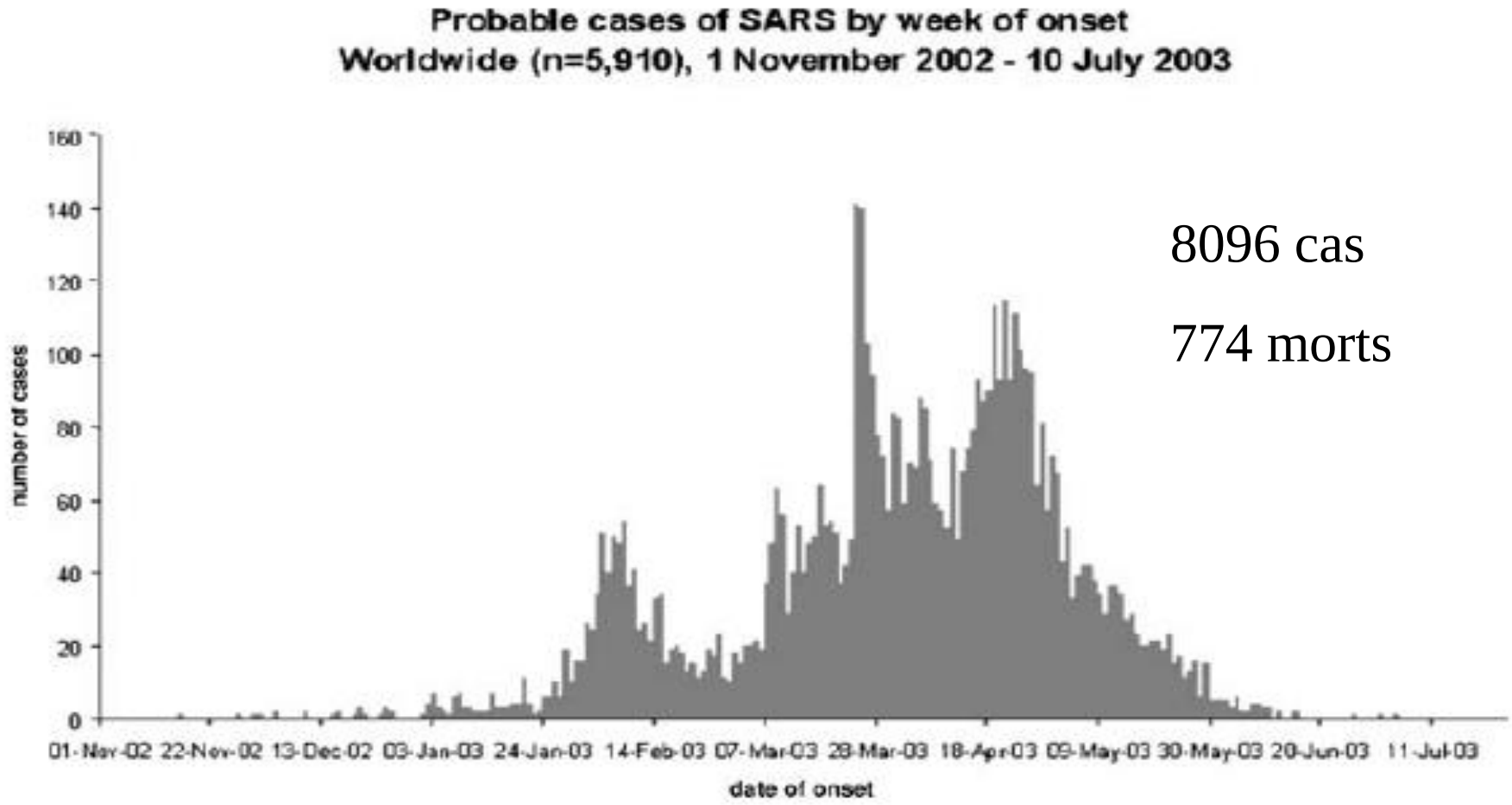
Les vaccins contre la Covid-19

Olivier Epaulard
Infectiologie
CHU Grenoble Alpes

25 février 2021

Un 1er coronavirus : 2003 : SARS



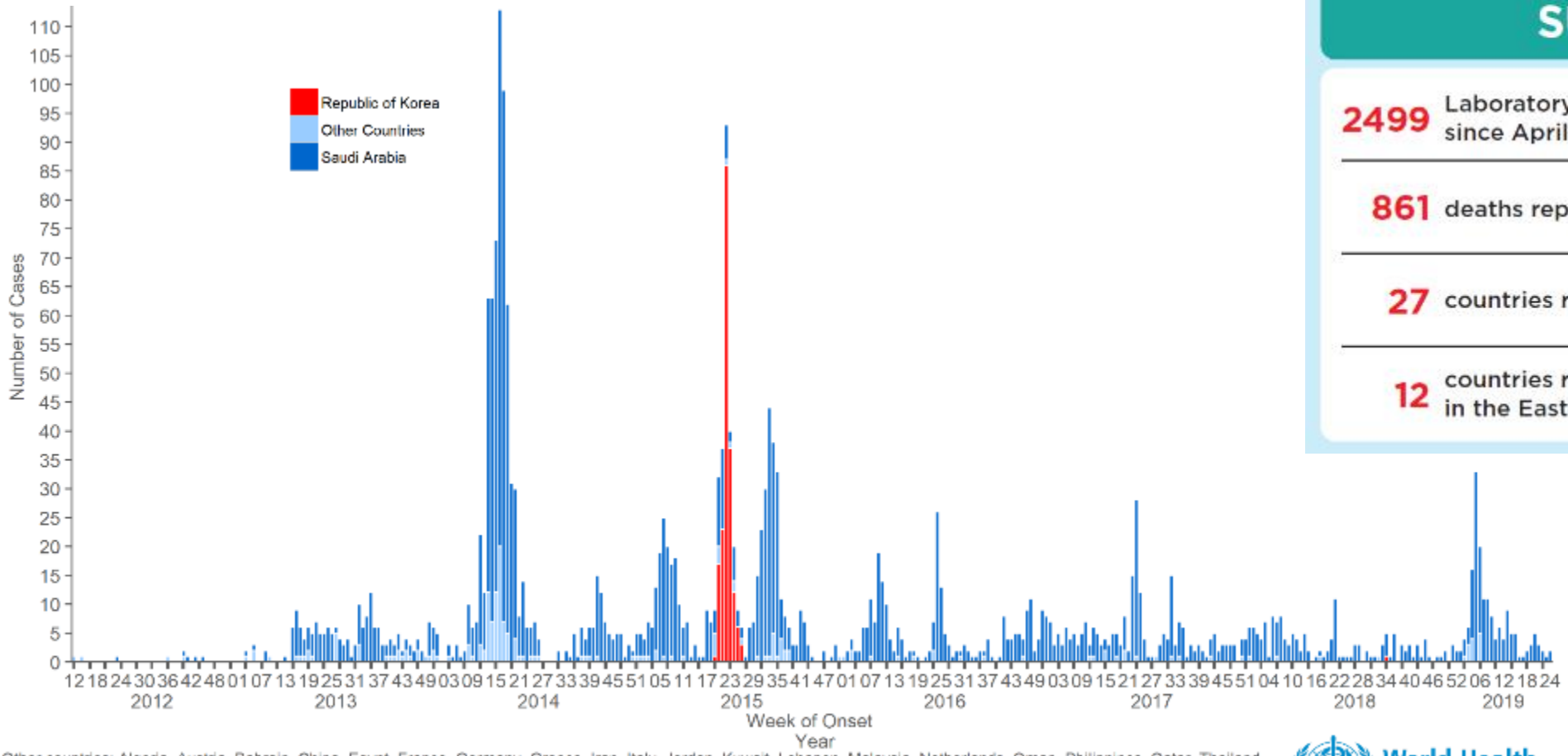
8096 cas

774 morts

Skowronski, ann rev med 2005

Un 2ème coronavirus épidemique, 2012: MERS-Cov

(*middle-eastern respiratory syndrom*)



Other countries: Algeria, Austria, Bahrain, China, Egypt, France, Germany, Greece, Iran, Italy, Jordan, Kuwait, Lebanon, Malaysia, Netherlands, Oman, Philippines, Qatar, Thailand, Tunisia, Turkey, United Arab Emirates, United Kingdom, United States of America, Yemen

Please note that the underlying data is subject to change as the investigations around cases are ongoing. Onset date estimated if not available.

World Health Organization

Un 3ème coronavirus : 2019-nCov *puis* SARS-CoV-2

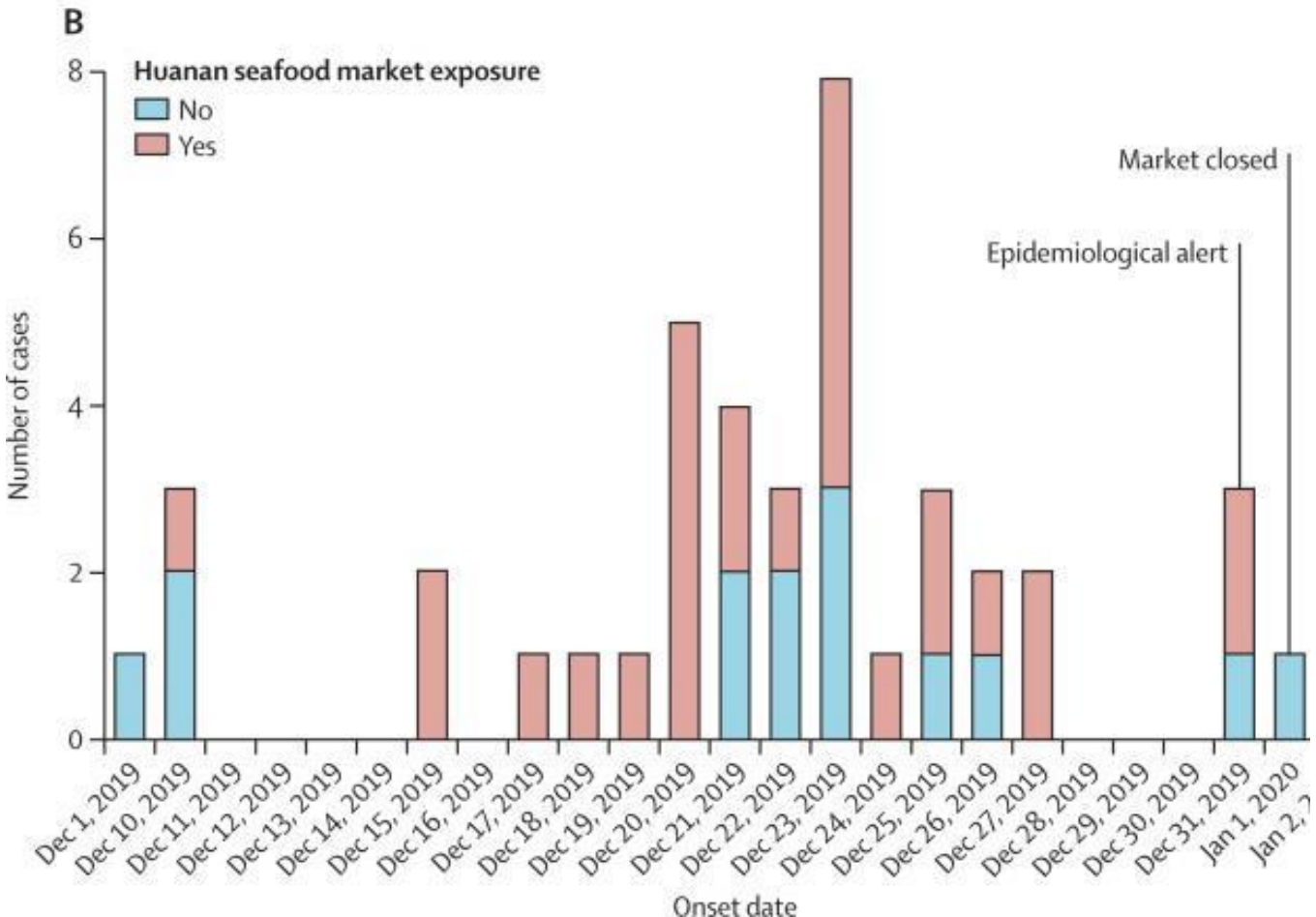
Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China

Chaolin Huang, Yeming Wang*, Xingwang Li*, Lili Ren*, Jianping Zhao*, Yi Hu*, Li Zhang, Guohui Fan, Jiuyang Xu, Xiaoying Gu, Zhenshun Cheng, Ting Yu, Jiaan Xia, Yuan Wei, Wenjuan Wu, Xuelei Xie, Wen Yin, Hui Li, Min Liu, Yan Xiao, Hong Gao, Li Guo, Jungang Xie, Guangfa Wang, Rongmeng Jiang, Zhancheng Gao, Qi Jin, Jianwei Wang†, Bin Cao†*

Summary

Background A recent cluster of pneumonia cases in Wuhan, China, was caused by a novel betacoronavirus, the 2019 novel coronavirus (2019-nCoV). We report the epidemiological, clinical, laboratory, and radiological characteristics and treatment and clinical outcomes of these patients.

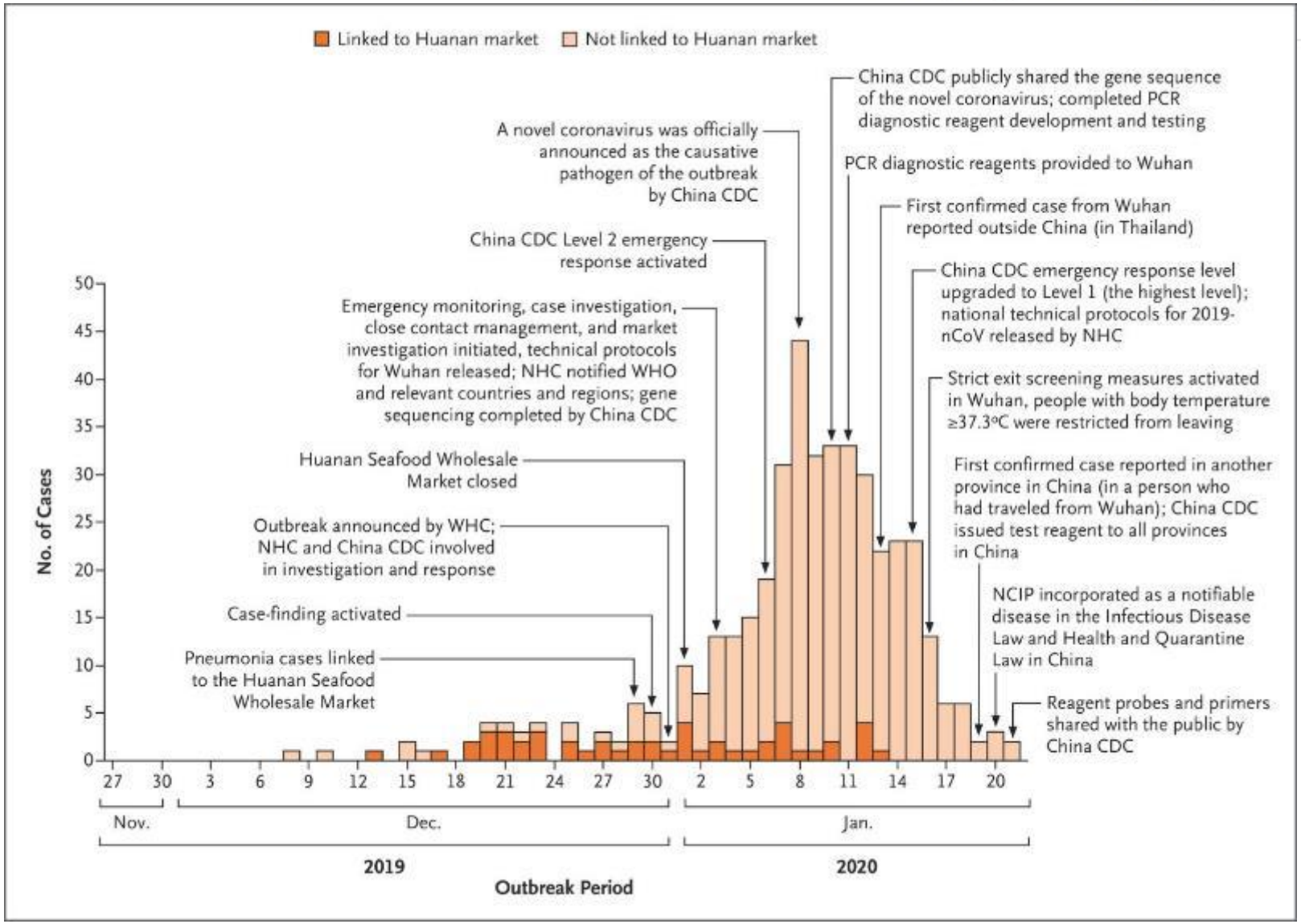
Published Online
January 24, 2020
https://doi.org/10.1016/
S0140-6736(20)30183-5



Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus–Infected Pneumonia

Qun Li, M.Med., Xuhua Guan, Ph.D., Peng Wu, Ph.D., Xiaoye Wang, M.P.H., Lei Zhou, M.Med., Yeqing Tong, Ph.D., Ruiqi Ren, M.Med., Kathy S.M. Leung, Ph.D., Eric H.Y. Lau, Ph.D., Jessica Y. Wong, Ph.D., Xuesen Xing, Ph.D., Nijuan Xiang, M.Med., et al.

