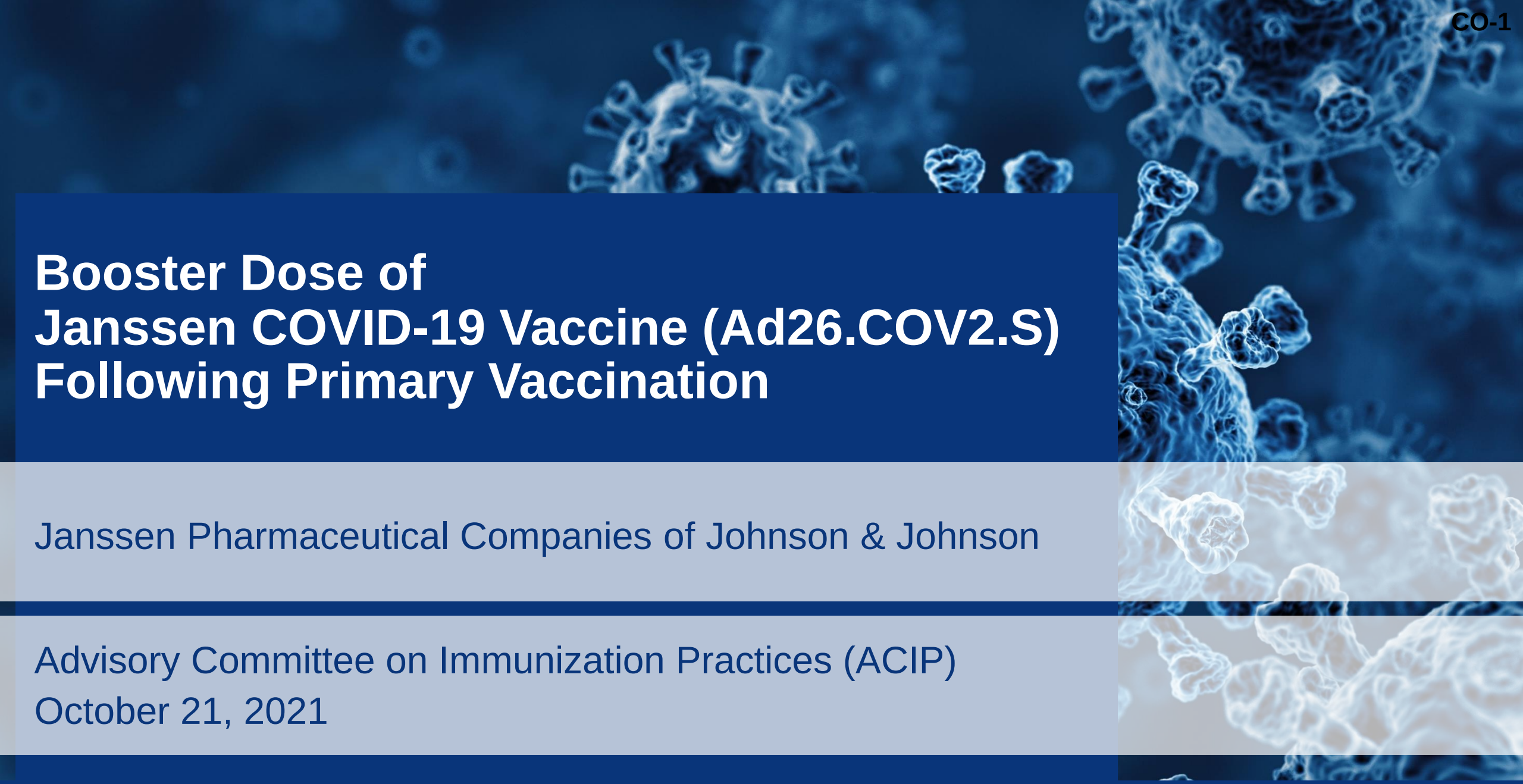


Booster Dose of Janssen COVID-19 Vaccine (Ad26.COV2.S) Following Primary Vaccination

Janssen Pharmaceutical Companies of Johnson & Johnson

Advisory Committee on Immunization Practices (ACIP)
October 21, 2021

Booster Dose of Janssen COVID-19 Vaccine (Ad26.COV2.S) Following Primary Vaccination

Penny M. Heaton, MD

Global Therapeutic Area Head Vaccines

Janssen Pharmaceutical Companies of Johnson & Johnson

Ad26.COV2.S: Unique Development Strategy, Durable Efficacy, Breadth of Immune Response

- Initial Phase 3 study evaluated single-dose for pandemic response, globally
- Durable protection from single dose
  - In the US, 74% efficacy against severe disease and 70% efficacy against all symptomatic disease
  - Efficacy persisted for at least 6 months
- Unique immunoprofile with antibody titers that peak later and persist; durable cellular immunity with persistent responses

Durability is clear, room to boost protection against symptomatic infection

- Homologous boost of Ad26.COV2.S aligns with US priority to optimally protect individuals against any COVID-19 infection

Clinical Program Supports Booster Dose is Safe, Increases Protection, Including Against Symptomatic COVID-19

> 9000 Received Ad26 Booster Dose in Randomized Clinical Trials

Booster dose increased efficacy against COVID-19

- Efficacy against symptomatic disease in the US increased to 94% and to 74% globally
- Complete protection against severe/critical COVID-19 globally

Booster dose is safe and well-tolerated

Rapid rise in antibodies after booster dose

- Reflects anamnestic response, consistent with a booster dose
- Booster dose at 6 months provided 12-fold increase in antibodies, more potent than at 2 months

Protection against variants of concern tested, including Delta

- Large RWE study of single-dose showed similar efficacy against COVID-19 hospitalizations after Delta became dominant in US
- Booster at 6-months increased breadth of immune response inducing neutralizing antibody titers against variants of concern

