

The background of the slide features a detailed, blue-tinted illustration of several COVID-19 virus particles. These particles are spherical with a textured surface and numerous spike-like protrusions (glycoproteins) extending from them. The particles are scattered across the frame, with some appearing more prominent and in focus than others. The overall color scheme is a deep blue, creating a clinical and scientific atmosphere.

Safety and Efficacy of a Single Dose of **Ad26.COV2.S: ENSEMBLE study results**

Janssen Pharmaceutical Companies of Johnson & Johnson

Presenter: Martin F. Ryser, Janssen Pharmaceuticals

Janssen COVID-19 Vaccine Candidate (Ad26.COV2.S)



ENSEMBLE Phase 3 study enrolled **> 44,000** participants and was conducted in US, Latin America and South Africa **during height of pandemic**



Offers **substantial protection**, especially against severe COVID-19 including hospitalization and death, **irrespective of variant**



Well-tolerated and safe



Single-dose regimen with storage, transportation conditions **compatible within existing distribution channels**

Key Efficacy Findings From Ad26.COV2.S Phase 3, Single-Dose Study Support EUA



85% vaccine efficacy* against severe/critical COVID-19 globally,

- Consistent vaccine efficacy against severe/critical disease across all regions
- Equally high protection in South Africa (n > 6,500) where B.1.351 is highly prevalent (>95%)
- In the trial complete protection against COVID-19 related hospitalizations as of Day 28 and no COVID-19 related deaths in Ad26 group



66% vaccine efficacy* against moderate to severe/critical COVID-19 across all countries

- Protection as of 2 weeks after vaccination



Similar vaccine efficacy demonstrated by age, comorbidities status, sex, race, and ethnicity

* > Day 28

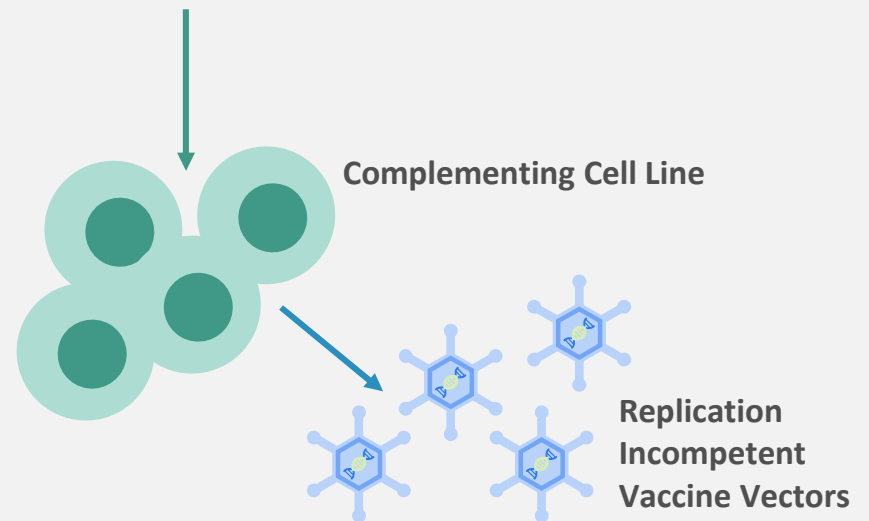
Vaccine Platform and Immunogenicity

Ad26 Vector is Replication Incompetent

Adenovirus genome

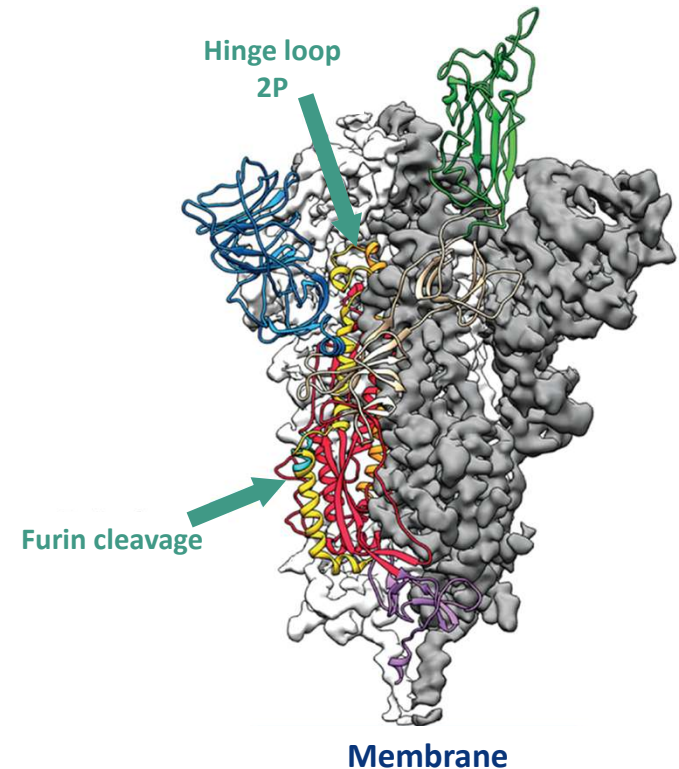


- Janssen Ad26 vector **can not replicate** in the human body
- Cell line grows in medium free of animal components
- Vial of Ad26-based vaccine contains buffer with commonly used ingredients in vaccines
 - No adjuvants, no antibiotics, no preservatives



Targeted Immune Response Against SARS-CoV-2 Spike (S)

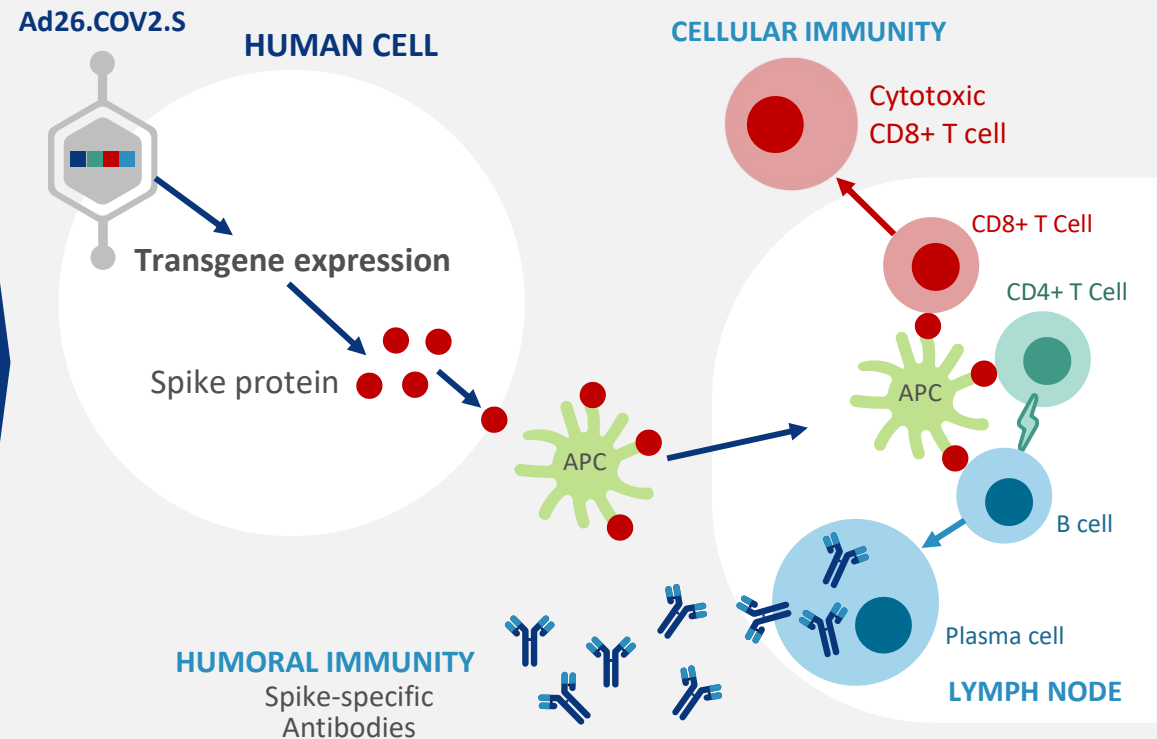
- Evaluated multiple transgenes encoding different S designs to select vaccine candidate with optimal:
 - Stabilization, expression, immunogenicity, nonclinical efficacy, manufacturability
- Selected S protein in Ad26.COVS contains two proline mutations and a knocked out furin cleavage site for optimal stability in prefusion confirmation²



