mRNA-1273 (Moderna COVID-19 Vaccine) in Individuals, 6 Months - 5 Years of Age

ModernaTX, Inc.

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ACIP

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EUA for Moderna COVID-19 Vaccine in Infants, Toddlers and Young Children, June 17, 2022

Young Children
2-5 Years

Primary Series
25 µg, 2-Dose

Infants/Toddlers
6-23 Months

Primary Series
25 µg, 2-Dose

Proposed Indication: Prevention of COVID-19 caused by SARS-CoV-2

Primary Series: 2-dose, intramuscular administration 1 month apart

>5,000 Infants, Toddlers & Young Children Received ≥ 1 Dose of mRNA-1273

Study 204 (Safety Set)

Age Range	Dose Selected	Participants Receiving ≥ 1 Injection		
		mRNA-1273	Placebo	Total
2-5 years	25 µg	3,100	1,007	4,107
6-23 months	25 µg	1,911*	589*	2,500
	Total	5,011	1,596	6,607

* Enrollment Ongoing

Median Safety Follow-Up in Each mRNA-1273 Age Group Meets EUA Recommendations of >2 Months

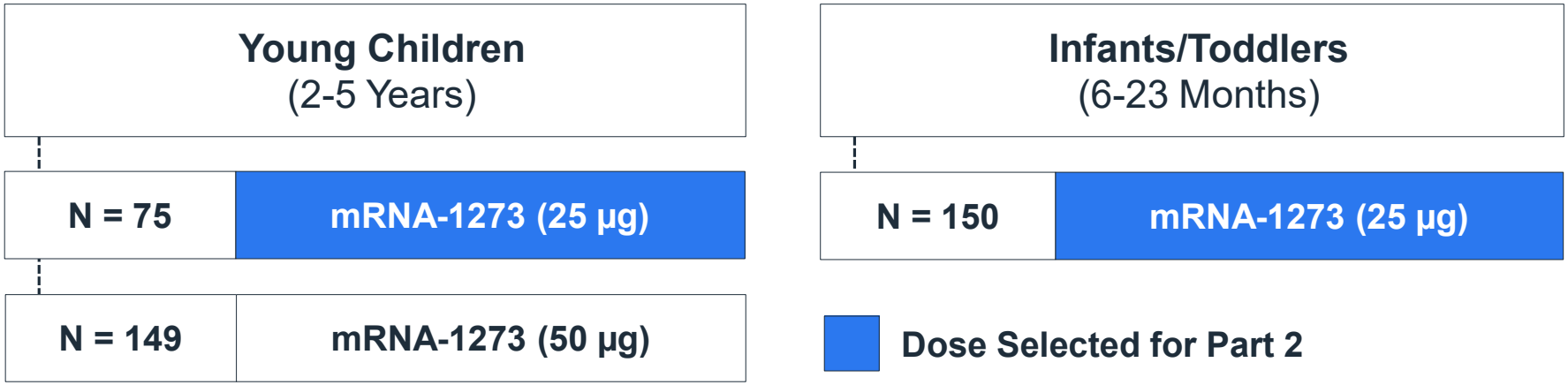
Study 204

Age Range	Part	Dose	mRNA-1273 (N)	Median Follow-Up Post-Dose 2 (Months)
2-5 years	Dose-Ranging	25 µg	75	7.4
		50 µg	149	8.5
6-23 months	Dose-Ranging	25 µg	150	8.3
2-5 years	Blinded, Randomized	25 µg	3,031	2.5
6-23 months	Blinded, Randomized	25 µg	1,760	2.4

1 month = 28 days

Part 1 Open-Label, Dose-Escalation, Age De-Escalation Study

Study 204: Designed to Select Dose for Randomization Phase (Part 2)

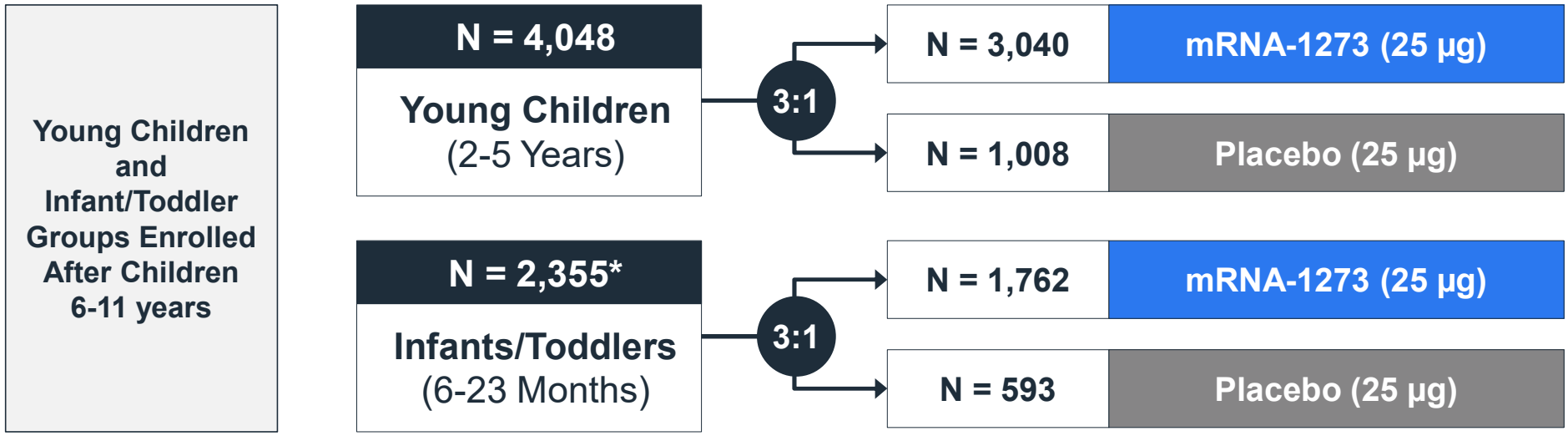


- Lowest evaluated dose level selected for each age group
  - Showed acceptable tolerability profile
  - High likelihood of meeting immunogenicity criteria
- External DSMB reviewed all Part 1 data and agreed with selected doses

DSMB – Data Safety Monitoring Board

Part 2 Randomized, Placebo-Controlled Study

Study 204: Enrollment Progressed Sequentially through Age De-Escalation



*Enrollment ongoing in Infants and Toddlers (6-23 Months)