COV3001 (Single-dose)
Final Analysis of Double-Blind Period*

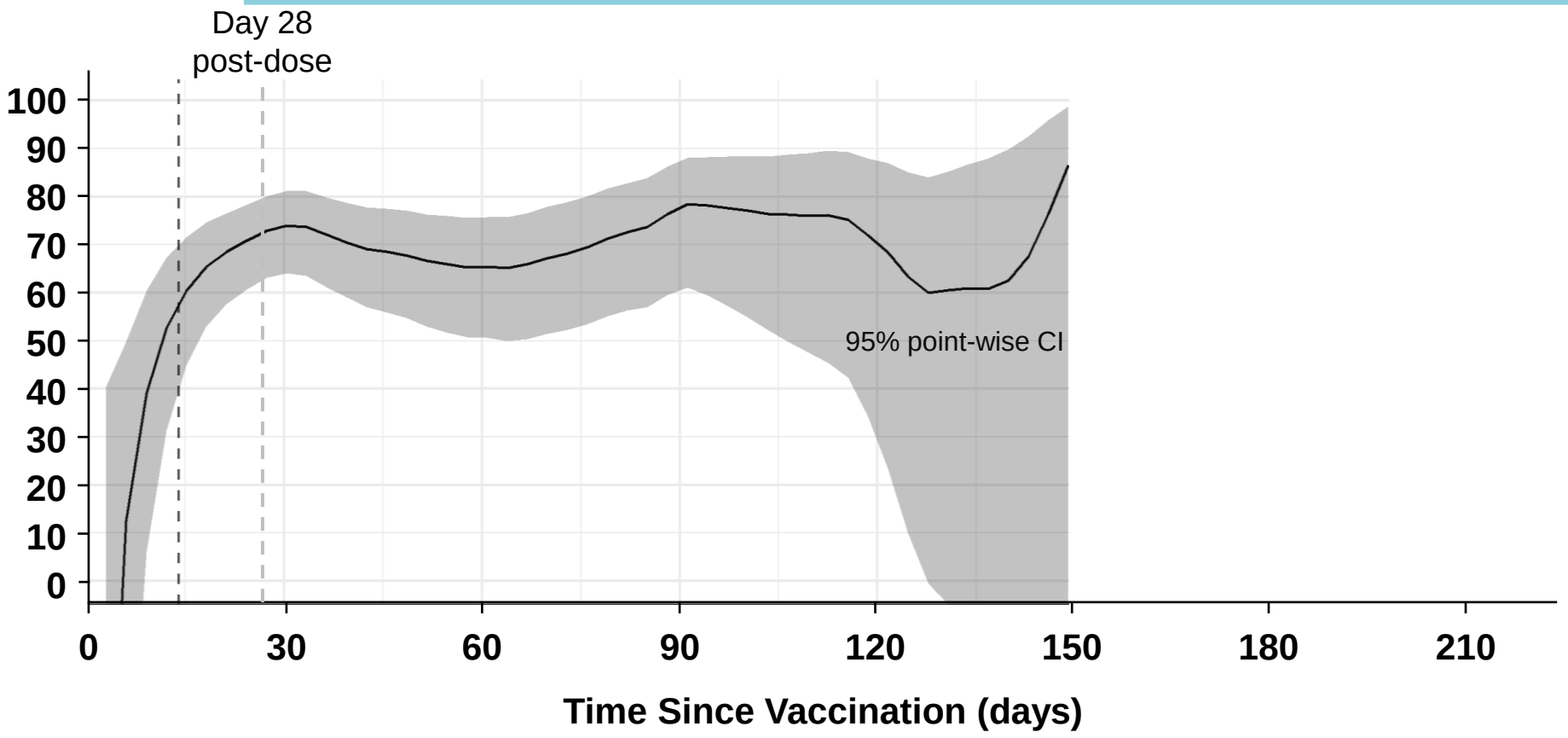
- Following EUA, protocol allowed crossover for participants on placebo
- Median follow up: 4 months
  - 23% of participants had follow up of ≥ 6 months

3001

*Data cut off date of July 9, 2021

COV3001: Durable VE for Symptomatic COVID-19 in US

- US: 70% VE against symptomatic COVID-19 > Day 28
- RWE cohort study showed similar level of protection in US through Delta surge