Ad26.COV2.S is Replication Incompetent and Expresses SARS-CoV-2 Spike Protein, Eliciting Multiple Immune Responses

I.M.
injection of
Ad26.COV2.S

Adenoviral vectors classified as
non-integrating*



*FDA Guidance, 2020

Phase 1/2a (COV1001): First in Human Study

Focus: 2 groups of healthy adults 18 to 55 yrs and ≥ 65 yrs

COV1001 Evaluated 2 Dose Levels: 5×10^{10} vp and 1×10^{11} vp in Healthy Adults 18 to 55 yrs and ≥ 65 yrs



Administered in 1-dose or 2-dose regimen

Intramuscular injection



Interim analysis conducted at Day 29

28 days following 1st dose

Evaluated safety and immunogenicity

Summary of Phase 1/2 Immunogenicity Data Following Single Dose of Ad26.COV2.S



Neutralizing antibody titers elicited in **~96% of adults, independent of age and dose level**

- Titers detected as early as 14 days post vaccination
- Increased in following week and maintained thereafter up to 87 days



Strong CD8+ and Th1 dominated CD4+ T cell responses

- **Minimizes risk for vaccine associated enhanced disease (VAED)**



Both doses had favorable safety profile

- **Lower dose more favorable reactogenicity profile**

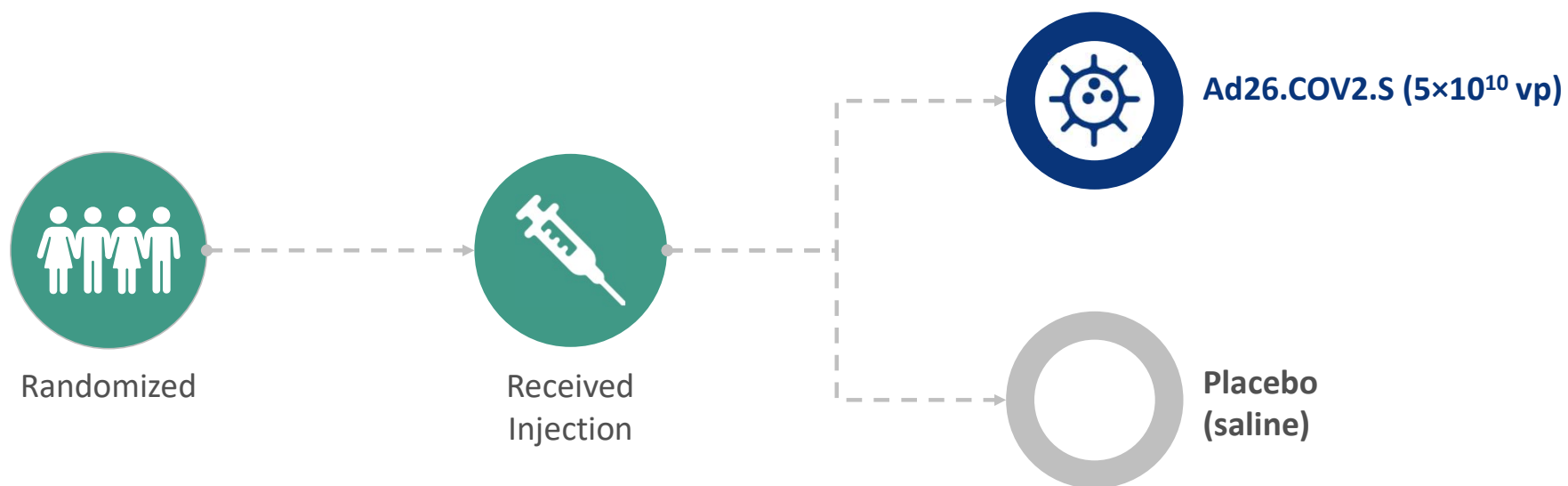


Ad26.COV2.S 5×10^{10} vp dose selected for COV3001

Phase 3 Study COV3001 (ENSEMBLE) Efficacy and Safety

COV3001: Randomized, Double-Blind, Phase 3 Trial

Evaluating efficacy, safety, immunogenicity of single dose of Ad26.COV2.S



Randomization stratified by site, age group, and absence / presence of comorbidities

COV3001: Co-Primary Endpoints



Vaccine efficacy to prevent moderate to severe/critical COVID-19



at least 14 days after vaccination



at least 28 days after vaccination



Primary Hypothesis:

- Lower limit of 95% confidence interval >30%

Per Protocol Population

COV3001: Case Definition for Moderate COVID-19

RT-PCR or molecular test confirmation of SARS-CoV-2 infection

AND

At any time during observation period:

≥ 1 new or worsening sign or symptoms

- Respiratory rate ≥ 20 bpm
- Abnormal oxygen saturation (> 93% on room air)
- Evidence of pneumonia
- Deep Vein Thrombosis (DVT)
- Shortness of breath

OR

≥ 2 new or worsening sign or symptoms

- Fever
- Heart rate ≥ 90 bpm
- Shaking chills
- Muscle pain
- Changes to olfaction or taste
- Gastrointestinal symptoms
- Red or bruised looking feet or toes
- Malaise
- Headache
- Cough
- Sore throat

bpm, beats per minute; RT-PCR, real-time polymerase chain reaction.