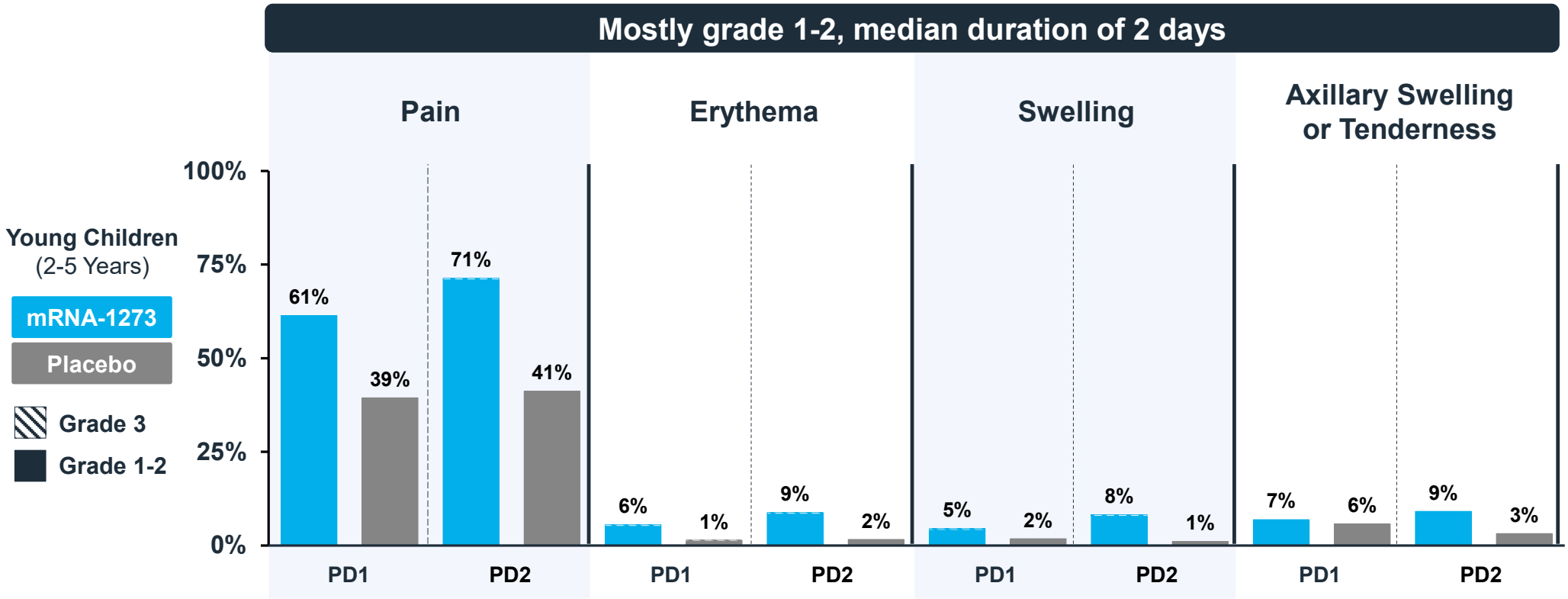
Demographics

Study 204 (Part 2): Infants, Toddlers, and Young Children (6 Months - 5 Years), Safety Set

		Infants/Toddlers (6-23 Months)		Young Children (2-5 Years)	
		mRNA-1273 (25 µg) N = 1,761	**Placebo** N = 589	**mRNA-1273 (25 µg)** N = 3,031	**Placebo** N =1,007
Age	**Mean**	**15.8 Months**	**15.9 Months**	**3.0 Years**	**3.0 Years**
Gender	**Female**	**48%**	**51%**	**49%**	**49%**
Race	**White**	**79%**	**79%**	**76%**	**79%**
	Black or African American	**3%**	**3%**	**5%**	**4%**
	Asian	**4%**	**6%**	**6%**	**5%**
	American Indian or Alaska Native	**0.2%**	**0**	**0.4%**	**0.3%**
	Multiracial	**11%**	**11%**	**11%**	**10%**
Ethnicity	**Hispanic or Latino**	**13%**	**14%**	**14%**	**14%**
	Not Hispanic or Latino	**86%**	**85%**	**85%**	**85%**

Solicited Local Reactions within 7 Days After Dose 1 & 2

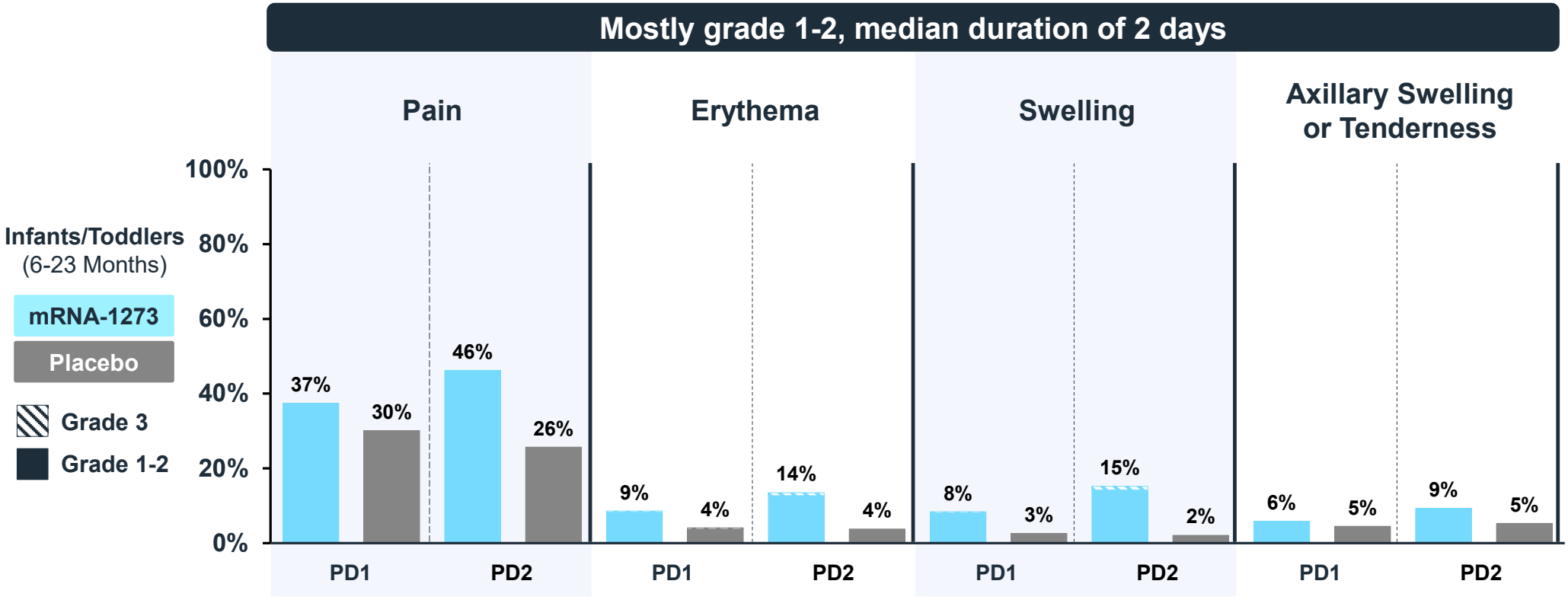
Study 204: Young Children (2-5 Years)



Solicited Safety Set; No Grade 4 events reported

Solicited Local Reactions within 7 Days After Dose 1 & 2

Study 204: Infants & Toddlers (6-23 Months)



Solicited Safety Set; No Grade 4 events reported

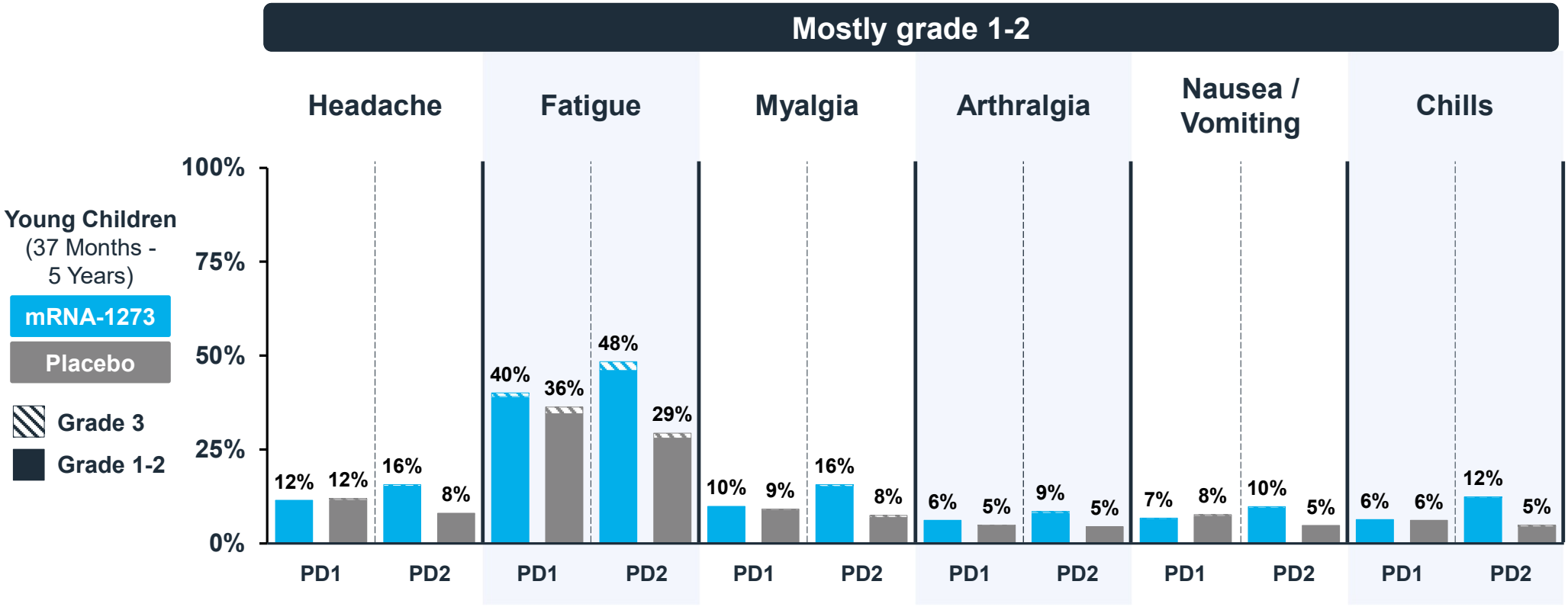
Solicited Systemic AEs Were Evaluated According to Age

