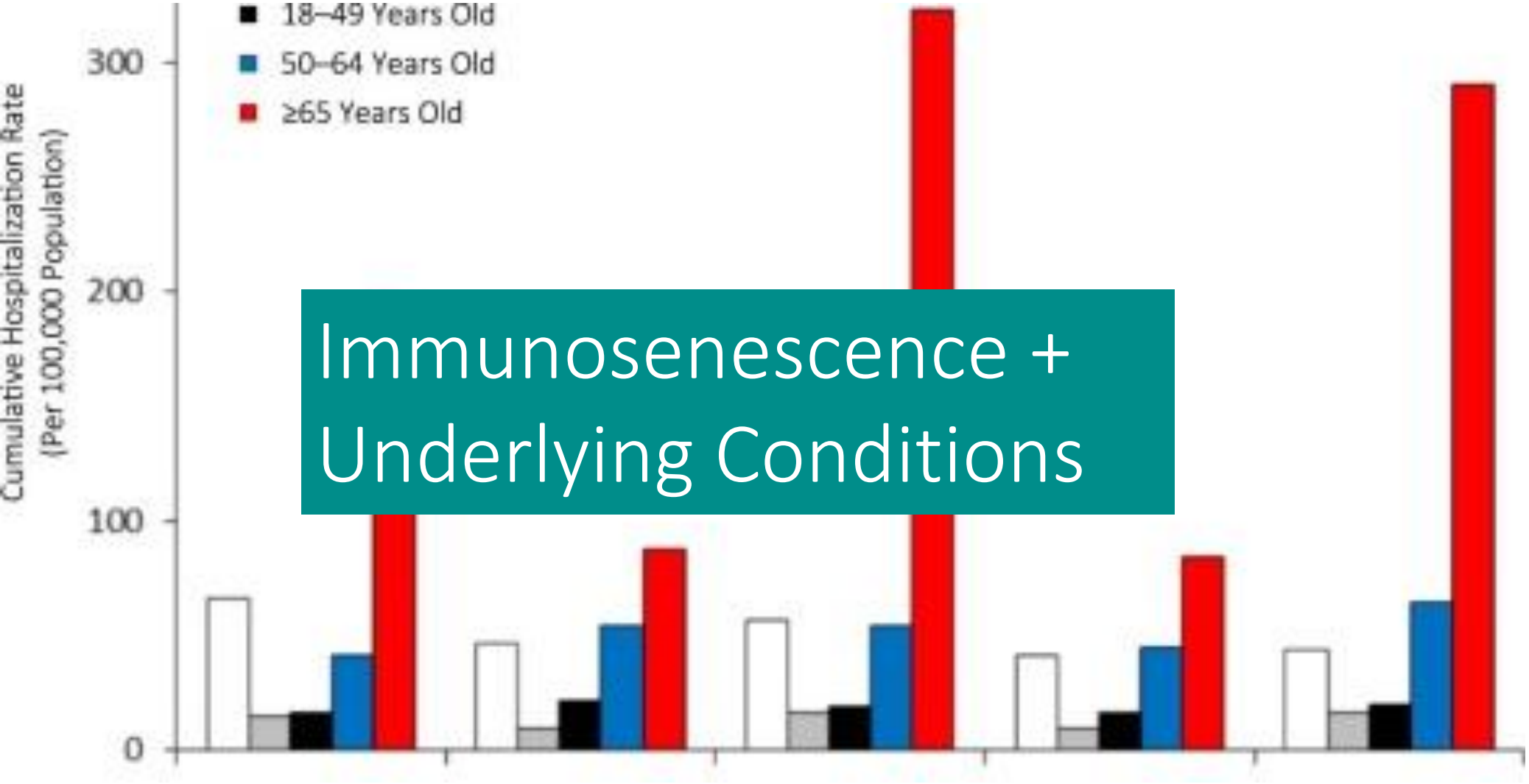
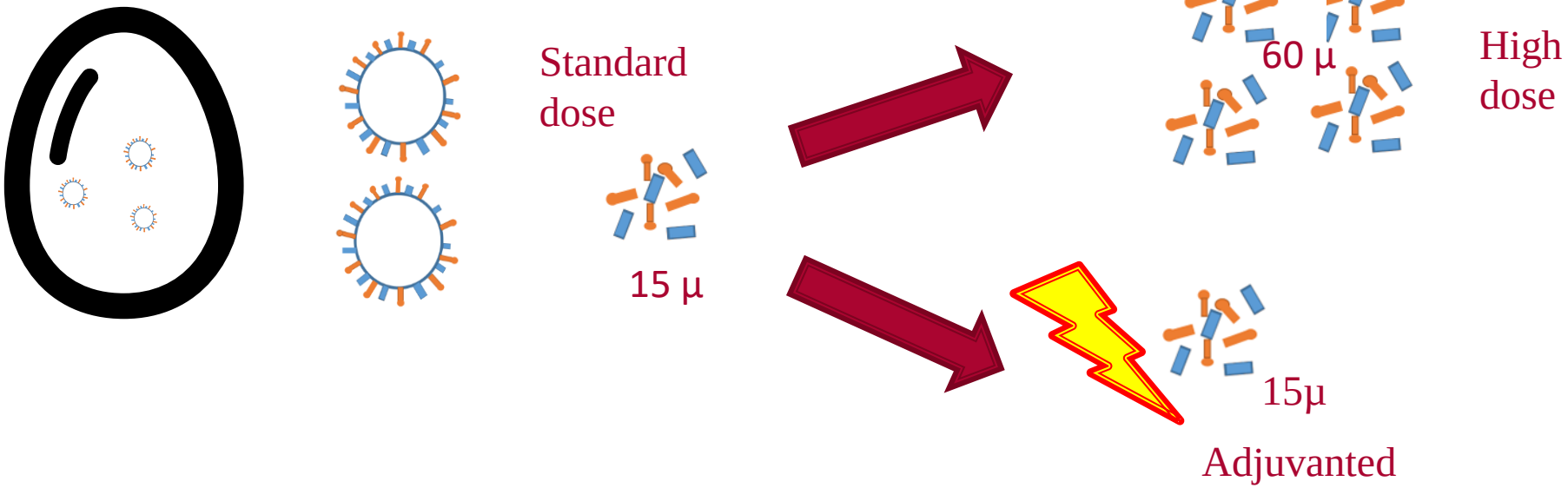

19-26
27-49
50-64
≥ 65
Vaccine *
Dose(s) for Selected Age Range
IIV or RIV4
1 dose annually
or LAIV4
No recommendation/Not applicable
Tdap or Td
1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound management (see notes)
1 dose Tdap, then Td or Tdap booster every 10 yrs
MMR
No recommendation/Not applicable
VAR
2 doses
RZV
2 doses
HPV
No recommendation/Not applicable
PCV13
1 dose
1 dose
PPSV23
1 dose
HepA
2 or 3 doses depending on vaccine
HepB
2 or 3 doses depending on vaccine
MenACWY
1 or 2 doses depending on indication, see notes for booster recommendations
MenB
2 or 3 doses depending on vaccine and indication, see notes for booster recommendations
Hib
1 or 3 doses depending on indication
Adult
Conditions
Contraindications
Resources
Recommended
Shared Decision
Catch up
High risk
Not Recommended

She did get a flu shot in October at a drive-through clinic. She wonders if she should get the “Senior Vaccine” next time.



Immunosenescence + Underlying Conditions

Am J Med. 2018 Aug;131(8):865-873


Standard dose
15 µ
60 µ
High dose
15µ
Adjuvanted
45 µ
RNA
Recombinant

Multicenter, Randomized, Double-blind, active-controlled trial

31,989 healthy adults 65+ in US and Canada

15,998 High Dose

15,998 Standard Dose

2 Flu Seasons 2011-2012 and 2012-2013

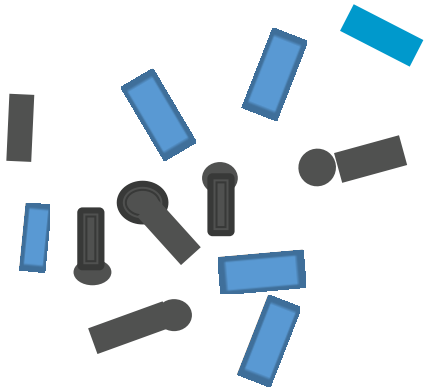
laboratory-confirmed influenza

N Engl J Med 2014; 371:635-645

High Dose

	Flu	No Flu	Total
High dose	228	15763	15,991
Standard dose	301	15697	15,998
ARR=CER-EER 301/15998-228/15991=0.018-0.014=0.004 NNT =1/AAR =250 We need to give 250 adults over 65 the high dose to prevent one case of flu in a season			
RRR=EER/CER=0.014/0.018=0.73 or 73% or a 27% reduction			

N Engl J Med 2014; 371:635-645



Influenza: Adjuvanted

High Dose vs Adjuvanted Claims Data Studies

- Study population: 65 +
- Interventions
  - High Dose 1,058,638
  - Adjuvanted 189,636
- Outcome respiratory related hospitalizations
- Seasons: 2016/17 & 2017/18

van Aalst Vaccine 2020

- Study population: 65 +
- Interventions
  - Aduvatned 524 223
  - Standared 4917 609
  - High Dose 3 377 860
- Outcome Influenza related medical encounters
- Seasons: 2017/18 & 2018/19

Biokos Clinical Infectious Diseases 2020

High Dose vs Adjuvanted Claims Data 2017/18 Season

Respiratory related hospitalizations

rVE High Dose vs Adjuvanted

12% (95%CI, 2.1%–21%)

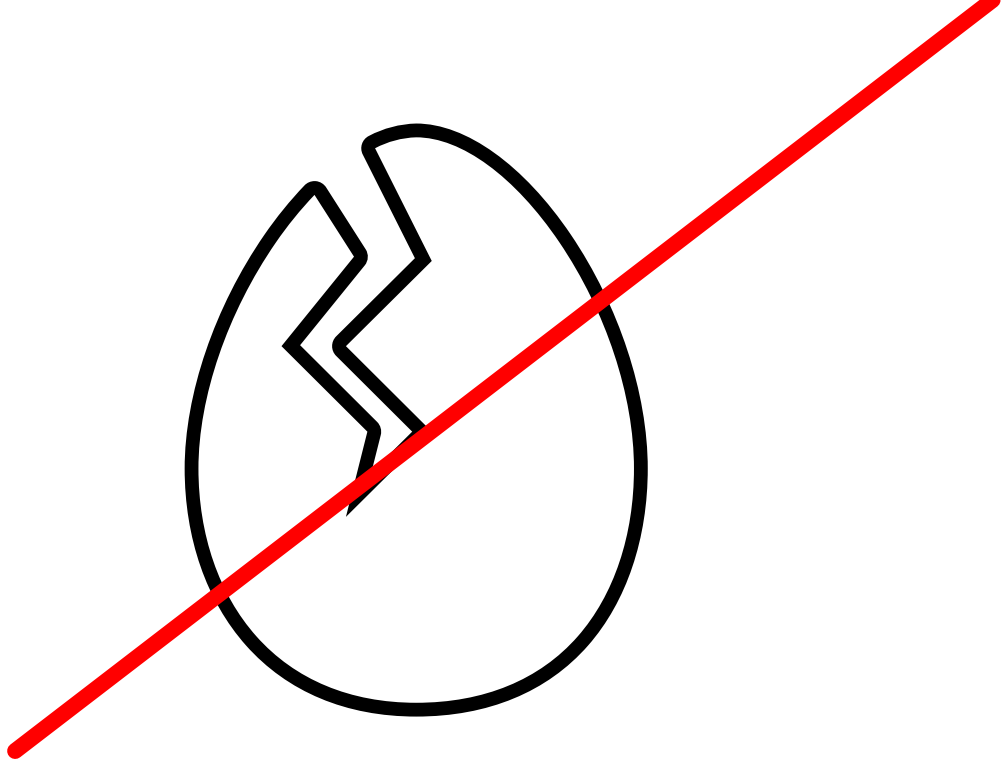
van Aalst Vaccine 2020

Influenza-related medical encounters

rVE Adjuvanted vs High Dose

7.7% (95% CI,2.3-12.8)