COV3001: Case Definition for Severe / Critical COVID-19

RT-PCR or molecular test confirmation of SARS-CoV-2 infection

AND

At any time during observation period:

≥ 1 of these signs or symptoms

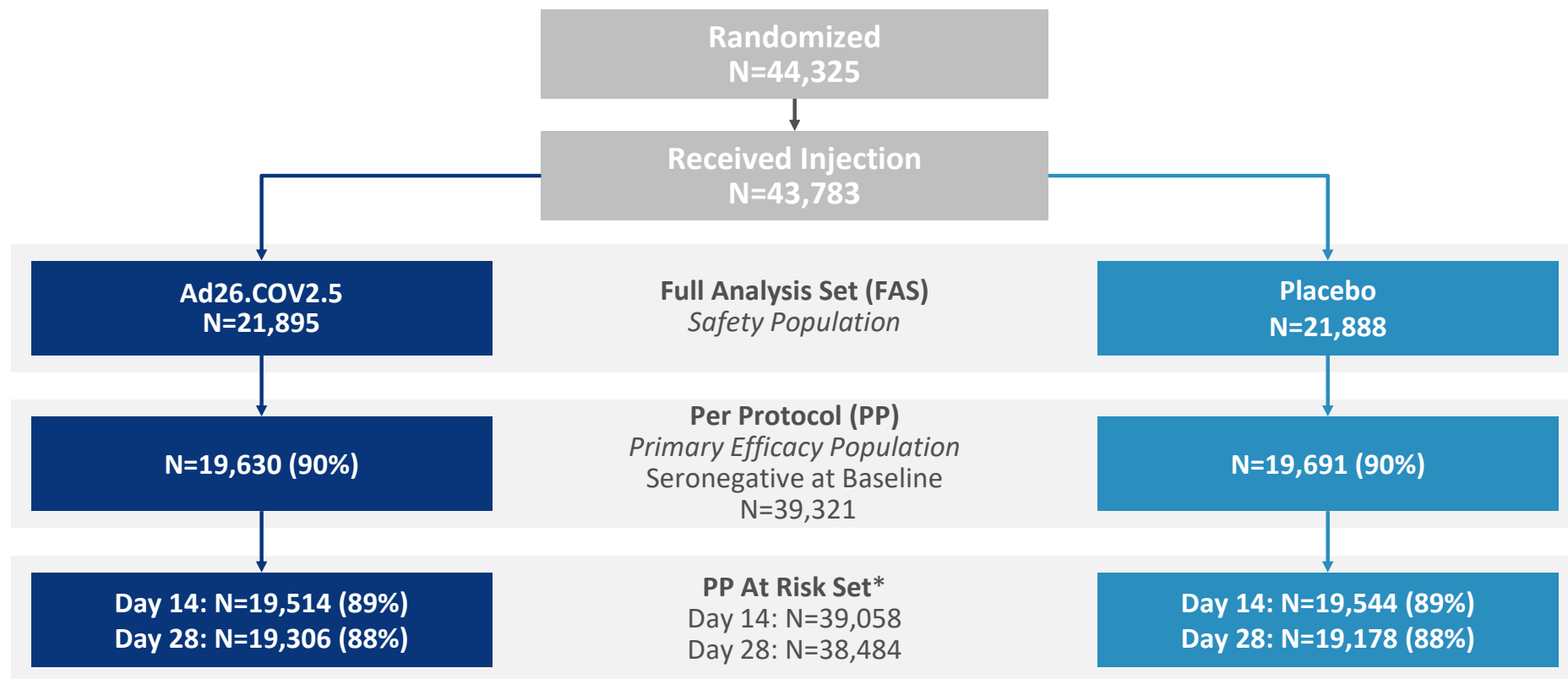
- **Clinical signs indicative of severe systemic illness:**
Respiratory rate ≥30 bpm, heart rate ≥125 bpm, $SpO_2 \leq 93\%$ on room air at sea level or $PaO_2/FiO_2 < 300$ mmHg
- **Respiratory failure:** Needing high-flow oxygen, non-invasive ventilation, mechanical ventilation, or extracorporeal membrane oxygenation [ECMO]
- **Evidence of shock:** Systolic blood pressure <90 mmHg, diastolic blood pressure <60 mmHg, or requiring vasopressors
- **Significant acute renal, hepatic, or neurologic dysfunction**
- **Admission to ICU**
- **Death**

bpm, beats per minute; FiO_2 , fraction of inspired oxygen; ICU, intensive care unit; PaO_2 , oxygen partial pressure; RT-PCR, real-time polymerase chain reaction; SpO_2 , oxygen saturation.

Study COV3001

Disposition and Efficacy Results

COV3001 Disposition of Participants



*PP At Risk set: Excluded participants with positive polymerase chain reaction (PCR) test for SARS-CoV-2 between vaccination and day of efficacy assessment

COV3001: No Relevant Differences at Baseline Between Vaccine and Placebo Groups Globally

Full Analysis Set	Ad26.COV2.S N = 21,895		Placebo N = 21,888	
	n	%	n	%
Sex, female	9,820	45%	9,902	45%
Mean Age (SD), years	50.7 (15.1)		50.7 (15.0)	
Age group				
18-59	14,564	67%	14,547	66%
≥ 60	7,331	33%	7,341	34%
≥ 65	4,259	19%	4,302	20%
≥ 75	809	4%	732	3%
Race				
American Indian* or Alaska Native	2,083	10%	2,060	9%
Asian	743	3%	687	3%
Black or African American	4,251	19%	4,264	20%
Native Hawaiian or other Pacific Islander	58	0.3%	48	0.2%
White	12,858	59%	12,838	59%
Multiple, unknown, not reported	1,901	9%	1,989	9%
Ethnicity				
Hispanic or Latino	9,874	45%	9,963	46%

*Includes American Indians from North and South Americas

COV3001: Global Participants with Comorbidities Similar Between Vaccine and Placebo Groups

Full Analysis Set Baseline Comorbidity* Category, ≥ 2%	Ad26.COV2.S N = 21,895		Placebo N = 21,888	
	n	%	n	%
≥ 1 risk factor	8,936	40.8%	8,922	40.8%
Obesity ≥ 30 kg/m ²	6,277	28.7%	6,215	28.4%
Hypertension	2,225	10.2%	2,296	10.5%
Type 2 Diabetes Mellitus	1,600	7.3%	1,549	7.3%
Serious heart conditions	497	2.3%	511	2.3%