Study 204

- **Young Children, 37 months - 5 years**
  - Events assessed included fever, headache, fatigue, myalgia, arthralgia, nausea/vomiting and chills
- **Infants/Toddlers, 6-36 months**
  - Events assessed included fever, irritability, crying, sleepiness, and loss of appetite

Solicited Systemic Reactions within 7 Days After Dose 1 & 2

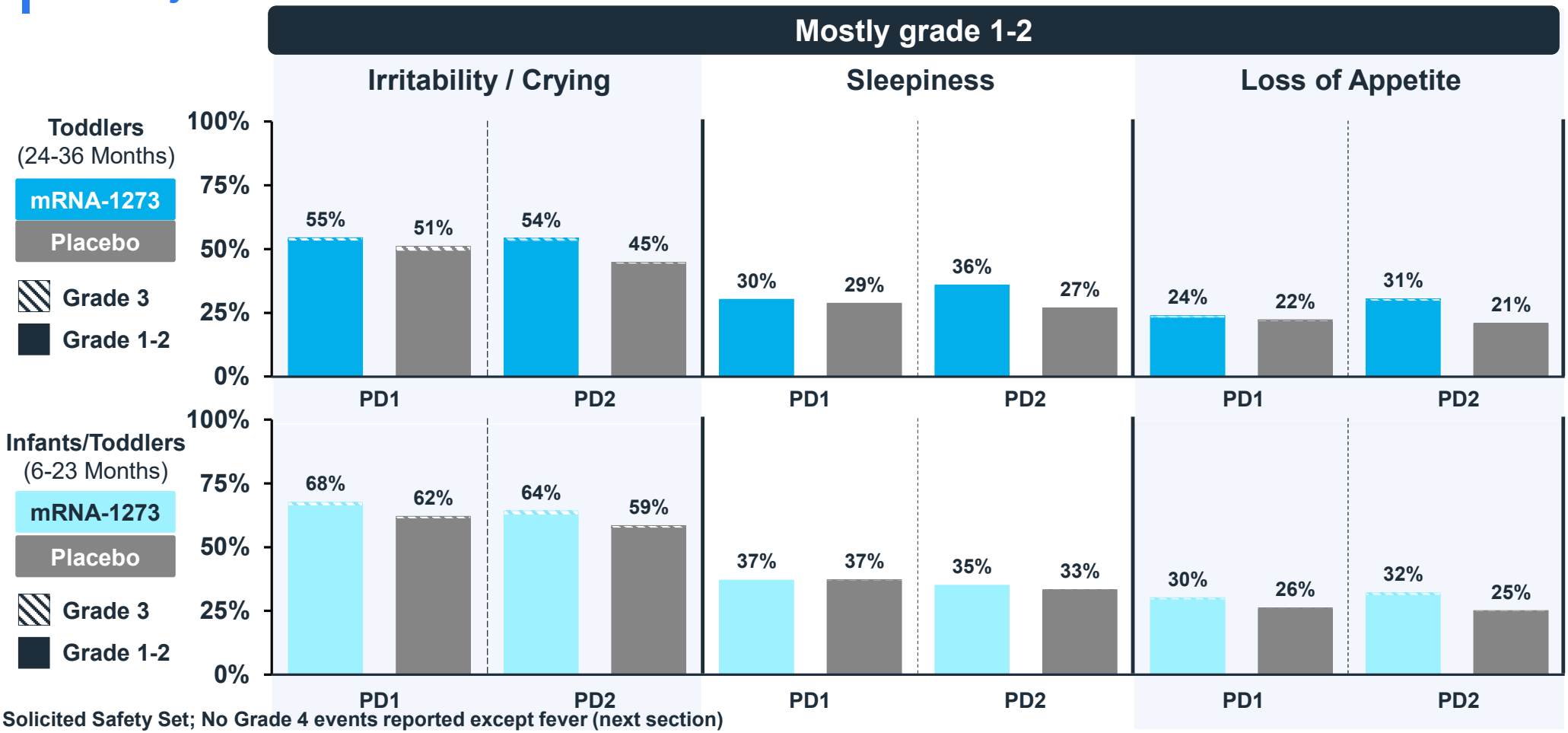
Study 204: Young Children (37 Months -5 Years), Pediatric Toxicity Scale



Solicited Safety Set; No Grade 4 events reported except fever (next section)

Solicited Systemic Reactions within 7 Days After Dose 1 & 2

Study 204: Infants/Toddlers (6-23 Months) & Toddlers (24-36 Months), Infant/Toddler Toxicity Scale



Solicited Safety Set; No Grade 4 events reported except fever (next section)

Fevers: Distribution of Temperatures Across Age Groups

Study 204: Children (6 Months - 5 Years)

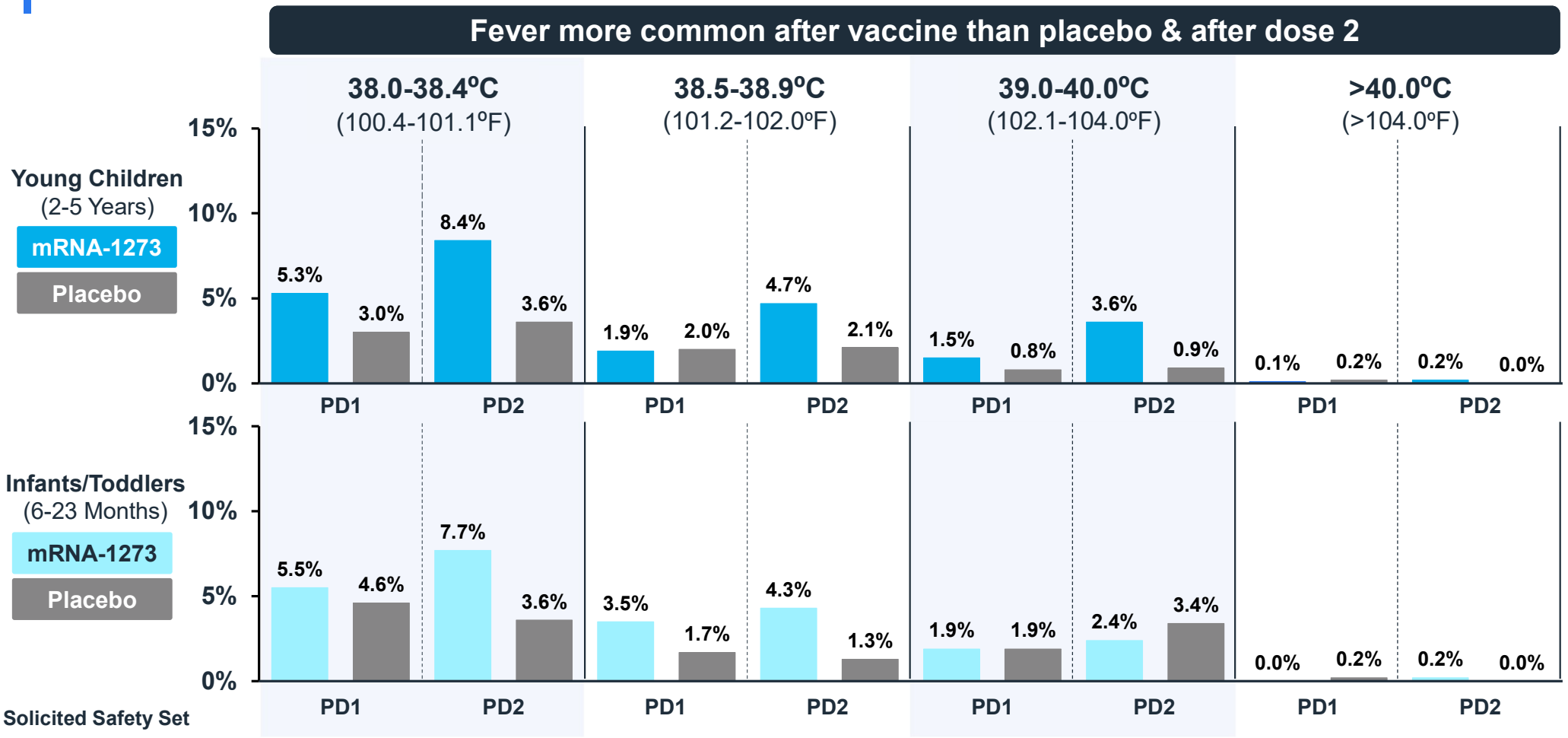
Fever After Any Dose	mRNA-1273	
	Young Children (2-5 Years) 25 µg N = 3,016	**Infants/Toddlers** (6-23 Months) 25 µg N = 1,758
Any Fever ≥ 38.0ºC (≥100.4ºF)	**23%**	**22%**
≥ 38.0 - 38.9ºC (100.4 – 102.0ºF)	**18%**	**18%**
≥ 39.0 - 40.0ºC (102.1 - 104ºF)	**4%**	**4%**
> 40ºC (>104ºF)	**0.4%**	**0.2%**