January 29, 2020
DOI: 10.1056/NEJMoa2001316



Linked to Huanan market

Not linked to Huanan market

Wuhan seafood market pneumonia virus isolate Wuhan-Hu-1, complete genome

GenBank: MN908947.3

FASTA Graphics

Go to:

```
LOCUS       MN908947               29903 bp ss-RNA     linear   VRL 17-JAN-2020
DEFINITION  Wuhan seafood market pneumonia virus isolate Wuhan-Hu-1, complete
            genome.
ACCESSION   MN908947
VERSION     MN908947.3
KEYWORDS    .
SOURCE      Wuhan seafood market pneumonia virus
  ORGANISM  Wuhan seafood market pneumonia virus
            Viruses; Riboviria; Nidovirales; Cornidovirineae; Coronaviridae;
            Orthocoronavirinae; Betacoronavirus; unclassified Betacoronavirus.
REFERENCE   1  (bases 1 to 29903)
  AUTHORS   Wu,F., Zhao,S., Yu,B., Chen,Y.-M., Wang,W., Hu,Y., Song,Z.-G.,
            Tao,Z.-W., Tian,J.-H., Pei,Y.-Y., Yuan,M.L., Zhang,Y.-L.,
            Dai,F.-H., Liu,Y., Wang,Q.-M., Zheng,J.-J., Xu,L., Holmes,E.C. and
            Zhang,Y.-Z.
  TITLE     A novel coronavirus associated with a respiratory disease in Wuhan
            of Hubei province, China
  JOURNAL   Unpublished
REFERENCE   2  (bases 1 to 29903)
  AUTHORS   Wu,F., Zhao,S., Yu,B., Chen,Y.-M., Wang,W., Hu,Y., Song,Z.-G.,
            Tao,Z.-W., Tian,J.-H., Pei,Y.-Y., Yuan,M.L., Zhang,Y.-L.,
            Dai,F.-H., Liu,Y., Wang,Q.-M., Zheng,J.-J., Xu,L., Holmes,E.C. and
            Zhang,Y.-Z.
  TITLE     Direct Submission
  JOURNAL   Submitted (05-JAN-2020) Shanghai Public Health Clinical Center &
            School of Public Health, Fudan University, Shanghai, China
COMMENT     On Jan 17, 2020 this sequence version replaced MN908947.2.

            ##Assembly-Data-START##
            Assembly Method       :: Megahit v. V1.1.3
            Sequencing Technology :: Illumina
            ##Assembly-Data-END##
FEATURES             Location/Qualifiers
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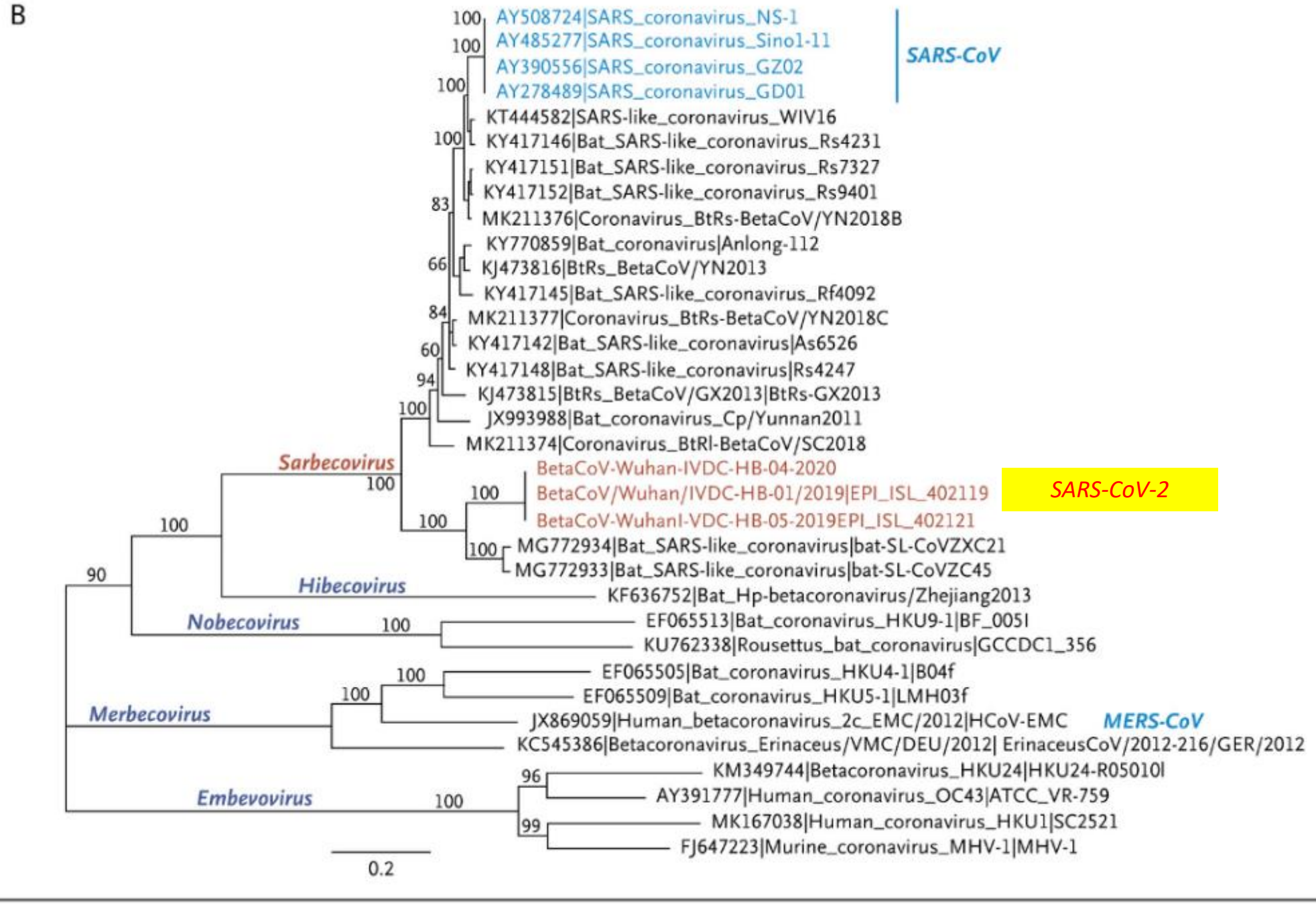
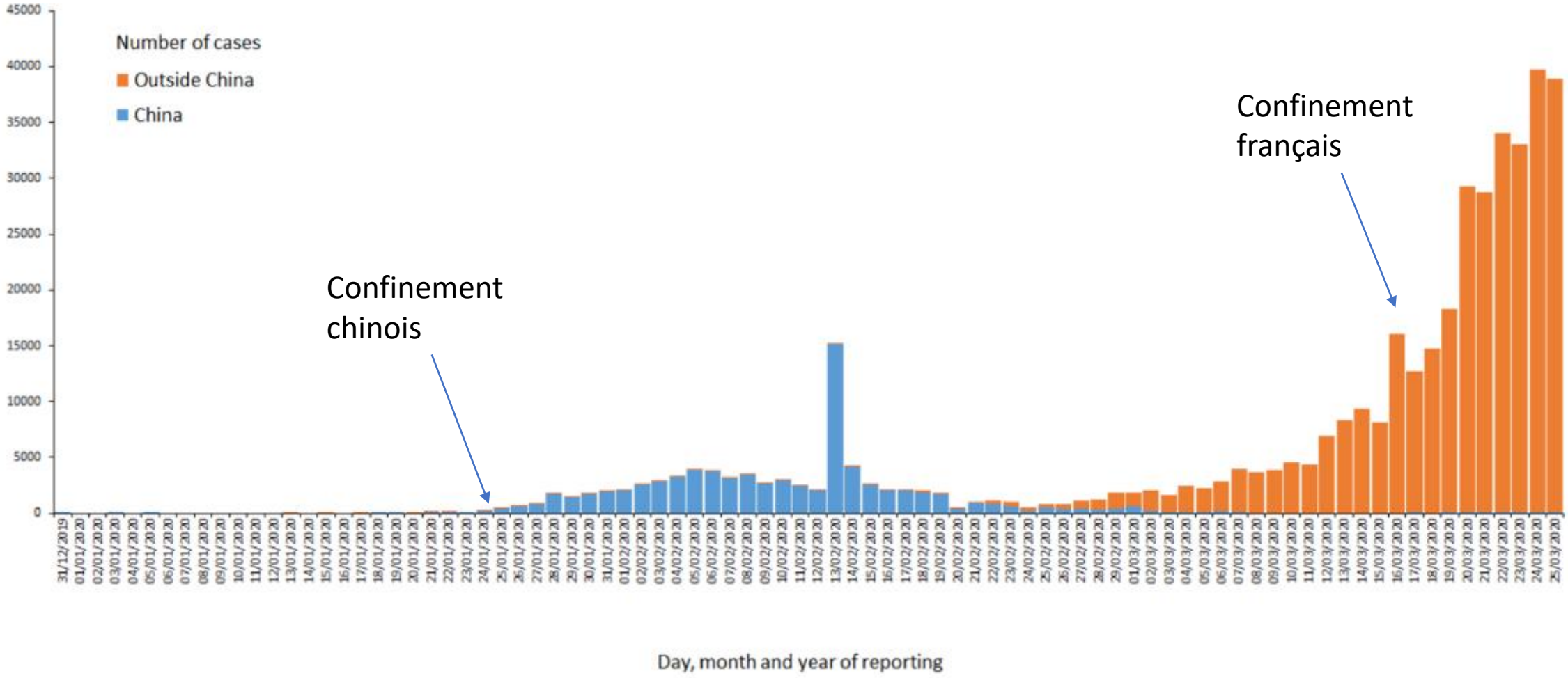
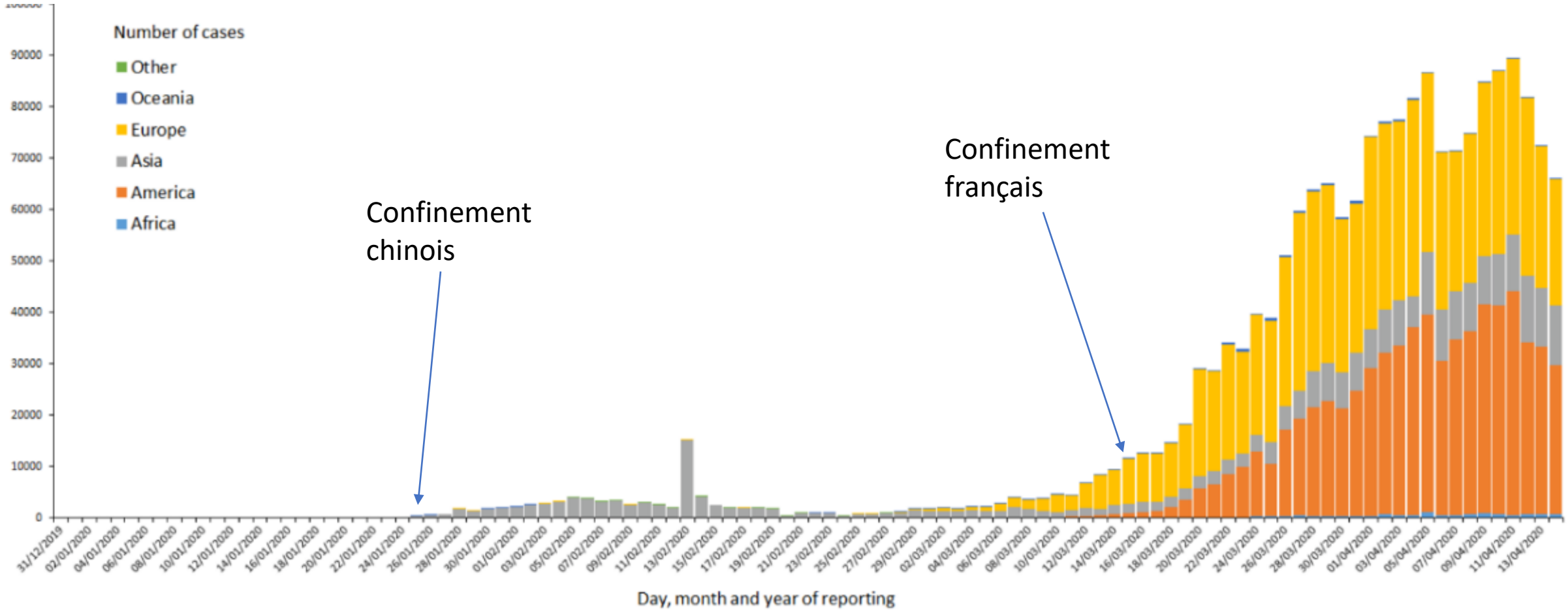

B
AY508724|SARS_coronavirus_NS-1
AY485277|SARS_coronavirus_Sino1-11
AY390556|SARS_coronavirus_GZ02
AY278489|SARS_coronavirus_GD01
SARS-CoV
KT444582|SARS-like_coronavirus_WIV16
KY417146|Bat_SARS-like_coronavirus_Rs4231
KY417151|Bat_SARS-like_coronavirus_Rs7327
KY417152|Bat_SARS-like_coronavirus_Rs9401
MK211376|Coronavirus_BtRs-BetaCoV/YN2018B
KY770859|Bat_coronavirus|Anlong-112
KJ473816|BtRs_BetaCoV/YN2013
KY417145|Bat_SARS-like_coronavirus_Rf4092
MK211377|Coronavirus_BtRs-BetaCoV/YN2018C
KY417142|Bat_SARS-like_coronavirus|As6526
KY417148|Bat_SARS-like_coronavirus|Rs4247
KJ473815|BtRs_BetaCoV/GX2013|BtRs-GX2013
JX993988|Bat_coronavirus_Cp/Yunnan2011
MK211374|Coronavirus_BtRl-BetaCoV/SC2018
Sarbecovirus
BetaCoV-Wuhan-IVDC-HB-04-2020
BetaCoV/Wuhan/IVDC-HB-01/2019|EPI_ISL_402119
BetaCoV-WuhanI-VDC-HB-05-2019EPI_ISL_402121
SARS-CoV-2
MG772934|Bat_SARS-like_coronavirus|bat-SL-CoVZXC21
MG772933|Bat_SARS-like_coronavirus|bat-SL-CoVZC45
Hibecovirus
KF636752|Bat_Hp-betacoronavirus/Zhejiang2013
Nobecovirus
EF065513|Bat_coronavirus_HKU9-1|BF_005I
KU762338|Rousettus_bat_coronavirus|GCCDC1_356
EF065505|Bat_coronavirus_HKU4-1|B04f
EF065509|Bat_coronavirus_HKU5-1|LMH03f
Merbecovirus
JX869059|Human_betacoronavirus_2c_EMC/2012|HCoV-EMC
MERS-CoV
KC545386|Betacoronavirus_Erinaceus/VMC/DEU/2012| ErinaceusCoV/2012-216/GER/2012
KM349744|Betacoronavirus_HKU24|HKU24-R05010I
AY391777|Human_coronavirus_OC43|ATCC_VR-759
Embevovirus
MK167038|Human_coronavirus_HKU1|SC2521
FJ647223|Murine_coronavirus_MHV-1|MHV-1
0.2

Cas de Covid-19 dans le monde au 25 mars 2020



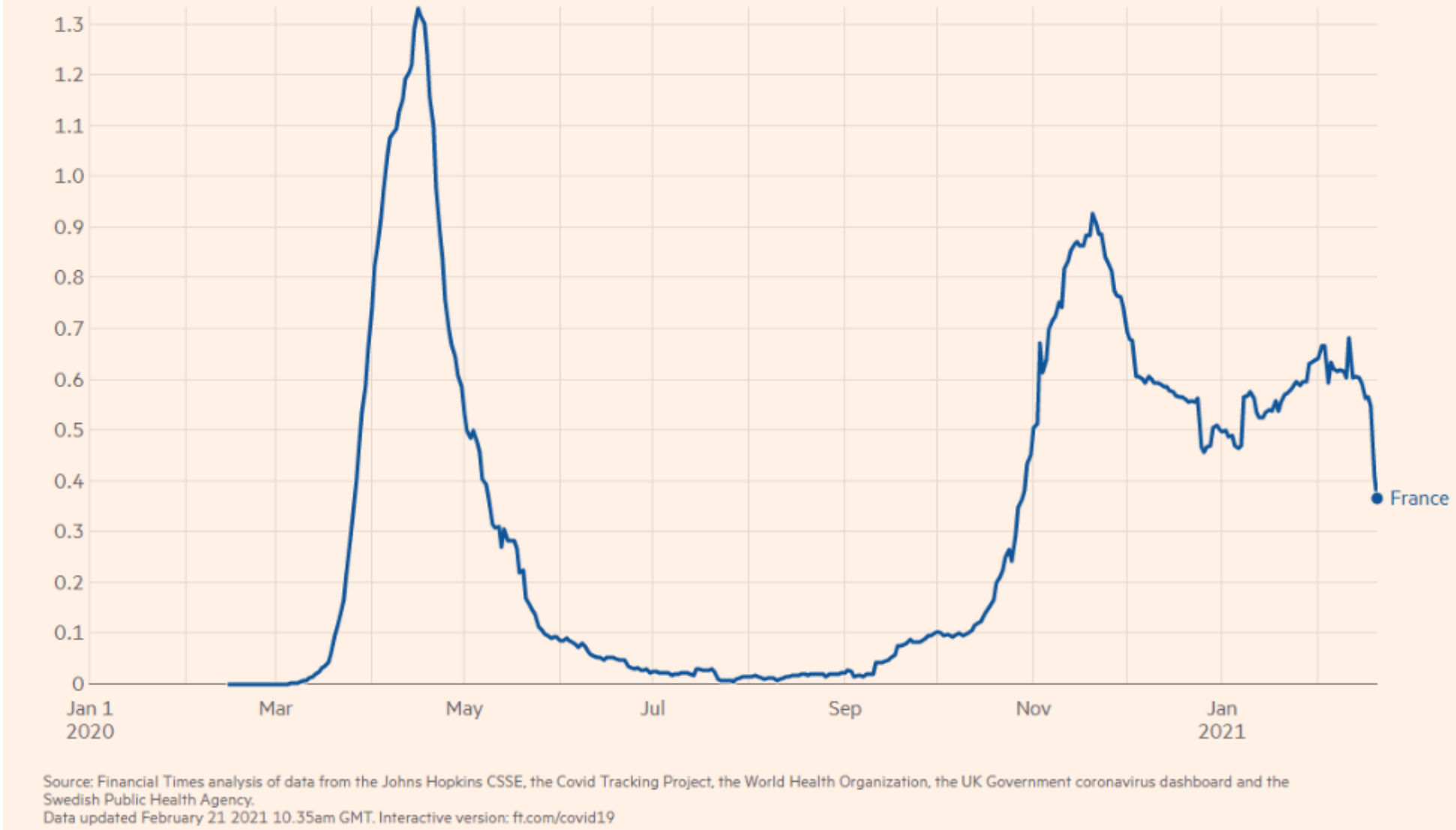
Cas de Covid-19 dans le monde au 14 avril 2020



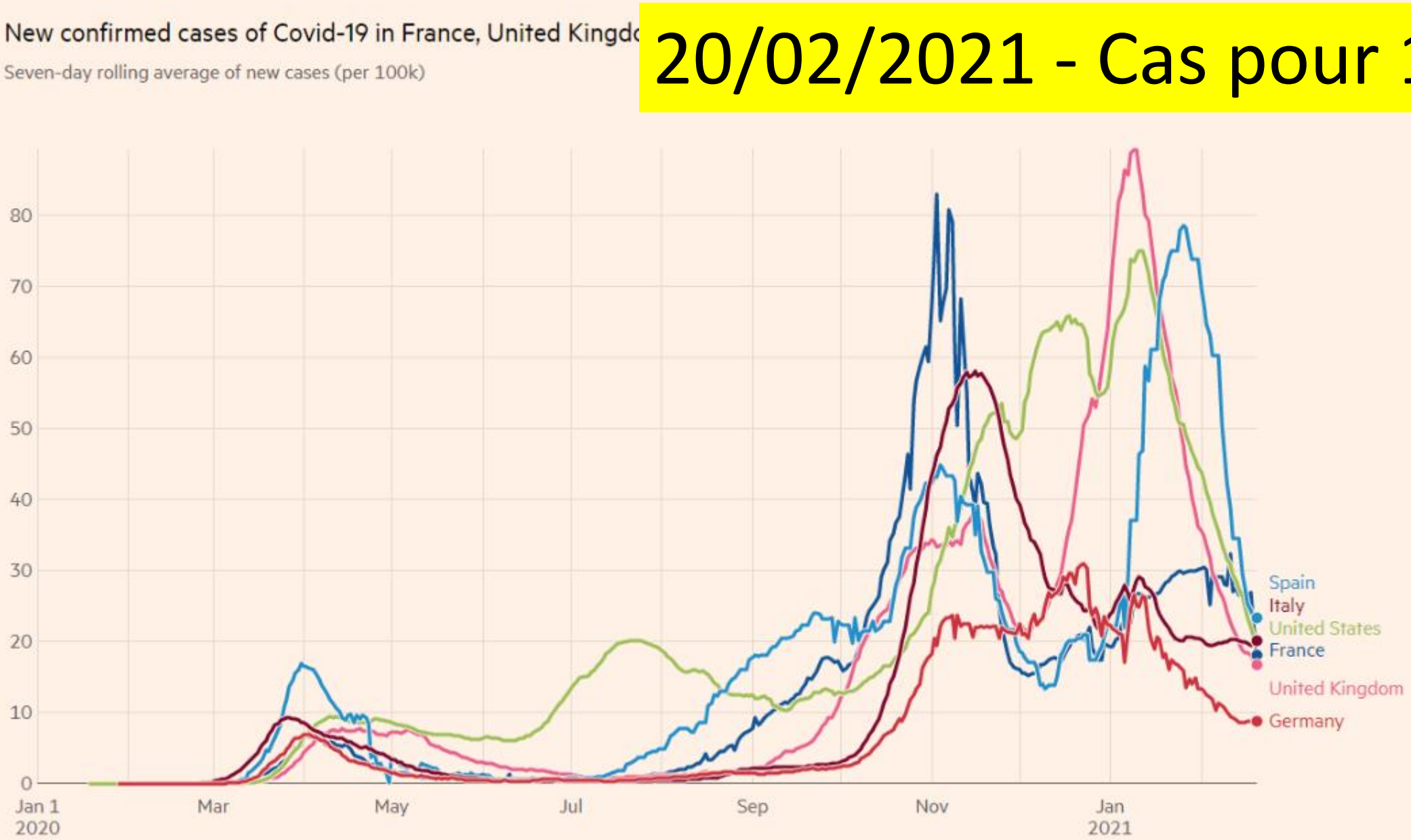
European CDC


New confirmed cases of Covid-19 in France
Seven-day rolling average of new cases (per 100k)
20/02/2021 - Cas pour 100000
80
70
60
50
40
30
20
10
0
Jan 1
2020
Mar
May
Jul
Sep
Nov
Jan
2021
France

20/02/2021 - morts pour 100000



20/02/2021 - Cas pour 100000



20/02/2021 - morts pour 100000

·新型冠状病毒肺炎疫情防控·

新型冠状病毒肺炎流行病学特征分析

中国疾病预防控制中心新型冠状病毒肺炎应急响应机制流行病学组
中国疾病预防控制中心，北京 102206
通信作者：张彦平，Email：Zhangyp@chinacdc.cn

Février 2020
72 314 cas

中华流行病学杂志

• Prevention and Control of Novel Coronavirus Pneumonia •

Analysis of epidemiological characteristics of new coronavirus pneumonia

Epidemiology Group of New Coronavirus Pneumonia Emergency Response Mechanism, Chinese Center for Disease Control and Prevention

Chinese Journal of Epidemiology, 2020,41(02) : 145-151. DOI: 10.3760/cma.j.issn.0254-6450.2020.02.003

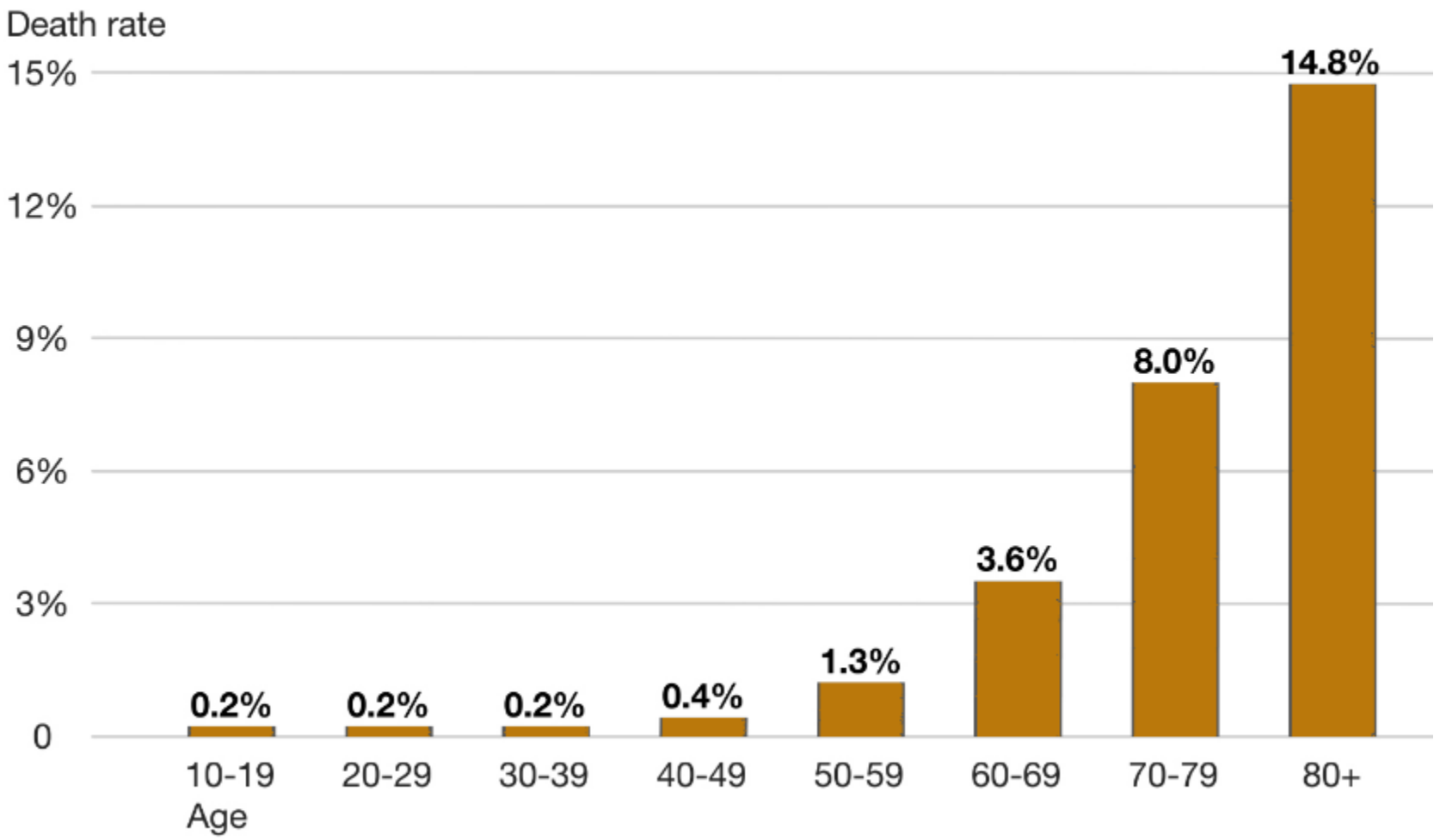
中华流行病学杂志