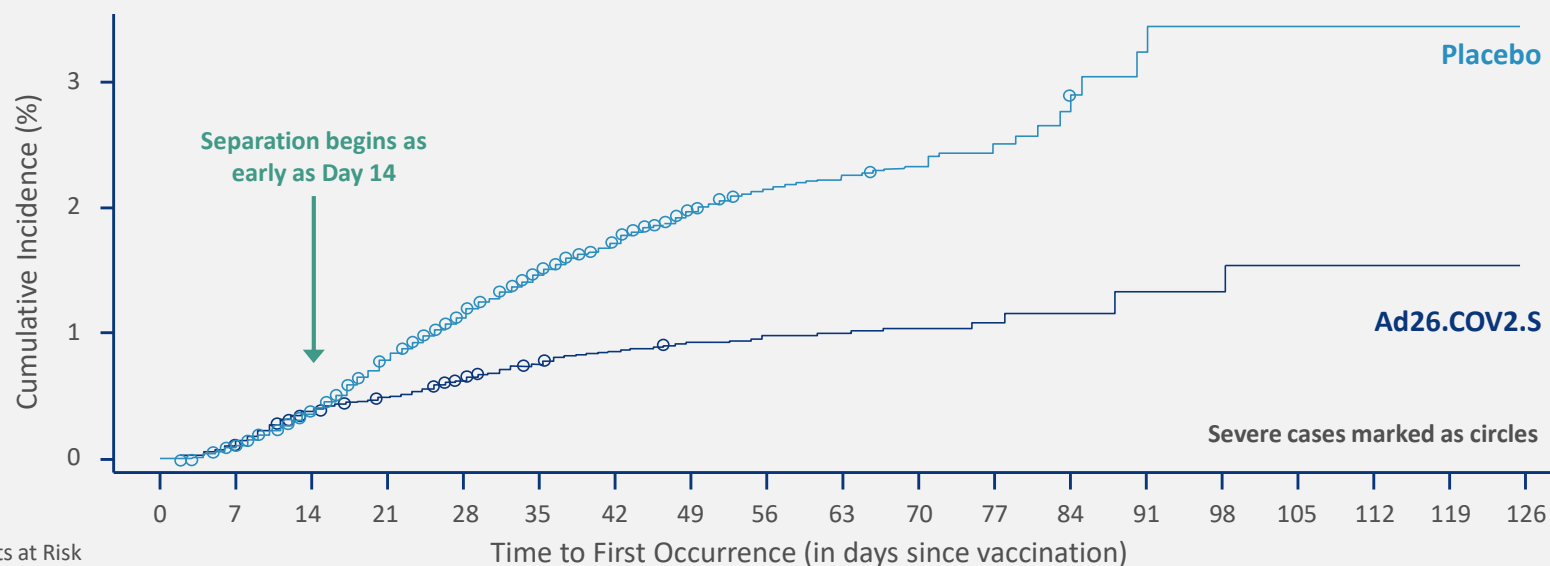
*Pre-existing medical risk factor for developing severe COVID-19

COV3001 Met Co-Primary Endpoints: Ad26.COV2.S Protects Against Moderate to Severe/Critical COVID-19 Globally

PP At Risk Set	> Day 14		> Day 28	
	Ad26.COV2.S N = 19,514	Placebo N = 19,544	Ad26.COV2.S N = 19,306	Placebo N = 19,178
Number of confirmed cases, n	116	348	66	193
Person-years	3,117	3,096	3,102	3,071
Vaccine efficacy (adjusted 95% CI)	66.9% (59.0, 73.4)		66.1% (55.0, 74.8)	

COV3001, Participants seronegative at baseline, confirmed: positive PCR centrally confirmed COVID-19 cases, global data.

Kaplan Meier Shows Early Onset of Protection Against Moderate to Severe/Critical COVID-19



Participants at Risk

Ad26.COV2.S	19744	19725	19669	19642	19612	19578	18541	14909	10930	7831	3998	1468	713	484	483	482	142	31	0
Placebo	19822	19804	19745	19652	19579	19488	18411	14814	10823	7740	3876	1439	708	485	482	480	133	27	0

Cumulative number of cases

Ad26.COV2.S	0	27	76	96	126	151	168	178	184	188	189	191	191	192	193	193	193	193	193
Placebo	0	22	81	168	237	299	351	387	407	416	423	425	430	432	432	432	432	432	432

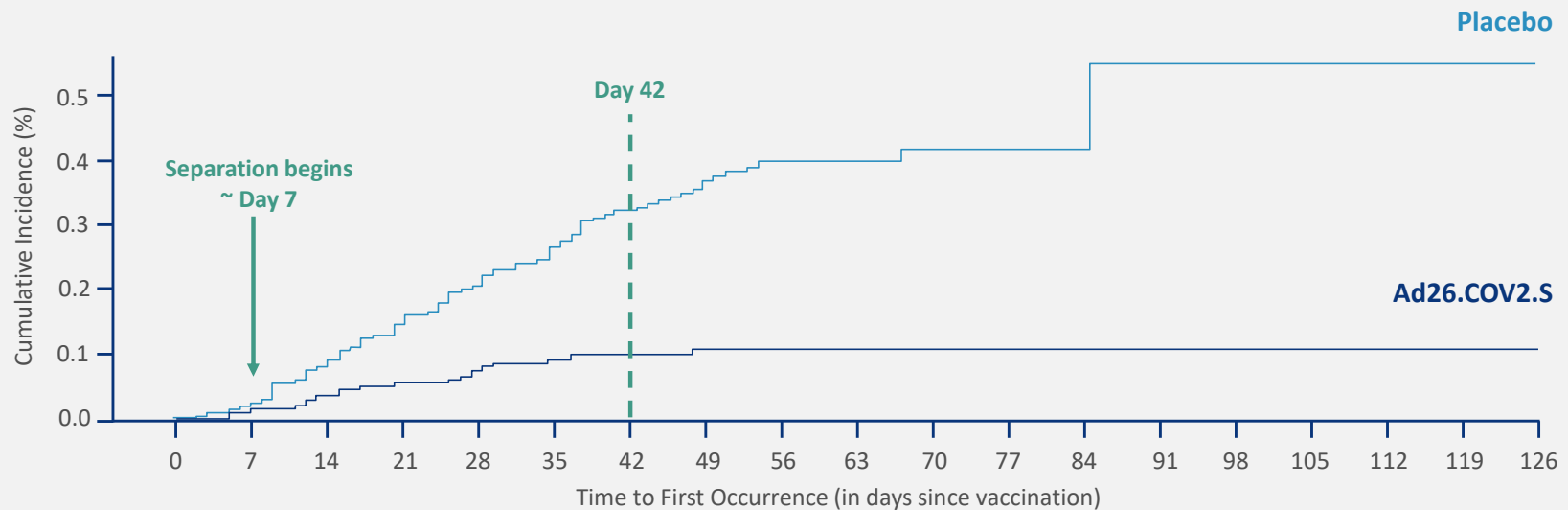
COV3001; Full Analysis Set; baseline seronegative; confirmed: positive PCR centrally confirmed COVID-19 cases

High Vaccine Efficacy Against Severe/Critical COVID-19

PP At Risk Set	> Day 14		> Day 28	
	Ad26.COV2.S N = 19,514	Placebo N = 19,544	Ad26.COV2.S N = 19,306	Placebo N = 19,178
Number of confirmed cases, n	14	60	5	34
Vaccine efficacy (adjusted 95% CI)	76.7% (54.6, 89.1)		85.4% (54.2, 96.9)	

COV3001; Confirmed: positive PCR centrally confirmed COVID-19 cases. CI, confidence interval; PP, per protocol

Time to First Occurrence of Severe/Critical COVID-19 Demonstrates Early Onset of Protection