Solicited Safety Set

Maximum Temperatures within 7 Days After Dose 1 & 2

Study 204 (Part 2): Infants/Toddlers (6-23 Months) and Young Children (2-5 Years)

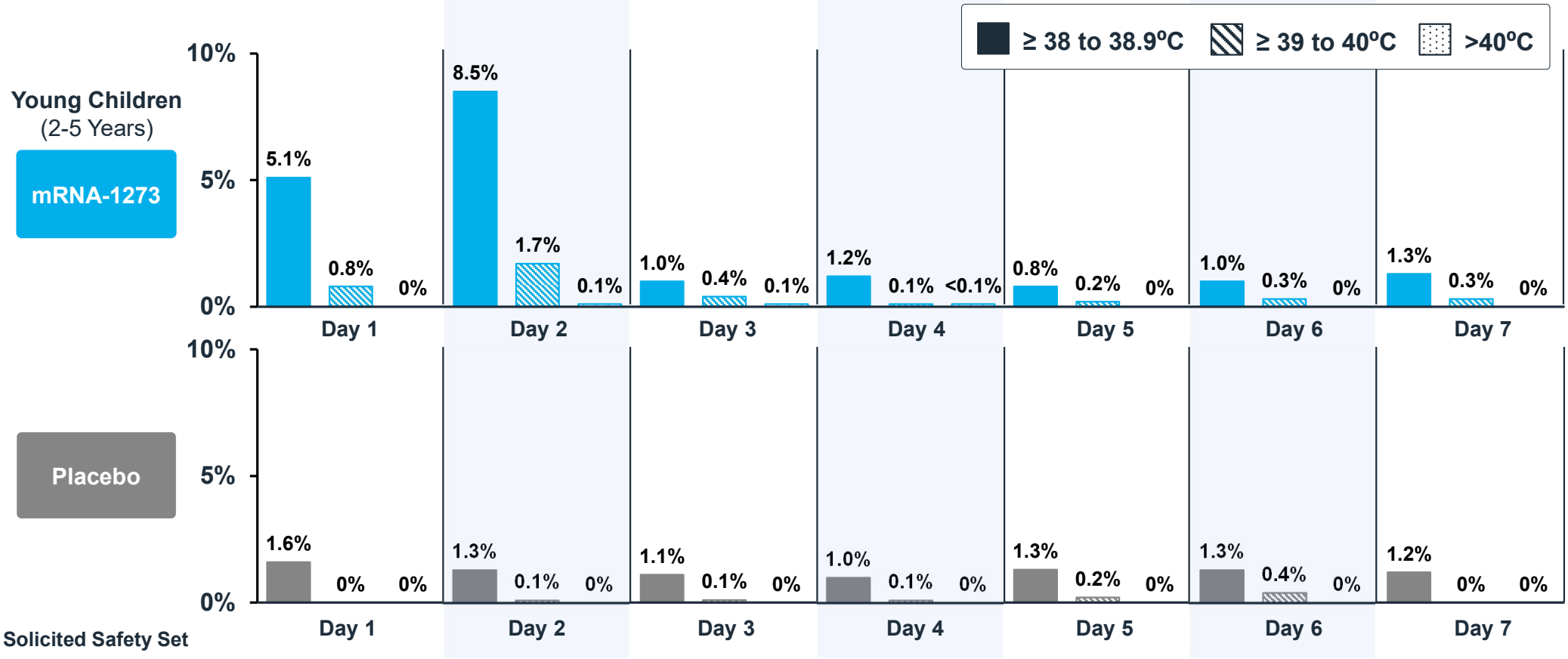
Fever more common after vaccine than placebo & after dose 2



Fevers by Day and Temperature, Post-Dose 2

Study 204 (Part 2): Young Children (2-5 Years)

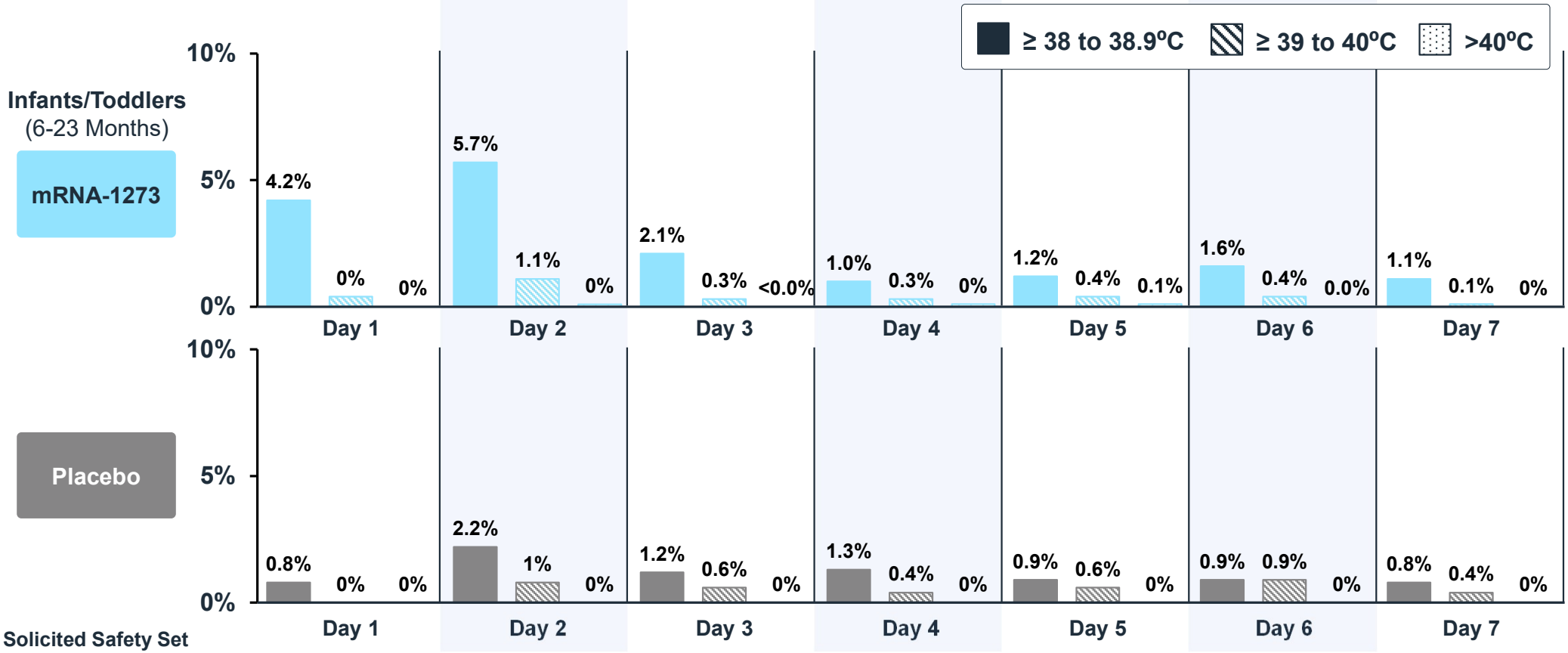
Most fevers occurred within 2 days of vaccination, median duration was 1 day



