	Vaccine 1 **Sinovac**	**Vaccine 2** **Moderna**	**Vaccine 3** **Pfizer**	**Vaccine 4** **Astra/Oxford**
Reviewers	Thunyarat, Ronny, Grace	Atiporn, Amarit, Tunlanut, Pokket	Kunlawat, Sureerat, Passara	Patarawan, Chuenkamon, Songporn
Vaccine's other name(s)	CoronaVac	mRNA-1273	BNT162b2 mRNA Covid-19 Vaccine	ChAdOx1 nCoV-19 vaccine
Technique of vaccine (i.e. mRNA/…)	Inactivated vaccine	mRNA vaccine	mRNA vaccine	Viral vector
Planned dosage and duration between dose	2 doses, 14 days apart	2 doses, 28 days apart	2 doses, 21 days apart	2 doses, 4-12 weeks apart (aimed 4 weeks)
Cost per dose	200 CNY ($30.86)	$32-37	$19.50	$2-4
Storage/Logistic	2 – 8 °C	-25°C to -15°C for transport 2 – 8 °C for up to 30 days	-70°C ± 10°C for up to 10 days unopened for transport 2 – 8 °C for up to 5 days	2 – 8 °C for up to 6 months
Summary of Phase I / Phase II study result (Immunogenicity)	Phase I The seroconversion of neutralising antibodies Day 14 of 0-14 cohort Medium: 11/24 (46%) High: 12/24 (50%) Placebo: 0/24 (0%) Day 28 of 0-28 cohort Medium: 20/24 (83%) High: 19/24 (79%) Placebo: 1/24 (4%) Phase II	2 publications from phase I study: 1. 18-55 years of age (45 participants): 2 doses of 25 μg, 100 μg, or 250 μg 2. 56 years of age or higher (40 participants): 2 doses of 25 μg, or 100 μg Results: Anti-S-2P geometric mean titer was higher in higher doses.	195 participants randomized to receive placebo or either of 2 vaccines, each with 4 dosages local AEs: injection site pain, redness, swelling Systemic AEs: - fever 18-55 y/o: 17% 65-85 y/o: 8% - fatigue 18-55 y/o: 75% 65-85 y/o: 42% - chills 18-55 y/o: 58% 65-85 y/o: 17% S1-Binding IgG (U/ml)	Phase I 1077 participants Age 35 (28-44) Neutralising antibody 32 (91%) of 35 participants after a single dose (MNA80) 9 (100%) of 9 at day 42 after a booster dose (MNA80) Phase II 560 participants Age 18-76 y >99% of 209 boosted participants had neutralising antibody responses after 14d

	The seroconversion of neutralising antibodies Day 14 of 0-14 cohort Medium: 109/118 (92%) High: 117/119 (98%) Placebo: 2/60 (3%) Day 28 of 0-28 cohort Medium: 114/117 (97%) High: 118/118 (100%) Placebo: 0/59 (0%)	250 μg dosage associated with severe adverse event in 3 participants. Conclusion: 100 μg has comparable efficacy and lower adverse effect.	18-55 y/o: 9136 on day 28, 8147 on day 35 65-85 y/o: 7985 on day 27, 6014 on day 35 50% Neutralization Titer 18-55 y/o: 361 on day 28, 163 on day 35 65-85 y/o: 149 on day 27, 206 on day 35	No serious adverse events
Phase III research				
Baseline characteristics of participants				
Countries of study	**For Sinovac ONLY PRELIMARY PROTOCOL AND UNOFFICIAL RESULTS WERE REPORTED** Brazil Chile China Indonesia Turkey	99 sites in US	152 sites worldwide (United States, 130 sites; Argentina, 1; Brazil, 2; South Africa, 4; Germany, 6; and Turkey, 9)	UK and Brazil (South Africa)
Prevalence of COVID-19 in the countries of conducting the study	Brazil 39,487.75 per million Chile 34,587.40 per million China 67.82 per million Indonesia 3,226.11 per million Turkey 28,137.79 per million	Approximately 23 million cases since January 2020. The first dose of vaccine in phase III was delivered between July to October 2020.	Total patients/ 1 M - United States 73,198 - Argentina 39,452 - Brazil 39,632 - Turkey 28,063 - Germany 24,290 - South Africa 22,200 Pooled prevalence 64,279 cases /1M	UK 4.8% Brazil 3.9% (South Africa 2.2%)
Total numbers of participants	(Planned) Brazil 13,060 Chile 2,300	30,420 participants	43,548 participants	11,636 participants for efficacy COV002 (UK): 7,548 COV003 (Brazil): 4,088