Like 74 Share 113 Favorites 20 Error correction log in registered
• Prevention and Control of Novel Coronavirus Pneumonia •

Analysis of epidemiological characteristics of new coronavirus pneumonia

Epidemiology Group of New Coronavirus Pneumonia Emergency Response Mechanism, Chinese Center for Disease Control and Prevention

Chinese Journal of Epidemiology, 2020,41(02) : 145-151. DOI: 10.3760/cma.j.issn.0254-6450.2020.02.003

COVID-19 Fatality Rate by AGE



72 314 cas

RAPID COMMUNICATION

Estimating the infection and case fatality ratio for coronavirus disease (COVID-19) using age-adjusted data from the outbreak on the Diamond Princess cruise ship, February 2020

Timothy W Russell[1], Joel Hellewell[1,2], Christopher I Jarvis[1,2], Kevin van Zandvoort[1,2], Sam Abbott[1], Ruwan Ratnayake[1,3], CMMID COVID-19 working group[4], Stefan Flasche[1], Rosalind M Eggo[1], W John Edmunds[1], Adam J Kucharski[1]

1. Centre for the Mathematical Modelling of Infectious Diseases, Department of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine, London, United Kingdom
2. These authors contributed equally to this work
3. Department of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine, London, United Kingdom
4. The members of the Centre for the Mathematical Modelling of Infectious Diseases (CMMID) COVID-19 working group are listed at the end of the article

Correspondence: Timothy W Russell (timothy.russell@lshtm.ac.uk)

- 1 passager fébrile quitte le bateau ; diagnostic de Covid-19
- **Les 3 711 passagers et membres d'équipage restent à bord**
- 3 063 PCR réalisées

- **619 cas positifs, dont 318 asymptomatiques**
- **Mortalité : 1,3% (2,6% des symptomatiques)**
  - **Dont 13% des >70 ans symptomatiques**

Sur le plan physiopathologique : 2 phases

- Une phase marquée par la **réplication virale** : 1ère semaine de symptômes
  - Virus aisément détectable dans les voies aériennes
  - Signes généraux marqués : myalgies, fièvre, asthénie
  - Toux sèche : pneumonie virale
  - Diarrhées non rares

- Une phase inconstante marqué par une **intense activation de l'immunité** innée : 2ème semaine de symptômes
  - Plus de virus cultivable dans les voies aériennes
  - Pneumopathie inflammatoire potentiellement grave
  - Syndrome inflammatoire

Facteurs de risque de maladie grave

- Facteurs principaux :
  - âge
  - Surpoids (surtout pour les personnes de moins de 60 ans)
  - Sexe masculin

- Autres facteurs importants :
  - Diabète
  - BPCO
  - Cancer récent
  - Transplantation d'organe
  - Hypertension compliquée
  - Insuffisance cardiaque
  - Insuffisance rénale chronique
  - Trisomie 21

- Et aussi :
  - Grossesse
  - Hypertension

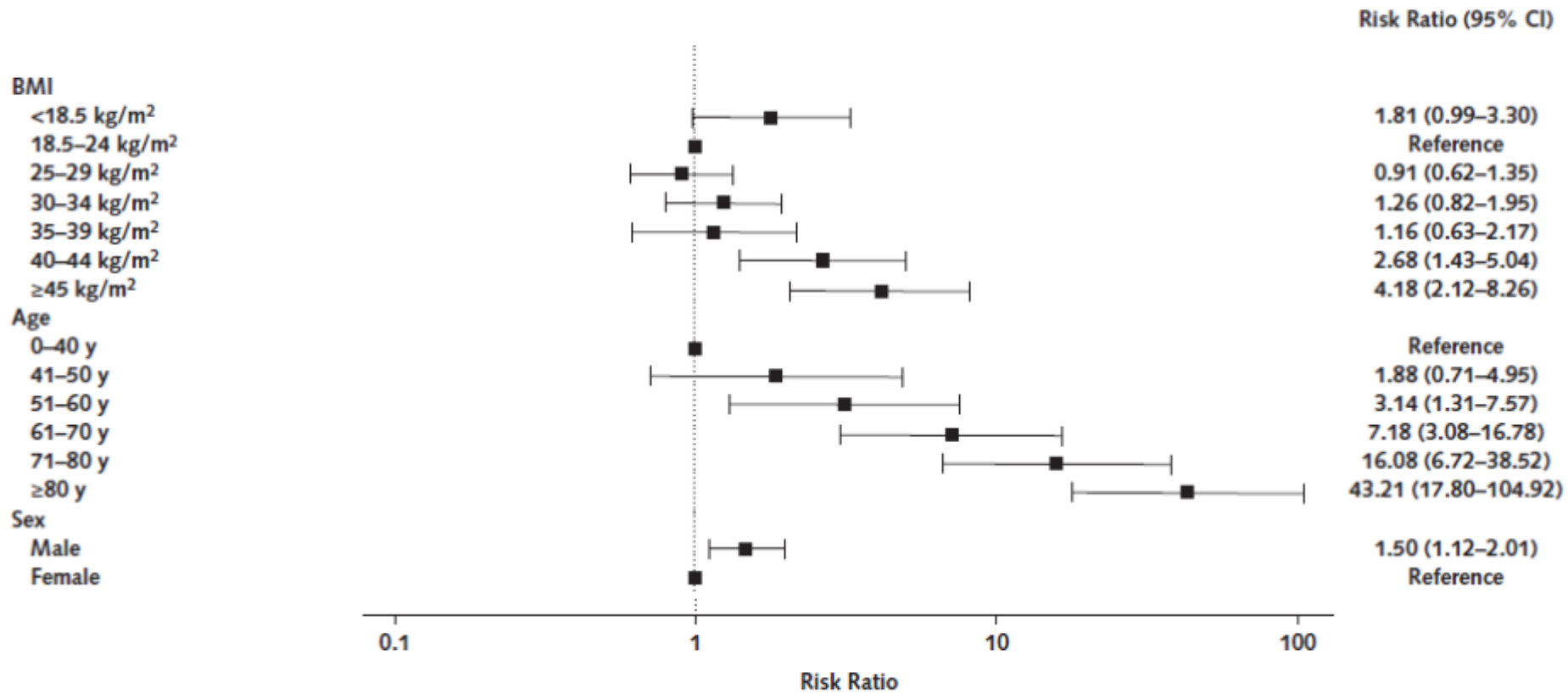
Annals of Internal Medicine

ORIGINAL RESEARCH

Obesity and Mortality Among Patients Diagnosed With COVID-19: Results From an Integrated Health Care Organization

Sara Y. Tartof, PhD, MPH; Lei Qian, PhD, MS; Vennis Hong, MPH; Rong Wei, MA; Ron F. Nadjafi, MD, MS; Heidi Fischer, PhD, MS; Zhuoxin Li, MS; Sally F. Shaw, DrPH, MPH; Susan L. Caparosa, MA; Claudia L. Nau, PhD, MA; Tanmai Saxena, MD, PhD; Gunter K. Rieg, MD; Bradley K. Ackerson, MD; Adam L. Sharp, MD, MSc; Jacek Skarbinski, MD; Tej K. Naik, MD; and Sameer B. Murali, MD

Figure 1. Forest plot of final adjusted risk factors for death in overall population (n = 6916).



Traitements

Journal Pre-proof

Chloroquine for the 2019 novel coronavirus

Philippe COLSON[1,2], Jean-Marc ROLAIN[1,2], Didier RAOULT[1,2,*]

[1]Aix-Marseille Univ., Institut de Recherche pour le Développement (IRD), Assistance Publique - Hôpitaux de Marseille (AP-HM), MEPHI, 27 boulevard Jean Moulin, 13005 Marseille, France;

[2]IHU Méditerranée Infection, 19-21 boulevard Jean Moulin, 13005 Marseille, France

THE LANCET
Infectious Diseases
Volume 11, Issue 9, September 2011, Pages 677-683

Fail

Articles

Chloroquine for influenza prevention: a randomised, double-blind, placebo controlled trial

Nicholas I. Paton, MD, FRCP
Ruth L. Goodall, PhD
David T. Dunn, PhD
Samuel Franzen, BSc
Yolanda Collaco-Moraes, PhD
Brian G. Gazzard, MD, FRCP
Ian G. Williams, MA, FRCP
Martin J. Fisher, FRCP
Alan Winston, MD, MRCP
Julie Fox, MD, MRCP
Chloe Orkin, MRCP
Elbushra A. Herieka, MRCOG
Jonathan G. Ainsworth, FRCP
Frank A. Post, PhD, FCP(SA)
Mark Wansbrough-Jones, FRCP
Peter Kelleher, PhD, MRCPath
for the Hydroxychloroquine Trial Team

Fail

Effects of Hydroxychloroquine on Immune Activation and Disease Progression Among HIV-Infected Patients Not Receiving Antiretroviral Therapy

A Randomized Controlled Trial

2012

Fail

OPEN ACCESS Freely available online

PLoS NEGLECTED TROPICAL DISEASES