Participants at risk

Ad26.COV2.S	19744	19741	19734	19725	19718	19705	18685	15043	11046	7919	4039	1481	720	490	490	489	146	31	0
Placebo	19822	19817	19799	19779	19760	19725	18682	15088	11069	7939	3995	1485	732	500	497	495	137	29	0

Number of cases

Ad26.COV2.S	0	3	7	11	16	18	20	21	21	21	21	21	21	21	21	21	21	21	21
Placebo	0	5	18	32	44	55	65	73	76	76	77	77	78	78	78	78	78	78	78

COV3001; Full analysis set. Baseline seronegative. Confirmed: positive PCR centrally confirmed COVID-19 cases

Data Support Substantial Effect on Prevention of COVID-19 Related Hospitalizations

<i>PP At Risk Set (MRU, SAE and MA-COV information)</i>	Ad26.COV2.S Cases, n	Placebo Cases, n	VE (95% CI)
> Day 14			
PCR+ cases from any source, regardless of central confirmation	2	29	93.1% (72.7, 99.2)
> Day 28			
PCR+ cases from any source, regardless of central confirmation	0	16	100.0% (74.3, 100.0)

COV3001; Sources: MRU (Medical Resource Utilization), SAE, and MA-COV (medical attendance-COV). CI, confidence interval; PP, per protocol; VE, Vaccine efficacy
Onset is earliest of either AE linked to COVID-19 or onset of COVID-19 episode following SAP algorithm.

Ad26.COV2.S Data Support Protection Against COVID-19-Related Deaths

<i>Full Analysis Set (cutoff of Jan 22, 2021)</i>	Ad26.COV2.S N = 21,895	Placebo N = 21,888
All cause mortality	3	16
COVID-19-related death > Day 1	0	5*

*One PCR+ participant at baseline, not included

<i>Full Analysis Set From January 22, 2021 to February 5, 2021</i>	Ad26.COV2.S N = 21,895	Placebo N = 21,888
All cause mortality	2	4
COVID-19-related death > Day 1	0	1

- All COVID-19 associated deaths occurred in South Africa

COV3001; non-confirmed: all COVID-19 cases with a positive PCR from any source, regardless of central confirmation;

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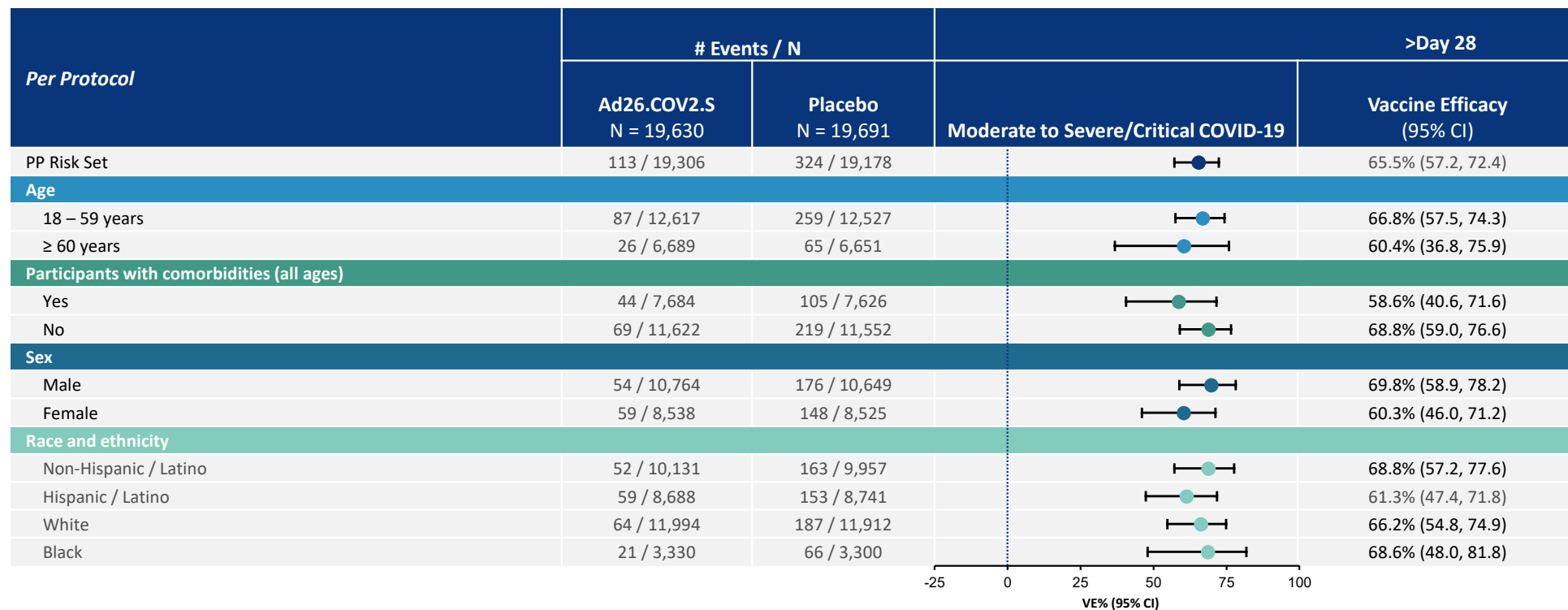
Subset of Data Show Effect Against Asymptomatic/Undetected COVID-19

<i>Per Protocol</i>	>Day 29		VE (95%CI)
	Ad26.COVS.2.S N = 19,630	Placebo N = 19,691	
Serology Risk Set (Day 71 Serology Results)	N = 1,346	N = 1,304	
Seroconverted SARS-CoV-2 (Day > 29) ^a	18	50	65.5% (39.9, 81.1)
Seroconverted SARS-CoV-2 without previous symptoms (Day > 29) ^{a,b}	10	37	74.2% (47.1, 88.6)

^a Serologically converted: positive serology (Non-S protein) test without SARS-CoV-2 positive RT-PCR before positive serology test irrespective of previous symptoms.

^b Without previous symptoms: no COVID-19 symptoms occurred before positive serology test at any point during study. CI, confidence interval; VE, vaccine efficacy

Overall VE Against Moderate to Severe/Critical COVID-19 Consistent Across Prespecified Subgroups



COV3001; global; non-confirmed: all COVID-19 cases with a positive PCR from any source, regardless of central confirmation

Vaccine Efficacy Across Age Groups With/Without Co-morbidities

		Day >14		Day >28	
		Point estimate	95% CI	Point estimate	95% CI
18-59 without co-morbidities	Moderate/severe	66%	(56.1; 73.3)	68%	(56.8; 76.6)
18-59 with co-morbidities	Moderate/severe	64%	(49.4; 74.6)	64%	(44.3; 77.3)
≥60 without co-morbidities	Moderate/severe	76%	(56.3; 87.6)	72%	(45.0; 87.3)
≥60 with co-morbidities	Moderate/severe	65%	(42.2; 79.4)	42%	(-13.1; 71.6)