Biokos Clinical Infectious Diseases 2020



Recombinant Influenza Vaccines

Recombinant

Vaccine 2020

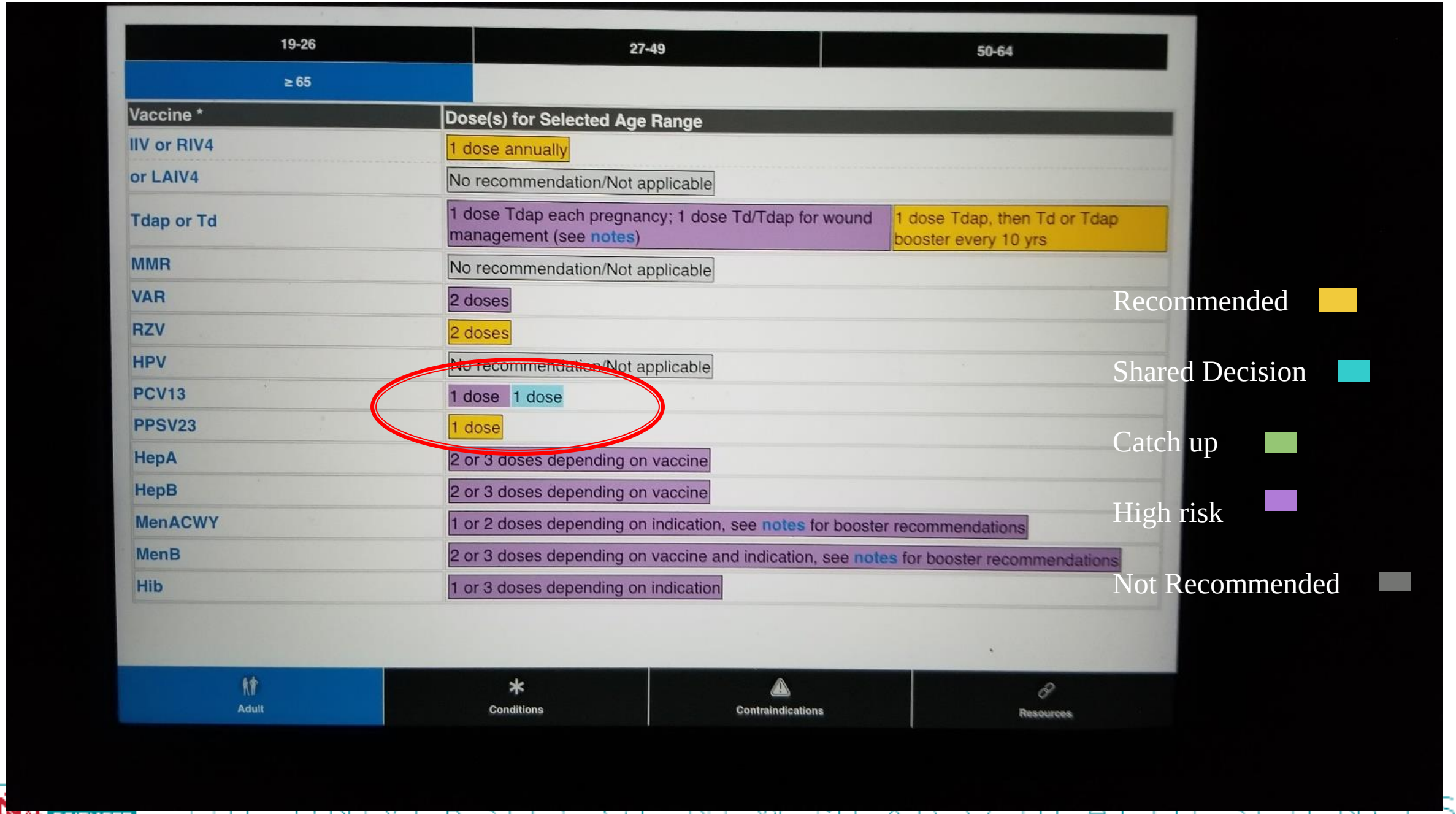
She did get a
should get th

Getting a high dose, adjuvanted or recombinant vaccine may give you a little bit more protection.

The most important thing is to **get the vaccine**.

If the drive through is the best way for you to get the vaccine, that is okay.

You check in record and see that she received a Pneumococcal Polysaccharide Vaccine (PPSV23) three years ago. Does she need any additional pneumococcal vaccines?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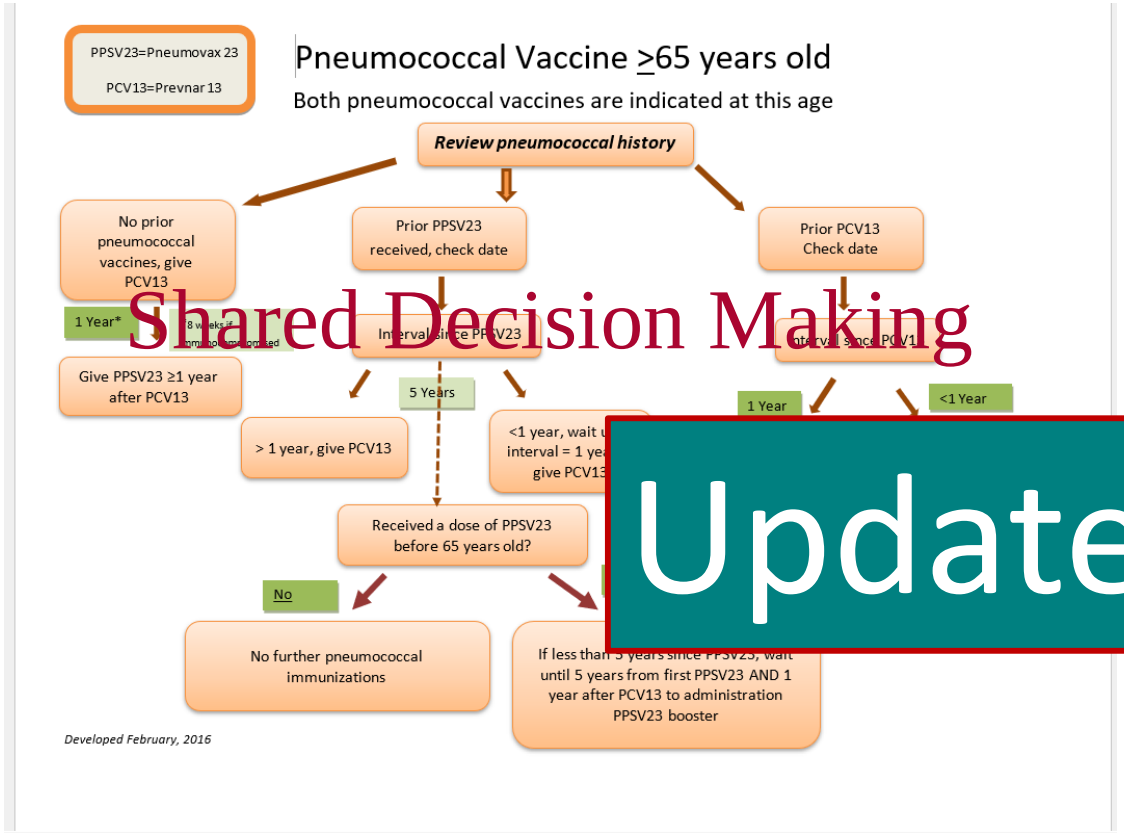
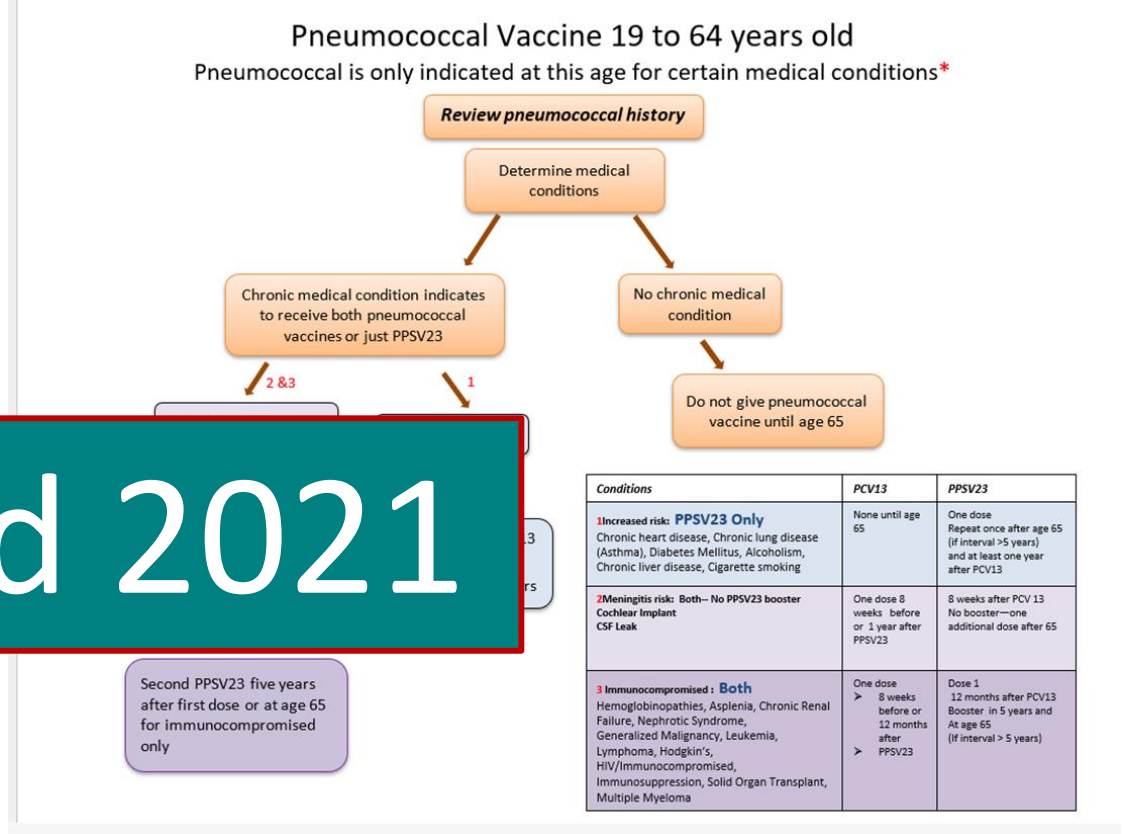


Shared Decision Making

Updated 2021



Current Recommendations

No Previous Conjugate Vaccine

Age ≥ 65

Age 19-64 with high-risk conditions

Age 19-64 with immunocompromising conditions

PCV20

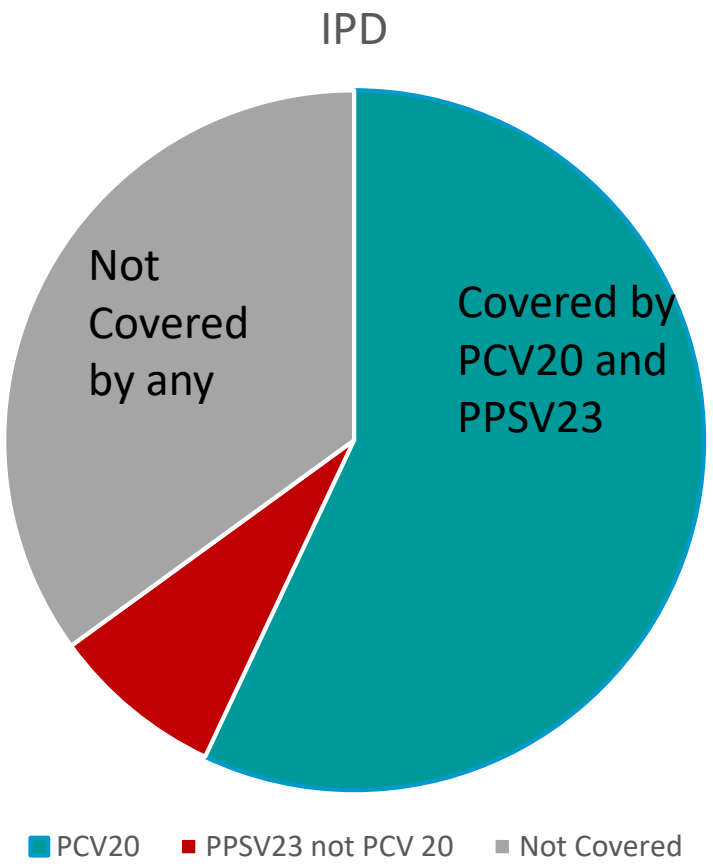
Or

PCV15 + PPSV23

12 months or if high risk, 8 weeks later

ACIP January 12, 2022

Why give two vaccines (PPSV23 &PCV15) when you can give one(PCV20)?