A Randomized Controlled Trial of Chloroquine for the Treatment of Dengue in Vietnamese Adults

Vianney Tricou[1], Nguyet Nguyen Minh[1,2], Toi Pham Van[1], Sue J. Lee[3,4], Jeremy Farrar[1,3], Bridget Wills[1,3], Hien Tinh Tran[2], Cameron P. Simmons[1,3]*

1 Oxford University Clinical Research Unit, Hospital for Tropical Diseases, Ho Chi Minh City, Viet Nam, **2** Hospital for Tropical Diseases, Ho Chi Minh City, Viet Nam, **3** Centre for Clinical Vaccinology and Tropical Medicine, Churchill Hospital, Oxford, United Kingdom, **4** Faculty of Tropical Medicine, Mahidol University, Bangkok, Thailand

International Journal of Antimicrobial Agents 56 (2020) 105949

Contents lists available at ScienceDirect

International Journal of Antimicrobial Agents

journal homepage: www.elsevier.com/locate/ijantimicag

Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial ☆

Philippe Gautret[a,b,§], Jean-Christophe Lagier[a,c,§], Philippe Parola[a,b], Van Thuan Hoang[a,b,d], Line Meddeb[a], Morgane Mailhe[a], Barbara Doudier[a], Johan Courjon[e,f,g], Valérie Giordanengo[h], Vera Esteves Vieira[a], Hervé Tissot Dupont[a,c], Stéphane Honoré[i,j], Philippe Colson[a,c], Eric Chabrière[a,c], Bernard La Scola[a,c], Jean-Marc Rolain[a,c], Philippe Brouqui[a,c], Didier Raoult[a,c,*]

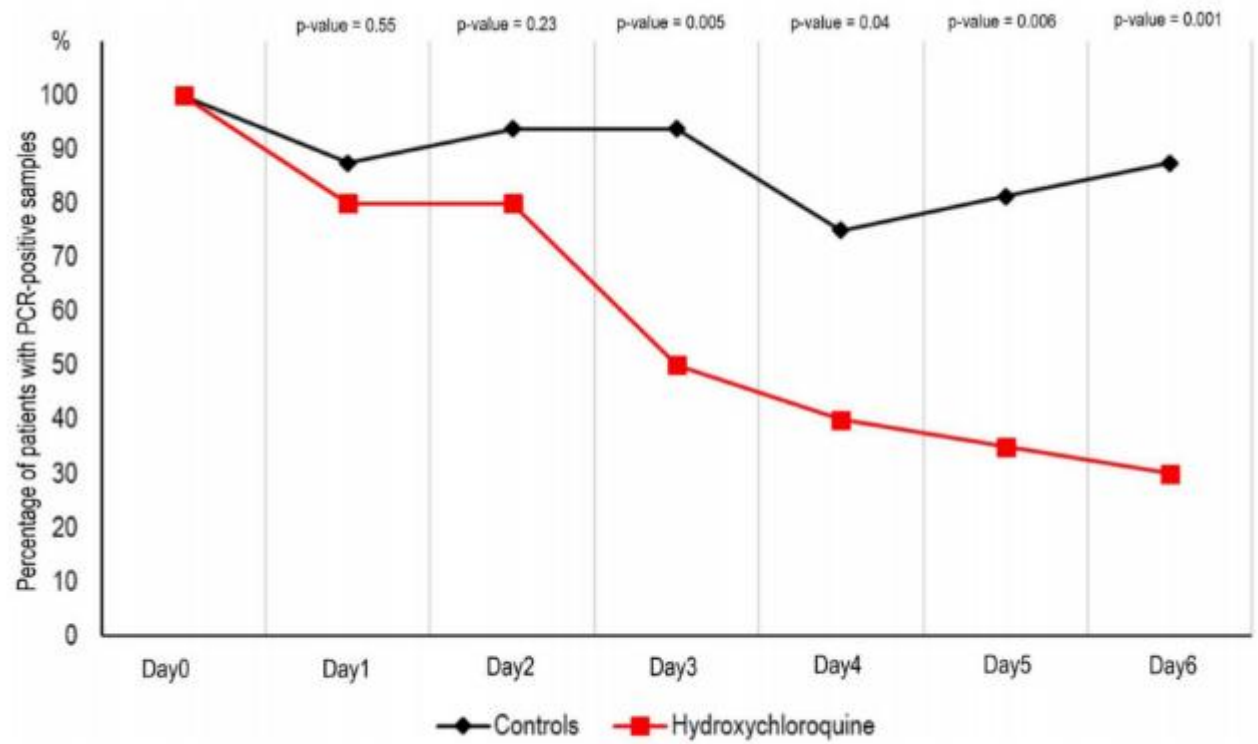


Fig. 1. Percentage of patients with PCR-positive nasopharyngeal samples from inclusion to day6 post-inclusion in COVID-19 patients treated with hydroxychloroquine and in COVID-19 control patients.

浙江大学学报（医学版）
JOURNAL OF ZHEJIANG UNIVERSITY
2020 年 3 月
March 2020
http://www.zjujournal.com/med
DOI：10.3785/j.issn.1008-9292.2020.03.03

硫酸羟氯喹治疗普通型 2019 冠状病毒病（COVID-19）患者初步研究

陈军 刘丹萍 刘莉 刘萍 徐庆年 夏露 凌云 黄丹 宋树丽 张丹丹 钱志平 李涛 沈银忠 卢洪洲
上海市公共卫生临床中心感染与免疫科，上海 201508

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A pilot study of hydroxychloroquine in treatment of patients with common coronavirus disease-19 (COVID-19)

CHEN Jun, LIU Danping, LIU Li, LIU Ping, XU Qingnian, XIA Lu, LING Yun, HUANG Dan,

Clinical Microbiology and Infection xxx (xxxx) xxx

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

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Systematic review

Effect of hydroxychloroquine with or without azithromycin on the mortality of coronavirus disease 2019 (COVID-19) patients: a systematic review and meta-analysis

Thibault Fiolet [1, 2, *], Anthony Guihur [3], Mathieu Edouard Rebeaud [3], Matthieu Mulot [4], Nathan Peiffer-Smadja [5, 6, 7], Yahya Mahamat-Saleh [1, 2]

[1] *CESP (Centre for Research in Epidemiology and Population Health), Faculté de Médecine—Université Paris-Sud, Faculté de Médecine—UVSQ, INSERM, Université Paris Saclay, Villejuif, France*
[2] *Gustave Roussy, Villejuif, France*
[3] *Department of Plant Molecular Biology, Faculty of Biology and Medicine, University of Lausanne, Switzerland*
[4] *Laboratory of Soil Biodiversity, Faculty of Science, University of Neuchâtel, Switzerland*
[5] *Université de Paris, IAME, INSERM, Paris, France*
[6] *National Institute for Health Research Health Protection Research Unit in Healthcare Associated Infections and Antimicrobial Resistance, Imperial College, London, UK*
[7] *Infectious and Tropical Diseases Department, Bichat-Claude Bernard Hospital, AP-HP, Paris, France*

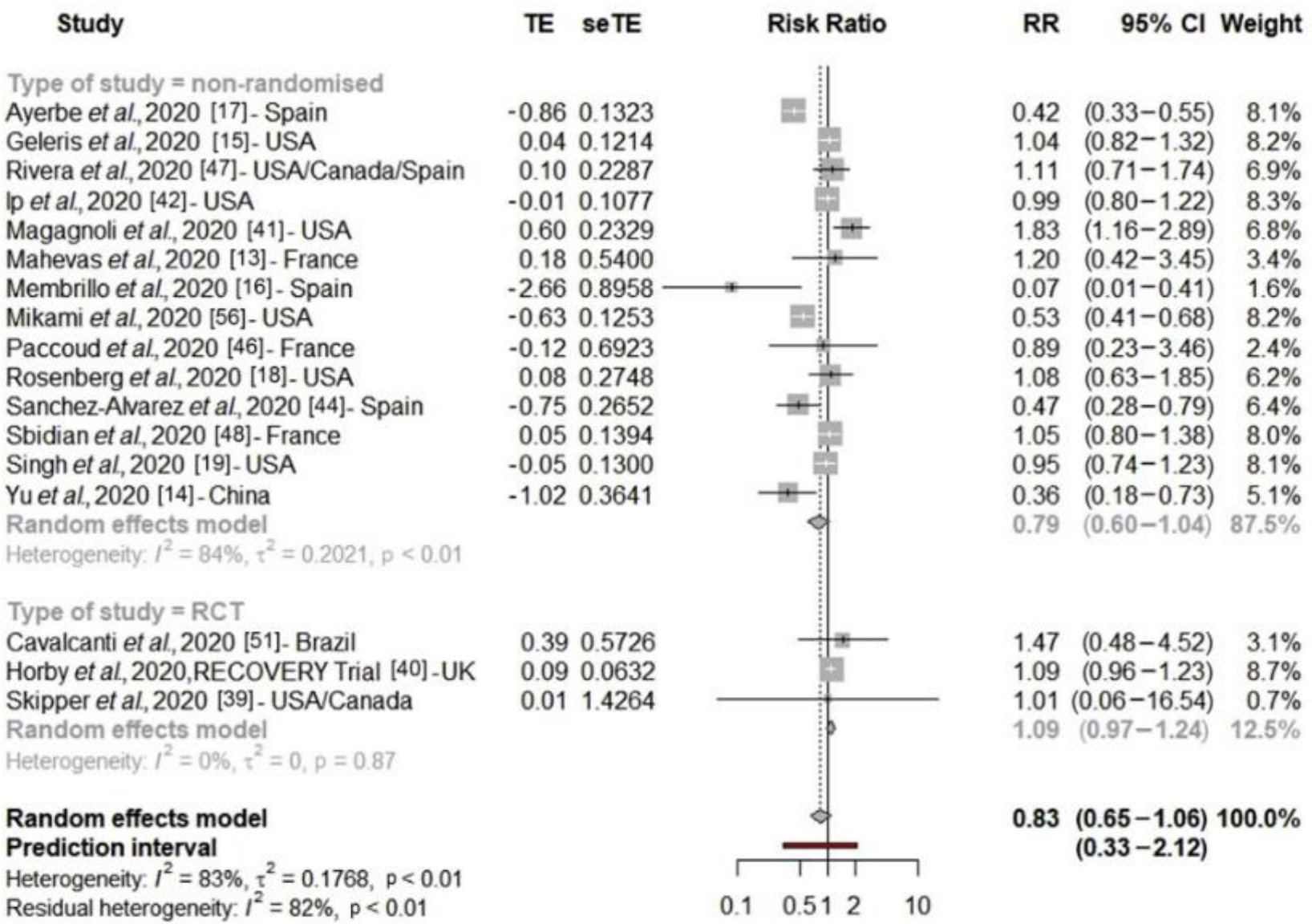


Fig. 2. Forest plot of the association between hydroxychloroquine alone and COVID-19 mortality (excluding studies with critical risk of bias). RR, risk ratio.

Fail

The NEW ENGLAND JOURNAL of MEDICINE

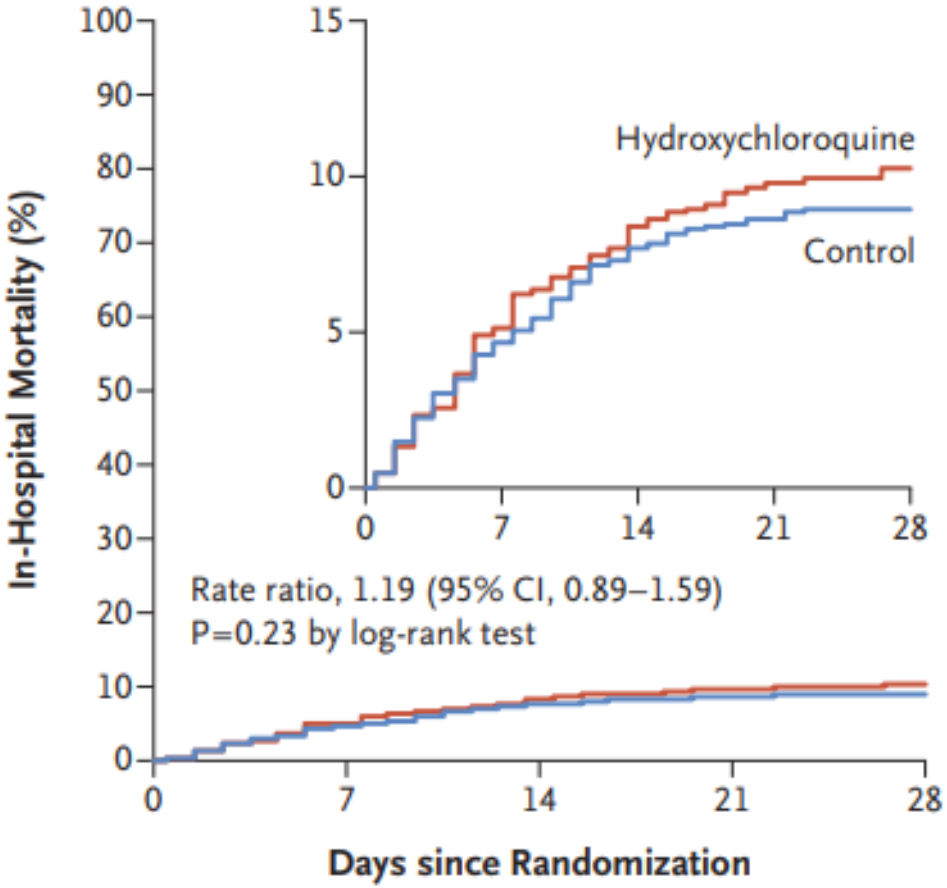
ORIGINAL ARTICLE

Repurposed Antiviral Drugs for Covid-19 — Interim WHO Solidarity Trial Results

WHO Solidarity Trial Consortium*

Fail

B Hydroxychloroquine vs. Its Control



Denominator					
Hydroxychloroquine	947	889	854	838	833
Control	906	853	823	814	809

No. Who Died					
Hydroxychloroquine	48	31	13	6	6
Control	42	27	8	4	3

18/03/2020

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

A Trial of Lopinavir–Ritonavir in Adults Hospitalized with Severe Covid-19

B. Cao, Y. Wang, D. Wen, W. Liu, Jingli Wang, G. Fan, L. Ruan, B. Song, Y. Cai, M. Wei, X. Li, J. Xia, N. Chen, J. Xiang, T. Yu, T. Bai, X. Xie, L. Zhang, C. Li, Y. Yuan, H. Chen, Huadong Li, H. Huang, S. Tu, F. Gong, Y. Liu, Y. Wei, C. Dong, F. Zhou, X. Gu, J. Xu, Z. Liu, Y. Zhang, Hui Li, L. Shang, K. Wang, K. Li, X. Zhou, X. Dong, Z. Qu, S. Lu, X. Hu, S. Ruan, S. Luo, J. Wu, L. Peng, F. Cheng, L. Pan, J. Zou, C. Jia, Juan Wang, X. Liu, S. Wang, X. Wu, Q. Ge, J. He, H. Zhan, F. Qiu, L. Guo, C. Huang, T. Jaki, F.G. Hayden, P.W. Horby, D. Zhang, and C. Wang

Fail