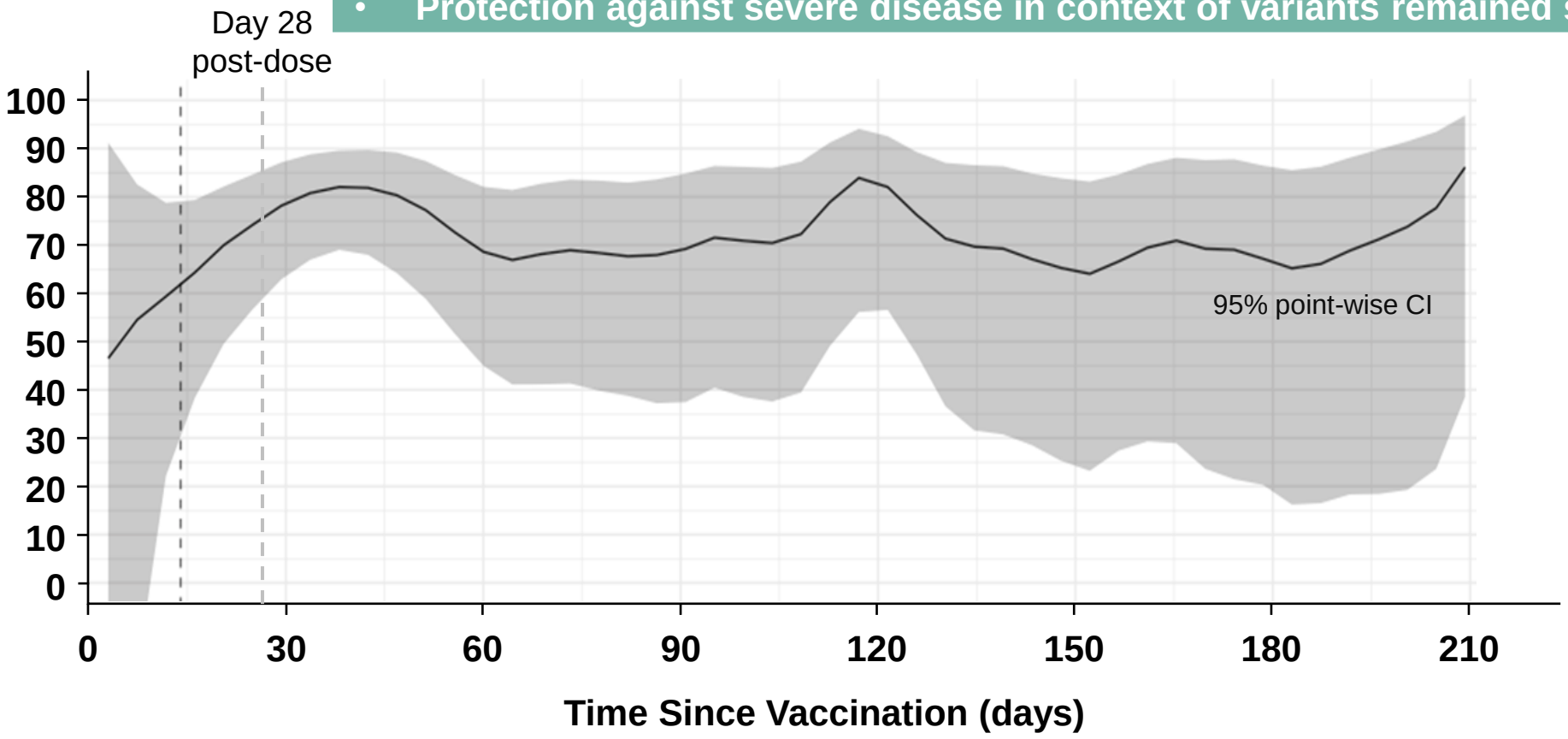


Vaccine Efficacy in United States %

Numbers at risk								
Ad26.COV2.S	9153	8797	17553	6130	3180	1180	446	153
Placebo	9119	8605	7127	5665	2700	944	385	162

COV3001: Persistent VE Against Severe COVID-19

- 75% VE against severe/critical COVID-19 > Day 28*
- Protection against severe disease in context of variants remained strong



Numbers at risk

Ad26.COV2.S	19562	19230	17764	15591	10284	5432	4045	1307
Placebo	19589	19134	17521	15202	9815	5046	3796	1260

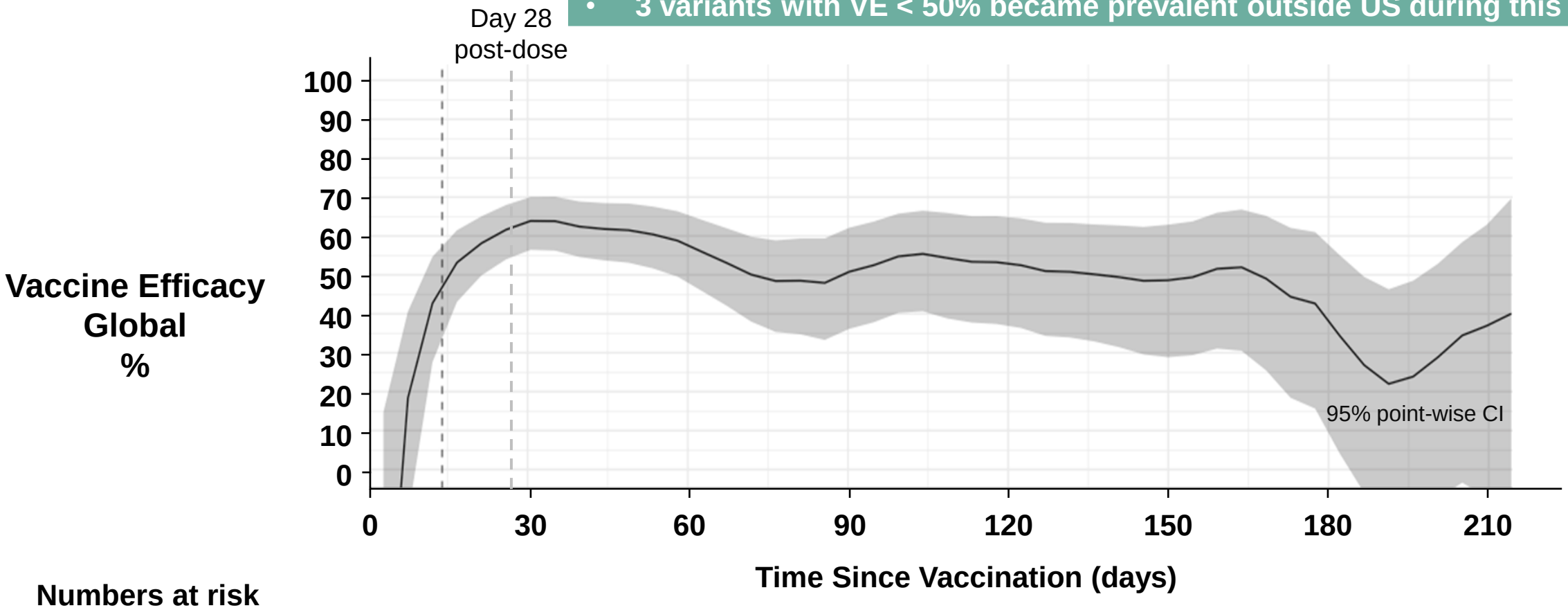
3001

***Primary endpoint COV3001**

Baseline-seronegative participants, per-protocol (PP) analysis set; based on hazard ratio of severe/critical COVID-19

COV3001: VE for Symptomatic COVID-19

- 53% VE against symptomatic COVID-19 > Day 28
- 3 variants with VE < 50% became prevalent outside US during this period



Numbers at risk

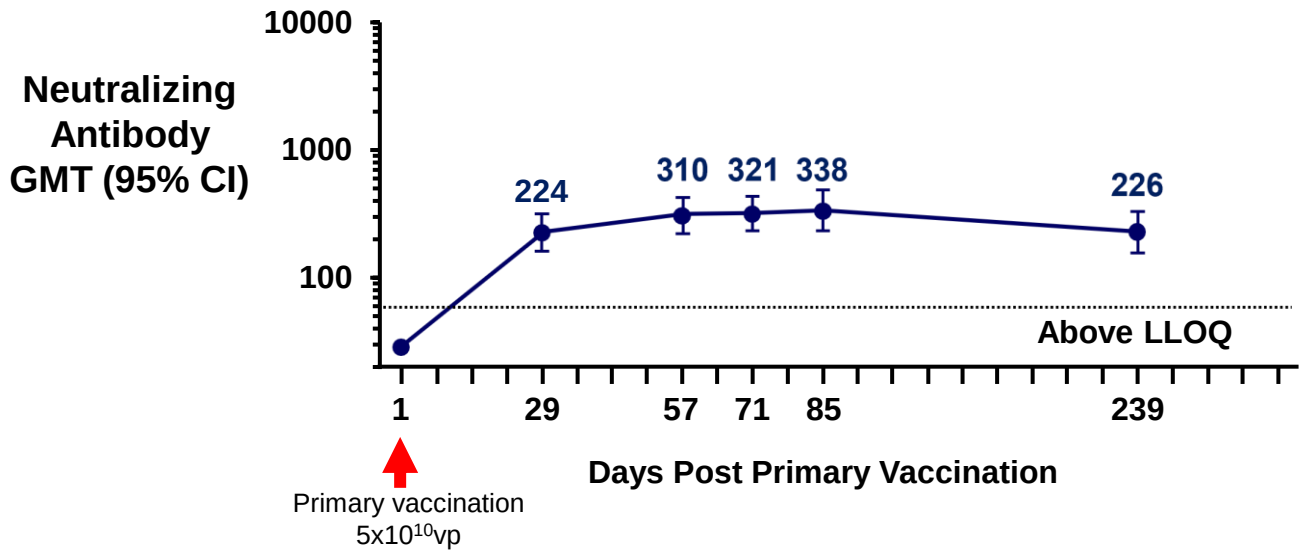
Ad26.COV2.S	19562	19111	17540	15290	10033	5256	3887	1193
Placebo	19589	18902	17052	14622	9328	4745	3531	1098