8% of strains covered by PPSV23 and Not PCV20

Non- inferiority, studies

PCV15+ PPSV23 had higher GMT for some strains compared to PCV13

PCV20 had slightly lower GMTs compared to PCV13

No Clinical Data

Pneumococcal Vaccines in Adults

Age 65+ or Age 18+ with underlying medical conditions or other risk factors*	
No previous pneumococcal vaccine	PCV20 or PCV15 + PPSV23 12 months or if high risk, 8 weeks later[1]
Previous PPSV23	PCV15 or PCV20 at least 12 months after PPSV23
Previous Conjugate vaccine: (Currently there is no recommendation for PCV20 or PCV15 in adults who have received PCV13)	
PCV13 or PCV15 No PPSV23	PPSV23 12 months after the PCV was given
PCV13 or PCV15 +PPSV23	no additional pneumococcal vaccines at this time
PCV20	No additional pneumococcal vaccines

***Underlying medical conditions or other risk factors:**
Chronic renal failure, nephrotic syndrome, immunodeficiency, iatrogenic immunosuppression, generalized malignancy, human immunodeficiency virus infection, Hodgkin disease, leukemia, lymphoma, multiple myeloma, solid organ transplants, congenital or acquired asplenia, sickle cell disease, or other hemoglobinopathies, CSF leak, or cochlear implant

*(**1) Indication for PPSV23 8 weeks after PCV 15:** immunocompromising condition, cochlear implant, or cerebrospinal fluid leak to minimize the risk for IPD caused by serotypes unique to PPSV23 in these vulnerable groups.*

Footnote MMWR

- †††††† For adults who have received PCV13 but have not completed their recommended pneumococcal vaccine series with PPSV23, one dose of PCV20 may be used if PPSV23 is not available.

https://www.cdc.gov/mmwr/volumes/71/wr/mm7104a1.htm?s_cid=mm7104a1_w

You check in record and see that she received a Pneumococcal Polysaccharide Vaccine (PPSV23) three years ago. Does she need any additional pneumococcal vaccines?

Yes, you offer her a PCV15 or PCV20

You determine that she should have a shingles vaccine. If she were immunocompromised, would you still give her a shingles vaccine?

New RZV Recommendation

Two doses of recombinant zoster vaccine are recommended for adults aged ≥19 years who are or will be immunodeficient or immunosuppressed due to disease or therapy.

MMWR Jan 2022

Dosing schedule

First dose at Month 0
Second dose 2 to 6 months later

For individuals who are or will be immunodeficient or immunosuppressed and who would benefit from a shorter vaccination schedule:
First dose at Month 0
Second dose 1 to 2 months later

Consider timing zoster vaccination when immune response is likely to be most robust

MMWR Jan 2022

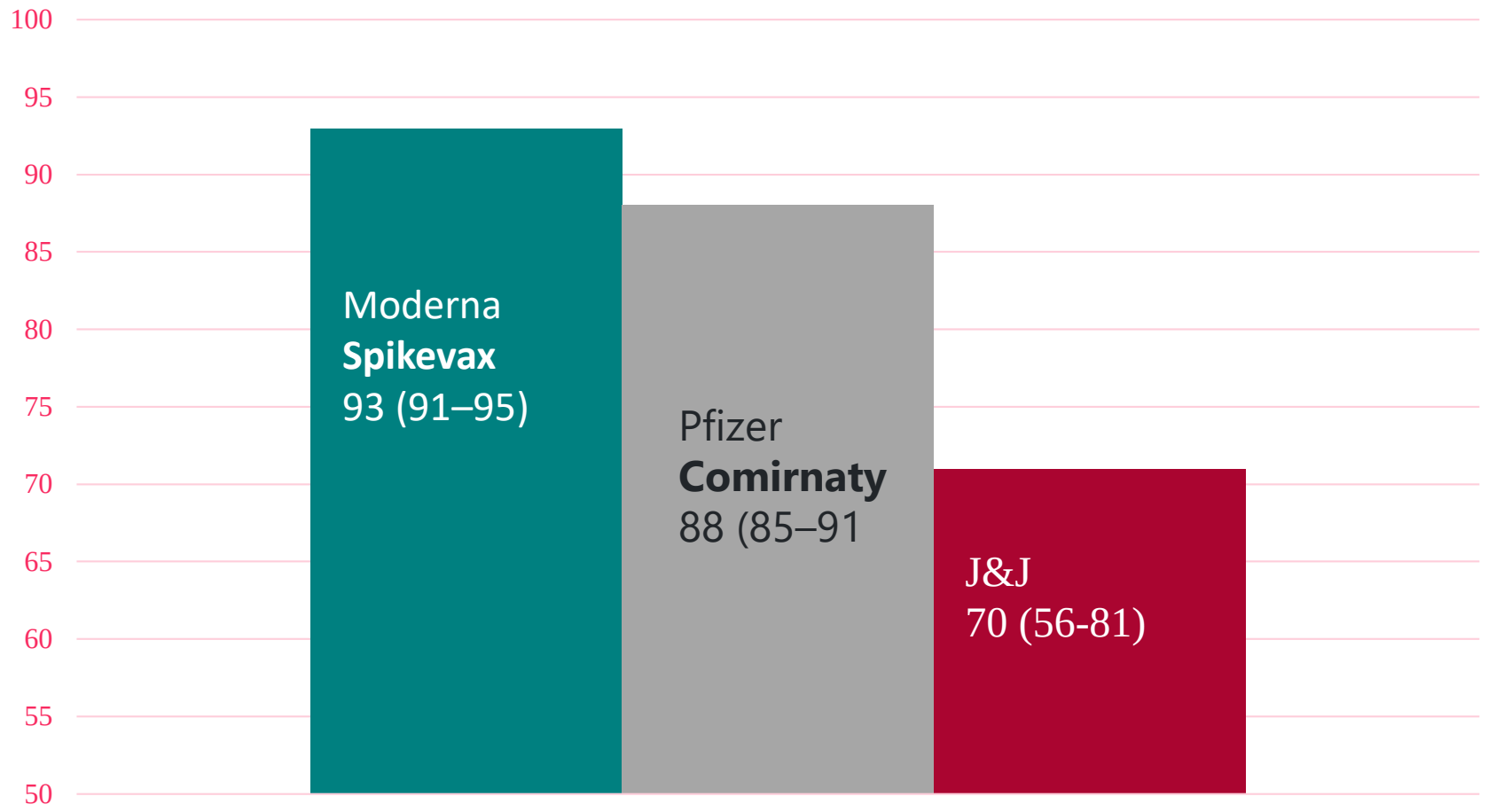
You determine tha
immunocompromi

She recalls having chicken pox as a child and a varicella IgG test when she worked as a nurse, so you feel confident giving her two doses of the shingles vaccine

She received a dose of the Jassen (J&J) COVID 19 vaccine in July. Should she get additional COVID vaccines?

Effectiveness against COVID-19–associated hospitalization: Adults without immunocompromising conditions

March–August 2021



MMWR Sept 2021

Thrombosis with Thrombocytopenia TTS

J&J/Janssen Vaccine

July 2021-December 2021

9.7 per million doses in **women** ages: 30-49

3.17 per million doses in **men** ages: 30-49

Overall: 3.7 per million doses

https://www.cdc.gov/vaccines/acip/meetings/live-mtg-2021-12-16.html

Timeline J&J/Janssen Vaccine

February 27, 2021: EUA

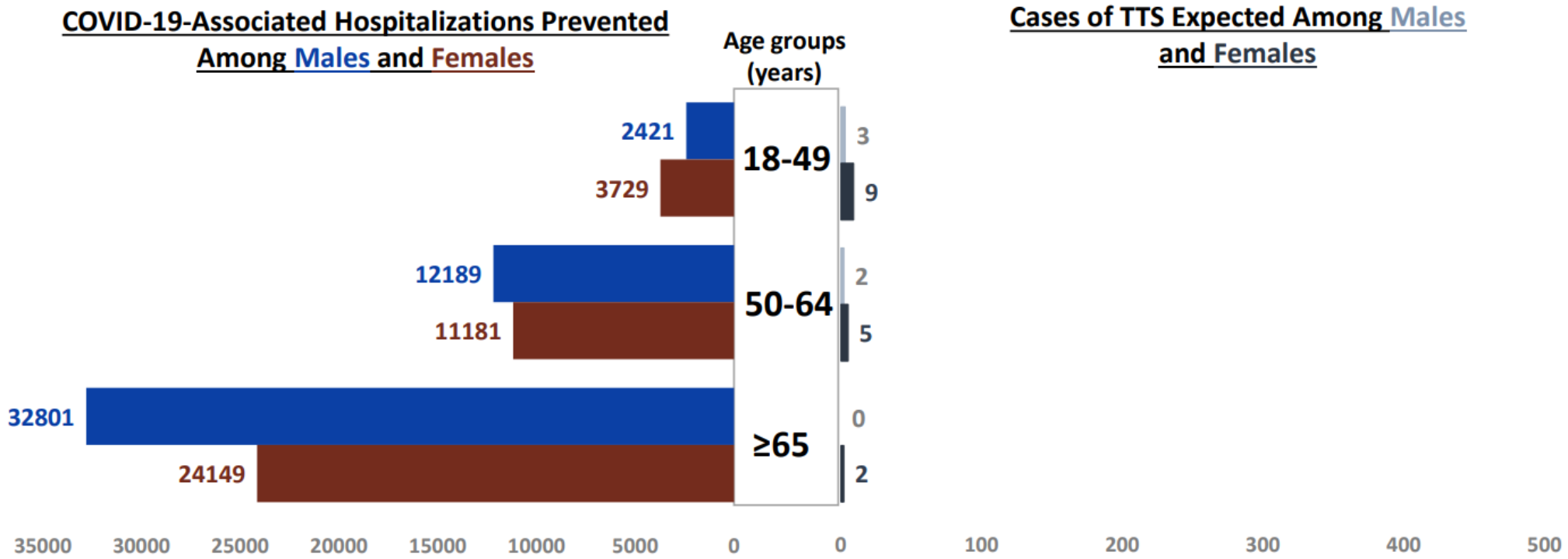
March 2, 2021: First TTS Reports

April 13, 2021: Pause EUA, Risk vs Benefits

Benefits and risks after Janssen COVID-19 vaccine

per million fully vaccinated people

- COVID-19-associated hospitalizations prevented by Janssen COVID-19 vaccine compared with TTS cases expected
- Presented by age groups and sex



https://www.cdc.gov/vaccines/acip/meetings/live-mtg-2021-12-16.html

Timeline J&J/Janssen Vaccine

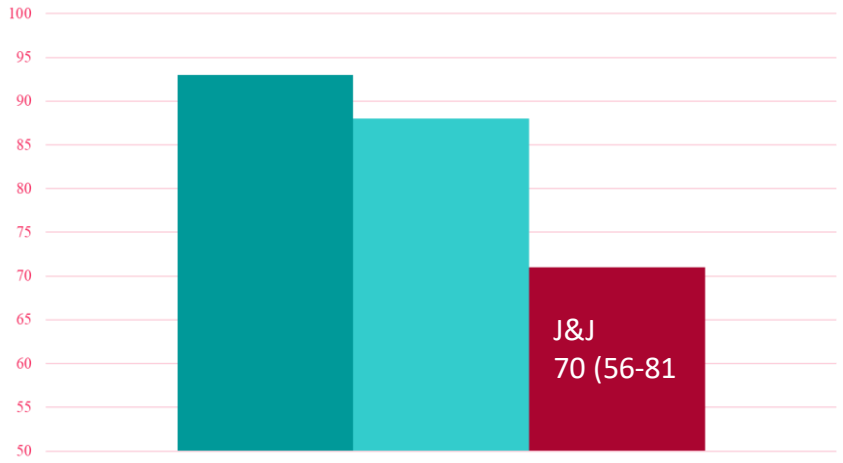
- April 13, 2021: Pause Risk vs Benefits
- April 23, 2021: Restarted EUA but Revised Fact sheet
- Continued to collect data
- December 2021: Preference for mRNA vaccines

