

# Mpox Vaccine Work Group

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Chair, ACIP Mpox Work Group**

**ACIP Meeting**

**June 23, 2023**

# Mpox outbreaks

- Before 2022, rare outside of Africa
- In Africa, have involved 2 clades:
  - Clade I (previously Congo Basin Clade)
  - Clade II (previously West African Clade)
- In United States, have involved Clade II
  - Clade IIa: 2003 U.S. outbreak associated with pet prairie dogs
  - Clade IIb: 2022/2023 global outbreak associated with male-to-male sexual contact
- Historically: Clade I believed to be associated with more severe disease than Clade II

# Severe manifestations observed in severely immunocompromised persons during the 2022/2023 outbreak: Clade IIb



Carrubba S, Geevarghese A, Solli E et al. Novel severe oculocutaneous manifestations of human monkeypox virus infection and their historical analogues. *Lancet Infect Dis.* 2023 Jan 23:S1473-3099(22)00869-6.




Menezes YR, Miranda AB. Severe disseminated clinical presentation of monkeypox virus infection in an immunosuppressed patient: first death report in Brazil. *Rev Soc Bras Med Trop.* 2022 Aug 29;55:e0392.

# ACIP recommendations

- With global eradication of smallpox, routine vaccinations against orthopoxviruses were no longer needed
- Routine smallpox vaccinations stopped globally in 1980 (USA, 1972)
- ACIP recommendations for persons at occupational risk for orthopoxvirus infections since 1980
  - Largest proportion of people recommended to be vaccinated are research laboratorians who work with orthopoxviruses (including monkeypox virus [MPXV])
  - ACAM2000 and JYNNEOS are the vaccines recommended

# Current ACIP recommendations for persons at risk for occupational exposure: ACAM2000 and JYNNEOS

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Morbidity and Mortality Weekly Report (MMWR)

Use of Vaccinia Virus Smallpox Vaccine in Laboratory and Health Care Personnel at Risk for Occupational Exposure to Orthopoxviruses — Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2015

Weekly / March 18, 2016 / 65(10);257–262

Brett W. Petersen, MD<sup>1</sup>; Tiara J. Harms, MS, MPH<sup>2</sup>; Mary G. Reynolds, PhD<sup>1</sup>; Lee H. Harrison, MD<sup>3,4</sup> ([VIEW AUTHOR AFFILIATIONS](#))

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Morbidity and Mortality Weekly Report (MMWR)

CDC

Use of JYNNEOS (Smallpox and Monkeypox Vaccine, Live, Nonreplicating) for Preexposure Vaccination of Persons at Risk for Occupational Exposure to Orthopoxviruses: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022

Weekly / June 3, 2022 / 71(22);734–742



On May 27, 2022, this report was posted online as an MMWR Early Release.

**Please note:** This report has been corrected. An [erratum](#) has been published.

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- Since 2015, ACAM2000 recommended
- In November 2021, JYNNEOS recommended as alternative to ACAM2000

# ACAM2000 compared to JYNNEOS

	ACAM2000	JYNNEOS
Vaccine virus	 Live, replication competent vaccinia virus	 Live, replication deficient vaccinia virus
Administration	Via multiple percutaneous puncture technique (single dose)	Subcutaneously* via 2 vaccine doses, 28 days apart
Take	Inadvertent inoculation and autoinoculation can occur via vaccine site lesion	No risk of inadvertent inoculation and autoinoculation with vaccinia virus

\*During the 2022/2023, intradermal was the preferred route of administration; vaccine effectiveness data indicates this route has been equally effective



# Contraindications for ACAM2000 and JYNNEOS

Contraindications	ACAM2000 Primary Vaccinees	ACAM2000 Revaccinees	ACAM2000 Household Contacts*	JYNNEOS
History or presence of atopic dermatitis	X	X	X	
Other active exfoliative skin conditions	X	X	X	
Conditions c/w immunosuppression	X	X	X	
Pregnancy	X	X	X	
Aged <1 year	X	X	X	
Breastfeeding	X	X		
Serious vaccine component allergy	X	X		X
Known underlying heart disease (e.g., coronary artery disease or cardiomyopathy)	X	X		
≥3 known major cardiac risk factors	X			

# 2022/2023 U.S. mpox outbreak: JYNNEOS recommended

- Fewer contraindications and adverse events with JYNNEOS
- Before this outbreak, no real-world experience with JYNNEOS

CDC > Poxvirus > Mpox > Your Health

🏠 Mpox

Your Health —

- Signs & Symptoms
- How It Spreads
- Testing
- Prevention +

## Mpox Vaccination Basics

Updated May 5, 2023

[Español](#) [Print](#)

Mpox (formerly known as monkeypox) is caused by a virus that is related to the virus that causes smallpox. JYNNEOS is a 2-dose vaccine developed to protect against mpox and smallpox infections. People need to get both doses of the vaccine for the best protection against mpox. The second dose should be given 4 weeks after the first dose.