	China 1040 Indonesia 1620 Turkey 13,000			23,784 participants for safety
Age (year), Median (Range)	(Planned) Brazil 18-59; 60+ Chile 18+ China 26-45; 18-59; 60+ Indonesia 18-59 Turkey 18-59	51.4 (18-95) years - 18 to < 65 years, not at risk of severe COVID-19: 58.6% - 18 to < 65 years, at risk of severe COVID-19: 16.7% - ≥ 65 years: 24.8%	52 (16–91) years	18-55 years - > 55 years: 3.8%
Race	(Planned)	White 79.2%, Black 10.2%, Asian 4.6%	White 82.9%, Asian 4.3%	White 82.7%, Asian 4.4%, Black 4.1%
Comorbidities data	(Planned)	- Chronic lung disease: 4.8% - Significant cardiac disease: 4.9% - Severe obesity: 6.7% - Diabetes: 9.5% - Liver disease: 0.6% - HIV: 0.6%	20.5% had at least one coexisting condition: - Chronic lung disease 7.8% - Obesity 35.1% - Diabetes without chronic complication 7.8% - Any malignancy: 3.7%	- Cardiologic disease: 7-12% - Respiratory disease: 10-13% - Diabetes: 1-3%
Percentage of healthcare workers in partipants	Brazil: 100% Turkey: 10%	25.4%	Not reported	79.7%
Percentage of pregnancy in participants	0	0	0	0
Percentage of children in participants	0	0	100 participants 12-15 years of age of 43,355 participants were analyzed in mITT	0
Follow-up duration (mean/median)	(Planned to follow up 6 months to 1 year after 2nd dose)	64 days after the 2nd dose (range, 0-97 days)	2 months after the second dose	3.4 months (first dose) 2 months (second dose)
VALIDITY				

Appraisal using User's Guide	Randomized: Yes Concealment: Yes Intention-to-treat: ? Baseline characteristics similarity between groups: ? Blinding of patients: Yes Blinding of clinician: Yes Blinding of assessors: Yes Follow-up complete: (ongoing)	Randomized: Yes Concealment: Yes **Intention-to-treat: *Per protocol and modified intention-to-treat** Baseline characteristics similarity between groups: Yes Blinding of patients: Yes Blinding of clinician: Yes Blinding of assessors: Yes **Follow-up complete: No (ongoing)**	Randomized: Yes Concealment: Yes **Intention-to-treat: *Modified intention-to-treat** Baseline characteristics similarity between groups: Yes Blinding of patients: Yes Blinding of clinician: Yes **(Not blind to administrative staff)** Blinding of assessors: Yes **Follow-up complete: no (14.6% loss to follow-up)**	Single blinded (participants) Web platform concealment **Protocol violation: half dose** Randomization: Yes Concealment: Yes Intention-to-treat: As treated Baseline similar: Yes Blinding patients: Yes Blinding of clinician: No Blinding of assessors:? independent **Follow-up complete: on going**
RESULT (Please state actual number of participants and relative & absolute risks between vaccinated and placebo group)				
Prevention of asymptomatic COVID infection	(Unofficial report from Brazil only) Vaccine group: 58 out of 4653 Placebo group: 160 out of 4,599 **RRR 64.2 51.7-73.4**	No information	No information	Vaccine group: 29 out of 3,288 Placebo group: 40 out of 3,350 **RRR 27.3 (-17.2,54.9)** Subgroup LD/SD 7/1120 vs 17/1127 **RRR 58.9(1.0, 82.9)** Subgroup SD/SD 22/2168 vs 23/2223 **RRR 3.8 (-72.4, 46.3)**
Prevention of symptomatic COVID infection	(Unofficial report from Brazil, Indonesia, Turkey) Vaccine group: 17 out of 6,215 Placebo group: 75 out of 5,979 **RRR 78.2 (63.1-87.1)** ARR 1 NNT 101.95 (77.43-149.19)	Vaccine group: 11 out of 14,134 Control group: 185 out of 14,073 **RRR 94.1 (89.3-96.8)** ARR 0.012 NNT 83 **(per protocol)** Vaccine group: 19 out of 14,550	Vaccine group: 8 out of 18,198 Placebo group: 162 out of 18,325 **RRR 95.0 (89.9, 97.6)** ARR 0.0084 (0.0098, 0.0070) NNT 120 (103, 143)	Vaccine group: 30 out of 5,807 Placebo group: 101 out of 5,829 **RRR 70.4 (54.8, 80.6)** ARR 0.012 NNT 84 Subgroup LD/SD 3/1367 vs 30/1374 **RRR 90.0 (67.4 ,97.0)** RR 0.002/0.022 = 0.09