3001

Baseline-seronegative participants, per-protocol analysis set; based on hazard ratio of severe/critical COVID-19

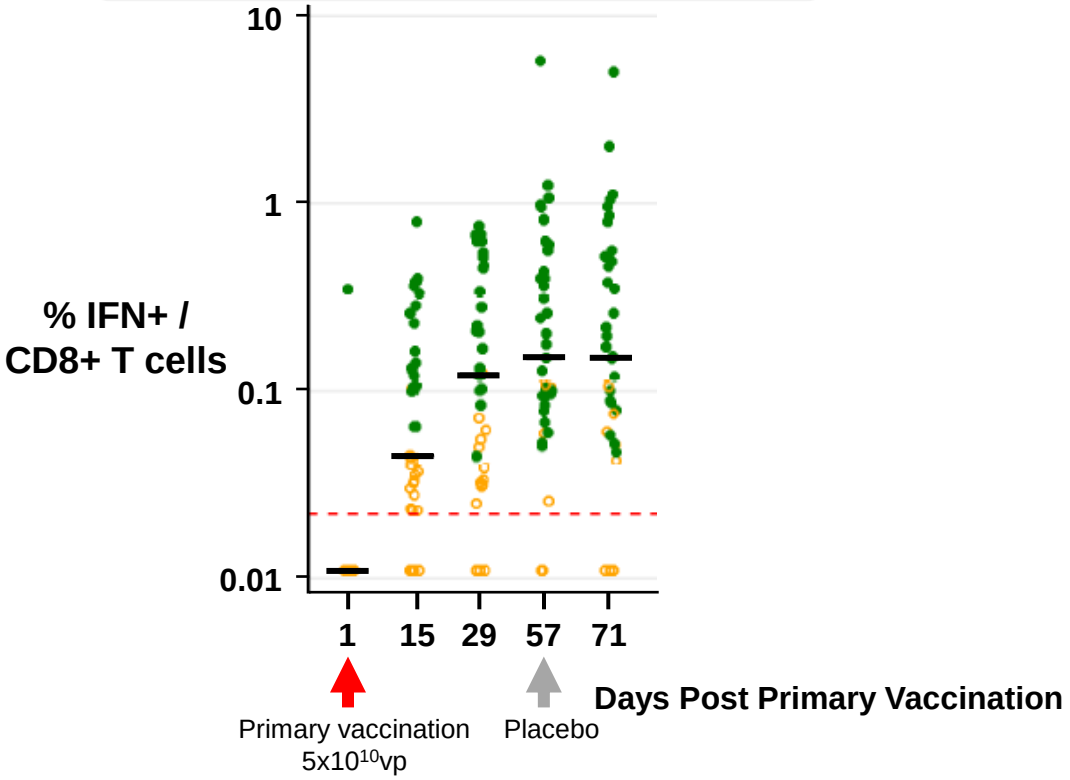
Immune Responses Persist Over Time, Following a Single Dose*

Humoral Immune Response
Neutralizing Antibodies



N	25	24	25	24	24	22
% Responders		96				
% Detectable antibodies			100	100	100	95

Cell-Mediated Immune Response
CD8+ T Cells



N	40	39	38	39	38
Median	0	0.05	0.12	0.15	0.15
% Positive	3	46	61	82	74

*Similar trend seen for both 18-55 yrs and ≥ 65 yrs age groups

Efficacy of Booster After Single-Dose Primary Regimen of Ad26.COV2.S

- “Booster dose” reflects robust immune response to single dose, anamnestic response to second dose

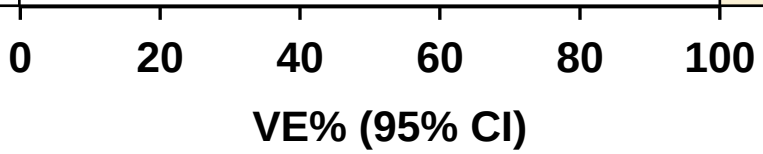
COV3009: Evaluated Efficacy of Ad26 Following Administration of Booster 2 Months After First Shot

- Large (N=31,300), global, randomized placebo-controlled trial conducted in 9 countries, 3 continents
- Study allowed unblinding following EUA
  - Participants on placebo offered vaccine
- 53% received booster dose during double-blind period
  - 25%* evaluable for efficacy ≥ 60 years
- Median follow-up after booster dose: 36 days (0 to 172 days)
  - 29% (n > 4245) of participants had follow up ≥ 2 months

*Per Protocol data set

COV3001 and COV3009: US and Global VE Against Symptomatic COVID-19 for Single Dose vs Booster after 2 Months

Country	Post-dose	Study Day	Symptomatic COVID-19 Ad26.COV2.S vs Placebo	VE (95% CI)
United States	3001: Post-dose 1	Day > 28		**70%** (61, 77)
	3009: Post-booster	Day > 71		**94%** (59, 100)
Global* (All)	3001: Post-dose 1	Day > 28		**53%** (47, 58)
	3009: Post-booster	Day > 71		**75%** (55, 87)



3001

3009

3001 Final analysis cutoff date: July 9, 2021 (all), June 16, 2021 (US)
3009 Final analysis cutoff date: June 24, 2021 (all), June 9, 2021 (US)
*Primary endpoint for 3001 and 3009 (VE moderate to severe = VE symptomatic)

COV3009: Protection Against Severe Outcomes

PP At Risk Set *Global*	> Day 71 (> 14 Days Post-Booster) **Ad26.COV2.S** (N = 6,024)	 **Placebo** (N = 5,615)	 **VE %** (95% CI)
Severe COVID-19	**0**	**8**	**100%** (33, 100)
COVID-19-related hospitalization	**0**	**5**	*N/A*
COVID-19-related death	**0**	**1**	*N/A*