- In primary analysis vaccine efficacy is slightly lower in participants with co-morbidities from Day >28
 - **Limitations:** difference in follow-up period between subgroups and limited case numbers
- Day >14 analysis consistent with other subgroups

*All subgroup analysis are based on any positive PCR (regardless of central confirmation); CI, Confidence interval

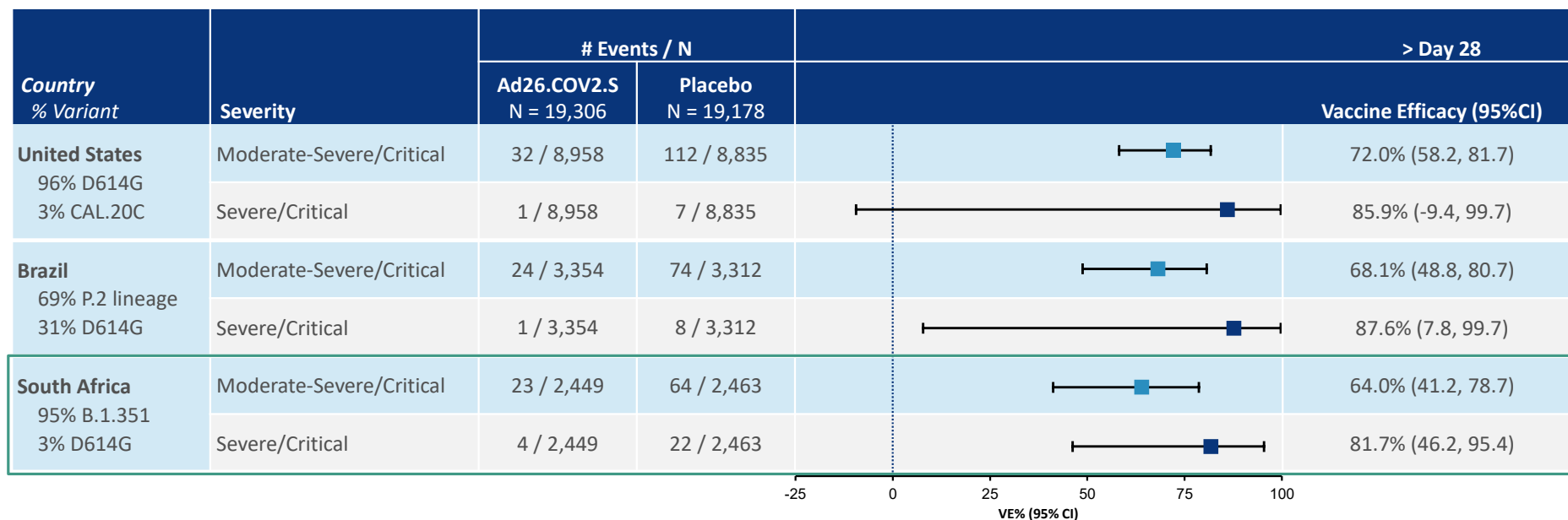
Ad26.COV2.S Protects Against COVID-19-Related Hospitalizations in Participants ≥ 60 years with Comorbidities

<i>Per Protocol Set</i>	Ad26.COV2.S	Placebo	VE (95% CI)
COVID-19-related Hospitalizations ≥ 60 years with Comorbidities (<i>Per Protocol Set</i>)			
> Day 14	2	11	82% (16, 98)
> Day 28	0	5	-
COVID-19 Related Deaths ≥ 60 years with Comorbidities (<i>Full Analysis Set</i>)			
> Day 1	0	2	-

Non-confirmed: all COVID-19 cases with a positive PCR from any source, regardless of central confirmation.

Onset based on earliest AE and/or COVID-19 episode. Derived based on PCR test with symptoms; CI, Confidence interval; VE, Vaccine efficacy

Vaccine Efficacy Consistently High Across Key Countries > Days 28



South Africa

PP At Risk Set (N=4,912)

Full Analysis Set (N=6,576)

Hospitalizations >Day 28*:

COVID-related deaths:

0 vs 6 (Ad26.COVS.2.S vs placebo)

0 vs 5** (Ad26.COVS.2.S vs placebo)

COV3001; Non-confirmed: all COVID-19 cases with a positive PCR from any source, regardless of central confirmation.

*Sources: MRU (Medical Resource Utilization), SAE, and MA-COV (medical attendance-COV); **6th case excluded due to positive PCR test at baseline

Single Dose of Ad26.COV2.S Offers Substantial Protection Against COVID-19, Irrespective of Variant



85% VE* against severe disease

- Onset of protection as early as 7 days after vaccination
- In the trial complete protection against COVID-19 related hospitalizations as of Day 28. No COVID-19 related deaths in Ad26 group



66% VE* against moderate to severe disease across all countries

- Onset evident as early as Day 14, and increased through Day 56



Protection against all symptomatic disease consistent with primary endpoint



High-quality, robust data at a time when the incidence of SARS-CoV-2 was increasing, and new, highly transmissible variants were emerging