2 arms - 99 and 100 patients

Median interval time between symptom onset and randomization: 13 days (IQR, 11 to 16 days)

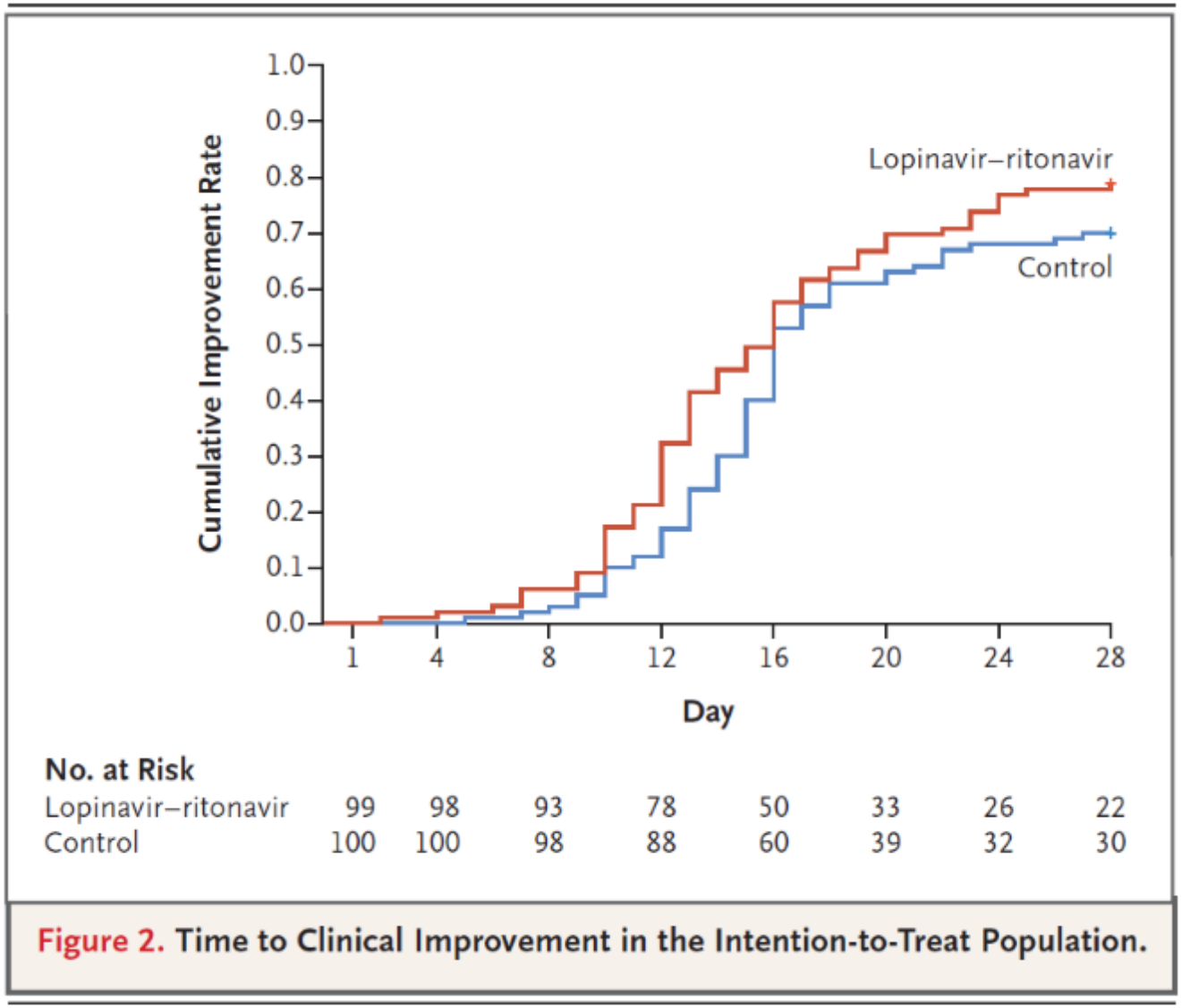


Figure 2. Time to Clinical Improvement in the Intention-to-Treat Population.

The NEW ENGLAND JOURNAL of MEDICINE

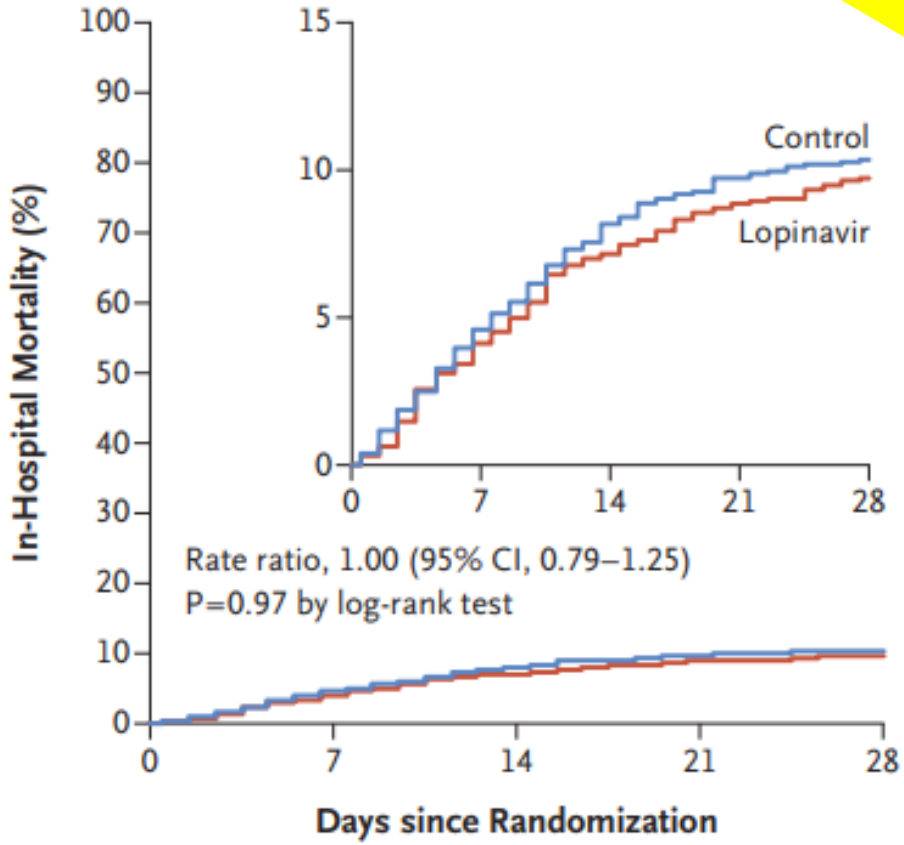
ORIGINAL ARTICLE

Repurposed Antiviral Drugs for Covid-19 — Interim WHO Solidarity Trial Results

WHO Solidarity Trial Consortium*

Fail

C Lopinavir vs. Its Control



Denominator					
Lopinavir	1399	1333	1282	1257	1243
Control	1372	1293	1239	1216	1203
No. Who Died					
Lopinavir	57	42	24	15	10
Control	62	48	21	10	5

Remdesivir in adults with severe COVID-19: a randomised, double-blind, placebo-controlled, multicentre trial

Yeming Wang, Dingyu Zhang*, Guanhua Du*, Ronghui Du*, Jianping Zhao*, Yang Jin*, Shouzhi Fu*, Ling Gao*, Zhenshun Cheng*, Qiaofa Lu*, Yi Hu*, Guangwei Luo*, Ke Wang, Yang Lu, Huadong Li, Shuzhen Wang, Shunan Ruan, Chengqing Yang, Chunlin Mei, Yi Wang, Dan Ding, Feng Wu, Xin Tang, Xianzhi Ye, Yingchun Ye, Bing Liu, Jie Yang, Wen Yin, Aili Wang, Guohui Fan, Fei Zhou, Zhibo Liu, Xiaoying Gu, Jiuyang Xu, Lianhan Shang, Yi Zhang, Lianjun Cao, Tingting Guo, Yan Wan, Hong Qin, Yushen Jiang, Thomas Jaki, Frederick G Hayden, Peter W Horby, Bin Cao, Chen Wang*

Fail

29/04/2020

158 dans le bras remdesivir, 79 dans le bras placebo

Temps median entre le début des symptoms et la mise sous traitement : 10 jours (IQR 9–12)

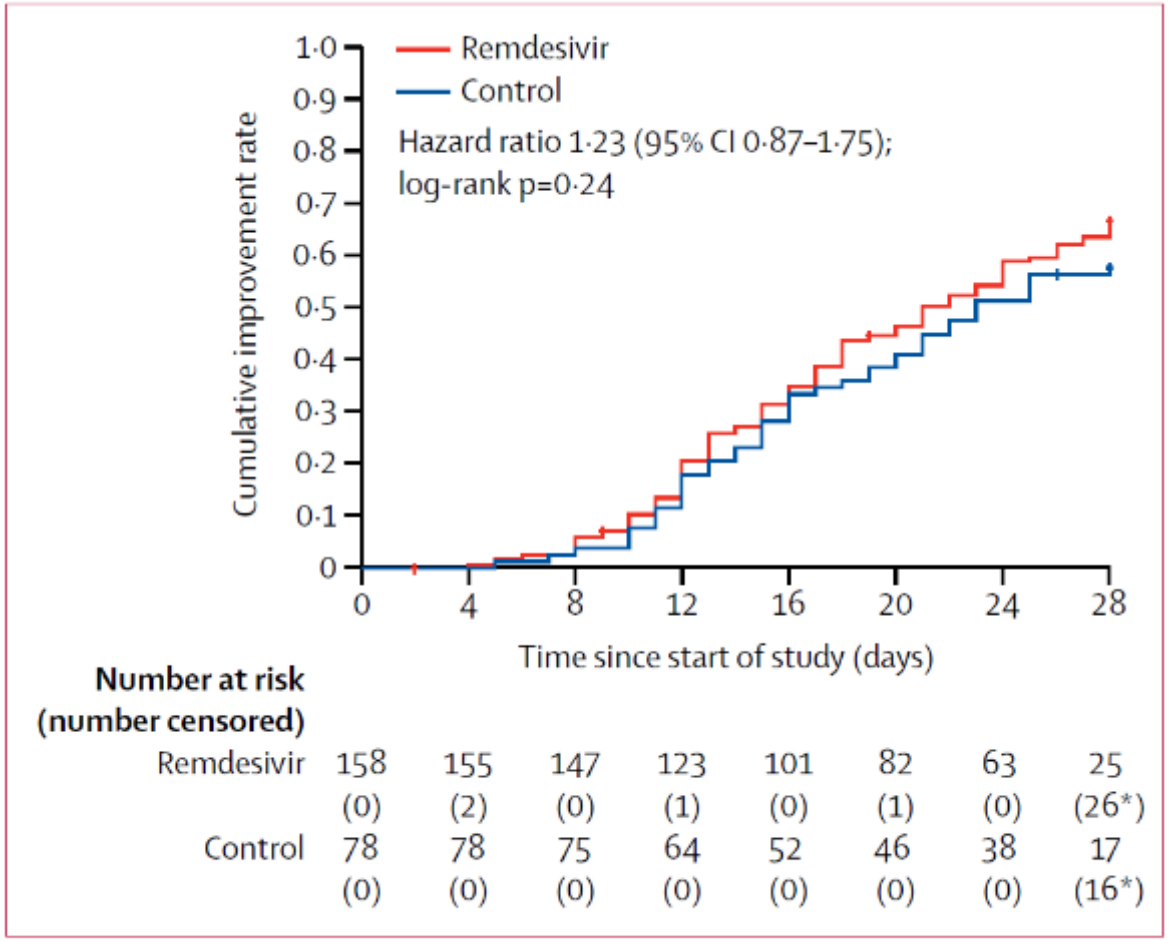


Figure 2: **Time to clinical improvement in the intention-to-treat population**

Évolution de la charge virale

Fail

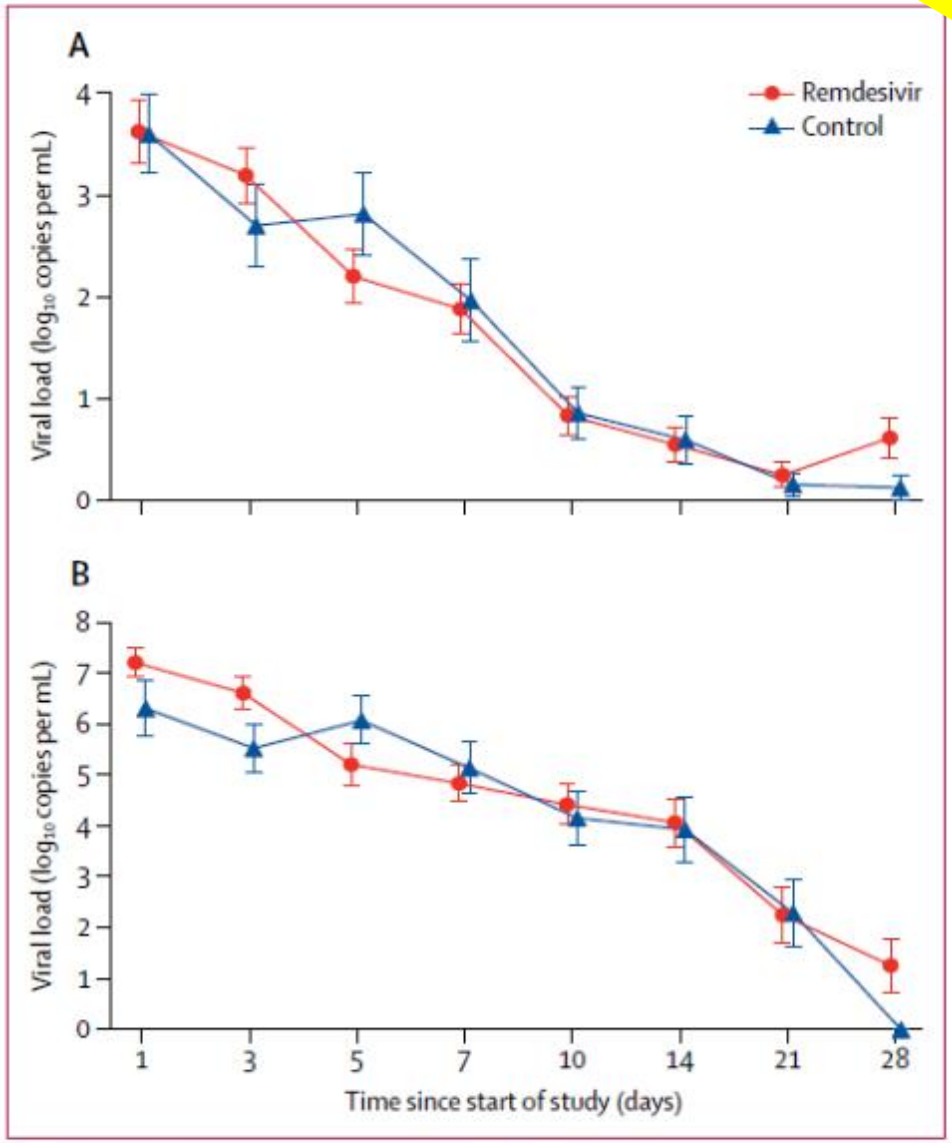


Figure 3: **Viral load by quantitative PCR on the upper respiratory tract specimens (A) and lower respiratory tract specimens (B)**
Data are mean (SE). Results less than the lower limit of quantification of the PCR assay and greater than the limit of qualitative detection are imputed with half of actual value; results of patients with viral-negative RNA are imputed with 0 log_{10} copies per mL.

The NEW ENGLAND JOURNAL of MEDICINE

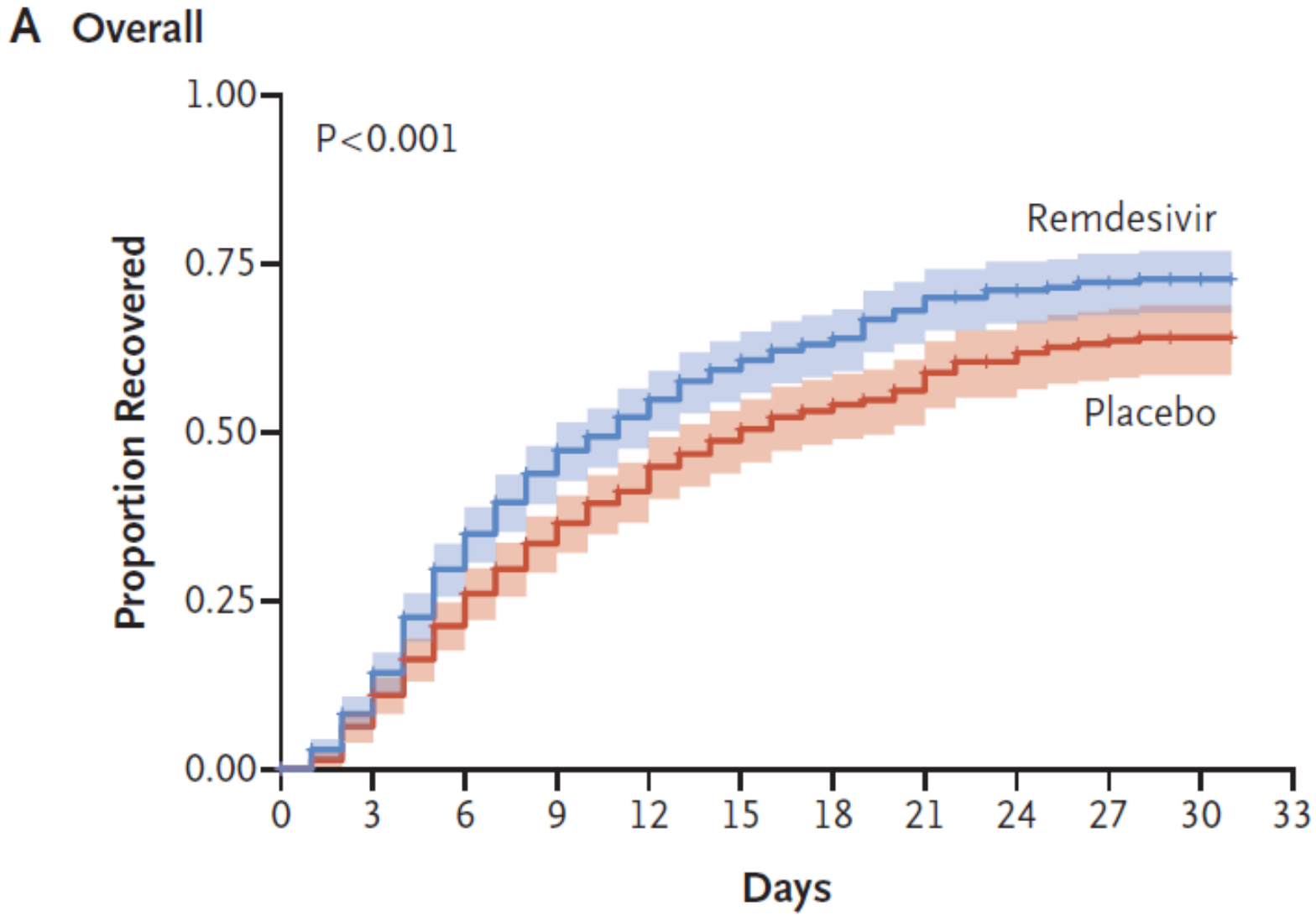
ORIGINAL ARTICLE

Remdesivir for the Treatment of Covid-19 — Preliminary Report

J.H. Beigel, K.M. Tomashek, L.E. Dodd, A.K. Mehta, B.S. Zingman, A.C. Kalil, E. Hohmann, H.Y. Chu, A. Luetkemeyer, S. Kline, D. Lopez de Castilla, R.W. Finberg, K. Dierberg, V. Tapson, L. Hsieh, T.F. Patterson, R. Paredes, D.A. Sweeney, W.R. Short, G. Touloumi, D.C. Lye, N. Ohmagari, M. Oh, G.M. Ruiz-Palacios, T. Benfield, G. Fätkenheuer, M.G. Kortepeter, R.L. Atmar, C.B. Creech, J. Lundgren, A.G. Babiker, S. Pett, J.D. Neaton, T.H. Burgess, T. Bonnett, M. Green, M. Makowski, A. Osinusi, S. Nayak, and H.C. Lane, for the ACTT-1 Study Group Members*

2 bras de 538 et 521 patients

Traitement après 9 jours de symptômes en médiane



No. at Risk

Remdesivir	538	481	363	274	183	142	121	98	78	65	3	0
Placebo	521	481	392	307	224	180	149	115	91	78	2	0

JAMA | Original Investigation

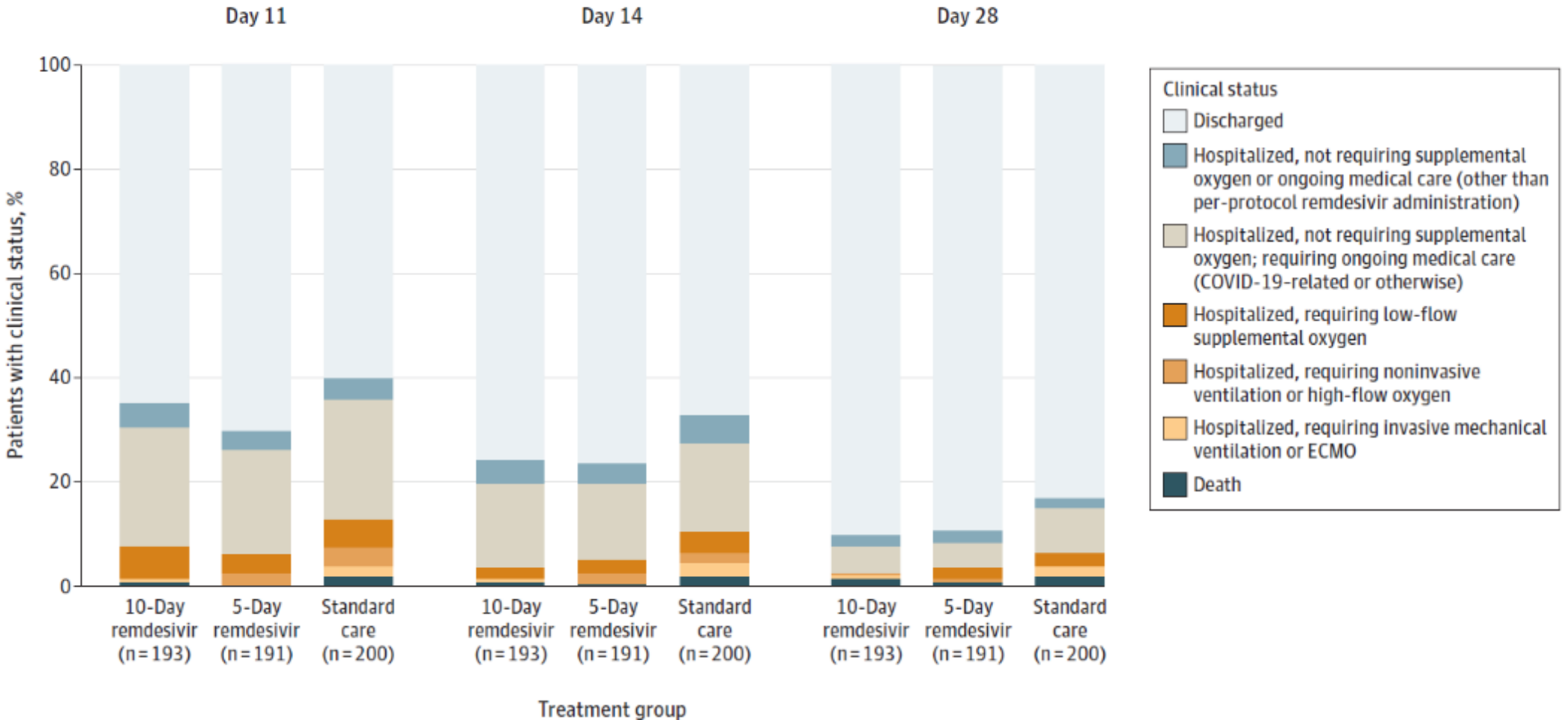
Effect of Remdesivir vs Standard Care on Clinical Status at 11 Days in Patients With Moderate COVID-19

A Randomized Clinical Trial

Spinner

Fail

Figure 2. Clinical Status on a 7-Point Ordinal Scale on Study Days 11, 14, and 28 by Treatment Group



The NEW ENGLAND JOURNAL of MEDICINE

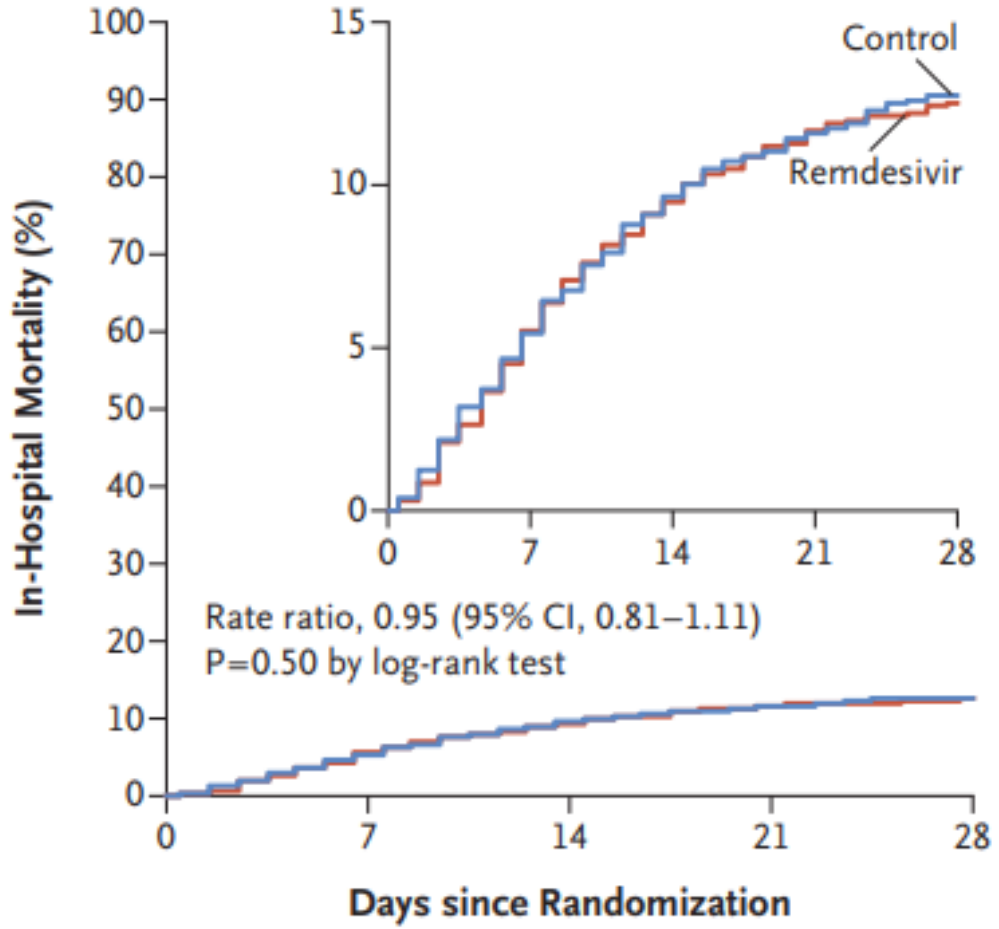
ORIGINAL ARTICLE

Repurposed Antiviral Drugs for Covid-19 — Interim WHO Solidarity Trial Results

WHO Solidarity Trial Consortium*

Fail

Remdesivir vs. Its Control



Denominator					
Remdesivir	2743	2159	2029	1918	1838
Control	2708	2138	2004	1908	1833

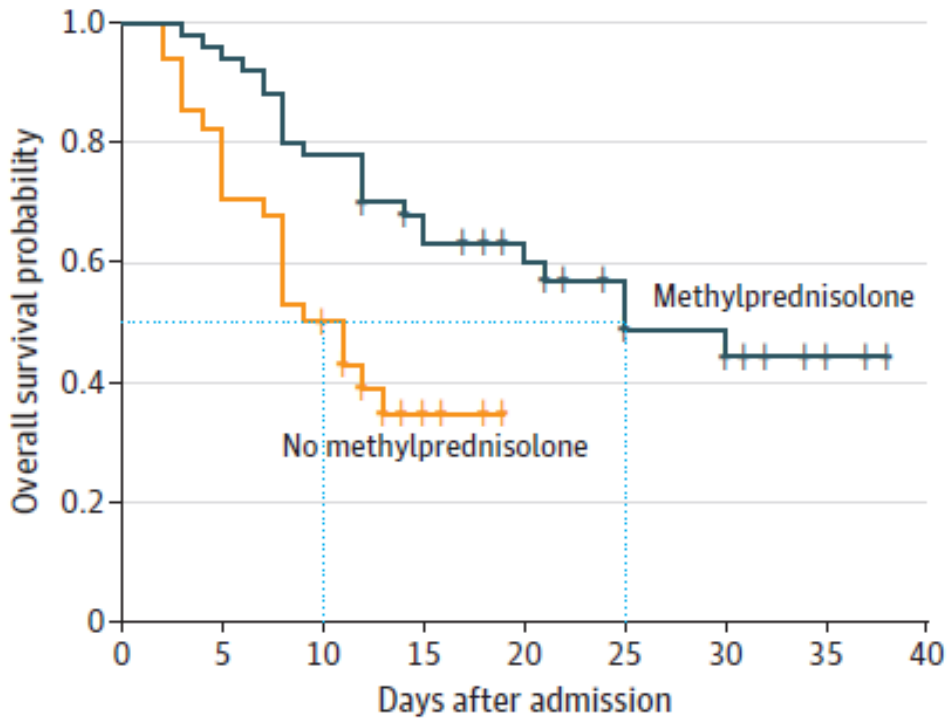
No. Who Died					
Remdesivir	129	90	48	18	16
Control	126	93	43	27	14

JAMA Internal Medicine | Original Investigation

Risk Factors Associated With Acute Respiratory Distress Syndrome and Death in Patients With Coronavirus Disease 2019 Pneumonia in Wuhan, China

Chaomin Wu, MD; Xiaoyan Chen, MD; Yanping Cai, MD; Jia'an Xia, MD; Xing Zhou, MD; Sha Xu, MD; Hanping Huang, MD; Li Zhang, MD; Xia Zhou, MD; Chunling Du, MD; Yuye Zhang, BD; Juan Song, BD; Sijiao Wang, BD; Yencheng Chao, MD; Zeyong Yang, MD; Jie Xu, MD; Xin Zhou, MD; Dechang Chen, MD; Weining Xiong, MD; Lei Xu, MD; Feng Zhou, MD; Jinjun Jiang, MD; Chunxue Bai, MD; Junhua Zheng, MD; Yuanlin Song, MD

Figure. Survival Curve in Patients With Acute Respiratory Distress Syndrome Who Did and Did Not Receive Methylprednisolone Treatment



No. at risk

No methylprednisolone	34	28	17	4	0	0	0	0	0
Methylprednisolone	50	48	39	29	20	14	11	4	0