3009 Final analysis cutoff date: June 24, 2021

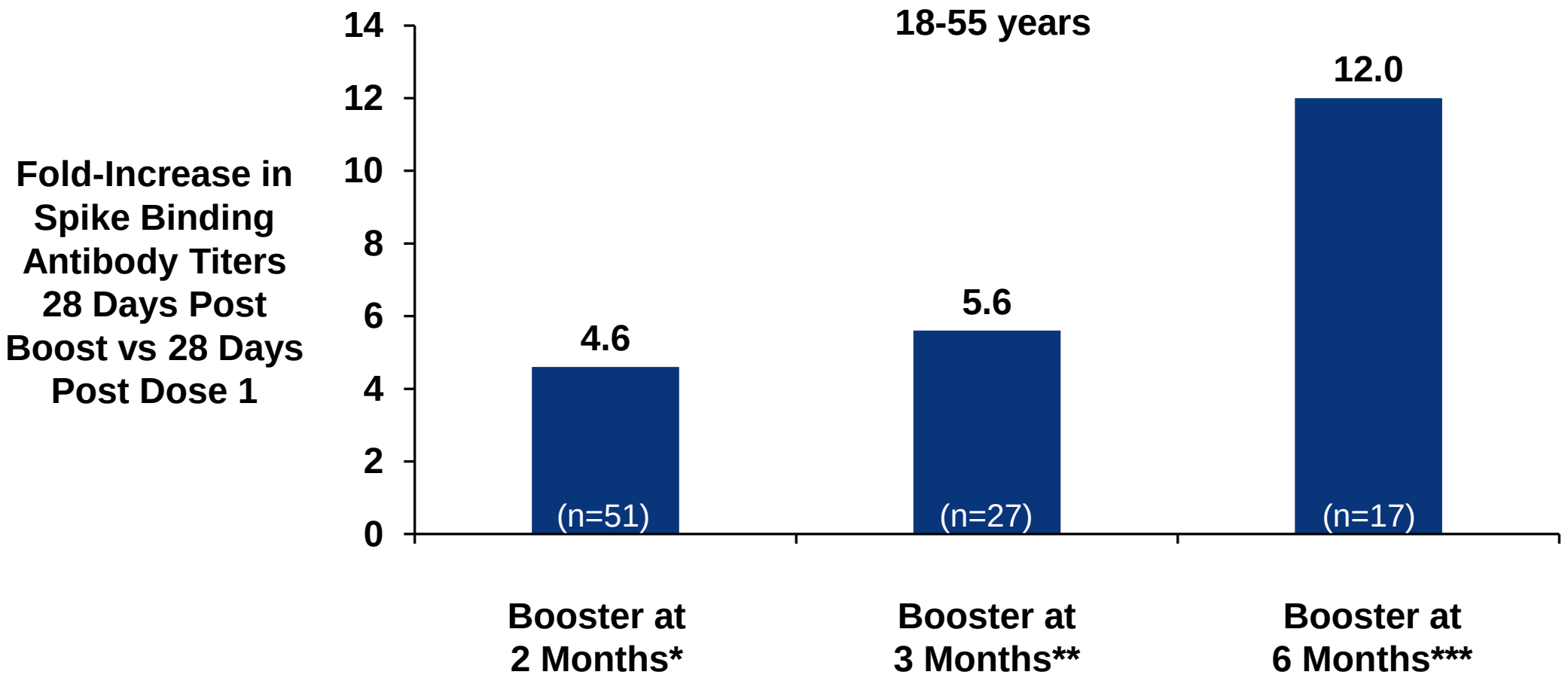
Immunogenicity Following Booster Dose of Ad26.COV2.S

Clinical Immunogenicity Studies Supporting Ad26.COV2.S Booster Dose

Booster Timing	Age (yrs)	Sample Size		
		S ELISA	wtVNA	psVNA
2 months	18-55	181	99*	**5** (Original, Alpha, Beta, Gamma, Delta, Epsilon, Kappa)
	≥ 65	79	65	-
3 months	18-55	27	22	-
	≥ 65	101	40	-
6 months	18-55	29	-	**17** (B1, Alpha, Beta, Gamma, Delta, Lambda)

*Variant wtVNA N=6 (Alpha, Beta)
Data from studies COV1001, COV1002, COV2001; Sample sizes depicted are at baseline

COV1001 and COV2001: Benefit of Booster Dose Higher When Given at 6 Months or Later



*Data from COV2001 Group 1
**Data from CVO2001 Group 9 / post-dose 1, data from parallel group
***Data from COV1001 Cohort 2a

Safety Results of Ad26.COV2.S Booster

Macaya Douoguih, MD, MPH

Head of Clinical Development & Medical Affairs, Vaccines
Janssen Pharmaceutical Companies of Johnson & Johnson

Cumulative Exposure to Ad26.COV2.S Booster After Single-Dose Primary Regimen, > 9000

Study (Dose Level)	Interval Between Primary Regimen and Booster		
	2 months	**3 months**	**≥ 6 months**
COV1001 (5 x 10^{10})	**190**	**77***	**19**
COV1002 (5 x 10^{10})	**91**	**0**	**0**
COV2001 (5 x 10^{10})	**137**	**51**	**0**
COV2008 (5 x 10^{10})	**0**	**0**	**127**** (blinded)
COV3009 (5 x 10^{10})	**8,655**	**0**	**0**
Total by Interval	**9,073**	**128**	**19**
Overall Total		**9,220**	

***Some participants received second dose with 3-month rather than scheduled 2-month interval because of a study pause**
****370 participants received booster in 3:3:1 ratio at dose level of 5 x 10^{10}, 2.5 x 10^{10}, or 1 x 10^{10}; Dose-level data remain blinded**