		Control group: 269 out of 14,598 **RRR 93.0 (88.9-95.6)** ARR 0.017 NNT 59 **(modified ITT)**		ARR 0.022-0.002 = 0.02 Subgroup SD/SD 27/4440 vs 71/4455 **RRR 62.1 (41.0, 75.7)** RR 0.006/0.016 = 0.38
Prevention of moderate to severe COVID disease: 1. Hospital admission rate 2. Patients requiring oxygen therapy rate 3. ICU admission rate 4. Mortality rate	(Only hospitalized rate were available) 1. 100% Vaccine = 0/6215 = 0.00% Placebo = 13/5979 = 0.002%	1. 100% Vaccine = 0/13934 = 0.00% Placebo = 9/13883 = 0.06% 2. 100% Vaccine = 0/13934 = 0.00% Placebo = 28/13883 = 0.02% 3. No information 4. Vaccine 6/15184 = 0.039 % Placebo 7/15165 = 0.046 %	Composited outcome of clinical signs at rest that are indicative of severe systemic illness; respiratory failure; evidence of shock; significant acute renal, hepatic, or neurologic dysfunction; admission to an intensive care unit; or death. Vaccine group: 1 out of 18,198 Placebo group: 3 out of 18,325 RRR 66.4 (-222.7, 96.5) ARR 0.0001 NNT 9,195 (3696, -)	1. 100% for hospitalization after 21 days Vaccine group: 0 out of 12,021 Control group: 10 out of 11,724 2. 100% prevention Vaccine group: 0 out of 12,021 Control group: 10 out of 11,724 3. 100% prevention Vaccine group: 0 out of 12,021 Control group: WHO score > 6: 2 out of 11,724 4. 100% prevention Vaccine group 0 out of 12,021 Control group: 1 out of 11,724
Were subgroup of result in elderly, pregnant, and children done? and how large is the efficacy?	Pregnant: Not included Children: Not included Elderly: no results yet (Brazil & China)	Pregnant: Not included Children: Not included Age (Per-protocol) - Adult 18 to < 65: 95.6% (95%CI, 90.6%-97.9%) - Elderly ≥ 65: 86.4% (95%CI, 61.4%-95.2%) At risk of severe COVID-19:	Pregnant: Not included Children: Not included Age - Older adults > 55 years group: 93.7% (80.6, 98.8) - Elderly ≥ 65 years group: 94.7% (66.7–99.9) - Elderly ≥ 75 years group: 100% (−13.1–100.0)	No Wait for full data analysis

		- Yes: 90.9% (95%CI, 74.7%-96.7%) - No: 95.1% (95%CI, 89.6%-97.7%)	Any malignancy: 75.7% (-145.8, 99. 5) Cardiovascular: 100.0% (-0.8, 100.0) Chronic pulmonary disease: 93.0% (54.1, 99.8) Diabetes: 94.7% (66.8, 99.9) Obese (BMI≥30.0 kg/m2): 95.4% (86.0, 99.1)	
Vaccine-related adverse events of vaccine group and placebo group	Brazil Both arm (n=7913) 6803 (87.9%) after 1st dose 2722 (63.1%) after 2nd dose Indonesia Vaccine arm (n=405) 245 (60.5%) after 1st dose 206 (51.9%) after 2nd dose Turkey Systemic AE in vaccine arm 373 (of 603; 61.9%) after 1st dose 180 (of 1221; 14.7%) after 2nd dose	**Solicited adverse events** At the injection site occurred more frequently in the mRNA-1273 group than placebo. First dose 84.2% vs 19.8% Second dose 88.6% vs 18.8% Mainly pain. Systemic adverse events First dose 54.9% vs 42.4% Second dose 79.4% vs 36.5% most common: fatigue, followed by headache, myalgia, arthralgia, chills, nausea/vomiting, and fever Notice that adverse event occurred more common among younger participants than among older participants **Unsolicited adverse events** Overall 23.9% vs 21.6%	- The most common solicited adverse reactions were injection site reactions (84.1%), fatigue (62.9%), headache (55.1%), muscle pain (38.3%), chills (31.9%), joint pain (23.6%), fever (14.2%). - Serious adverse events was <0.5%. Four related serious adverse events were reported among BNT162b2 recipients (shoulder injury related to vaccine administration, right axillary lymphadenopathy, paroxysmal ventricular arrhythmia, and right leg paresthesia).	Serious adverse events Vaccine group: 79/12021 (0.65%) Control group: 89/11724 (0.76%) (ARR -0.001) Transverse myelitis (one possible related to intervention)
Epidemiologists' notes			The final analysis uses a success boundary of 98.6% for probability of vaccine efficacy greater than 30% to	*LD/SD = first half dose & second standard dose, SD/SD = two standard doses

			compensate for the interim analysis and to control the overall type 1 error rate at 2.5%. Moreover, primary and secondary efficacy end points are evaluated sequentially to control the familywise type 1 error rate at 2.5%. Descriptive analyses (estimates of vaccine efficacy and 95% confidence intervals) are provided for key subgroups.	