Fevers by Day and Temperature, Post-Dose 2

Study 204 (Part 2): Infants/Toddlers (6-23 Months)

Most fevers occurred within 2 days of vaccination, median duration was 1 day



Fevers (>40°C or >104°F) within 7 Days of Any Injection

Study 204: Infants/Toddlers (6-23 Months) and Young Children (2-5 Years)

	Young Children (2-5 Years) 25 µg		Infants/Toddlers (6-23 Months) 25 µg	
After Any Dose	**mRNA-1273** N = 3,016	**Placebo** N = 1,007	**mRNA-1273** N = 1,758	**Placebo** N = 585
Fever, % (n)	**0.4%** (11)	**0.2%** (2)	**0.2%** (4)	**0.2%** (1)

- Duration of peak temperature >40°C lasted <1 day
- 15 events in vaccine recipients
  - 6 had symptoms of concurrent viral infections
- One febrile seizure considered related to vaccination reported in a 17- month old 2 days postdose 1
  - Fever to 103.1ºF
  - Child developed a maculopapular rash 2 days after the febrile seizure
  - Received 2nd dose without event

Unsolicited Adverse Events

Study 204: Young Children (2-5 Years), Safety Set (Part 2), Up to 28 Days After Any Injection

3:1 Randomization (mRNA-1273:Placebo)	mRNA-1273 N = 3,031		Placebo N = 1,007	
	Any AE	Related to Vaccination	Any AE	Related to Vaccination
All	40%	9%	38%	8%
SAE	0.1%	0	<0.1%	0
Fatal	0	0	0	0
Medically Attended AEs	22%	1%	22%	0.3%
Leading to Discontinuation – Vaccine	0*	0*	0	0
Leading to Discontinuation - Study	0*	0*	0	0
Severe	0.7%	0.6%	0.9%	0.8%
AESI – Any	0.2%	<0.1%	<0.1%	<0.1%
AESI of MIS-C	0	0	0	0
AESI of Myocarditis/Pericarditis	0	0	0	0

*One event updated to reflect discontinuation after 1st dose post data cut
Serious Adverse Event (SAE), Multisystem Inflammatory Syndrome in Children (MIS-C), Adverse Event of Special Interest (AESI)

Unsolicited Adverse Events

Study 204: Infants & Toddlers (6-23 Months), Safety Set (Part 2), Up to 28 Days After Any Injection

3:1 Randomization (mRNA-1273:Placebo)	mRNA-1273 N = 1,761		Placebo N = 589	
	Any AE	Related to Vaccination	Any AE	Related to Vaccination
All	49%	17%	48%	12%
SAE	0.5%	<0.1%	0	0
Fatal	0	0	0	0
Medically Attended AEs	28%	1%	27%	0.5%
Leading to Discontinuation - Vaccine	<0.1%	<0.1%	0.2%	0
Leading to Discontinuation - Study	0	0	0.2%	0
Severe	1%	0.7%	0.7%	0.5%
AESI – Any	0.2%	0.1%	0	0
AESI of MIS-C	0	0	0	0
AESI of Myocarditis/Pericarditis	0	0	0	0

Serious Adverse Event (SAE), Multisystem Inflammatory Syndrome in Children (MIS-C), Adverse Event of Special Interest (AESI)

Prespecified Co-Primary Immunogenicity Endpoints of GMC Ratio and Seroresponse Met

Study 204 (Part 2): Infants/Toddlers (6-23 Months) and Young Children (2-5 Years) vs Study 301 Young Adults (18-25 Years)

Day 57 Analysis, Part 2 PsVNA ID50 assay	Study 204 **Infants/Toddlers** (6-23 Months) **mRNA-1273 (25 µg)** N = 230	Study 204 **Young Children** (2-5 Years) **mRNA-1273 (25 µg)** N = 264	Study 301 **Young Adults*** (18-25 Years) **mRNA-1273 (100 µg)** N = 295
GMC (Geometric Mean Titer) 95% CI	**1781** (1606, 1974)	**1410** (1274, 1561)	**1391** (1262, 1532)
GMC Ratio (Study 204 vs. 301) 95% CI	**1.28** (1.12, 1.47)	**1.01** (0.88, 1.17)	
Seroresponse, n/N (%) 95% CI	230/230 **(100%)** (98.4, 100)	261/264 **(98.9%)** (96.7, 99.8)	289/291 **(99.3%)** (97.5, 99.9)
Difference (Study 204 vs. 301) 95% CI	**0.7** (-1.0, 2.5)	**-0.4** (-2.7,1.5)	