mRNA preference over Janssen J&J

TTS

Overall: 3.7 per million doses

Lower Efficacy



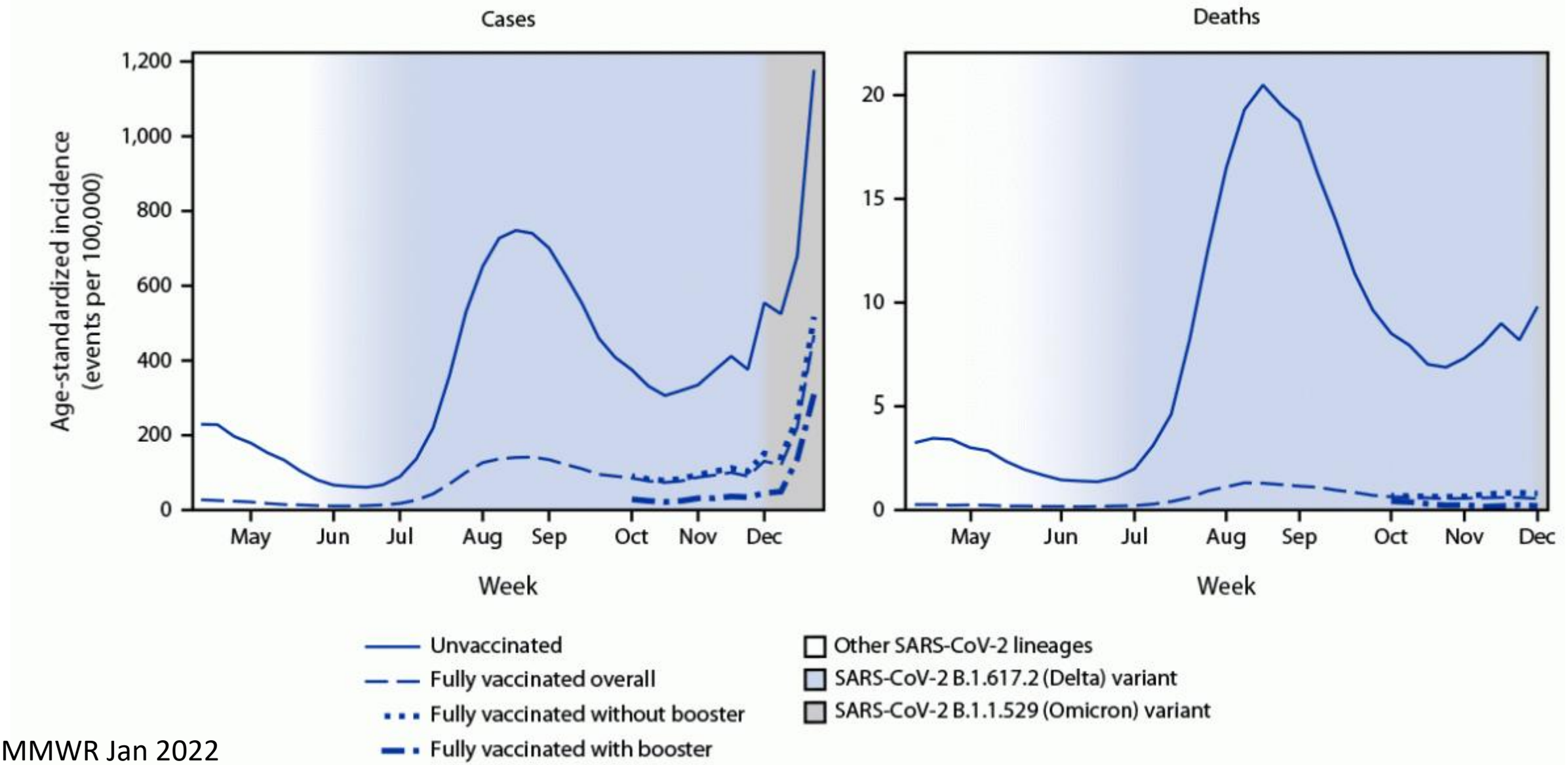
https://www.cdc.gov/vaccines/acip/meetings/live-mtg-2021-12-16.html

She received a dose of the Jassen (J&J) COVID 19 vaccine in July. Should she get additional COVID vaccines?

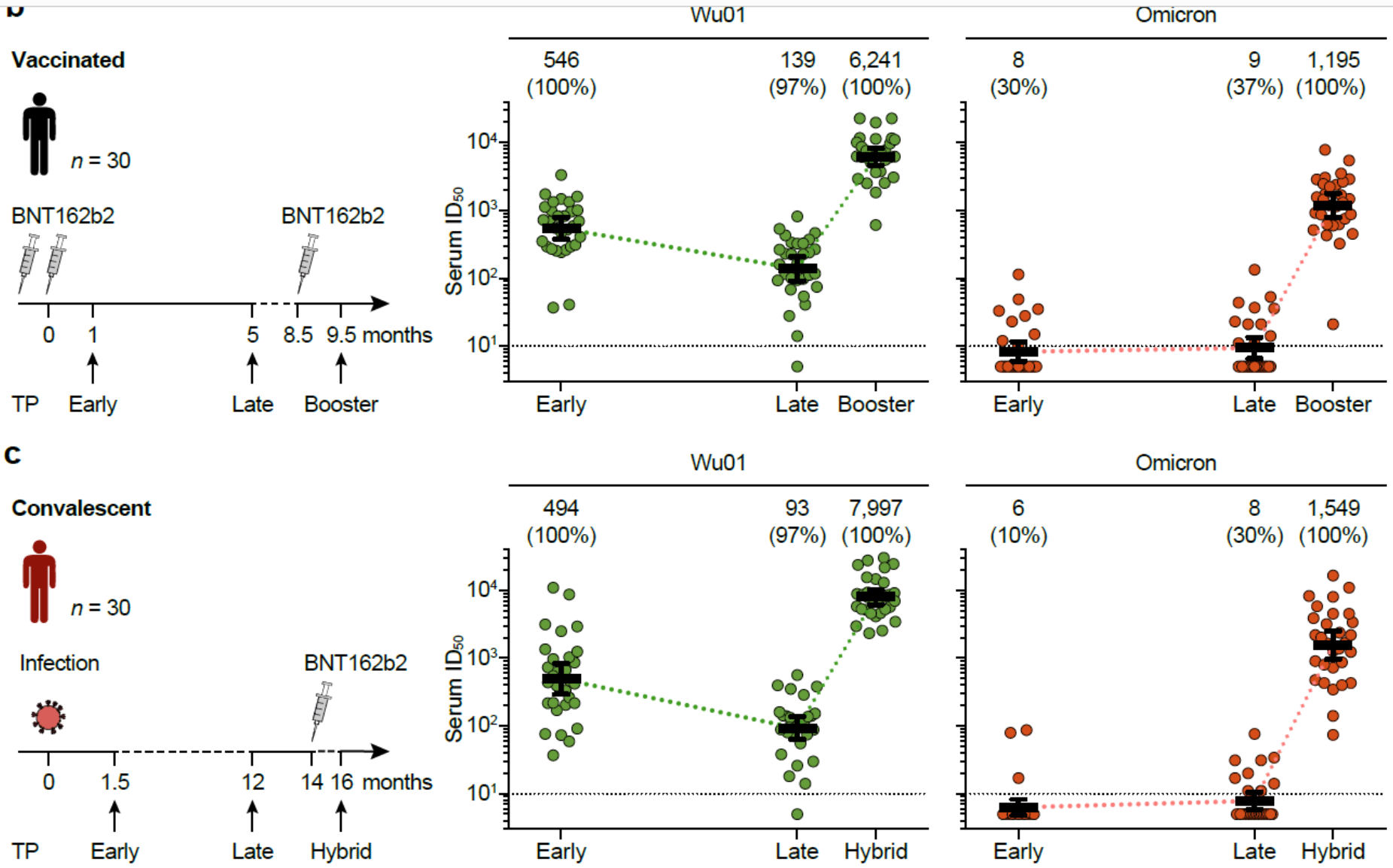
Yes, J&J need additional dose 4 weeks after 1st

mRNA preferred

Weekly trends in age-standardized incidence of COVID-19 cases (April 4–December 25, 2021) and deaths (April 4–December 4, 2021) for unvaccinated compared with fully vaccinated persons,* overall and by receipt of booster doses† and national weighted estimates of variant proportions§ — 25 U.S. jurisdictions



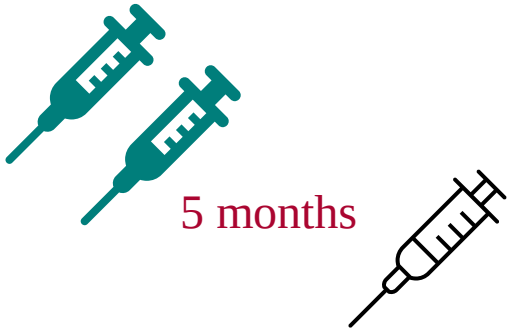
MMWR Jan 2022



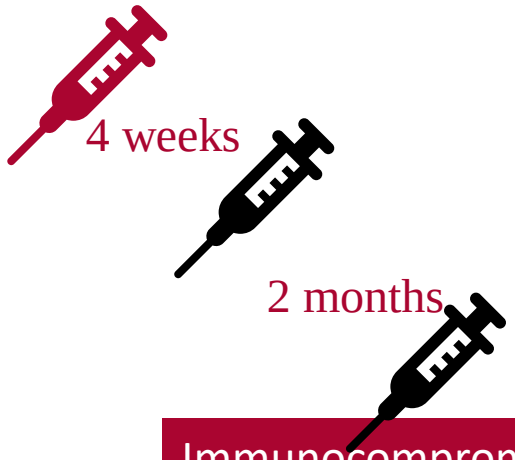
Nat Med 2022

SARS-CoV-2-neutralizing serum activity in vaccinated and convalescent individuals

mRNA Booster doses
Age 12 and up

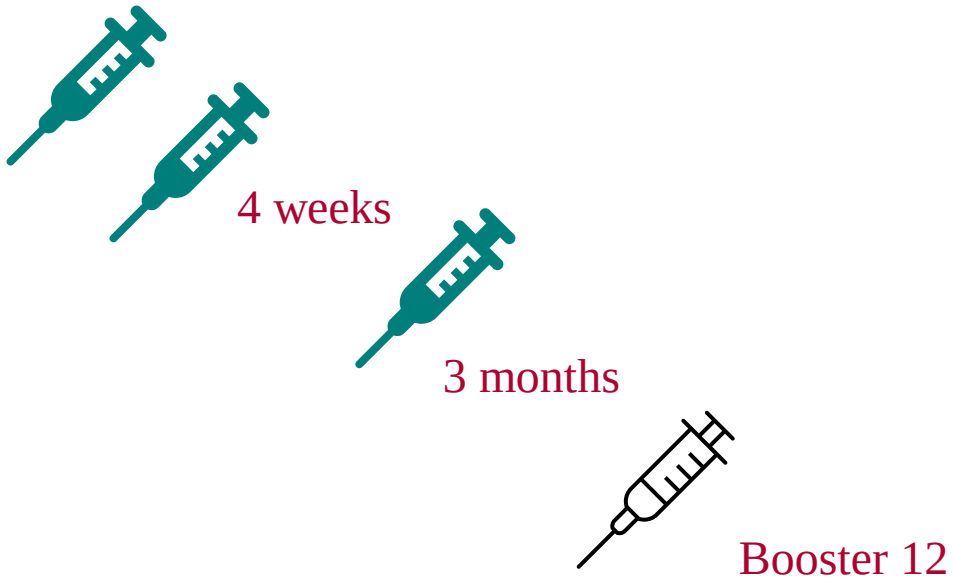


J & J Additional dose 4 weeks



Immunocompromised second booster

mRNA 3rd dose
Immunocompromised
Age 5 and up



3rd Dose

Moderately or severely immunocompromised
28 days after second dose

Vaccine	Dose	Age
Pfizer	30 µg	12 and up
Moderna	100 µg	18 and up
J&J	2 months after 2nd dose	

Immunocompromised

Active cancer treatment for tumors or cancers of the blood

Received an organ transplant and are taking medicine to suppress the immune system

Received a stem cell transplant within the last 2 years or are taking medicine to suppress the immune system

Moderate or severe primary immunodeficiency (such as DiGeorge syndrome, Wiskott-Aldrich syndrome)

Advanced or untreated HIV infection

Active treatment with high-dose corticosteroids or other drugs that may suppress your immune response