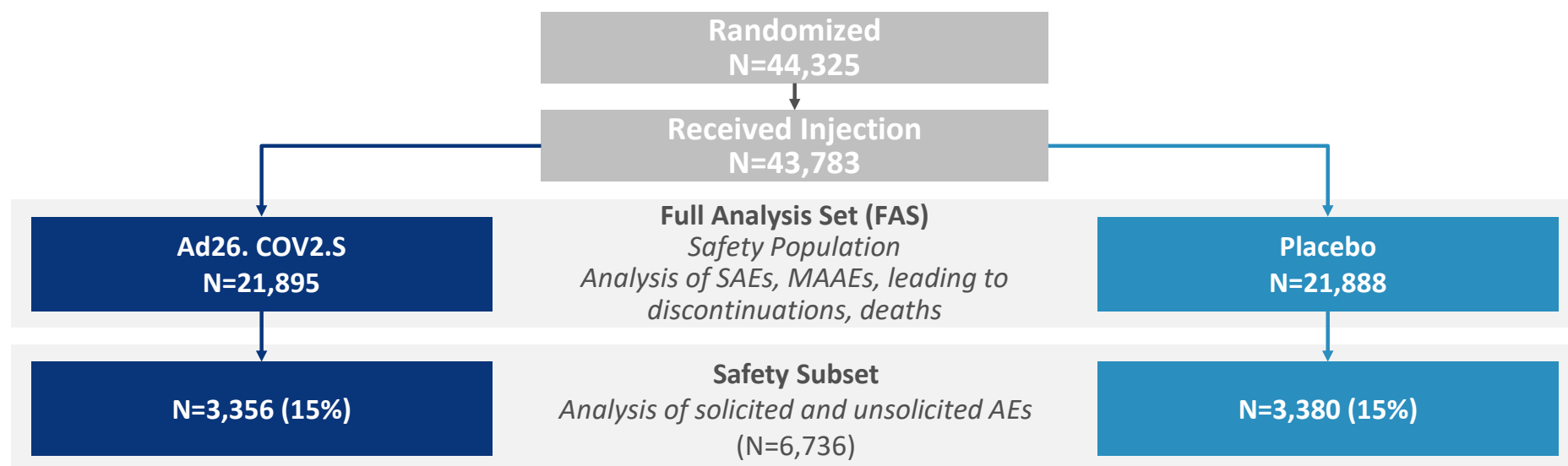


High levels of protection consistent across subgroups, countries and regions*

*> Day 28, VE, Vaccine efficacy

Study COV3001: Safety Results

COV3001 Safety Subset Includes Data on Solicited and Unsolicited Adverse Events



Safety analysis cut off date: January 22, 2021

Safety Data Met FDA Guidelines for Median Follow-Up of At Least 8 weeks



Median follow up after vaccination was 58 days



Full Analysis Set: 55% had ≥ 8 weeks of follow-up

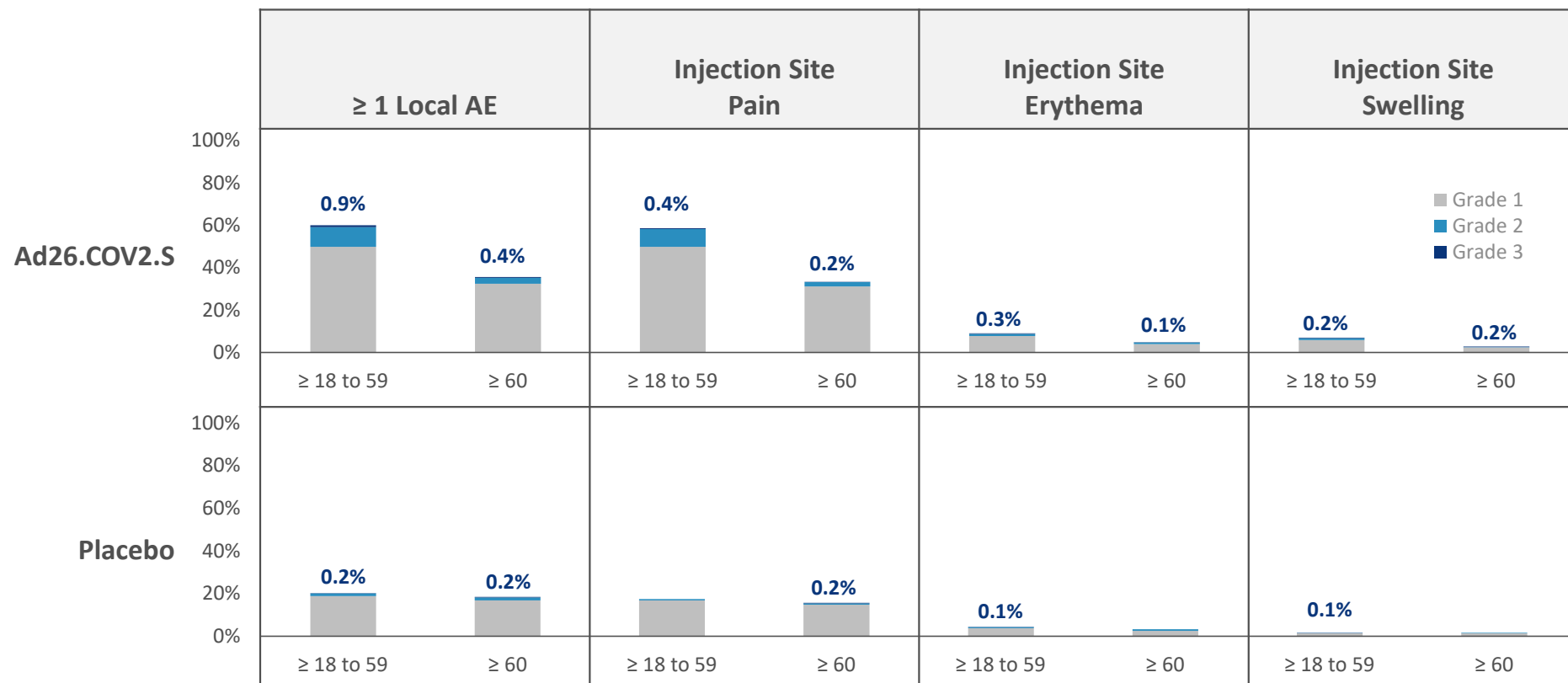


Safety Subset: nearly all (99.9%) completed post-vaccination period of Day 1-29

COV3001; safety analysis cut off date: January 22, 2021

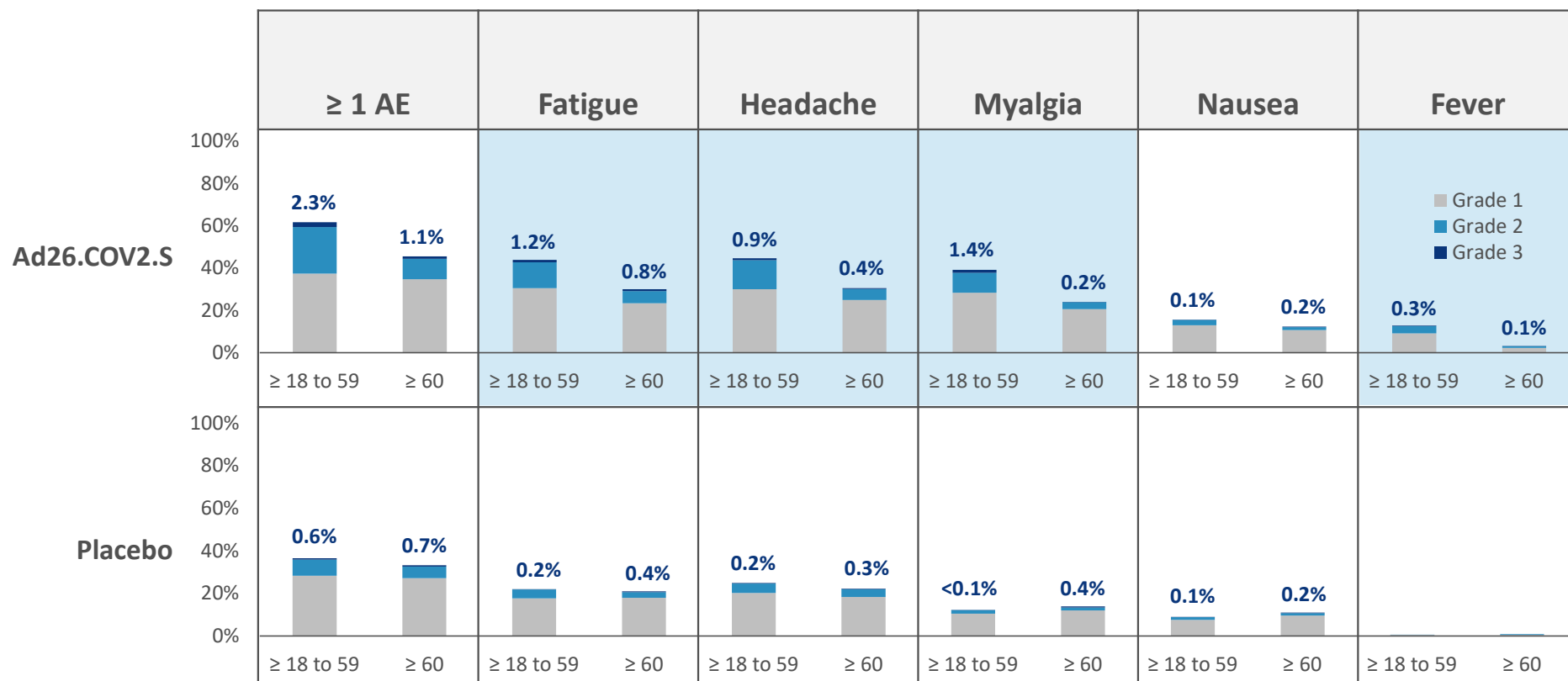
Study COV3001: Solicited Adverse Events

Local Adverse Events, Nearly All Grade 1 and 2 in Severity, All Events Resolved 2-3 Days After Injection