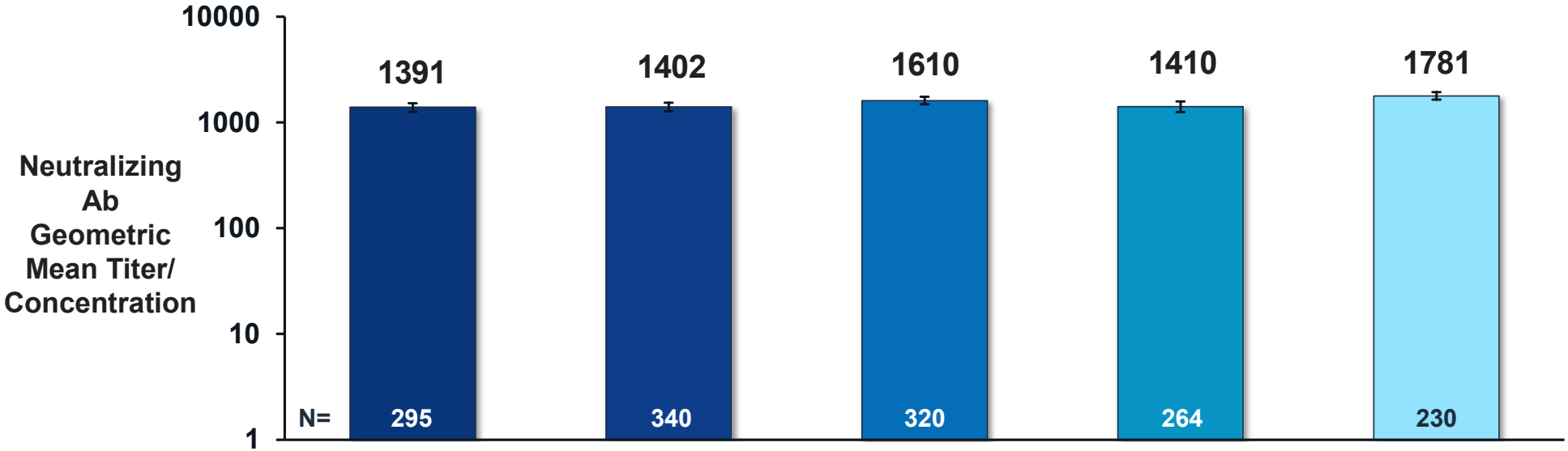
Success Criteria

GMC Ratio: Lower 95% CI ≥ 0.67 & Point Estimate ≥ 0.8

Difference in Seroresponse Rate: 95% CI > -10% & Point Estimate > -5%

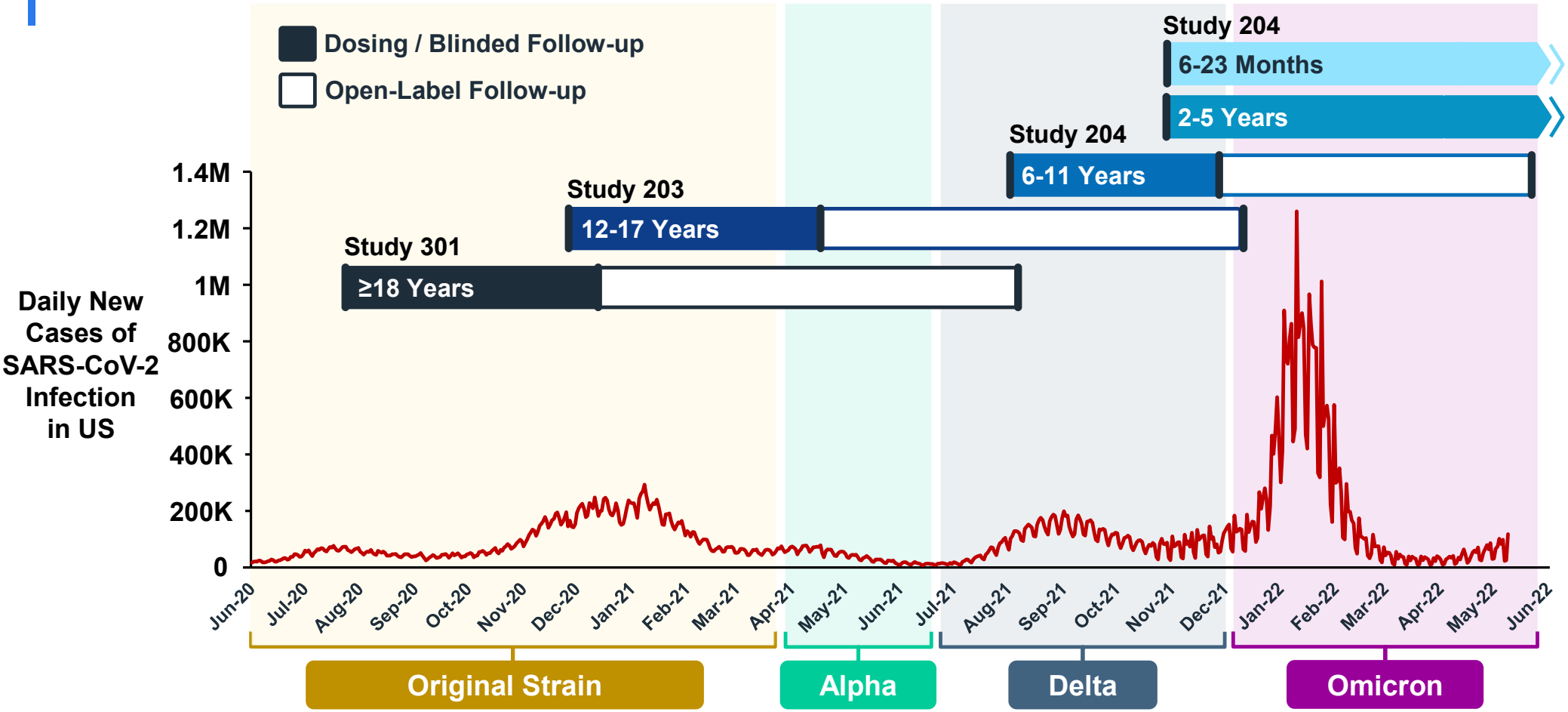
Per Protocol Immunogenicity Subset; *Samples tested at PPD laboratories

Immunogenicity of mRNA-1273 1 Month After a 2-Dose Primary Series, Consistent Across All Age Groups



	Study 301 Young Adults (18-25 Years)	Study 203 Adolescents (12-17 Years)	Study 204 Children (6-11 Years)	Study 204 Young Children (2-5 Years)	Study 204 Infants/Toddlers (6-23 Months)
Dose	100 µg	100 µg	50 µg	25 µg	25 µg
Geometric Mean Ratio (vs Young Adults)		1.1	1.2	1.01	1.28

Clinical Studies Conducted During Different Periods of COVID-19 Pandemic



https://covid.cdc.gov/covid-data-tracker/#trends_dailycases

Efficacy Against Symptomatic COVID-19 During Omicron Period

Study 204 (Part 2): Young Children (2 - 5 Years), Per Protocol, ≥14 Days Post-Dose 2

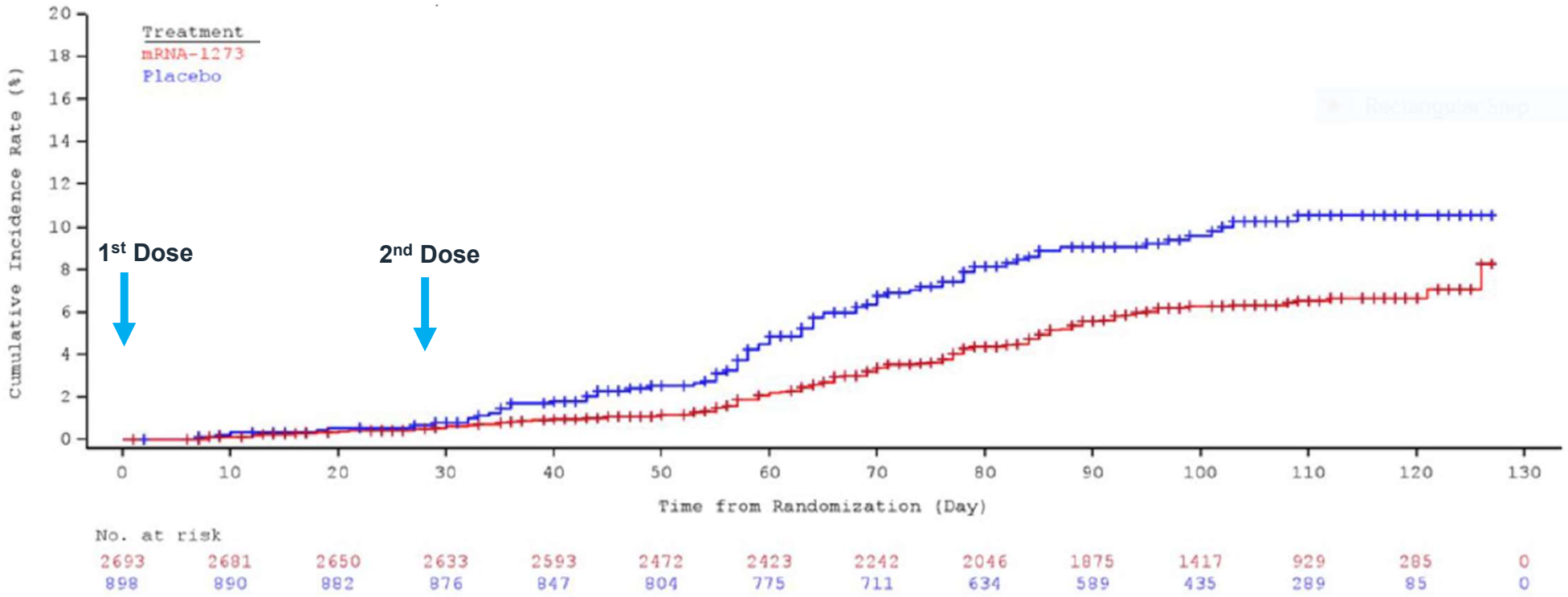
	mRNA-1273 25 µg	Placebo
CDC case definition of COVID-19		
Cases, n/N (%)	119 / 2,594 (4.6%)	61 / 858 (7.1%)
Incidence rate per 1000 person-years (95% CI)	175 (145, 209)	277 (212, 356)
VE (%) based on incidence rate (95% CI)	**36.8%** (12.5, 54.0)	
301 case definition of COVID-19		
Cases, n/N (%)	71 / 2,594 (2.7%)	43 / 858 (5.0%)
Incidence rate per 1000 person-years (95% CI)	104 (81, 131)	194 (140, 261)
VE (%) based on incidence rate (95% CI)	**46.4%** (19.8, 63.8)	