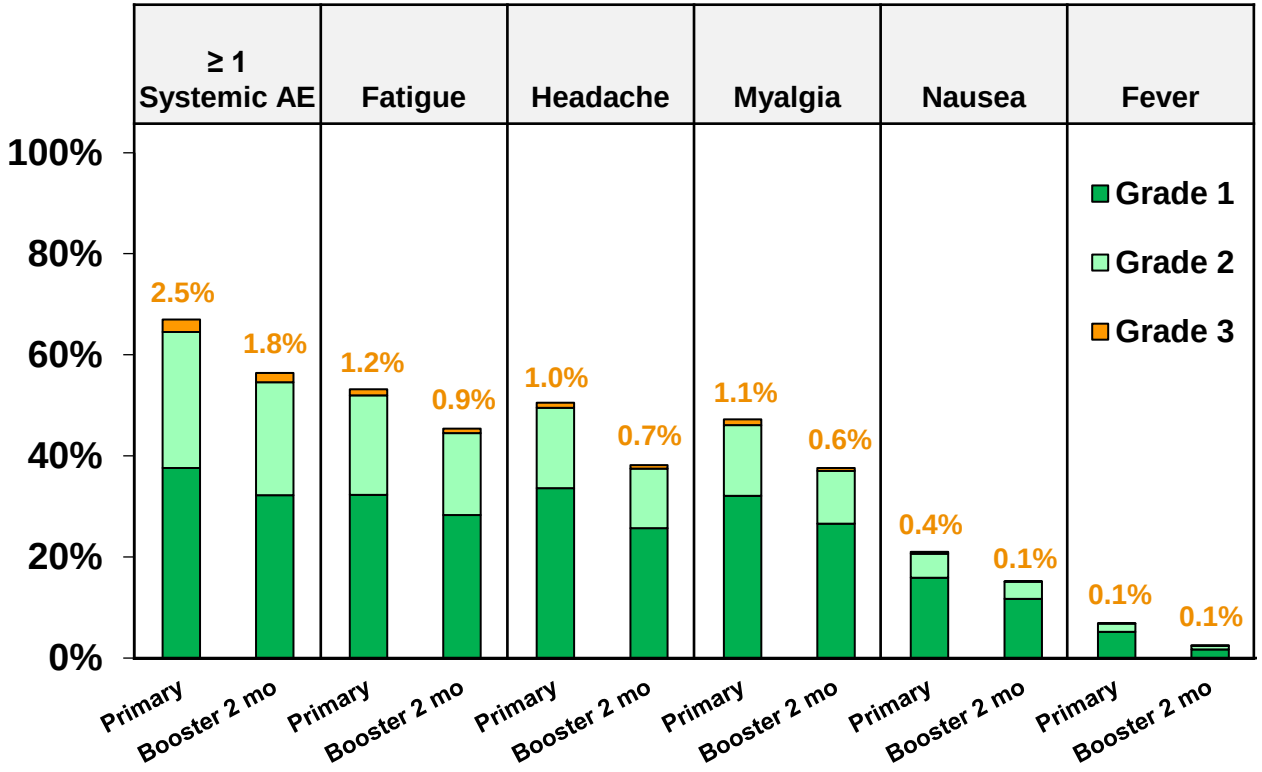
Reactogenicity of Booster Dose at 2 Months

Study COV3009

COV3009: Lower Systemic Reactogenicity with Booster at 2 Months Compared to Primary Dose