Vaccination is an important tool in stopping the spread of mpox. People who are vaccinated [should continue to avoid close, skin-to-skin contact](#) with someone who has mpox.



# Short-term goal of the Work Group

- Currently no ACIP recommendation for use of JYNNEOS during mpox outbreaks
- Develop ACIP recommendations for use of JYNNEOS during mpox outbreaks\*

\* Public health authorities determine whether there is an mpox outbreak; a single case may be considered an mpox outbreak at the discretion of public health authorities. Other circumstances in which a public health response may be indicated include ongoing risk of introduction of mpox into a community due to disease activity in another geographic area.

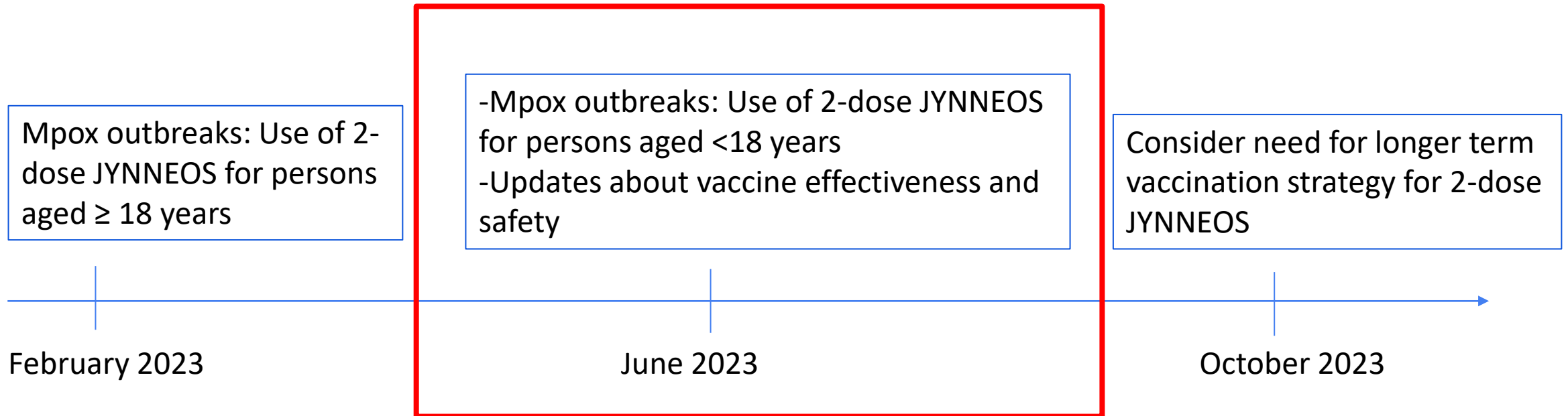
# February 2023 ACIP meeting: Vote passed for use of JYNNEOS during outbreaks

ACIP recommends the 2-dose\* JYNNEOS vaccine series for persons aged 18 years and older at risk of mpox during an mpox outbreak<sup>§</sup>

\*Dose 2 administered one month after dose 1

<sup>§</sup> Public health authorities determine whether there is an mpox outbreak; a single case may be considered an mpox outbreak at the discretion of public health authorities. Other circumstances in which a public health response may be indicated include ongoing risk of introduction of mpox into a community due to disease activity in another geographic area.

# Timeline that was proposed during February 2023\*



\*These votes do not impact existing recommendations for the current mpox outbreak.