CDC case definition: 1 systemic or 1 respiratory symptom + positive RT-PCR
301 case definition: 2 systemic or 1 respiratory symptom + positive RT-PCR

71 days median follow-up post-dose 2 in Part 2 for both groups combined

Cumulative Incidence Curve of COVID-19 Starting after Dose 1 (CDC Case Definition)

Study 204 (Part 2): Young Children (2 - 5 Years), mITT1 Set



Efficacy Against Symptomatic COVID-19 During Omicron Period

Study 204 (Part 2): Infants / Toddlers (6 - 23 Months), Per Protocol, ≥14 Days Post-Dose 2

	mRNA-1273 25 µg	Placebo
CDC case definition of COVID-19		
Cases, n/N (%)	51 / 1,511 (3.4%)	34 / 513 (6.6%)
Incidence rate per 1000 person-years (95% CI)	138 (103, 182)	280 (194,391)
VE (%) based on incidence rate (95% CI)	**50.6%** (21.4, 68.6)	
301 case definition of COVID-19		
Cases, n/N (%)	37 / 1,511 (2.4%)	18 / 513 (3.5%)
Incidence rate per 1000 person-years (95% CI)	100 (70, 138)	146 (87, 231)
VE (%) based on incidence rate (95% CI)	**31.5%** (-27.7, 62.0)	

CDC case definition: 1 systemic or 1 respiratory symptom + positive RT-PCR
301 case definition: 2 systemic or 1 respiratory symptom + positive RT-PCR

71 days median follow-up post-dose 2 in Part 2 for both groups combined

Sensitivity Analyses of Efficacy Against Symptomatic COVID-19

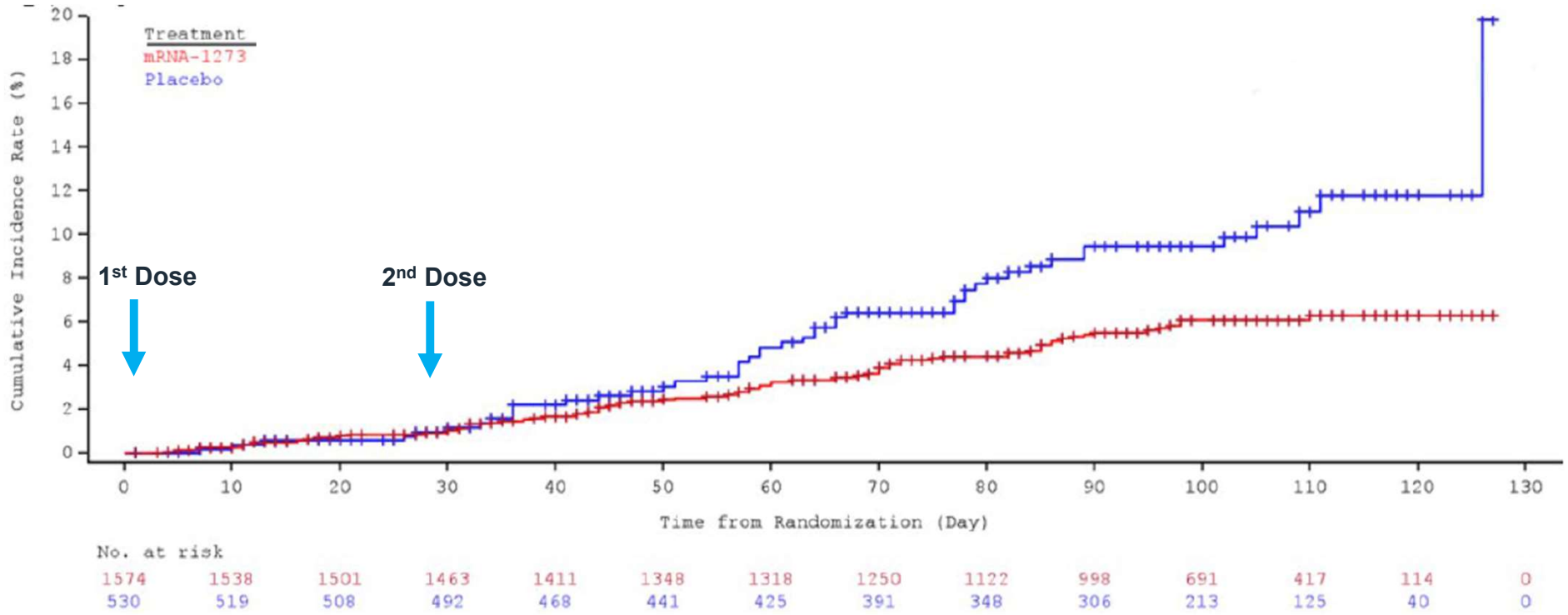
Study 204 (Part 2): Infants / Toddlers (6 - 23 Months), Per Protocol, ≥14 Days Post-Dose 2

	mRNA-1273 25 µg	Placebo
CDC case definition of COVID-19		
Cases, n/N (%)	74/1,512 (4.9%)	52/513 (10.1%)
Incidence rate per 1000 person-years (95% CI)	202	434
VE (%) based on incidence rate (95% CI)	**53.5%** (32.4, 67.9)	
301 case definition of COVID-19		
Cases, n/N (%)	51/1,512 (3.4%)	30/513 (5.8%)
Incidence rate per 1000 person-years (95% CI)	138	246
VE (%) based on incidence rate (95% CI)	**43.7%** (8.5, 64.8)	

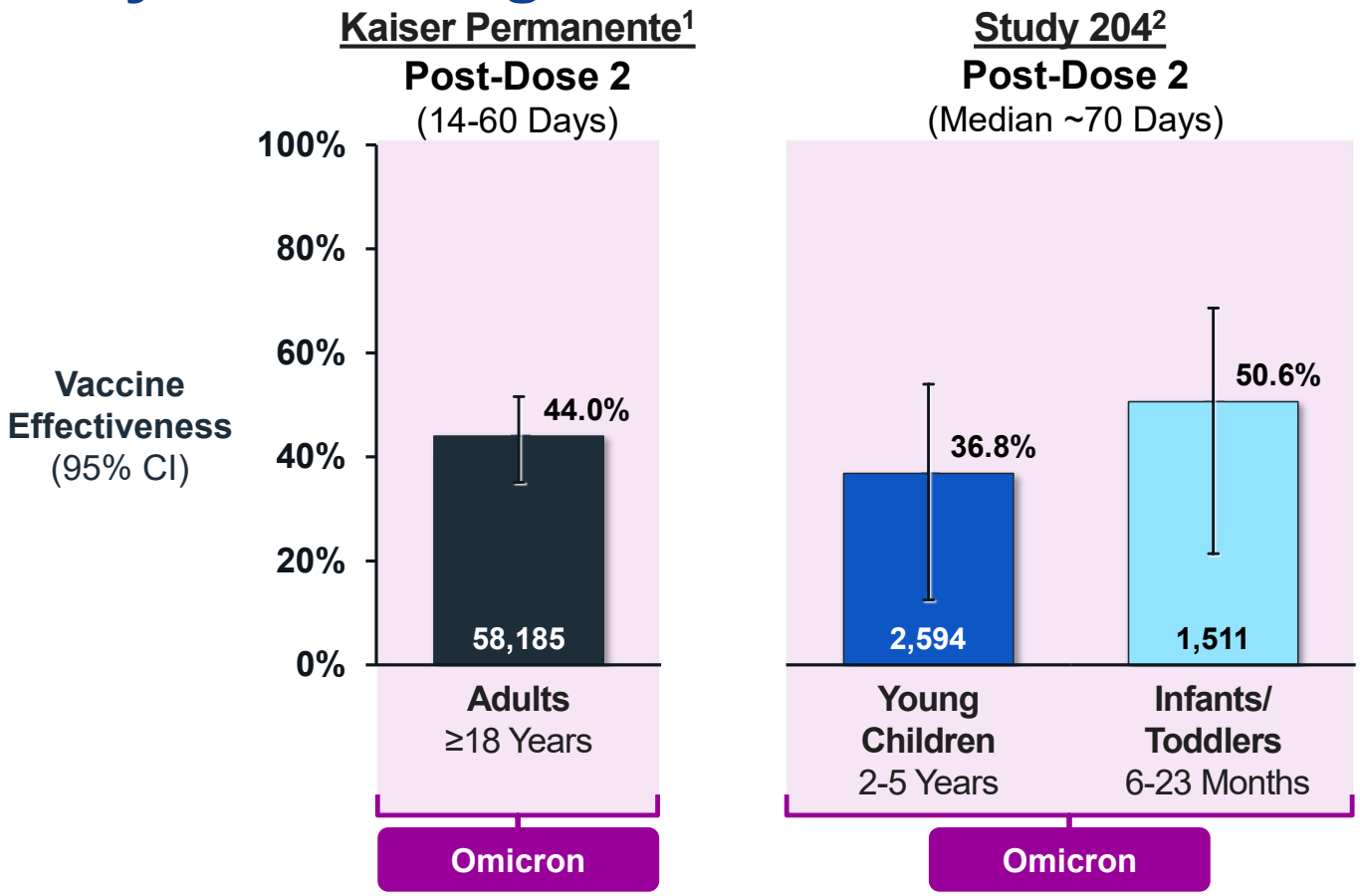
CDC case definition: 1 systemic or 1 respiratory symptom + **any positive COVID-19 test (including home tests)**
301 case definition: 2 systemic or 1 respiratory symptom + **any positive COVID-19 test (including home tests)**