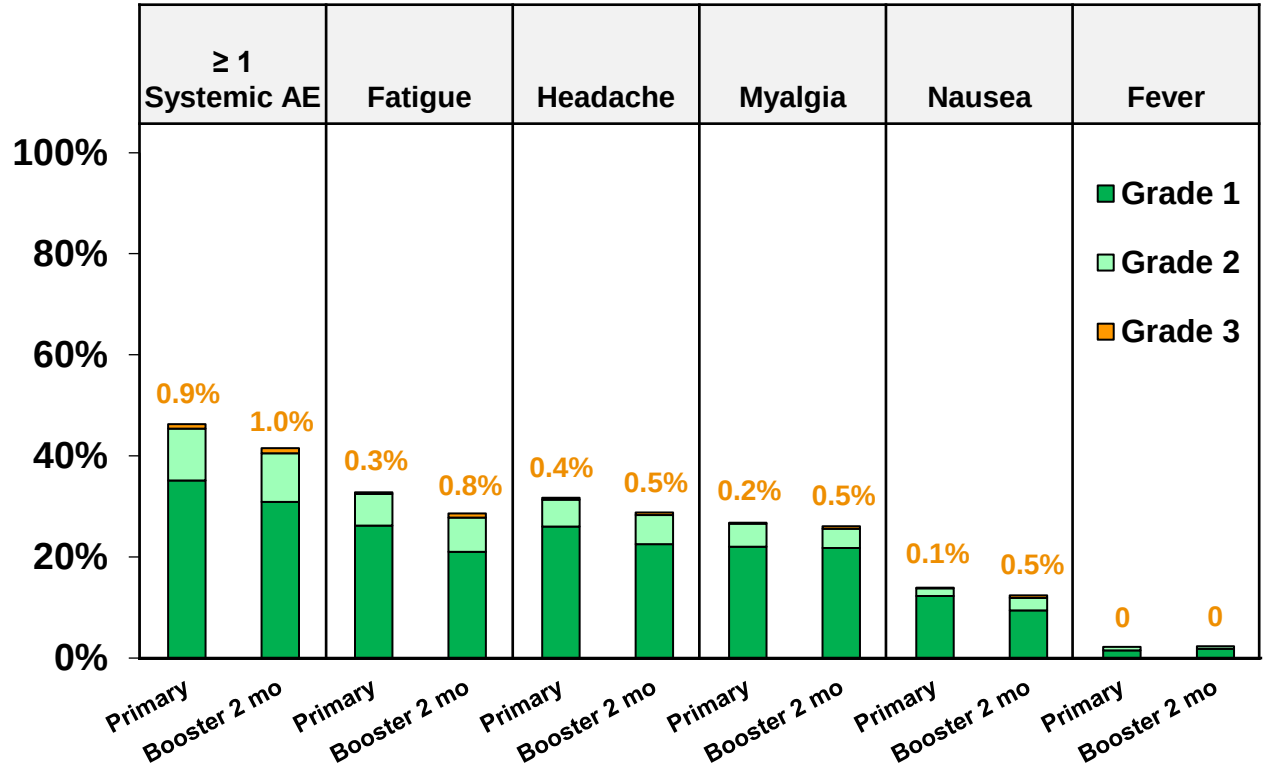
18-59 Years

Primary N = 1,784; Booster N = 1,164



≥ 60 Years

Primary N = 1,231; Booster N = 395

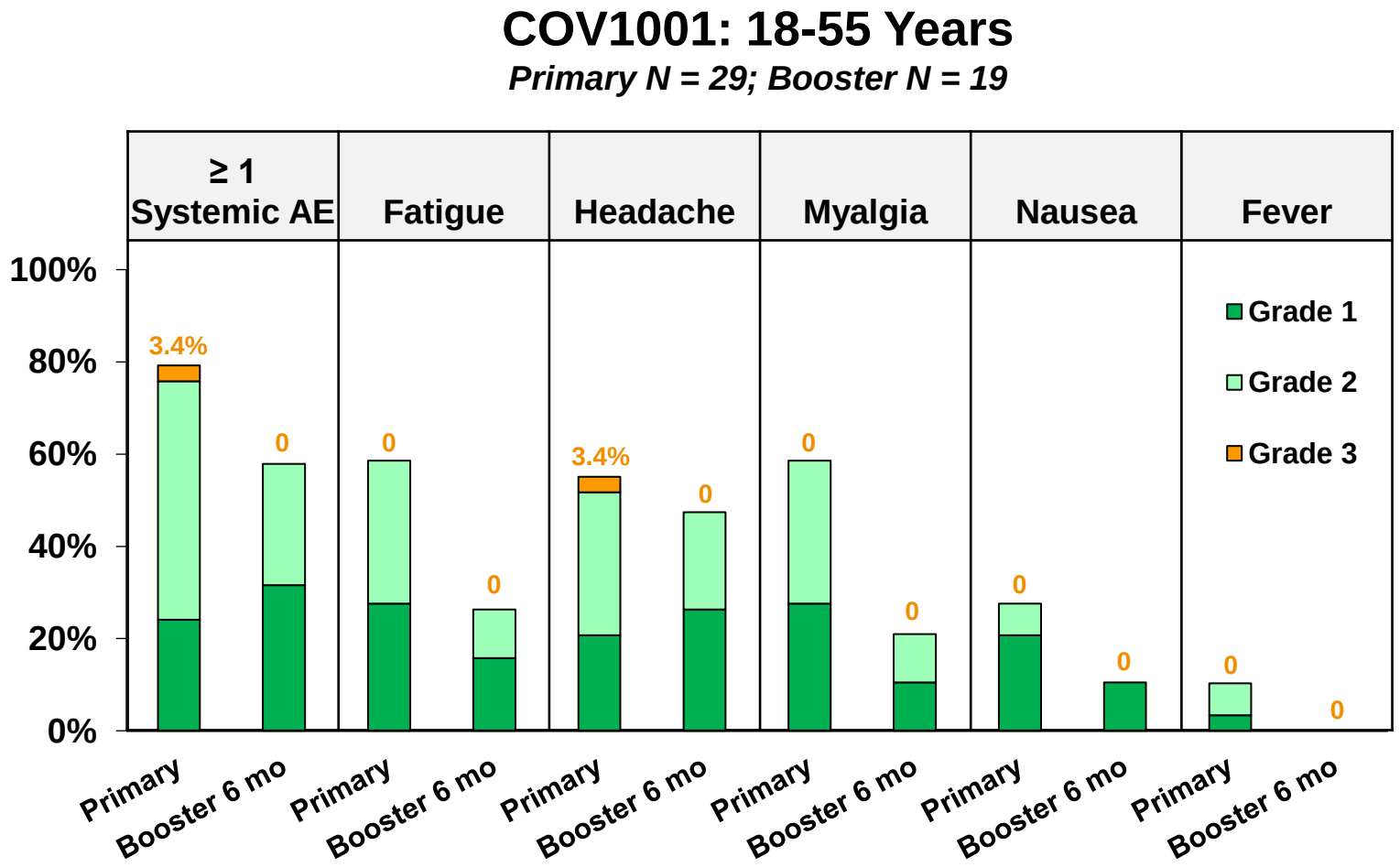


COV3009; Safety Subset

Reactogenicity of Booster Dose at 6 Months

Study COV1001 and Study COV2008

COV1001: Systemic Reactogenicity of Booster at 6 Months vs Primary Dose



COV2008: Preliminary Blinded Systemic Reactogenicity of Booster at ≥ 6 Months

- Ongoing randomized double-blind study of participants enrolled in Study 3001 evaluating three Ad26.COV2.S booster dose levels ≥ 6 months following primary vaccination with Ad26.COV2.S
- 127 estimated to have received 5 x 10^{10} vp
  - Blinded 7-day safety data available on 83 participants (N~32 ≥ 60 years)
- Dose-level data remain blinded; however, no Grade 3 systemic reactogenicity events have been reported

Unsolicited Adverse Events

Study COV3009

COV3009: Similar Rates of Unsolicited AEs Between Groups

	Ad26.COV2.S		Placebo	
Safety Subset – Dose 1	**N = 3,015**		**N = 3,052**	
Any AE	454	**15.1%**	332	**10.9%**
Safety Subset – Dose 2	**N = 1,559**		**N = 1,425**	
Any AE	159	**10.2%**	120	**8.4%**
Full Analysis Set (FAS)	**N = 15,705**		**N = 15,588**	
Any MAAE	1033	**6.6%**	1003	**6.4%**
Any SAE	104	**0.7%**	136	**0.9%**
Non-COVID-19-related	98	**0.6%**	104	**0.7%**
Any death*	4	**< 0.1%**	13	**0.1%**
COVID-19-related	0	**0**	6	**< 0.1%**

*Reported through June 25, 2021

Adverse Events of Interest / Special Interest

Study COV3009

Potential Cases of Thrombosis with Thrombocytopenia Syndrome (TTS)

- COV3009: Two cases of thrombosis with thrombocytopenia during follow-up
  - **Ad26.COV2.S:** DVT with thrombocytopenia on Day 100 post-vaccination
  - **Placebo:** DVT (Day 27) and PE (Day 29) with thrombocytopenia
  - **Neither case definitive TTS based on CDC criteria**
- Post-marketing data for AstraZeneca COVID-19 vaccine in UK
  - Dose 1: 24.9 million; Dose 2: 24.0 million
- Estimated rate of blood clots with concurrent low platelets
  - Dose 1 (or unknown): **15.1** cases per million; Dose 2: **1.9** cases per million
- Overall case fatality rate: 17% (66 deaths after first dose, 6 deaths after second dose)
- UK Government interpretation: *"no indication of an increased risk of these events after the second dose in any age group"*

https://www.gov.uk/government/publications/coronavirus-covid-19-vaccine-adverse-reactions/coronavirus-vaccine-summary-of-yellow-card-reporting