§ <https://www.cdc.gov/poxvirus/monkeypox/interim-considerations/overview.html>

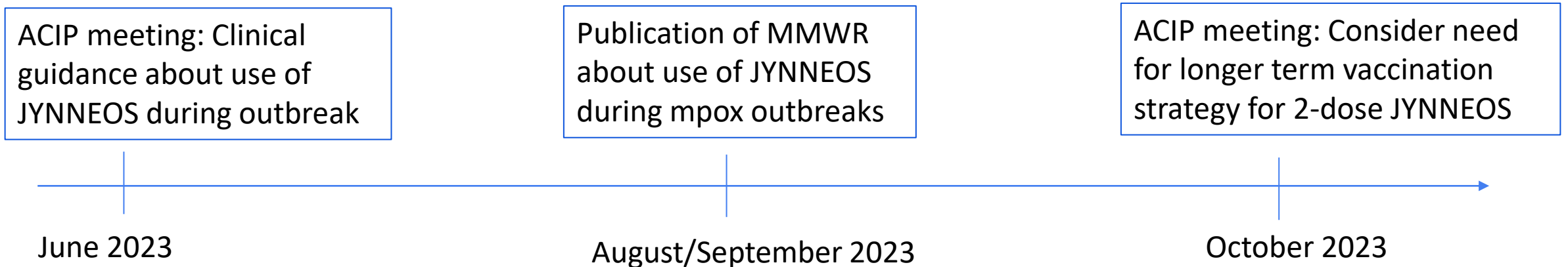
# Agenda for today's meeting

- Updates about epidemiology, vaccine safety, and vaccine effectiveness during the ongoing outbreak: Faisal Minhaj
- Clinical guidance about the use of 2-dose JYNNEOS (subcutaneous) series during mpox outbreaks: Agam Rao
- Considerations for long-term protection against mpox: Discussion in the context of the ongoing outbreak: Agam Rao

# Tentative timeline for ACIP discussions and votes

Current US mpox vaccination strategy remains active: Populations at high

Current U.S. mpox vaccination strategy remains in effect  
risk should continue to be vaccinated\*



\*MMWR publication will not change the clinical guidance posted for the ongoing outbreak:  
<https://www.cdc.gov/poxvirus/monkeypox/interim-considerations/overview.html>

# WG members

## ACIP Member

*Pablo Sánchez*

*Beth Bell*

## Ex Officio and Liaison Members

*CSTE: Chris Hahn / Paul Cieslak*

*ASTHO: Ericka McGowan*

*NACHO: Philip Huang*

*FDA: Sixun Yang, Clement*

*Meseda & Alonzo García*

*ACOG: Howard Minkoff*

*AAP: Jim Campbell*

*AIM: Rob Schechter / Jane Zucker*

*APHL: Jafar Razeq*

*NIH: Janet Lathey / Kimberly Taylor*

*IHS: Matthew Clark*

*NACI: Nicole Forbes / Oliver Baclic*

*IDSA: Shireesha Dhanireddy / Rajesh Gandhi*

## Invited Consultants

*Subject matter experts: Inger Damon, Stuart Isaacs, Mike Merchlinsky & Amanda Zarrabian (HHS/BARDA)*

*Clinician experts in STIs, HIV, pediatrics, maternal vaccination, vaccine safety, health equity, smallpox vaccination strategies, occupational health*

# Clinician experts

## STIs, HIV, and mpox (adult and peds):

*Jason Zucker*

*Jeanne Marrazzo*

*Pablo Tebas*

*Vince Marconi*

*Kim Workowski*

*Bonnie Maldonado*

## Immunizations (including for special populations) and vaccine safety:

*Ruth Karron*

*Flor Munoz-Rivas*

*Kathy Edwards*

## Health equity, vaccination strategies including for smallpox:

*Joel Breman*

*Gerard Vong*

## Occupational Medicine and worker safety:

*Mark Russi*



# CDC contributors

## Mpox epi, lab, and vaccine experts

*Brett Petersen*

*Andrea McCollum*

*Christy Hutson*

## Laboratory Response Network:

*Julie Villanueva*

## Infection control, worker safety:

*Marie de Perio*

*David Kuhar*

## Special populations (e.g., Persons experiencing homelessness)

*Emily Mosites*

## Vaccine safety

*Michael McNeil*

*Jonathan Duffy*

## Regulatory Affairs

*Yon Yu*

## STIs and HIV

*Laura Bachmann*

*Leandro Mena*

*John Brooks*

*Alexa Oster*

## Drug Services

*Julian Jolly*

## Vaccine implementation

*Liz Velasquez*

*James Lee*

## DoD Liaison to CDC

*Alan Lam*

## Work group lead

*Agam Rao*

# Thank you!

For more information, contact CDC  
1-800-CDC-INFO (232-4636)  
TTY: 1-888-232-6348 [www.cdc.gov](http://www.cdc.gov)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