MMWR Nov 2021

https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/underlyingconditions.html

Booster Dose (age 12 and up)

Vaccine	Dose	Age	Timing
Pfizer	30 µg	12 and up	5 months after 2nd dose
Moderna	50 µg (half of primary dose)	18 and up	5 months after 2nd dose
J&J	5×10^{10} VP	18 and up	4 weeks after 1st dose
Can mix and match for boosters			

MMWR Nov 2021

Note: immunocompromised persons may get 3 primary and one booster

Updates

Monoclonal Antibodies-do not need to wait 90 days

Wait 2 weeks after vaccine for Evusheld™

Antivirals unlikely to impair development of a protective antibody response

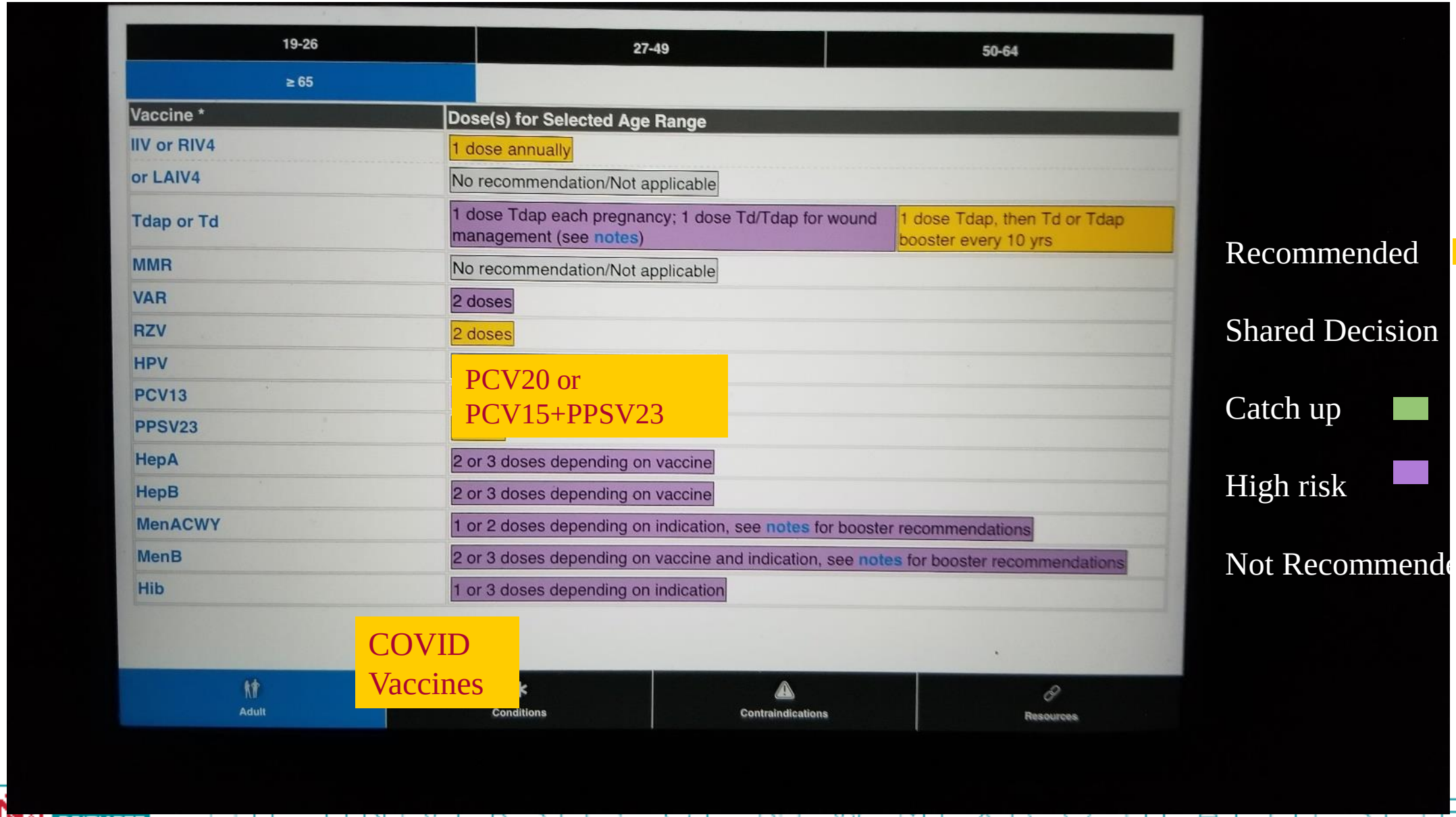
She has three children and four grandchildren with a 5th due in a few months. She received a Td 10 years ago

Tdap or Td?

She has three children and four grandchildren with a 4th due in a few months. She received a Tdap 10 years ago

Td or Tdap?

You recommend a Tdap


19-26
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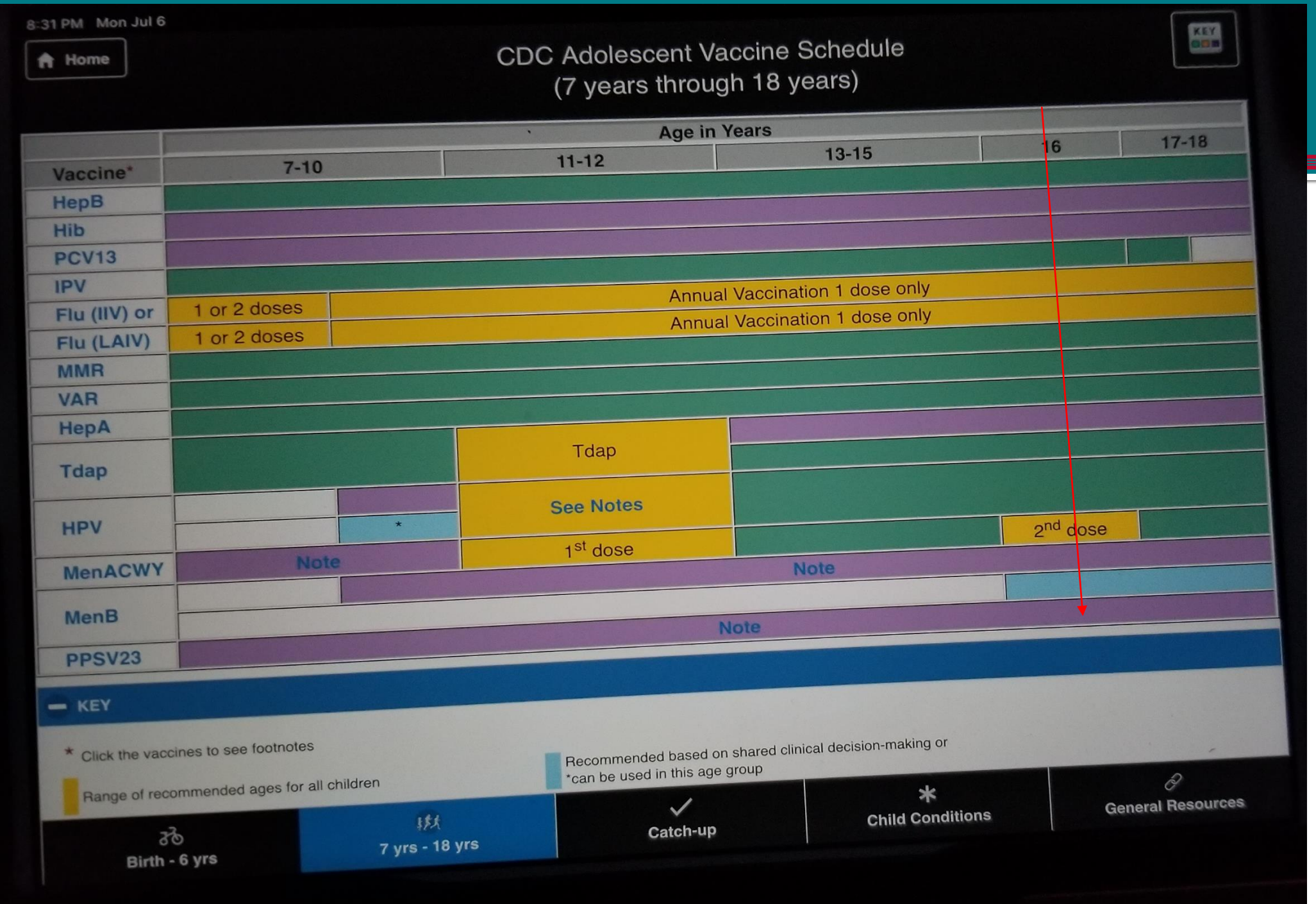
COVID Vaccines
Adult
Conditions
Contraindications
Resources
Recommended
Shared Decision
Catch up
High risk
Not Recommende

Margot is a 16-year-old female. She received all the recommended childhood vaccines. Other than two Pfizer COVID vaccines, her last immunizations were at age 12.



Recommended

Shared Decision

Catch up

High risk

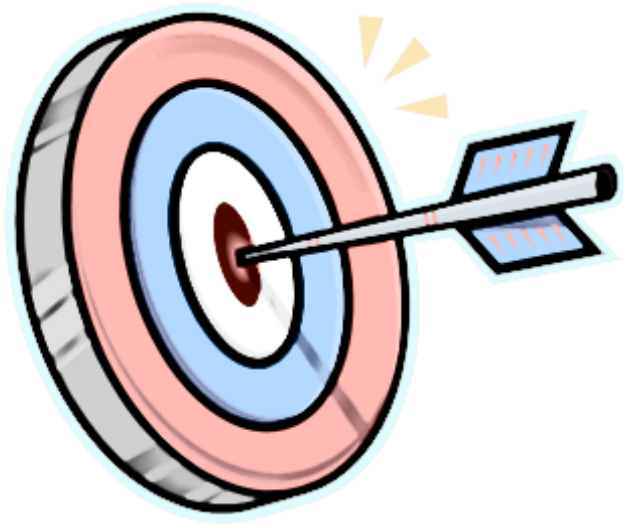
SCIENCES

Margot is a 16 year- old female. She received all the recommended childhood vaccines, including 2 HPV vaccines at age 12 and 13.

Margot’s mother is 45 years old, newly divorced. The mother wonder if she could get the HPV Vaccine also.

Advisory Committee on Immunization Practices (ACIP)

- Routine HPV vaccination at age 11 or 12 years.
- Can be started beginning at age 9 years.
- Also recommended aged **13-26** years who have not been vaccinated previously



Age 26 and up ?