Cumulative Incidence Curve of COVID-19 Starting after Dose 1 (CDC Case Definition)

Study 204 (Part 2): Infants & Toddlers (6-23 Months), miTT1 Set

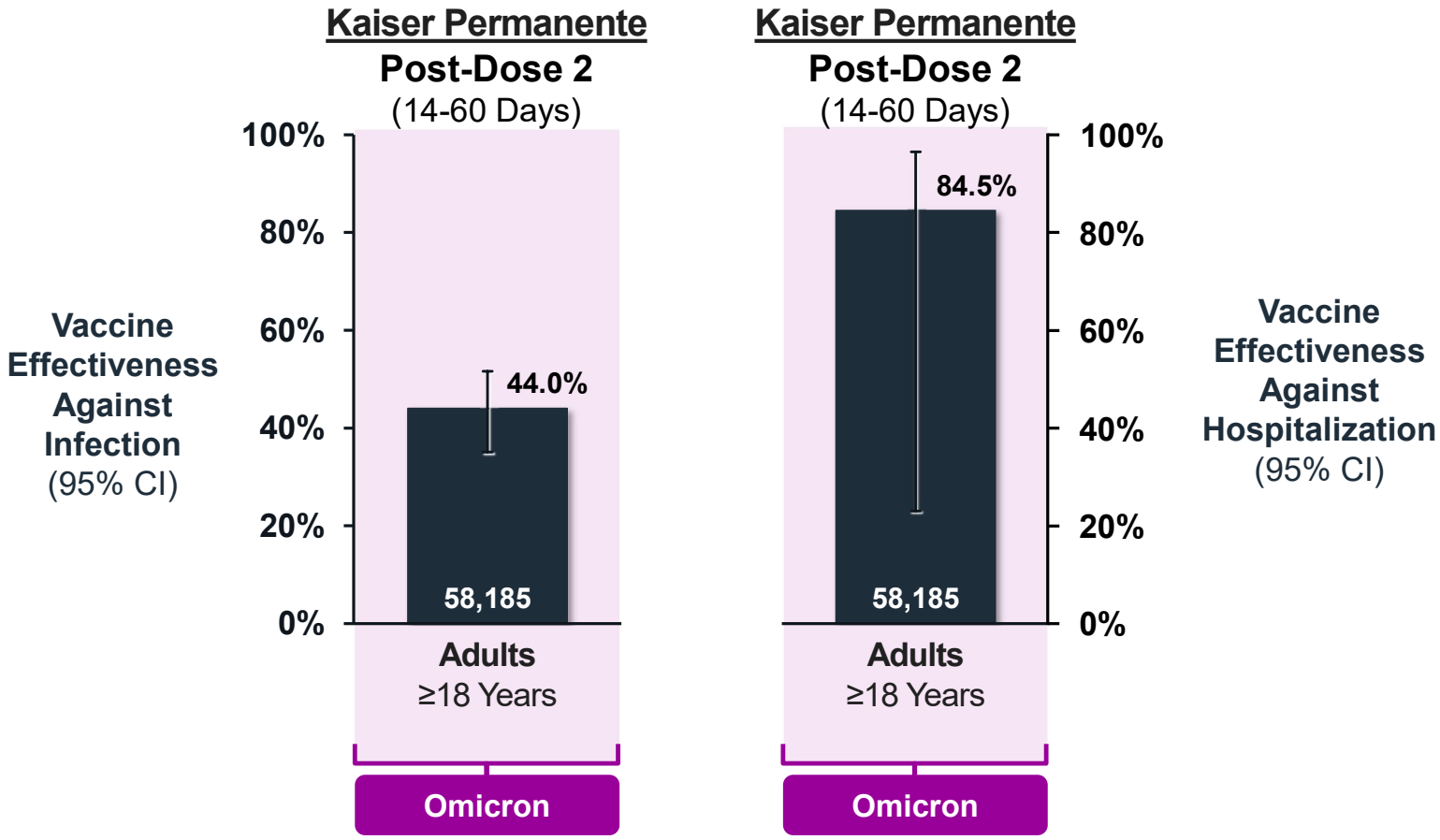


Real-World Effectiveness (Kaiser Permanente) Compared to Study 204 During Omicron Period



1. Tseng HF et al, 2022; Vaccine Effectiveness against infection
2. Study 204 – Vaccine Efficacy based on CDC Definition

mRNA-1273 Remains Highly Effective Against Hospitalization During Omicron Period in Adults



Tseng HF et al, 2022

Study 204: Ongoing Follow-up and Evaluation of Infants, Toddlers and Young Children

- All participants followed for safety for 12 months after last dose
- All participants will be offered a booster dose
  - mRNA-1273 (prototype vaccine)
  - mRNA-1273.214 (Omicron-containing vaccine)

Summary of Moderna COVID-19 Vaccine

Study 204: Infants, Toddlers and Young Children (6 Months - 5 Years)

Safety (Primary Objective)	▪ mRNA-1273 was generally well-tolerated in this age group
	  ▪ Local and systemic reactions lower than older children and adults
	  ▪ Fever in ~25% of participants, mostly grade 1-2, short duration
	▪ 1 related SAE of fever/seizure within 28 days

Immunogenicity (Primary Objective)	▪ Pre-specified immunogenicity objectives met
	▪ Vaccine immunogenic, GMCs and seroresponse rates non-inferior to young adults
	  ▪ *Children (2-5 years):* GMC ratio 1.01 & difference in seroresponse rates -0.4
	  ▪ *Infants/Toddlers (6-23 months):* GMC ratio 1.28 & difference in seroresponse rates 0.7
	▪ Vaccine effectiveness successfully inferred based on immunogenicity

Efficacy (Secondary Objective)	▪ Demonstrated efficacy against COVID-19, 14 days after dose 2, during Omicron period
	  ▪ *Children (2-5 years):* 36.8% (CDC definition) & 46.4% (Study 301 definition)
	  ▪ *Infants/Toddlers (6-23 months):* 50.6% (CDC definition) & 31.5% (Study 301 definition)
	▪ Consistent with adult effectiveness against Omicron
	▪ Boosters are under evaluation

THANK YOU to Our Study Collaborators, Investigators, and Participants

- All investigators
- Study site personnel
- BARDA
- NIH & COV-PN
- Most importantly, the infants, toddlers, and children who participated in these trials & their families