Administration of methylprednisolone reduced the risk of death (hazard ratio, 0.38; 95% CI, 0.20-0.72; P = .003).

Wu mars 2020

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Dexamethasone in Hospitalized Patients with Covid-19 — Preliminary Report

The RECOVERY Collaborative Group*

ABSTRACT

2104 patients dexamethasone, 4321 standard of care

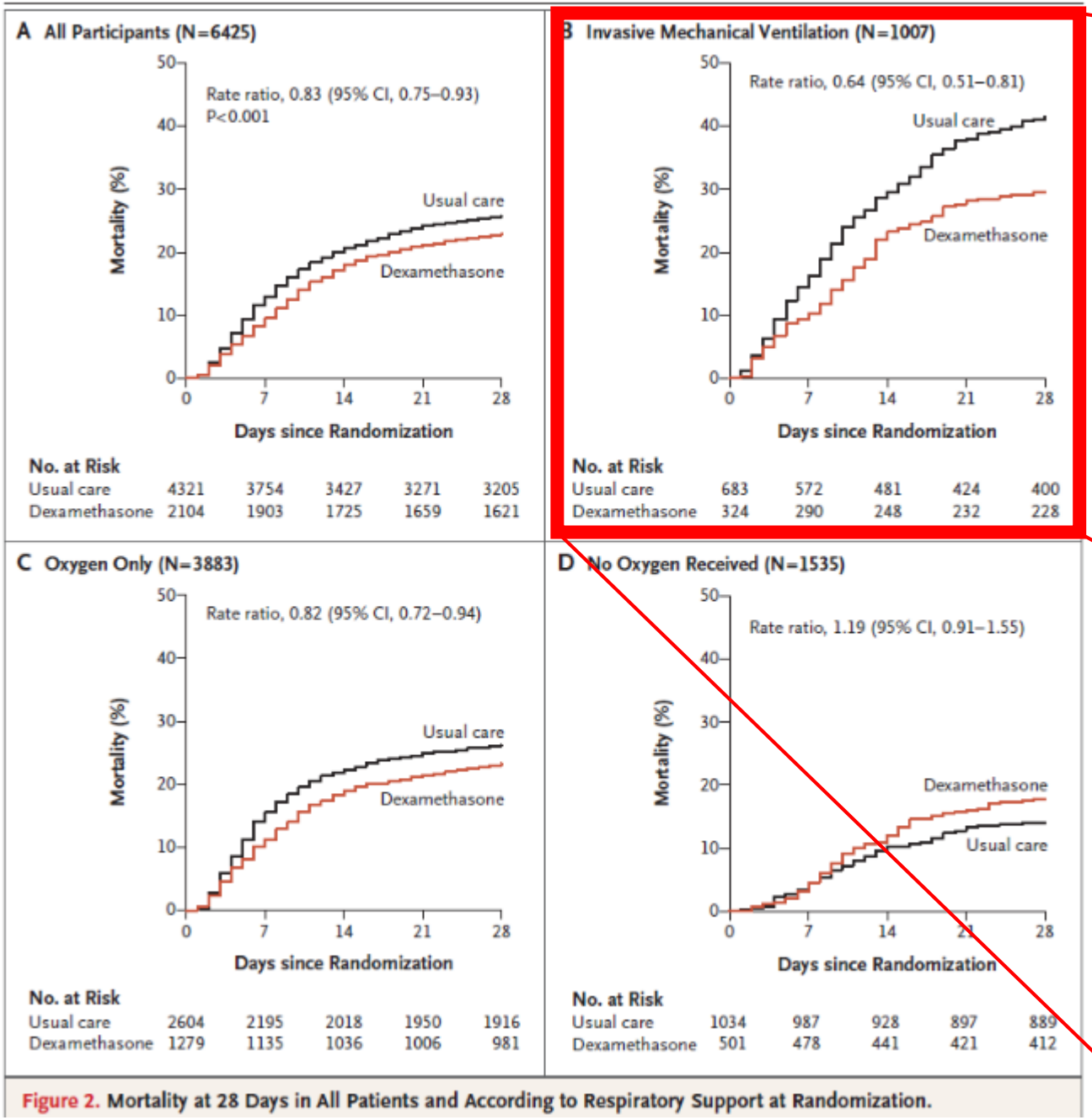
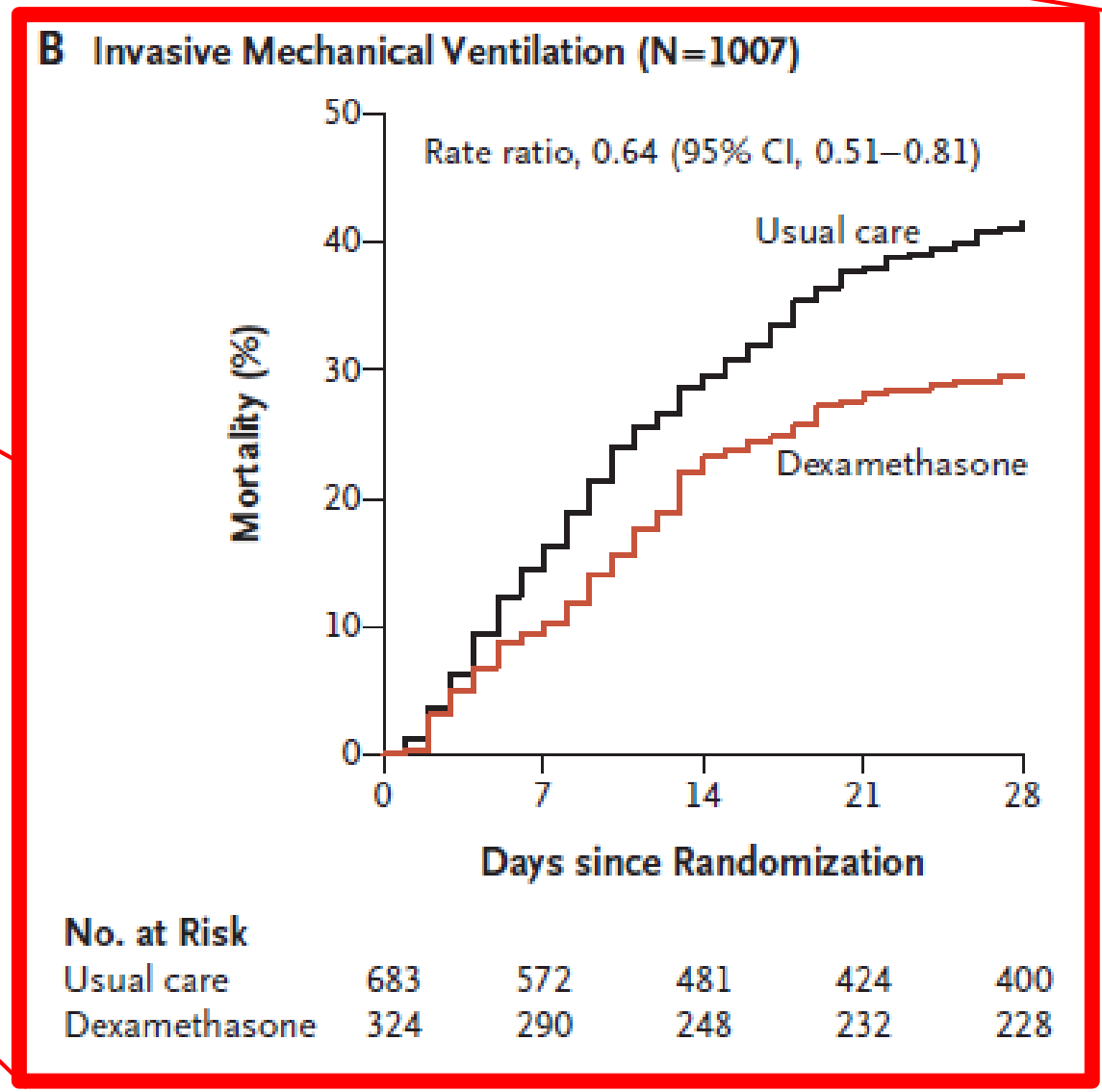


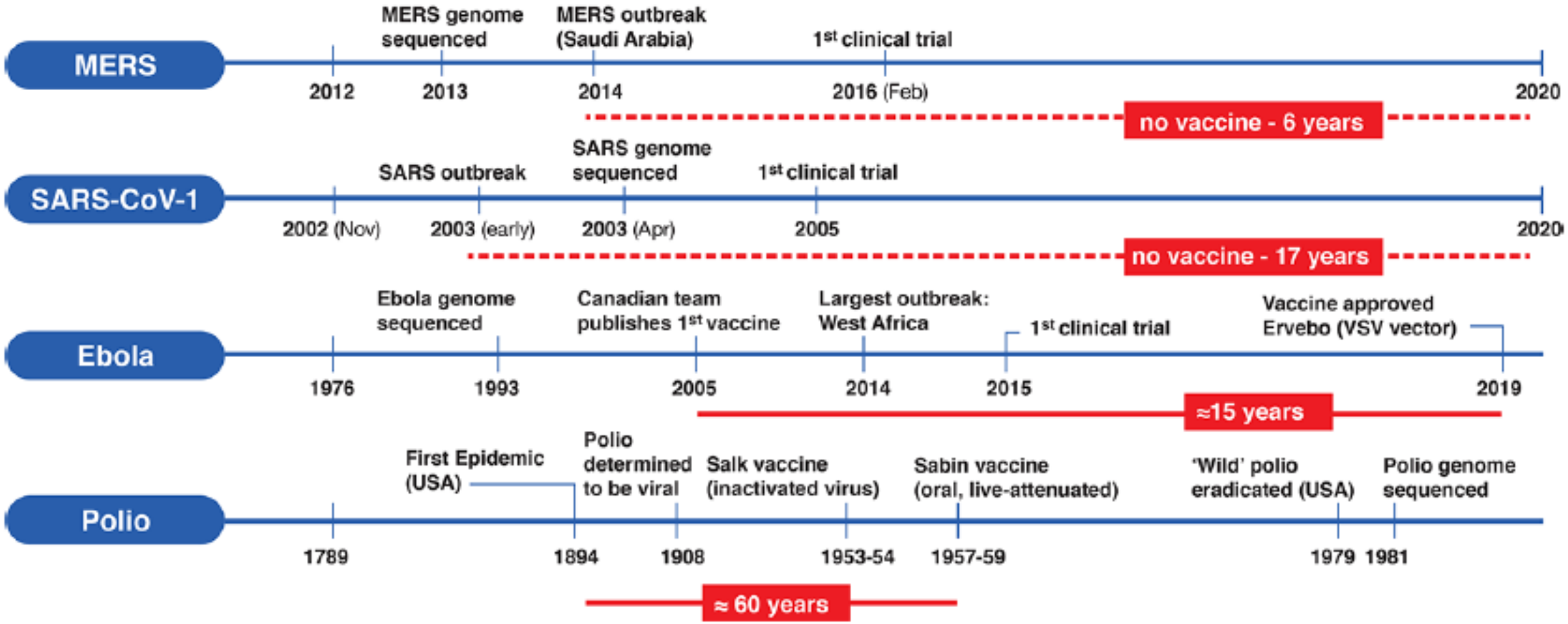
Figure 2. Mortality at 28 Days in All Patients and According to Respiratory Support at Randomization.



Les anticorps neutralisants monoclonaux

- Pas d’efficacité clinique dans plusieurs études
- Diminution plus rapide de la charge virale
- Disponibles en France depuis cette semaine … Indication ? Risques ?

Les vaccins Covid-19 !



Vaccin Covid-19 : à partir de la publication de la séquence :

1,5 mois avant la publication de résultats en modèle animal / vaccin protéique
3-4 mois avant la mise en route de phase 1 de vaccins ARN et adénovirus
6 mois avant la mise en route de phase 3 des mêmes
11 mois avant la publications de premiers résultats d'efficacité

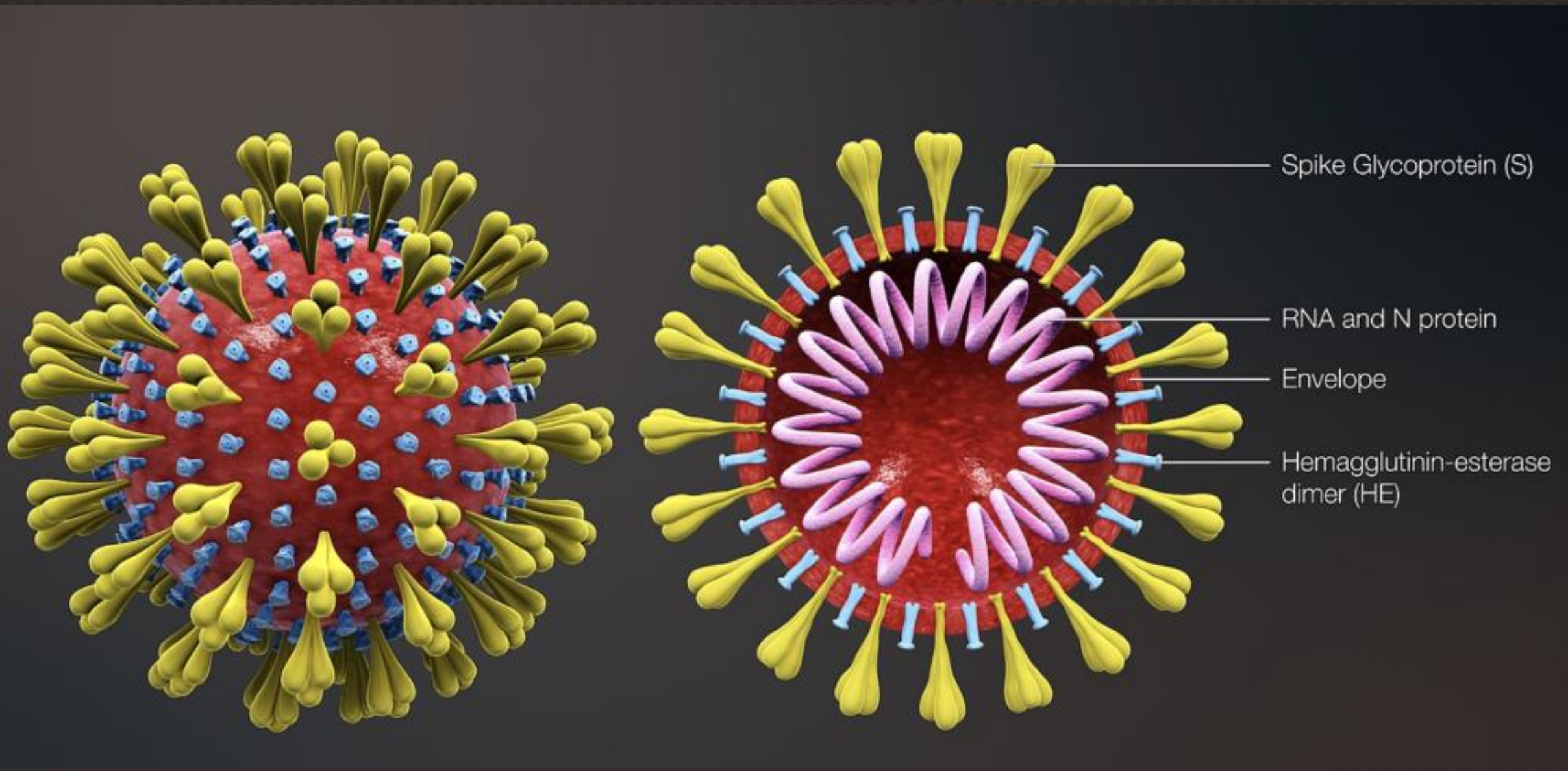
Funk **juin** 2020

Pourquoi cette rapidité ?

- Il y a eu de très nombreux travaux depuis 20 ans sur l'explorations de multiples modes de vaccination
  - en particulier, recherche autour des vaccins anti-VIH, et des vaccins anti-cancer
  - Donc les choses ont pu aller très vite dès le SARS-CoV-2 typé

- On connaissait assez bien les corrélats de protection pour les coronavirus : obtenir des vaccins anti-protéine *spike* (et en particulier contre le site de liaison au récepteur cellulaire, le RBD) est protecteur
  - Il a suffit d'élaborer des vaccins immunisant principalement contre cette protéine
  - Faire un candidat vaccin anti-Covid s'est révélé beaucoup plus aisé que, par ex., le VIH

- Un énorme effort financier et scientifique a été fait
  - Associations d'états et d'industriels (aux USA [Moderna], en Chine [CanSino], en Russie [Gamaleya], en France [Pasteur] …)

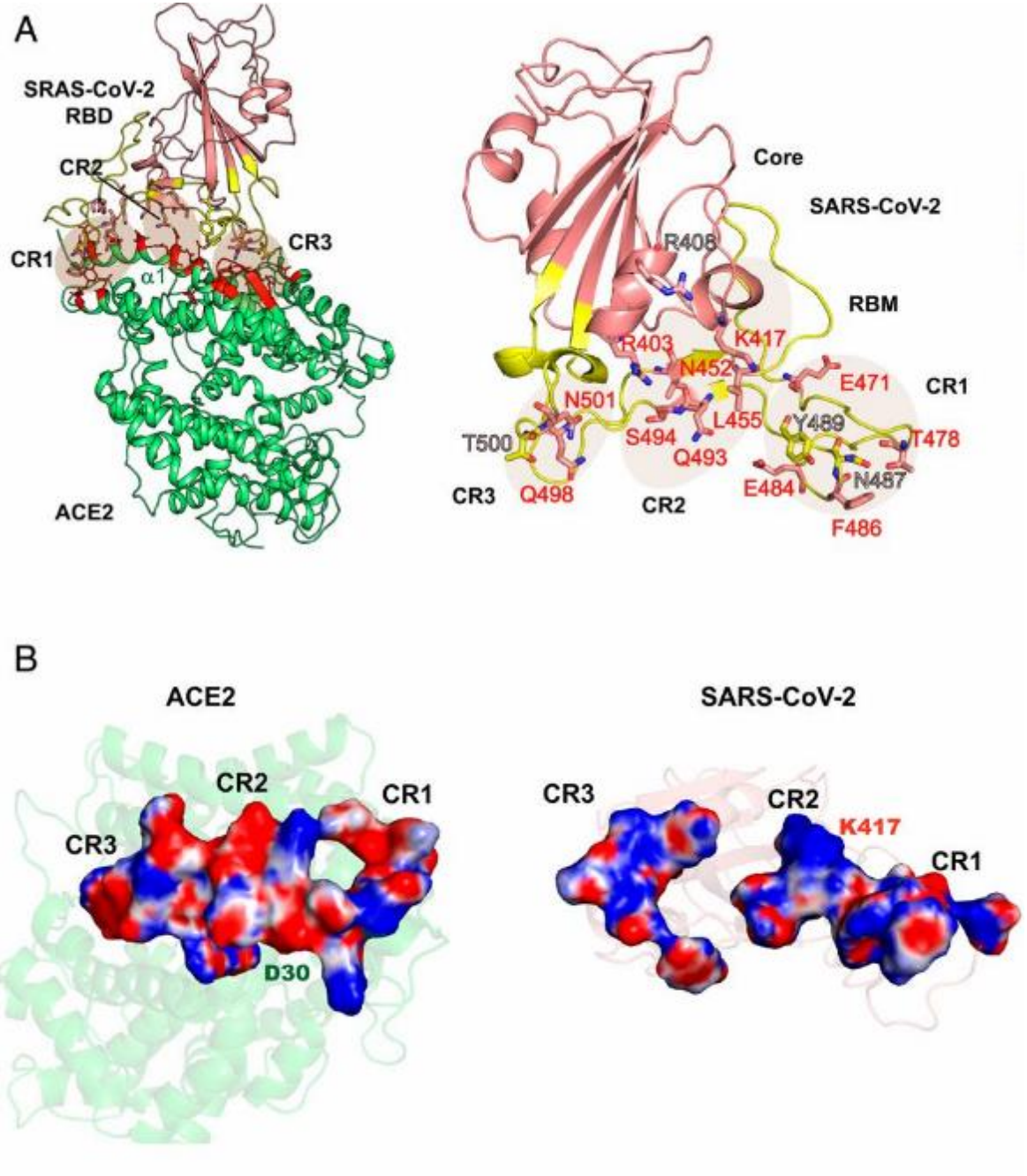

Spike Glycoprotein (S)
RNA and N protein
Envelope
Hemagglutinin-esterase dimer (HE)

Enhanced receptor binding of SARS-CoV-2 through networks of hydrogen-bonding and hydrophobic interactions

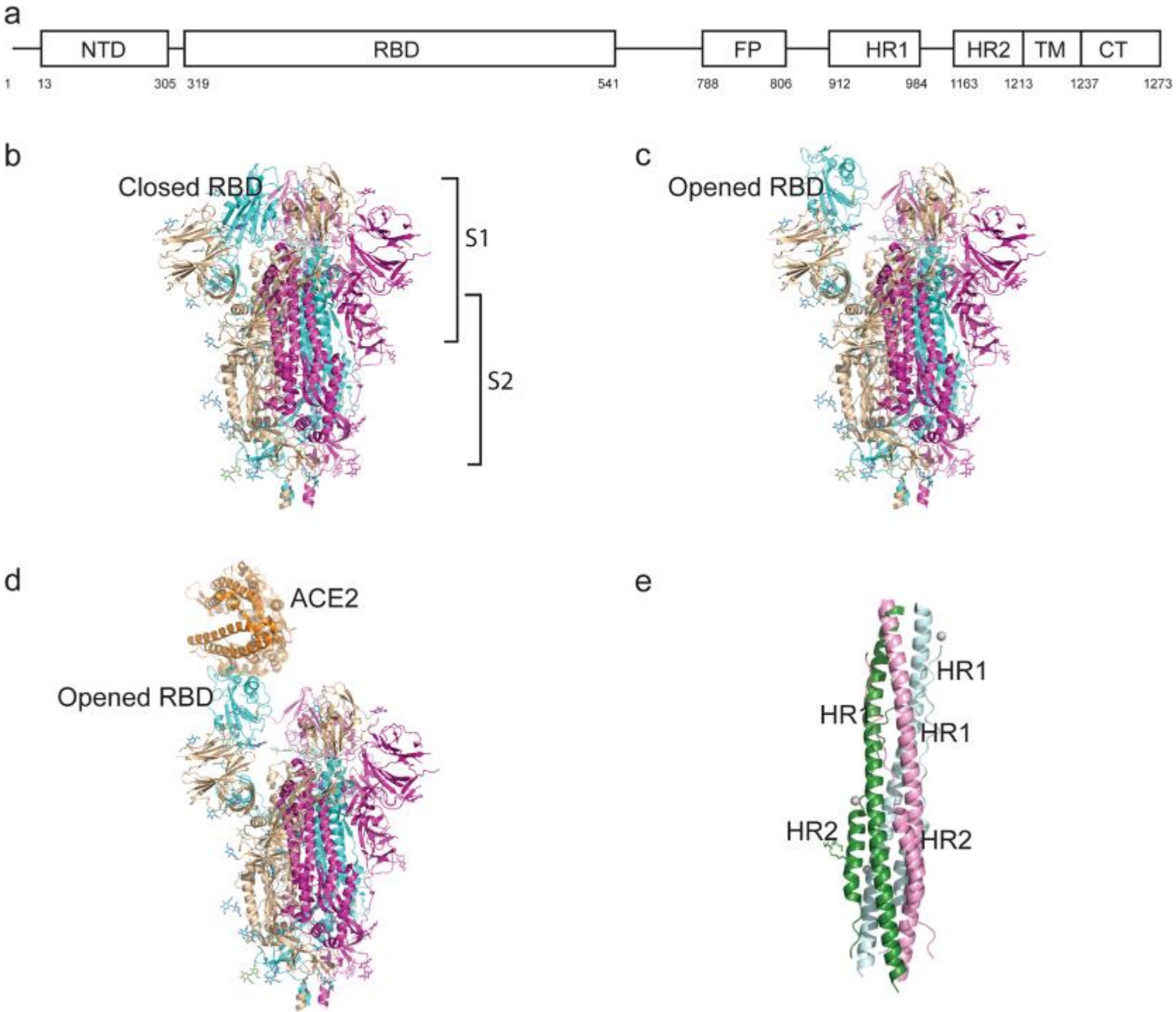
Yingjie Wang[a], **Meiyi Liu**[a,b], **and Jiali Gao**[a,b,c,d,1]

[a]Institute of Systems and Physical Biology, Shenzhen Bay Laboratory, Shenzhen 518055, China; [b]College of Chemical Biology and Biotechnology, Beijing University Shenzhen Graduate School, Shenzhen 518055, China; [c]Department of Chemistry, University of Minnesota, Minneapolis, MN 55455; and [d]Minnesota Supercomputing Institute, University of Minnesota, Minneapolis, MN 55455

Edited by Peter J. Rossky, Rice University, Houston, TX, and approved May 27, 2020 (received for review April 27, 2020)



Protéine Spike



Huang Nature 2020

Vaccine 26 (2008) 6338–6343

Contents lists available at ScienceDirect

Vaccine

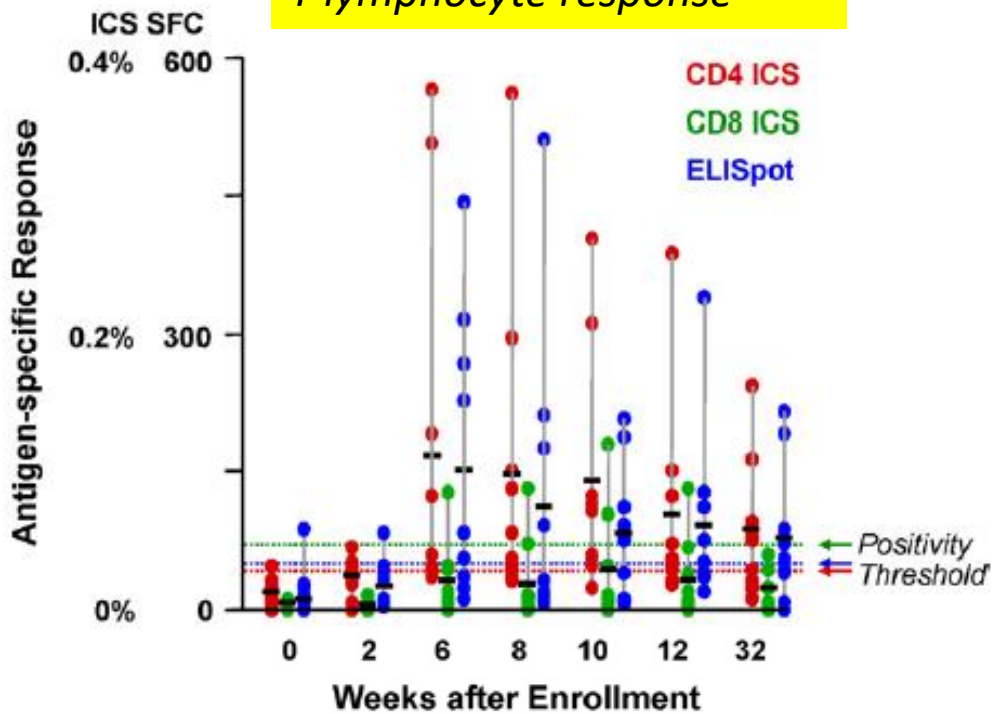
journal homepage: www.elsevier.com/locate/vaccine

2008

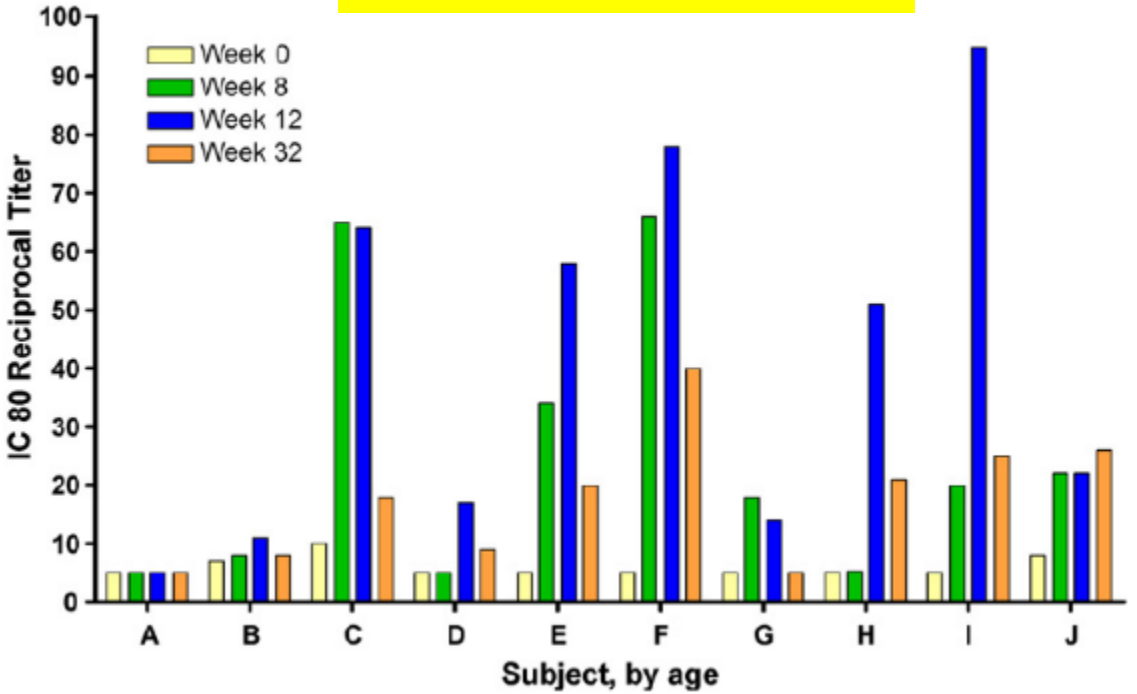
A SARS DNA vaccine induces neutralizing antibody and cellular immune responses in healthy adults in a Phase I clinical trial

Julie E. Martin[a], Mark K. Louder[a], LaSonji A. Holman[a], Ingelise J. Gordon[a], Mary E. Enama[a], Brenda D. Larkin[a], Charla A. Andrews[a], Leatrice Vogel[b], Richard A. Koup[a], Mario Roederer[a], Robert T. Bailer[a], Phillip L. Gomez[a], Martha Nason[a], John R. Mascola[a], Gary J. Nabel[a], Barney S. Graham[a,*], the VRC 301 Study Team[1]

T lymphocyte response

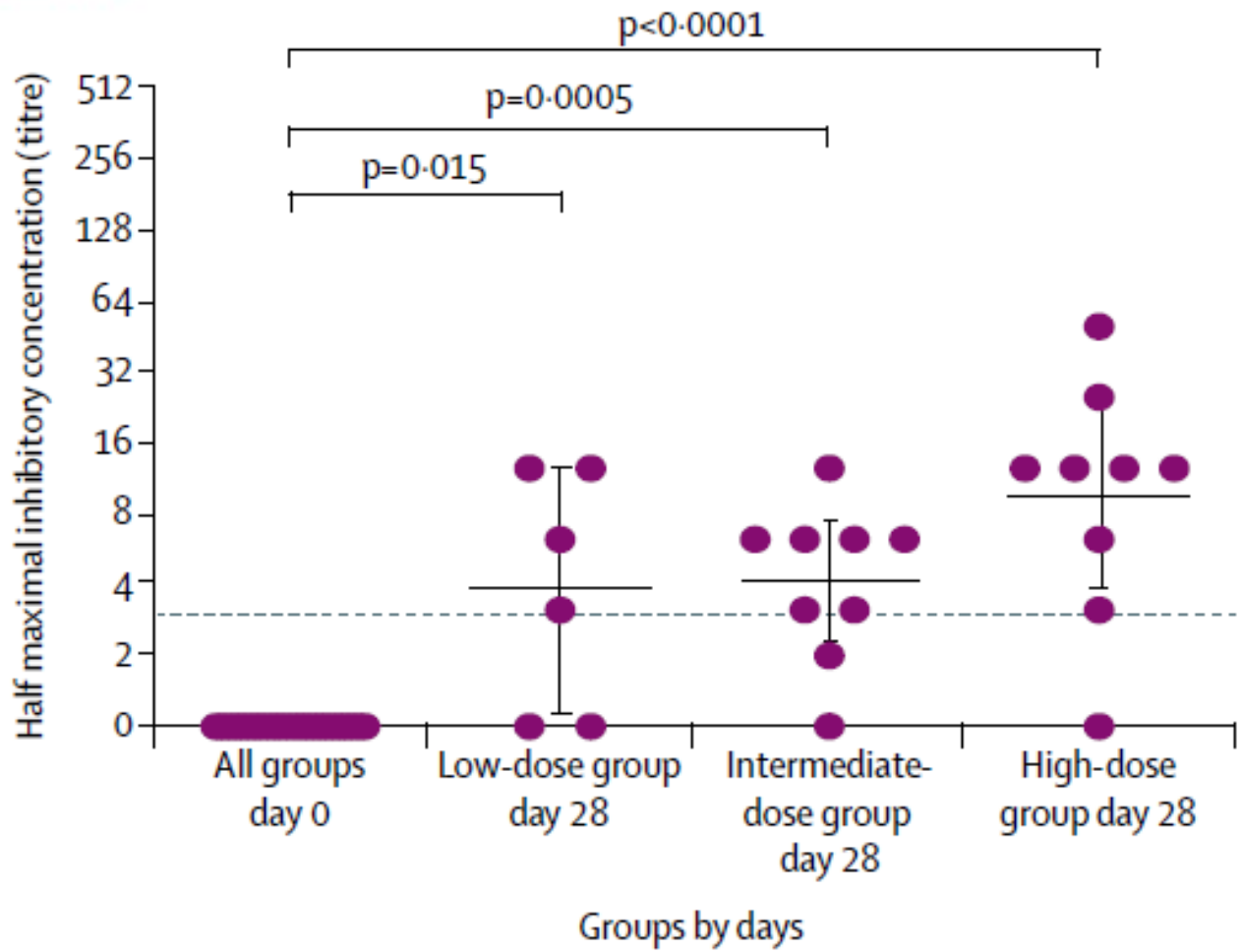


Neutralizing Ab response



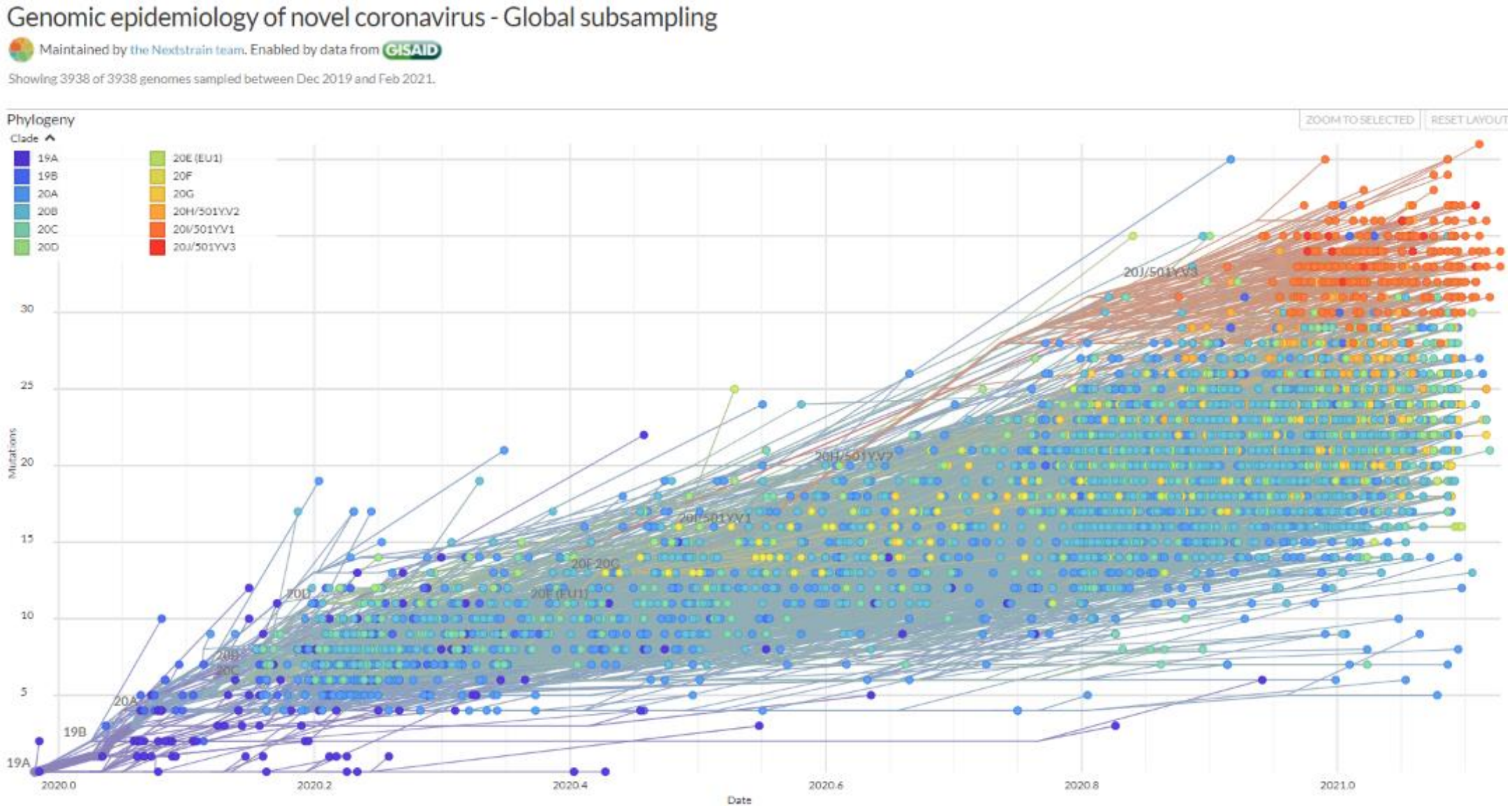
Safety and immunogenicity of a candidate Middle East respiratory syndrome coronavirus viral-vectored vaccine: a dose-escalation, open-label, non-randomised, uncontrolled, phase 1 trial

Pedro M Folegatti, Mustapha Bittaye, Amy Flaxman, Fernando Ramos Lopez, Duncan Bellamy, Alexandra Kupke, Catherine Mair, Rebecca Makinson, Jonathan Sheridan, Cornelius Rohde, Sandro Halwe, Yuji Jeong, Young-Shin Park, Jae-Ouk Kim, Manki Song, Amy Boyd, Nguyen Tran, Daniel Silman, Ian Poulton, Mehreen Datoo, Julia Marshall, Yrene Themistocleous, Alison Lawrie, Rachel Roberts, Eleanor Berrie, Stephan Becker, Teresa Lambe, Adrian Hill, Katie Ewer, Sarah Gilbert



Vecteur viral (adénovirus) basé sur la protéine spike

Une faible dérive génétique : taux de mutations bas



Nextstrain.org

Wuhan seafood market pneumonia virus isolate Wuhan-Hu-1, complete genome

GenBank: MN908947.3

FASTA Graphics

Go to:

```
LOCUS       MN908947               29903 bp ss-RNA     linear   VRL 17-JAN-2020
DEFINITION  Wuhan seafood market pneumonia virus isolate Wuhan-Hu-1, complete
            genome.
ACCESSION   MN908947
VERSION     MN908947.3
KEYWORDS    .
SOURCE      Wuhan seafood market pneumonia virus
  ORGANISM  Wuhan seafood market pneumonia virus
            Viruses; Riboviria; Nidovirales; Cornidovirineae; Coronaviridae;
            Orthocoronavirinae; Betacoronavirus; unclassified Betacoronavirus.
REFERENCE   1  (bases 1 to 29903)
  AUTHORS   Wu,F., Zhao,S., Yu,B., Chen,Y.-M., Wang,W., Hu,Y., Song,Z.-G.,
            Tao,Z.-W., Tian,J.-H., Pei,Y.-Y., Yuan,M.L., Zhang,Y.-L.,
            Dai,F.-H., Liu,Y., Wang,Q.-M., Zheng,J.-J., Xu,L., Holmes,E.C. and
            Zhang,Y.-Z.
  TITLE     A novel coronavirus associated with a respiratory disease in Wuhan
            of Hubei province, China
  JOURNAL   Unpublished
REFERENCE   2  (bases 1 to 29903)
  AUTHORS   Wu,F., Zhao,S., Yu,B., Chen,Y.-M., Wang,W., Hu,Y., Song,Z.-G.,
            Tao,Z.-W., Tian,J.-H., Pei,Y.-Y., Yuan,M.L., Zhang,Y.-L.,
            Dai,F.-H., Liu,Y., Wang,Q.-M., Zheng,J.-J., Xu,L., Holmes,E.C. and
            Zhang,Y.-Z.
  TITLE     Direct Submission
  JOURNAL   Submitted (05-JAN-2020) Shanghai Public Health Clinical Center &
            School of Public Health, Fudan University, Shanghai, China
COMMENT     On Jan 17, 2020 this sequence version replaced MN908947.2.