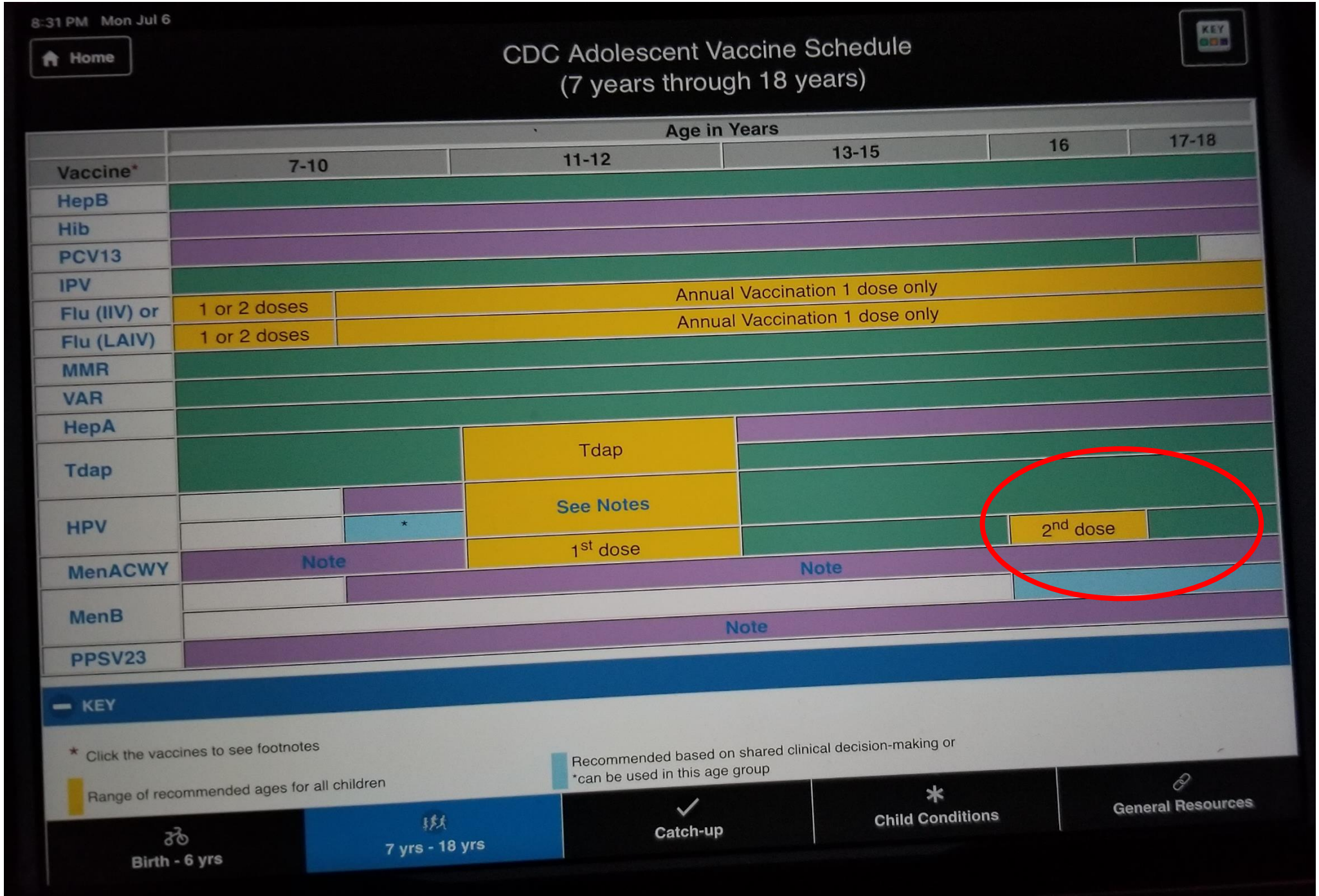
MMWR / March 27, 2015 / Vol. 64 / No. 11

HPV age 26-45

Shared Decision Making

No public health benefit
Some individuals may benefit

Example: Newly divorced want to start dating


8:31 PM Mon Jul 6
Home
KEY
CDC Adolescent Vaccine Schedule
(7 years through 18 years)
Age in Years
Vaccine*
7-10
11-12
13-15
16
17-18
HepB
Hib
PCV13
IPV
Flu (IIV) or
Flu (LAIV)
1 or 2 doses
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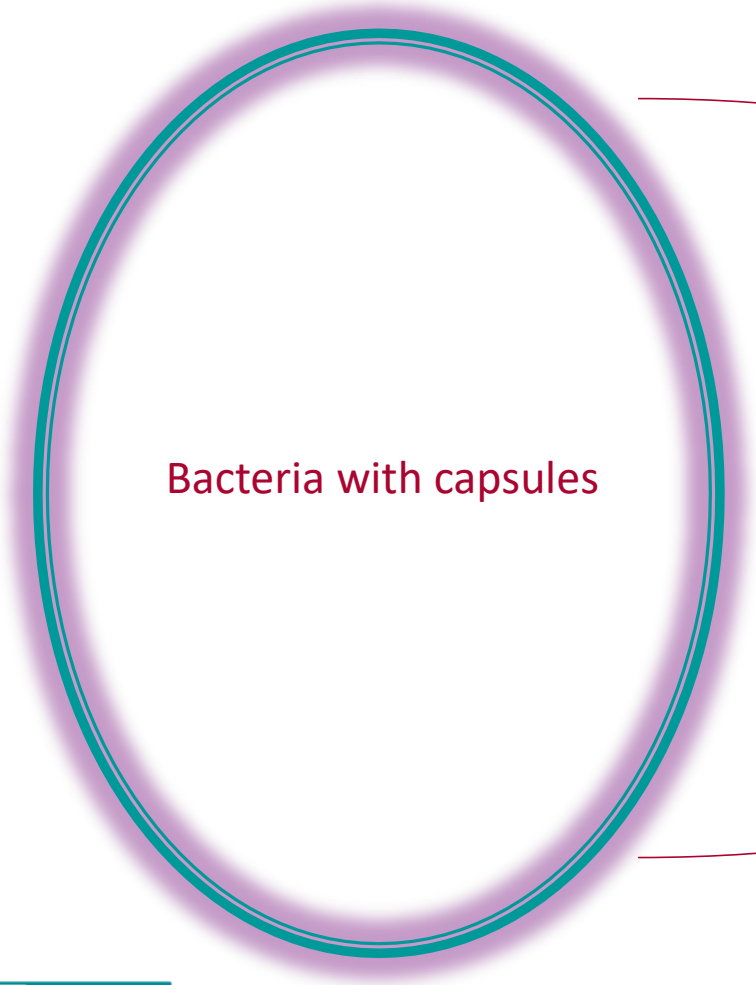
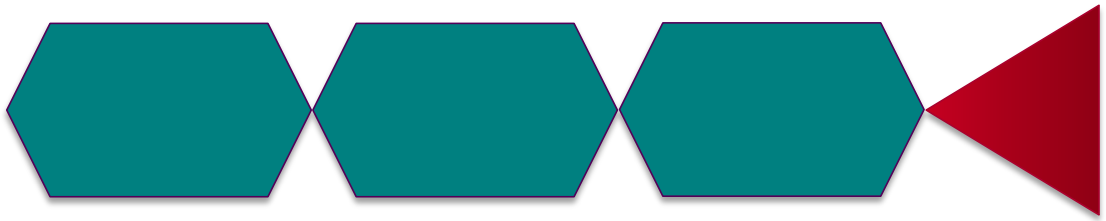
VAR
HepA
Tdap
Tdap
HPV
See Notes
*
1st dose
2nd dose
MenACWY
Note
Note
MenB
Note
PPSV23
KEY
* Click the vaccines to see footnotes
Range of recommended ages for all children
Recommended based on shared clinical decision-making or
*can be used in this age group
Birth - 6 yrs
7 yrs - 18 yrs
Catch-up
Child Conditions
General Resources

Meningococcal ACWY

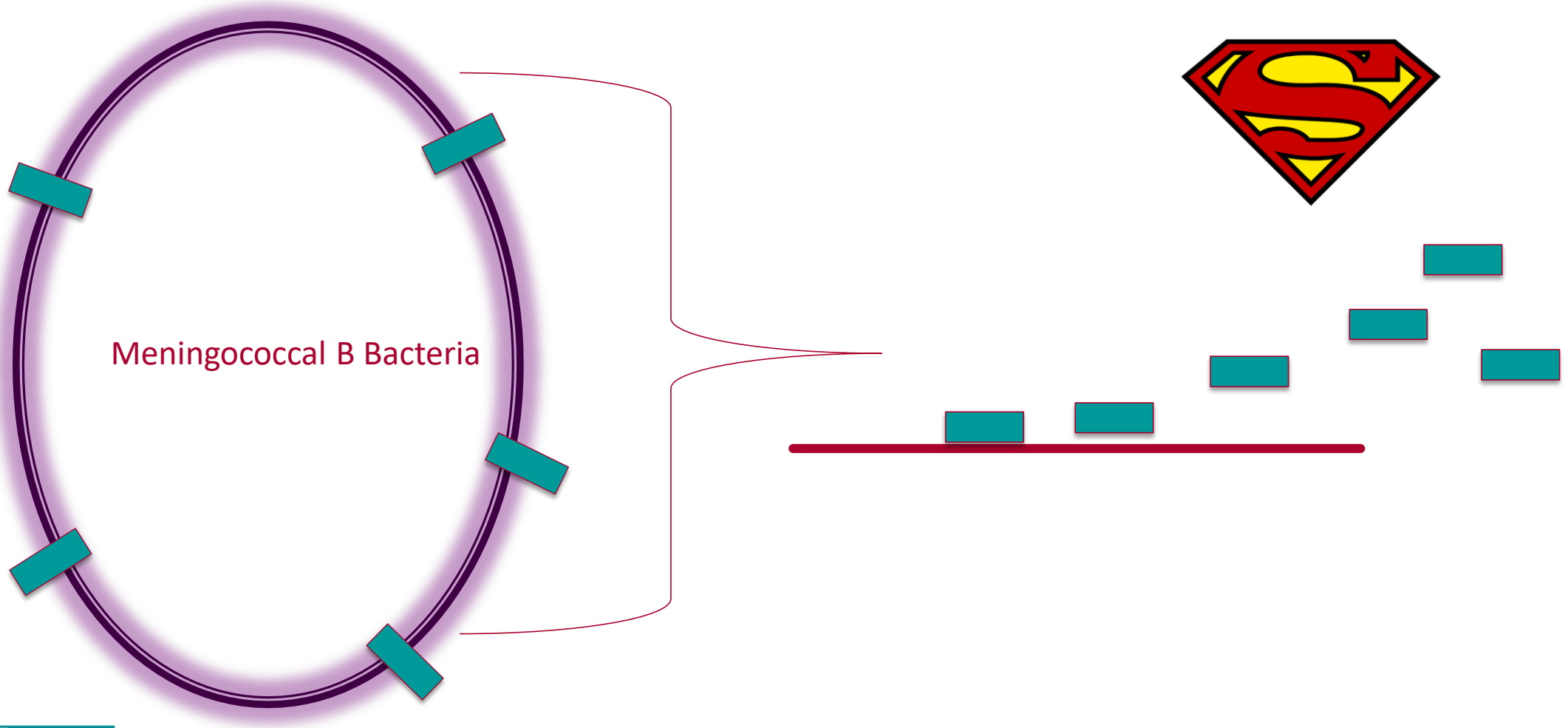


11-12 years old
Booster age16



Menactra®
Menveo®
MenQuadfi®

Meningococcal B vaccine=subunit vaccine



ACIP: “Shared decision making”

A serogroup B meningococcal vaccine series **may** be administered to adolescents and young adults 16-23 years of age to provide **short term** protection against **most** strains of group B meningococcal disease.

Margot is a 16 year-old female. She received all the recommended childhood vaccines.
Margot received two Pfizer COVID Vaccines 21 days apart 5 months ago.

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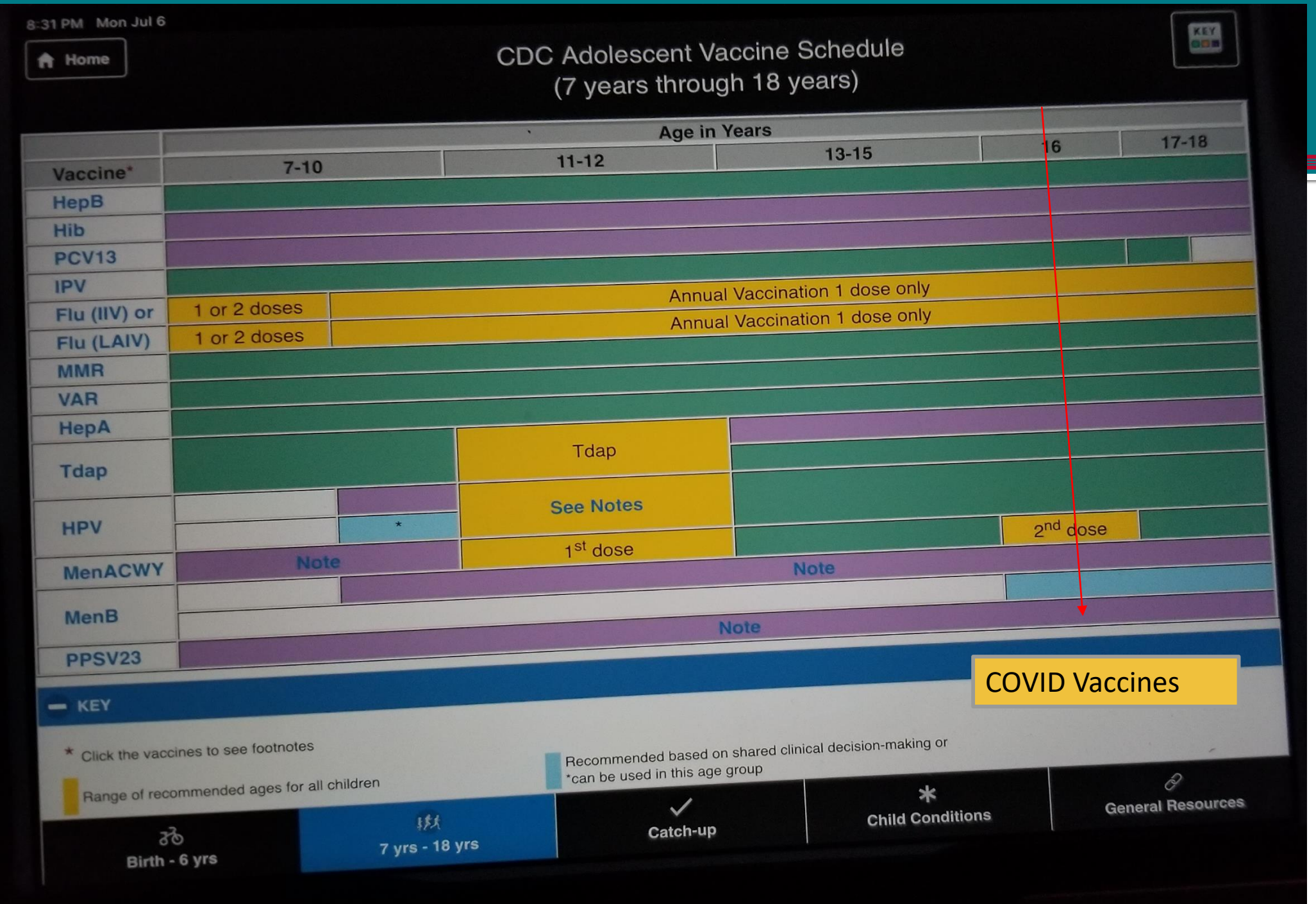
Margot received two Pfizer COVID Vaccines 21 days apart 5 months ago