COV3001; Safety Subset

Systemic Adverse Events Transient with Median Duration of 1-2 Days



COV3001; Safety Subset

Study COV3001: Unsolicited Adverse Events

Similar Rates of Unsolicited AEs Between Groups

	Ad26.COV2.S		Placebo	
Unsolicited Adverse Events	n	%	n	%
Safety Subset	N = 3,356		N = 3,380	
Any Adverse Event (AE)	440	13%	407	12%
Full Analysis Set (FAS)	N = 21,895		N = 21,888	
Any Medically-Attended Adverse Event (MAAE)	304	1.4%	408	1.9%
Any Serious Adverse Event (SAE)	90	0.4%	137	0.6%
Not COVID-19 Related SAE	83	0.4%	96	0.4%
Any death (reported through January 22, 2021)	3	<0.1%	16	0.1%
COVID-19 related deaths	0	-	5*	-

COV3001; *Excludes PCR+ participants at baselines, cut of as of February 5, 2021;

No Evidence of Vaccine-Associated Enhanced Respiratory Disease (VAERD)

- **Clinical data confirms nonclinical observations that theoretical risk for VAERD is low**
 - Data demonstrated Th1 dominant immune responses
 - Breakthrough infections in Ad26.COV2.S group milder than those in placebo
- **DSMB continuously monitored all cases of COVID-19 for patterns suggestive of VAERD, none found**

COV3001. DSMB, Data Safety Monitoring Board.

Other Adverse Events of Interest

Full Analysis Set	Ad26.COV2.S N = 21,895	Placebo N = 21,888
	n	n
Hypersensitivity*	77	65
Thrombotic and Thromboembolic Events**	14	10
Convulsions	4***	1
Tinnitus	6	0
Peripheral neuropathy	2	2
Guillain-Barre Syndrome	1	1
Bell's Palsy	3	2

COV3001

*No anaphylaxis

**Most had relevant predisposed medical conditions and/or other factors

***Three participants with history of epilepsy, one additional followed transverse sinus thrombosis

Hypersensitivity Events

Full Analysis Set Preferred Term, n	Ad26.COV2.S N = 21,895	Placebo N = 21,888
Hypersensitivity Cases, n (%)	77 (0.4%)	65 (0.3%)
Rash	35	23
Urticaria	8	5
Hypersensitivity	9*	6
Dermatitis/eczema	10	16
Edema/swelling	7	3
Eye, nose, throat manifestation	10	16
Cardiovascular	0	1

* Includes 1 related SAE of Type IV (delayed) hypersensitivity

- **Non-serious dermatologic conditions** most common hypersensitivity AEs
- Mean time to onset after vaccination: **5.7 days**
- Mean resolution time: **13 days**
- **Majority Grade 1 or 2**

In COV3001 no cases met Brighton Collaboration criteria for anaphylaxis
Similar profile observed with other Ad26 vaccines

COV3001

Thrombotic and Thromboembolic Events

Full Analysis Set	Ad26.COV2.S N = 21,895	Placebo N = 21,888
	n	n
Total number of participants with any event	14	10

Venous thromboembolic events		
Deep vein thrombosis	6	2
Pulmonary embolism	4	1
Transverse sinus thrombosis	1	0
Thrombosed hemorrhoid	0	1
Total participants with venous events	11	4

Arterial thromboembolic events		
Cerebrovascular events	3*	3
Cardiovascular events	1	3
Total participants with arterial events	3	6

COV3001

*2 events occurred in one participant

Benefits of Ad26.COV2.S Outweigh Known and Potential Risks

- Demonstrated **acceptable safety and reactogenicity** profile
- Overall, reactogenicity **mild and transient**
 - Grade 3 reactogenicity rare
- Most AEs **mild or moderate**
 - Generally **resolved 1 to 2 days** post vaccination
- Safety further supported by > 193,000 individuals exposed to Janssen Ad26-based vaccines

Vaccine Safety and Effectiveness Monitoring Post-Authorization



Surveillance of Adverse
Events Following
Immunizations (AEFIs),
prespecified AESIs, known
vaccine concerns



Signal detection through
Janssen's global safety
database and external
databases, eg. VAERS in the
US



Monitor long-term safety
and effectiveness through
observational and active
surveillance studies

Health insurance claims
databases, EHRs in US
and Europe

AESI: Adverse Events of Special Interest; VAERS: Vaccine Adverse Event Reporting System; EHR: Electronic Health Record

Next steps

Additional Key Studies



COV3009: two-dose regimen Phase 3 efficacy study



Immunogenicity and safety studies in children, 0 – 17 years

Adolescent study recruitment ongoing



Pregnant women

Planned to begin late March/early April 2021



Immunocompromised individuals

Planned to begin Q3 2021



Post-authorization observational safety and effectiveness studies

Including pregnancy exposure registry

Logistical, Practical Advantages to Help Simplify Distribution and Expand Vaccine Access of Single Dose Ad26.COV2.S



Single, 0.5ml dose
5 doses per vial
No dilution required



Stored for 3 months
at normal
refrigerator
temperatures,
2° to 8° C
(36° to 46° F)



2-year shelf life
when frozen,
-25° to -15° C
(-13° to 5° F)



Prepared for
large-scale
manufacturing



Shipping fits
into existing supply
chain infrastructure

Summary

Benefits of Ad26.COV2.S Outweigh Known and Potential Risks

Efficacy

- Offers substantial protection, especially against severe COVID-19 including hospitalization and death, irrespective of variant
- Similar VE by age, comorbidities status, sex, race, and ethnicity

Safety

- Acceptable safety and reactogenicity profile.
- Results consistent with tolerability, safety of other Ad26-based vaccines

Ongoing Monitoring

- Safety and effectiveness monitoring plans
- Cross-over plan for participants who received placebo

Traditional Shipping, Storage

- Stored at normal refrigerator temperatures
- 2-year shelf life when frozen

1-Dose Vaccine

- Specifically studied as 1-dose regimen
- increase vaccination capacity and coverage of population