COV3009: No Increase in Other Adverse Events of Interest with Booster Dose

	Within 28 Days of Primary Dose		Within 28 Days of Booster Dose	
Adverse Event of Interest	**Ad26.COV2.S** (N=15,705)	**Placebo** (N=15,588)	**Ad26.COV2.S** (N=8,646)	**Placebo** (N=8,043)
Embolic and thrombotic events (SMQ)	2 (< 0.1%)	6 (0.1%)	3 (< 0.1%)	3 (< 0.1%)
Convulsions / seizures	0	0	0	0
Tinnitus	4 (< 0.1%)	2 (< 0.1%)	2 (< 0.1%)	2 (< 0.1%)
Guillain-Barre Syndrome	0	0	0	0
Facial paralysis	1 (< 0.1%)	2 (< 0.1%)	1 (< 0.1%)	0
Arthritis	24 (0.2%)	12 (0.1%)	4 (< 0.1%)	5 (0.1%)

Conclusions on Safety of Homologous Boost of Ad26.COV2.S

- Similar reactogenicity and safety profile for homologous boost at 2 or 6 months vs single-dose primary regimen
  - Local AEs similar regardless of booster timing
  - Systemic AEs lower with booster at 6 months than 2 months
- No new safety signals for AEs, SAEs, or AEs of interest with booster
- Global surveillance suggests rare TTS events with viral vector vaccine are less frequent with second dose than first dose
- Ongoing and planned post-authorization studies will be revised to incorporate follow-up of booster in addition to primary doses

Conclusion

Penny M. Heaton, MD

Global Therapeutic Area Head Vaccines

Janssen Pharmaceutical Companies of Johnson & Johnson

Totality of Data Support Safety, Efficacy of Homologous Booster Dose of Ad26.COV2.S

Immunogenicity

Humoral responses persisted after a single-dose of Janssen vaccine
- Unique immunologic profile
- Cell-mediated immunity and nAbs all important contributors to protection

Vaccine Efficacy

Administration of booster dose results in greater protection against COVID-19
- Efficacy against symptomatic infection boosted to 94% in US
- Complete protection against severe disease globally

Safety

Booster dose safe and well tolerated
- Large safety data base with > 9,000 exposures

Boost

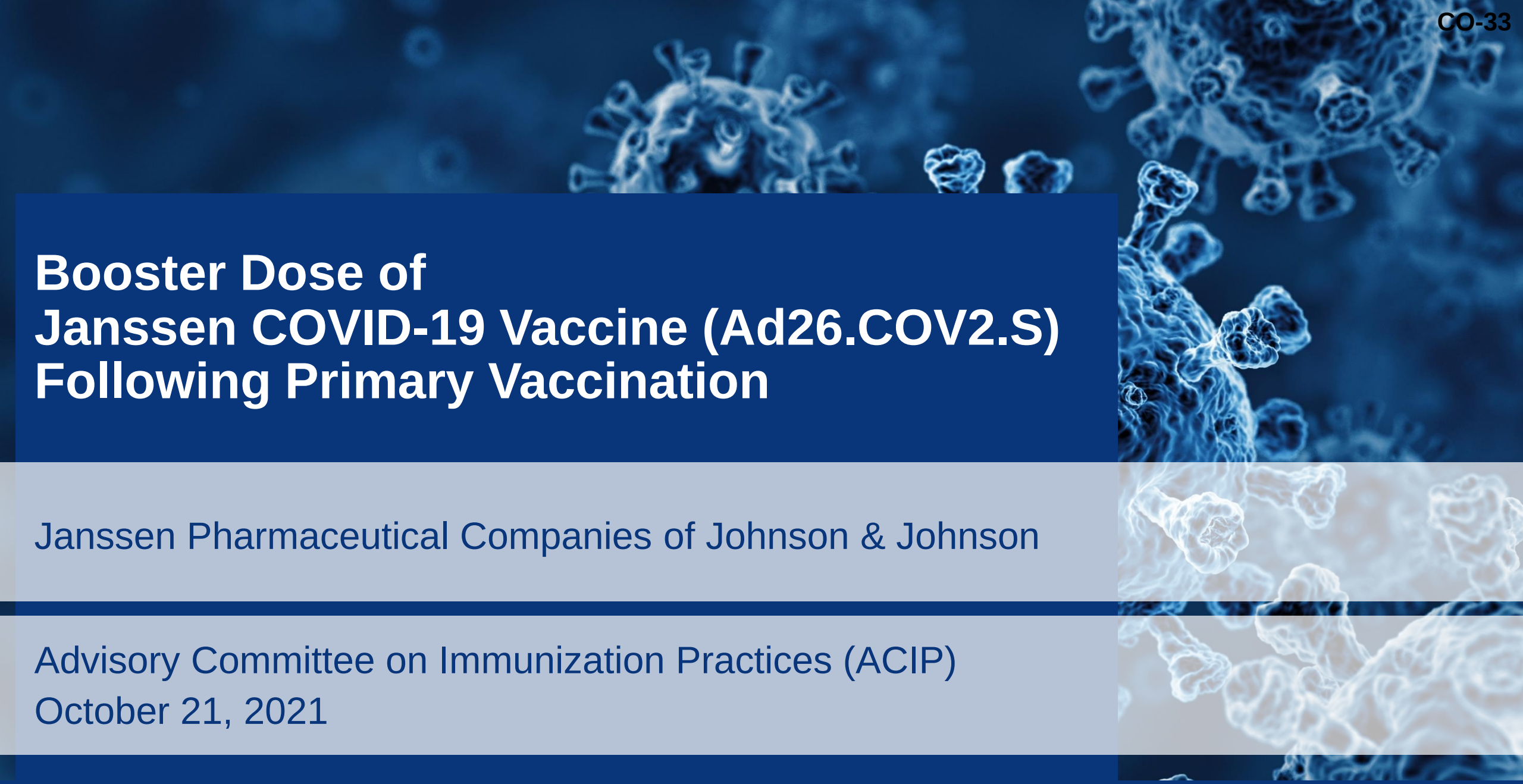
Data support a homologous booster dose with Ad26.COV.2.S

Homologous Boost with Ad26.COV2.S Helps Further Protect Individuals from COVID-19

VRBPAC Recommendation

- *Available data support the safety and effectiveness of Janssen COVID-19 Vaccine for use under EUA as a booster dose in individuals 18 years and older at least 2 months after a single dose primary vaccination*

- Provides flexibility for administering booster dose of Ad26



Booster Dose of Janssen COVID-19 Vaccine (Ad26.COV2.S) Following Primary Vaccination

Janssen Pharmaceutical Companies of Johnson & Johnson

Advisory Committee on Immunization Practices (ACIP)
October 21, 2021

Janssen
PHARMACEUTICAL COMPANIES OF
Johnson & Johnson