You give her a Pfizer booster



Recommended

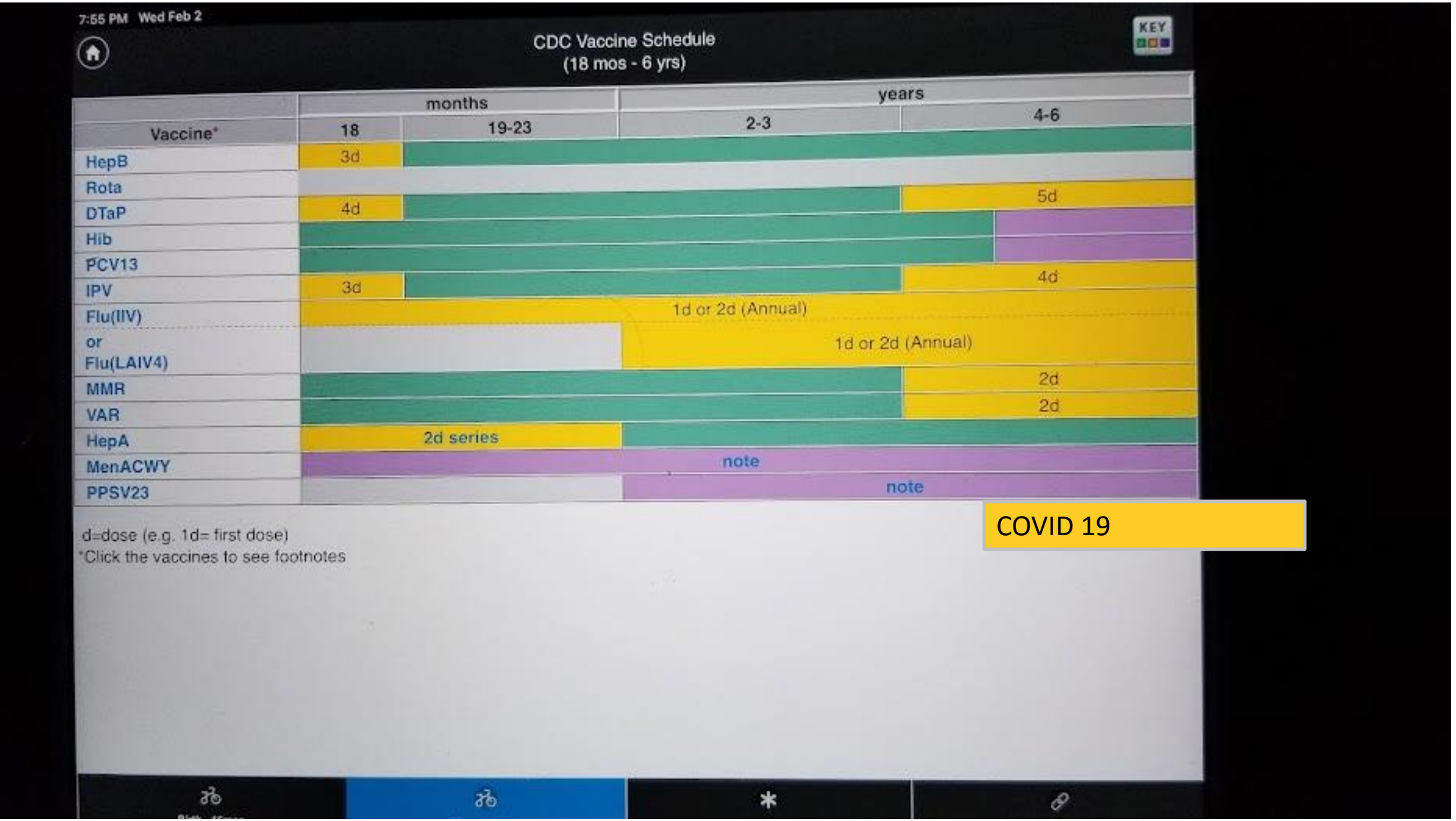
Shared Decision

Catch up

High risk

SCIENCES

Anthony is a heathy 8-year-old male. In clinic for a Flu shot. Had recommended vaccines at age 5.


7:55 PM Wed Feb 2
CDC Vaccine Schedule
(18 mos - 6 yrs)
KEY
months
years
Vaccine*
18
19-23
2-3
4-6
HepB
3d
Rota
DTaP
4d
5d
Hib
PCV13
IPV
3d
4d
Flu(IIV)
1d or 2d (Annual)
or
Flu(LAIV4)
1d or 2d (Annual)
MMR
2d
VAR
2d
HepA
2d series
MenACWY
note
PPSV23
note
d=dose (e.g. 1d= first dose)
*Click the vaccines to see footnotes
COVID 19

Anthony is a heathy 8-year-old male. In clinic for a Flu shot. Had recommended vaccines at age 5. Has not had COVID vaccine. Parents had COVID vaccine and booster. Mom: “Does he really need the vaccine? It seem like COVID is not that dangerous for children”. **“Someone told me that the vaccine causes heart problems in boys”**

Address concerns

"Thank you for sharing this with me, I can see why you would be worried about *potential heart problems* with the vaccine, can I share what I know?"

Fogarty FPM 2017

Children and COVID 19

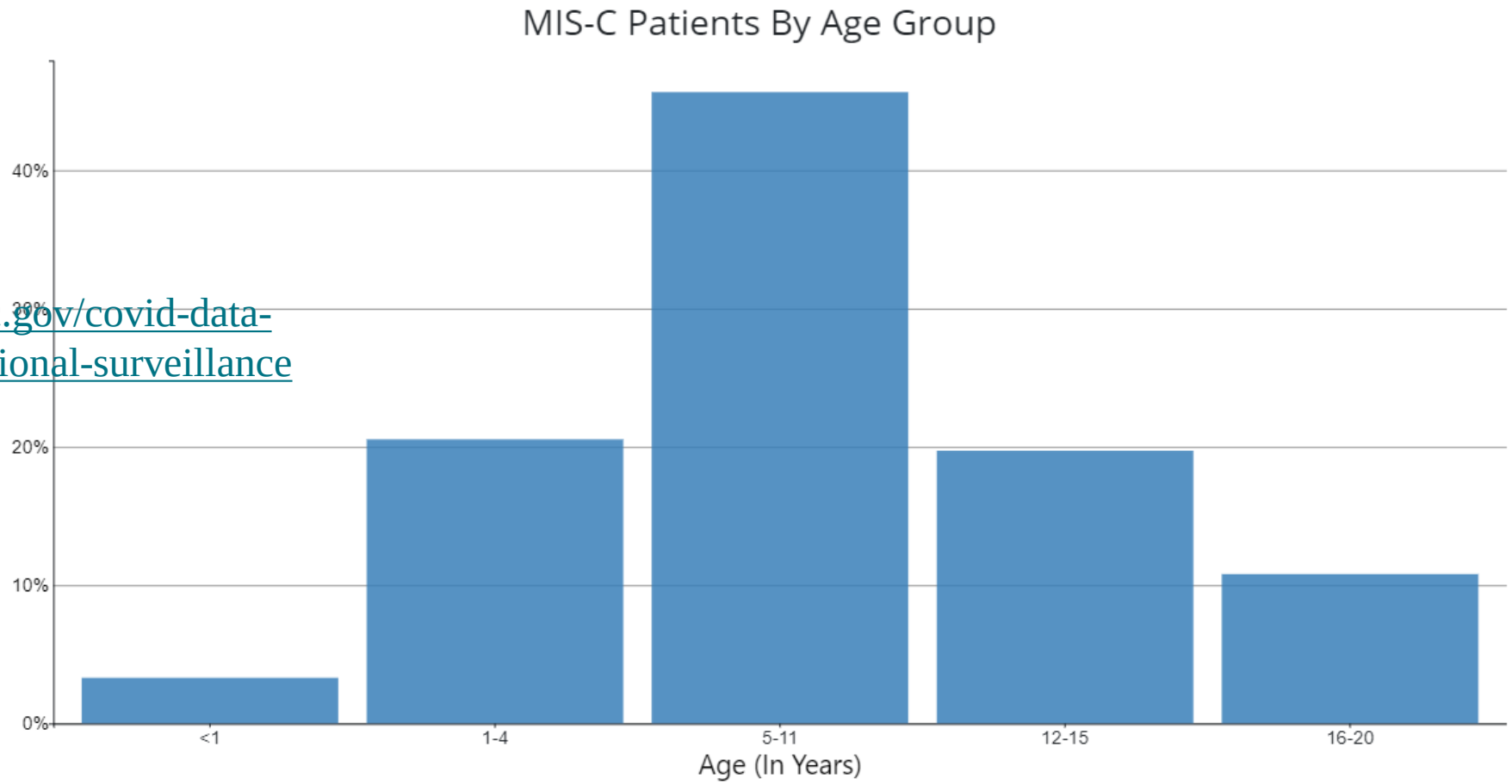
28 million children between the ages of 5 and 11 years old in the United States

- 2 million cases of COVID-19
- Can spread COVID-19 to people in their households and school settings.

https://www.cdc.gov/coronavirus/2019-ncov/vaccines/faq-children.html

Multisystem Inflammatory Syndrome

https://covid.cdc.gov/covid-data-tracker/#mis-national-surveillance



Myocarditis and mRNA Vaccines

Most self limiting with complete recovery

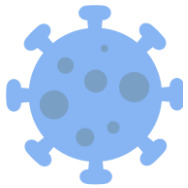
Rare occurrence 7-10 days after 2nd dose

Gender	Age	Rate per million second doses
Male	12-29	40.6
Male	>30	2.4
Female	12-29	4.2
Female	>30	1
Males	12-17	62.8
Males	18-24	50.5

MMWR July 9, 2021 / 70(27);977–982

COVID 19 Disease also causes myocarditis

mRNA COVID-19 (risk ratio = 3.24; 95% CI = 1.55–12.44)

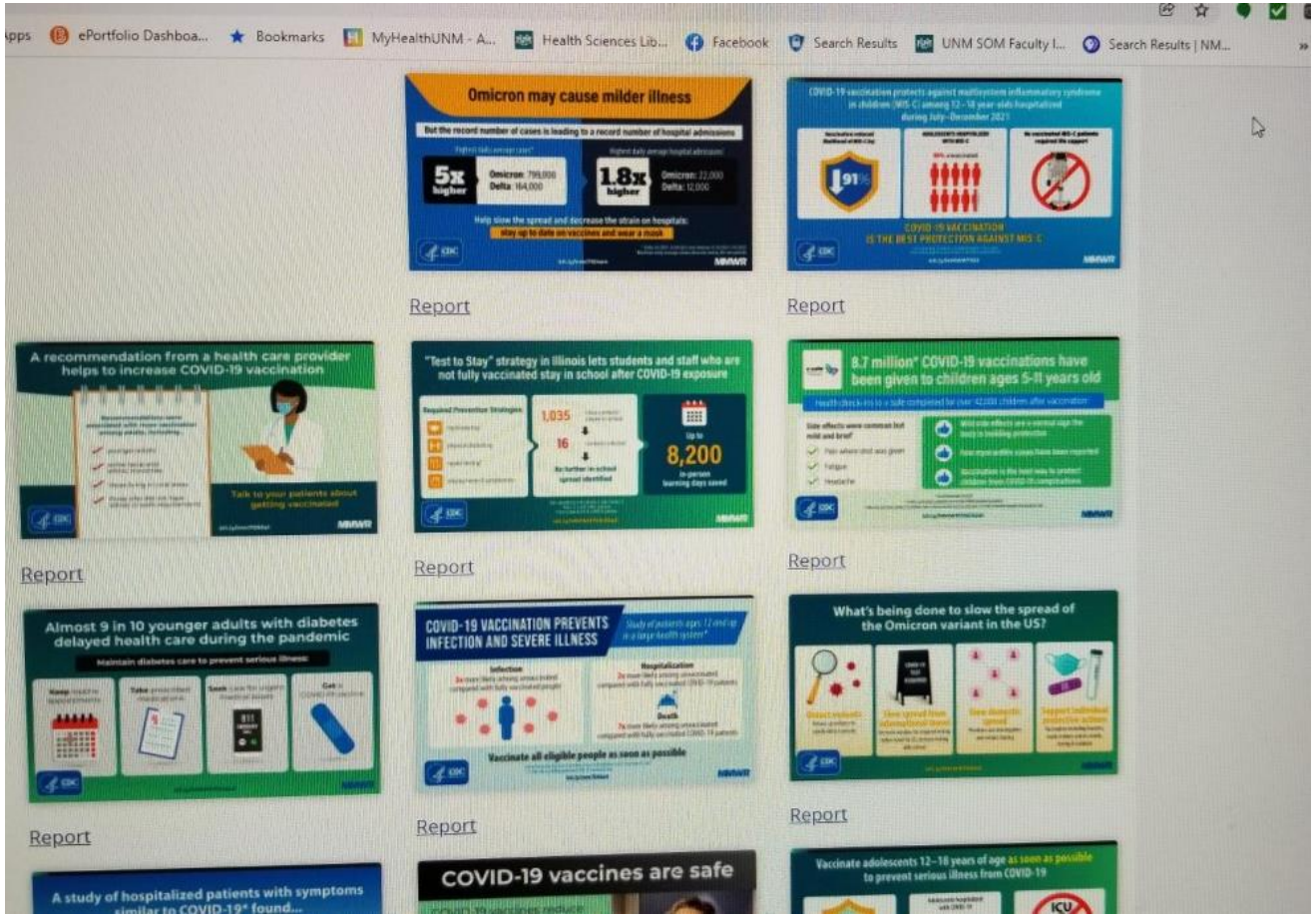


SARS-CoV-2 (risk ratio = 18.28, 95% CI = 3.95–25.12)
(Pfizer Vaccine in Israel)

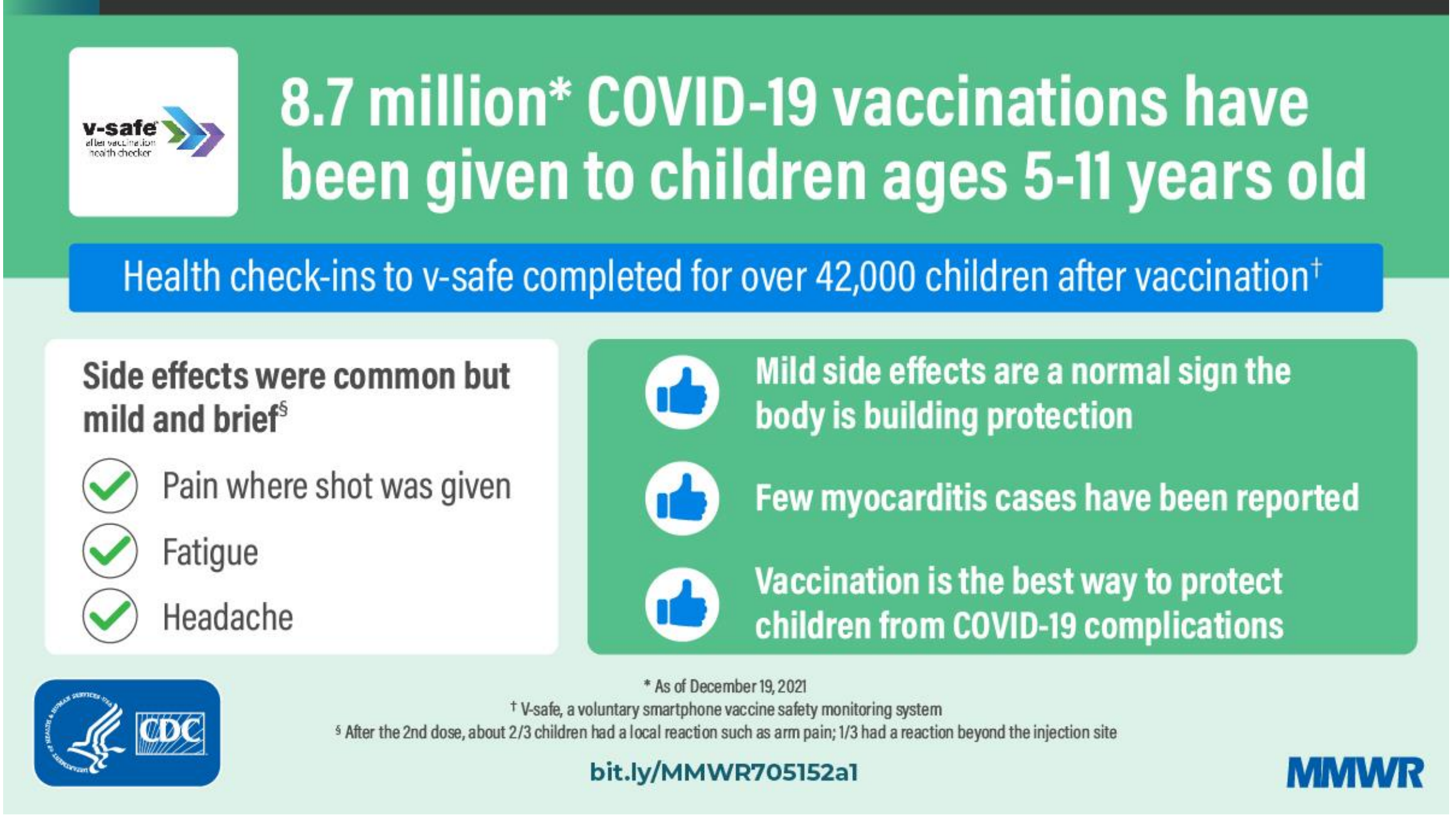
Less recovery from myocarditis caused by disease

NEJM October 2021

MMWR Infographics



https://www.cdc.gov/mmwr/mmwr_covid19_graphics.html



https://www.cdc.gov/mmwr/mmwr_covid19_graphics.html

COVID Vaccine: 6 months to 4 years

NOT APROVED
NO EUA

Pfizer-May be reviewed in April
Modenra- Trial data in March

COVID Vaccine: 6 months to 4 years

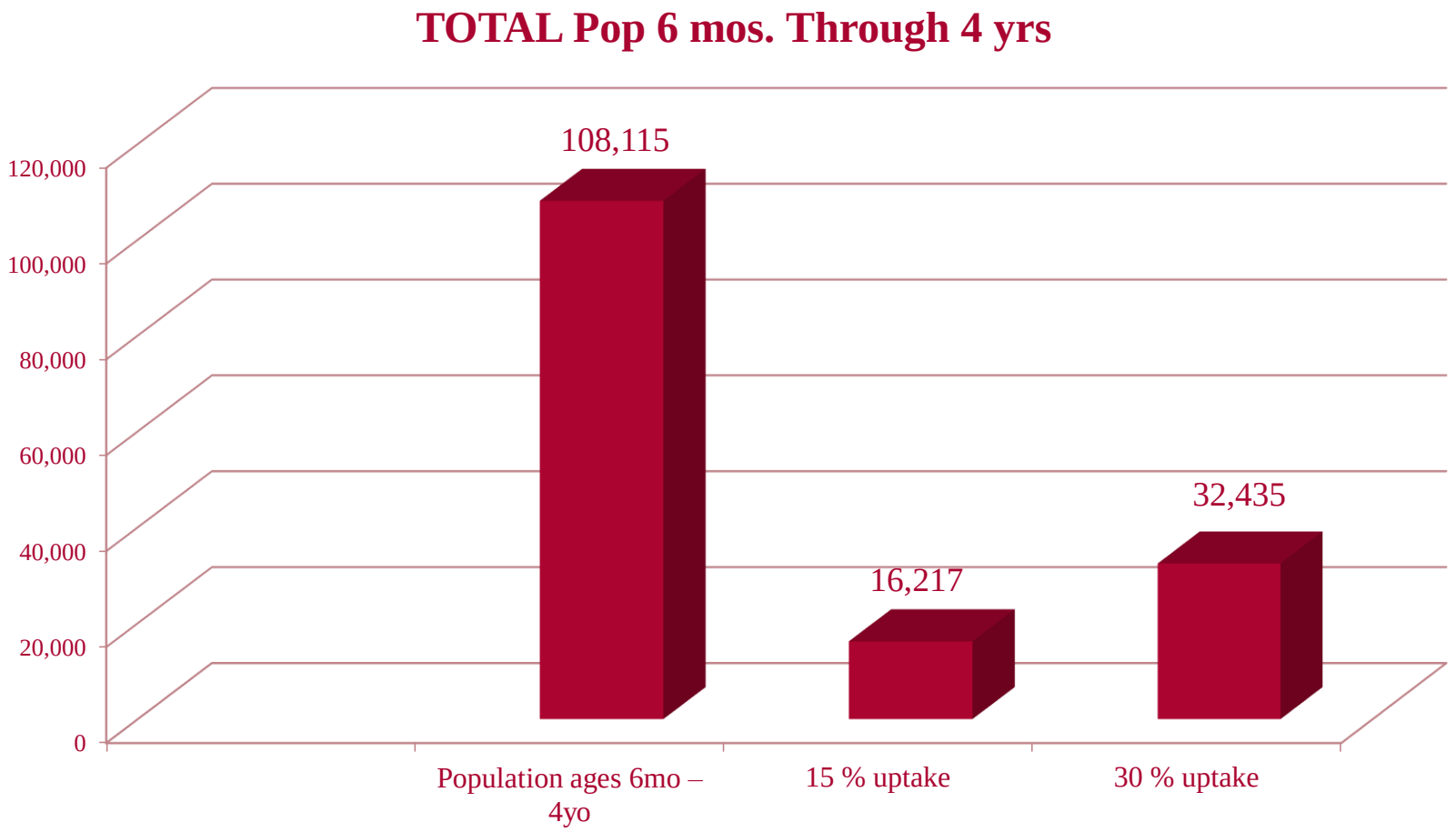
- 2-3 doses
- Likely need to mix/dilute
- Open vials will need to be used quickly (8-12 hours)
- Can be stored in refrigerators for weeks
- Shipped with “kits” to vaccination sites

Subject to change

Realistic Expectations

- Each younger age group has seen lower coverage than the group above it
- 5 to 11 is only 24.6% vaccinated as of Feb. 2 – or three months into the campaign
- Most pharmacists will not vaccinate below **age 5**
- Pharmacists have given 45% of all COVID vaccines in NM to date

Realistic Expectations



Introductions

- Dr. Laura Parajon
- Dr. Miranda Durham

NM DOH

Planning

- Will your practice vaccinate children in this age group?

- If not, why not?

Children and COVID 19

NMDOH
NEW MEXICO DEPARTMENT OF HEALTH

- What are the incentives and barriers you see to this age group getting vaccinated for COVID?

- How many children do you expect will come to your practice for COVID Vaccine? A Few, Some, Lots…

Children and COVID 19

NMDOH
NEW MEXICO DEPARTMENT OF HEALTH

- Can your practice use the 100 doses within 10 weeks
- Will it be possible to use the 10 doses in a vial in a 12 hour time?

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