            ##Assembly-Data-START##
            Assembly Method       :: Megahit v. V1.1.3
            Sequencing Technology :: Illumina
            ##Assembly-Data-END##
FEATURES             Location/Qualifiers
```

Article

A vaccine targeting the RBD of the S protein of SARS-CoV-2 induces protective immunity

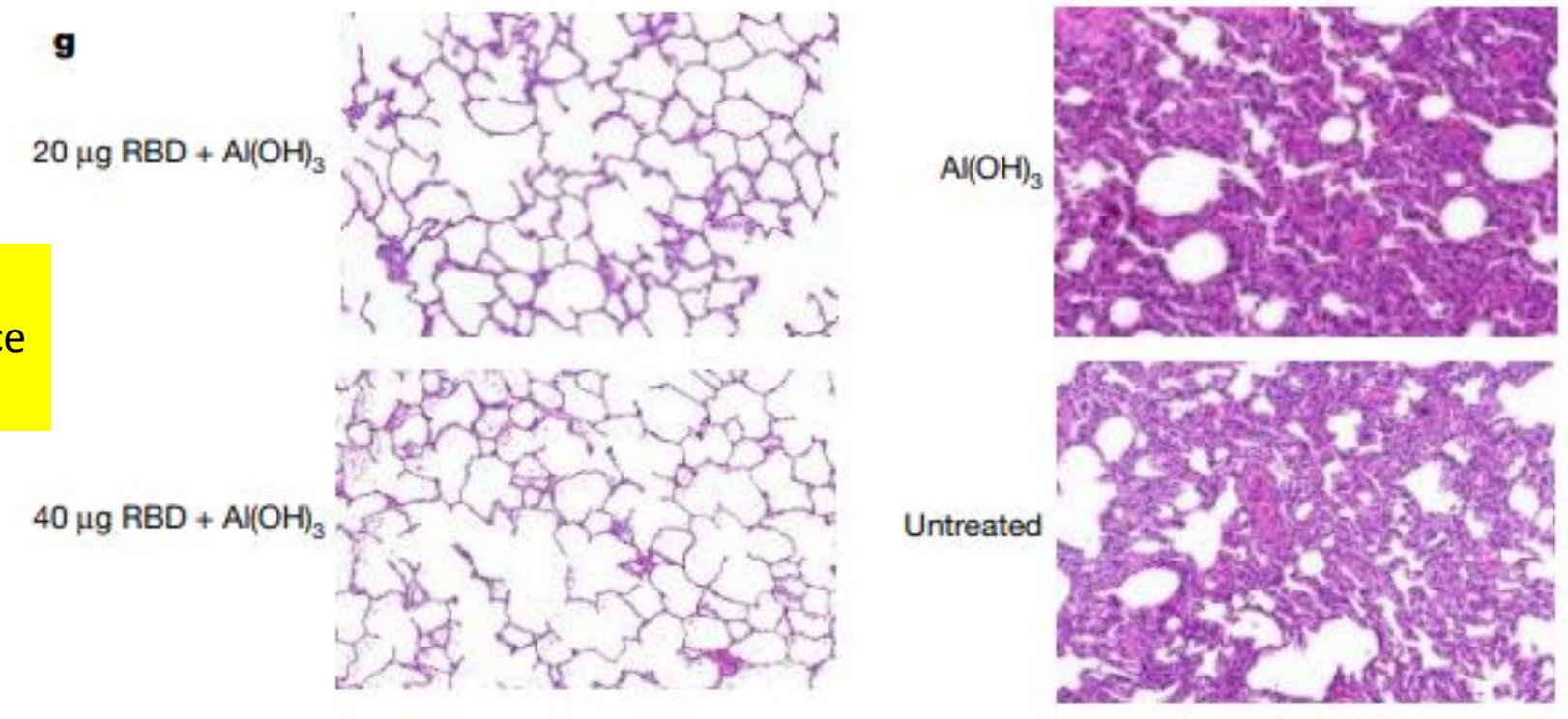
17 mars 2020

https://doi.org/10.1038/s41586-020-2599-8
Received: 17 March 2020
Accepted: 23 July 2020
Published online: 29 July 2020
Check for updates

Jingyun Yang[1,14], Wei Wang[1,14], Zimin Chen[1,14], Shuaiyao Lu[2,14], Fanli Yang[1,14], Zhenfei Bi[1,14], Linlin Bao[3,14], Fei Mo[1], Xue Li[1], Yong Huang[1], Weiqi Hong[1], Yun Yang[2], Yuan Zhao[2], Fei Ye[1], Sheng Lin[1], Wei Deng[3], Hua Chen[1], Hong Lei[1], Ziqi Zhang[1], Min Luo[1], Hong Gao[3], Yue Zheng[1], Yanqiu Gong[1], Xiaohua Jiang[1], Yanfeng Xu[1], Qi Lv[2], Dan Li[1], Manni Wang[1], Fengdi Li[2], Shunyi Wang[2], Guanpeng Wang[2], Pin Yu[2], Yajin Qu[2], Li Yang[1], Hongxin Deng[1], Aiping Tong[1], Jiong Li[1], Zhenling Wang[1], Jinliang Yang[1], Guobo Shen[1], Zhiwei Zhao[1], Yuhua Li[4], Jingwen Luo[1], Hongqi Liu[2], Wenhai Yu[2], Mengli Yang[2], Jingwen Xu[2], Junbin Wang[2], Haiyan Li[2], Haixuan Wang[2], Dexuan Kuang[2], Panpan Lin[1], Zhengtao Hu[5], Wei Guo[5], Wei Cheng[1], Yanlin He[5], Xiangrong Song[1], Chong Chen[1], Zhihong Xue[1], Shaohua Yao[1], Lu Chen[1], Xuelei Ma[1], Siyuan Chen[1], Maling Gou[1], Weijin Huang[4], Youchun Wang[4], Changfa Fan[4], Zhixin Tian[6], Ming Shi[7], Fu-Sheng Wang[7], Lunzhi Dai[1], Min Wu[1], Gen Li[8], Guangyu Wang[9], Yong Peng[1], Zhiyong Qian[1], Canhua Huang[1], Johnson Yiu-Nam Lau[10], Zhenglin Yang[11], Yuquan Wei[1], Xiaobo Cen[1,5], Xiaozhong Peng[2,12], Chuan Qin[3], Kang Zhang[8,✉], Guangwen Lu[1,13,✉] & Xiawei Wei[1,✉]

Poumon de primates vaccinés ou non puis inoculés avec SARS-CoV-2

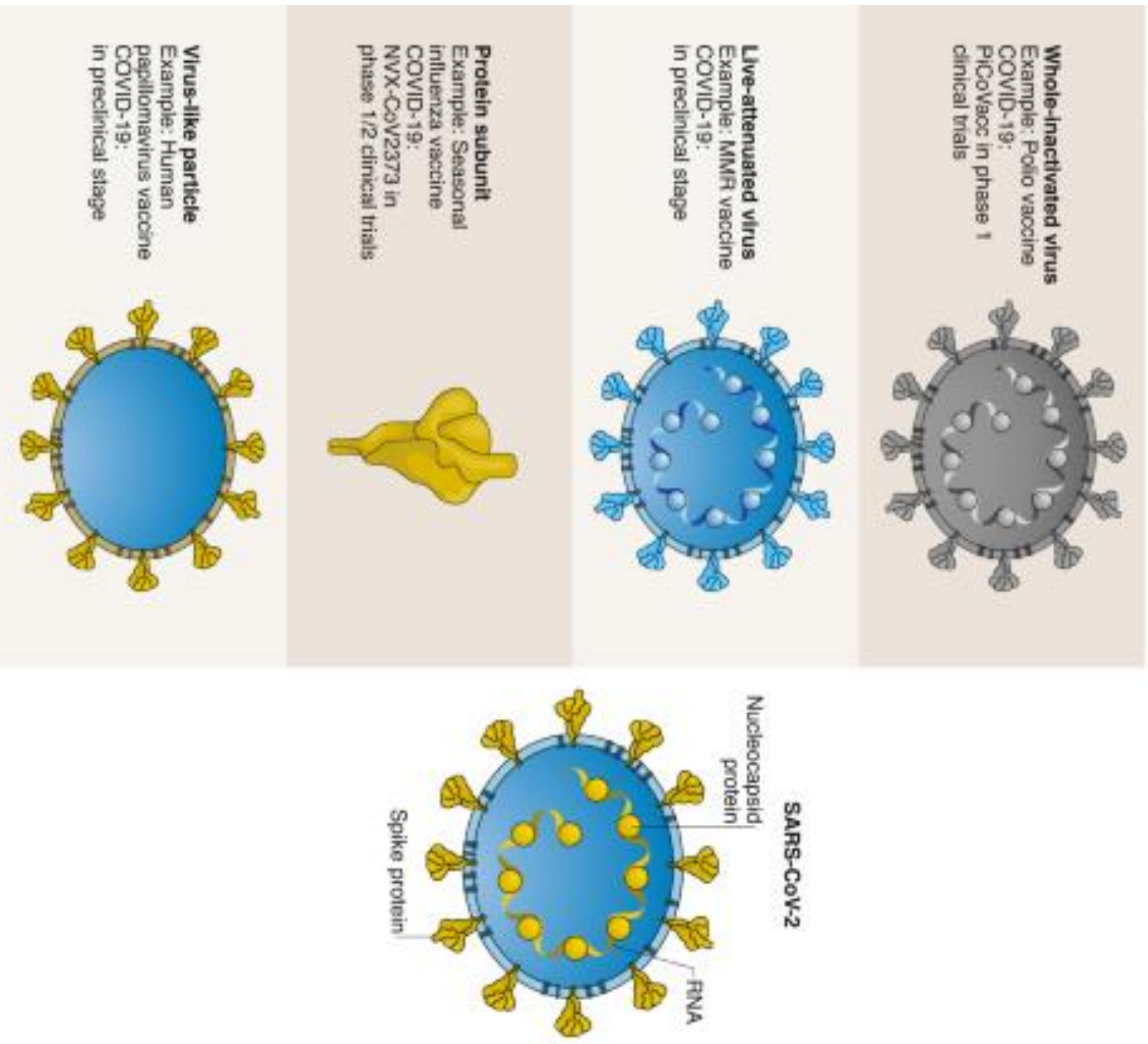
L'immunisation par la protéine Spike (adjuvantée avec l'aluminium) est protectrice en modèle macaque de la Covid-19



Next-generation vaccine platforms for COVID-19

Consensus among experts is that only an effective COVID-19 vaccine will end the pandemic. This Comment focuses on how this pandemic has accelerated the development of vaccine platforms distinct from classical vaccines; these novel platforms may also increase the response time when new viruses emerge in the future.

Debby van Riel and Emmie de Wit



comment

Next-generation vaccine platforms for COVID-19

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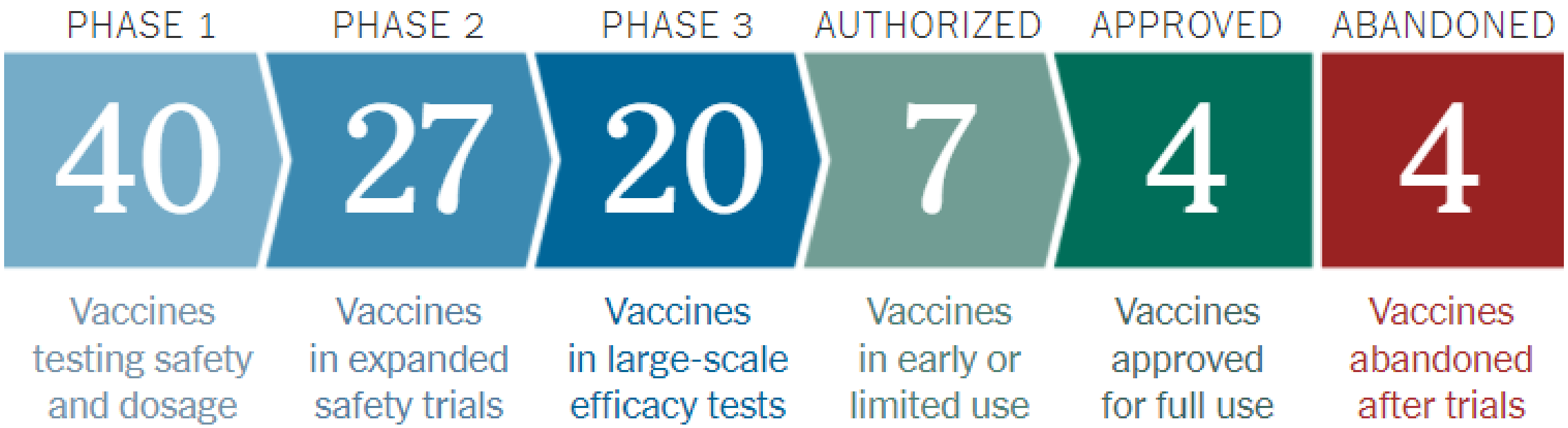
Debby van Riel and Emmie de Wit

Coronavirus Vaccine Tracker

By Carl Zimmer, Jonathan Corum and Sui-Lee Wee Updated Feb. 24, 2021



The New York Times

Au 25/02/2021

Leading vaccines

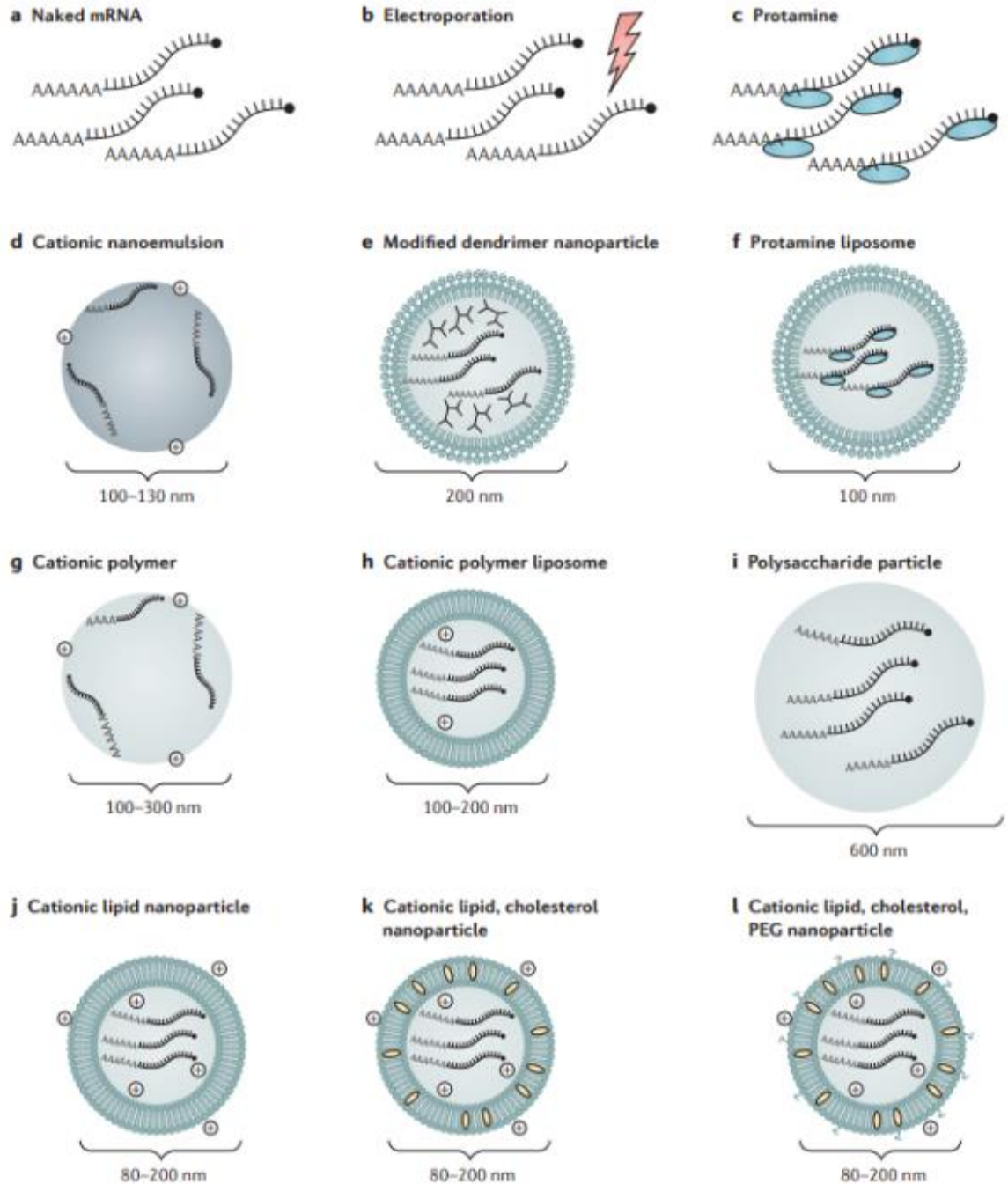
Developer	How It Works	Phase	Status
Pfizer-BioNTech	mRNA	2 3	Approved in several countries. Emergency use in U.S., E.U., other countries.
Moderna	mRNA	3	Approved in Switzerland. Emergency use in U.S., U.K., E.U., others.
Gamaleya	Ad26, Ad5	3	Early use in Russia. Emergency use in other countries.
Oxford-AstraZeneca	ChAdOx1	2 3	Emergency use in U.K., E.U., other countries.
CanSino	Ad5	3	Limited use in China.
Johnson & Johnson	Ad26	3	
Vector Institute	Protein	3	Early use in Russia.
Novavax	Protein	3	
Sinopharm	Inactivated	3	Approved in China, U.A.E., Bahrain. Emergency use in Egypt, other coutries.
Sinovac	Inactivated	3	Approved in China. Emergency use in Brazil, other countries.
Sinopharm-Wuhan	Inactivated	3	Limited use in China, U.A.E.
Bharat Biotech	Inactivated	3	Emergency use in India.

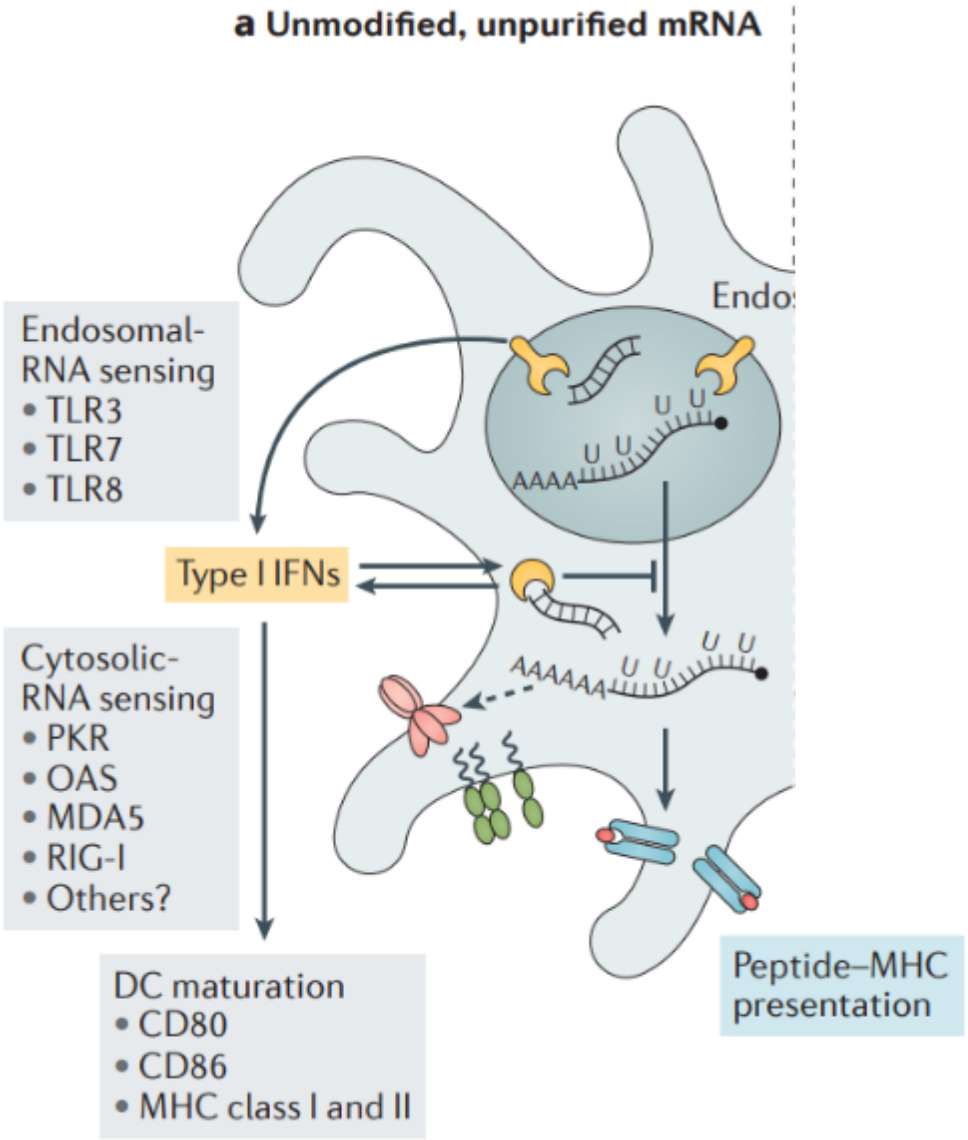
The New York Times

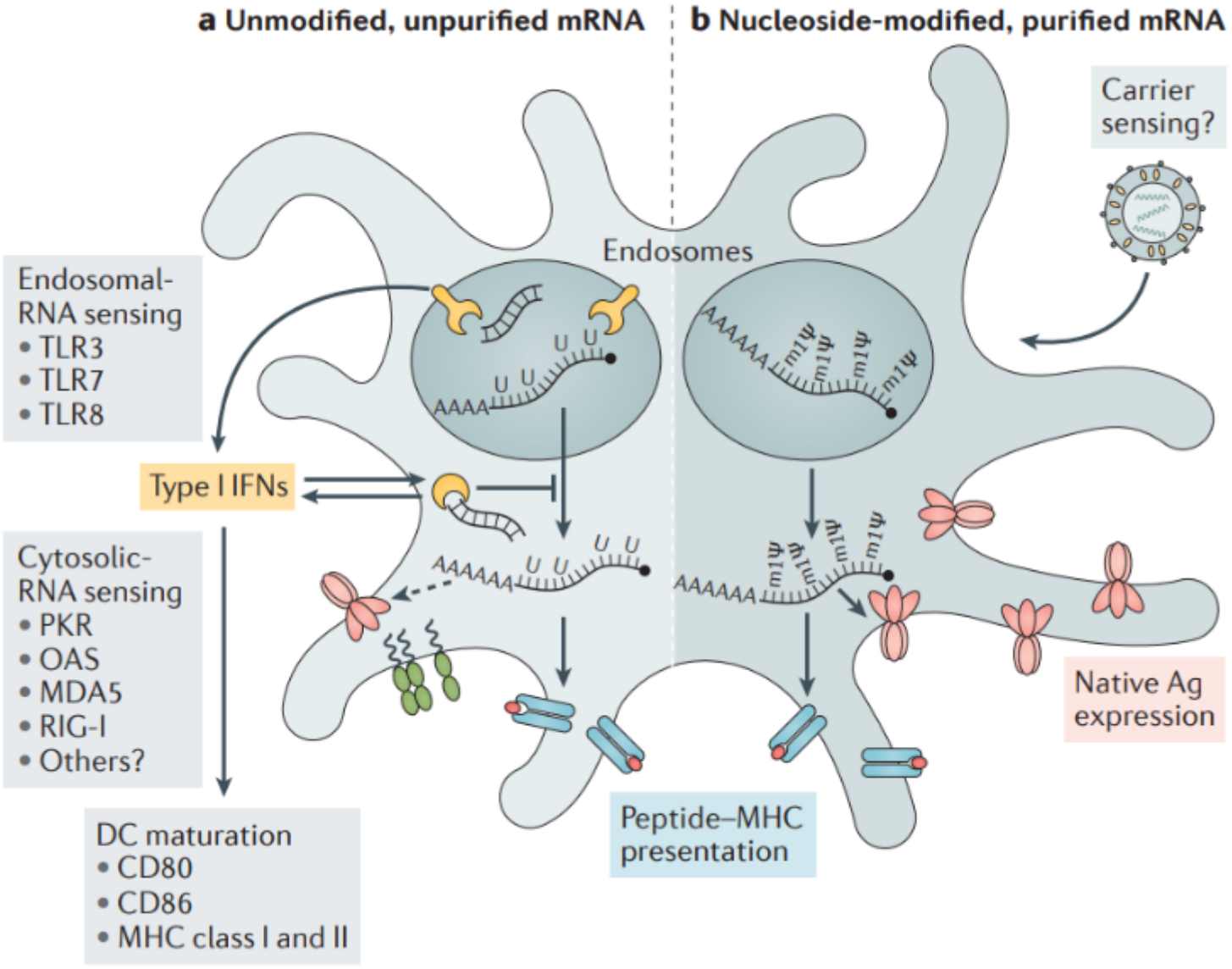
mRNA vaccines — a new era in vaccinology

Norbert Pardi[1], Michael J. Hogan[1], Frederick W. Porter[2] and Drew Weissman[1]

2018




a Unmodified, unpurified mRNA
Endo
Endosomal-RNA sensing
• TLR3
• TLR7
• TLR8
U U
U U
AAAA
Type I IFNs
Cytosolic-RNA sensing
• PKR
• OAS
• MDA5
• RIG-I
• Others?
AAAAAA
U U
U
DC maturation
• CD80
• CD86
• MHC class I and II
Peptide–MHC presentation



Stabilisation des ARNm :

Queue poly-A

Éléments régulateurs en 5’ et 3’

Cap en 5’

Améliorer la disponibilité :

nanoparticules

Améliorer la ‘’prise en charge’’ cellulaire :

Optimisation de codons

Substitution par 1-methylpseudouridine

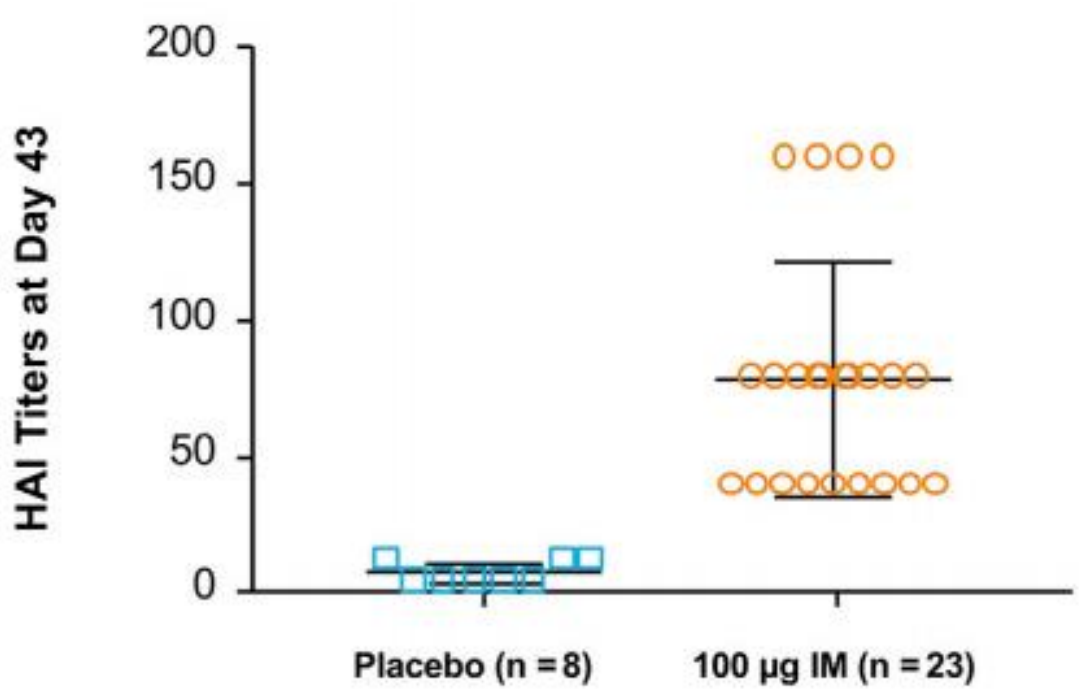
Purification pour éliminer les double brins

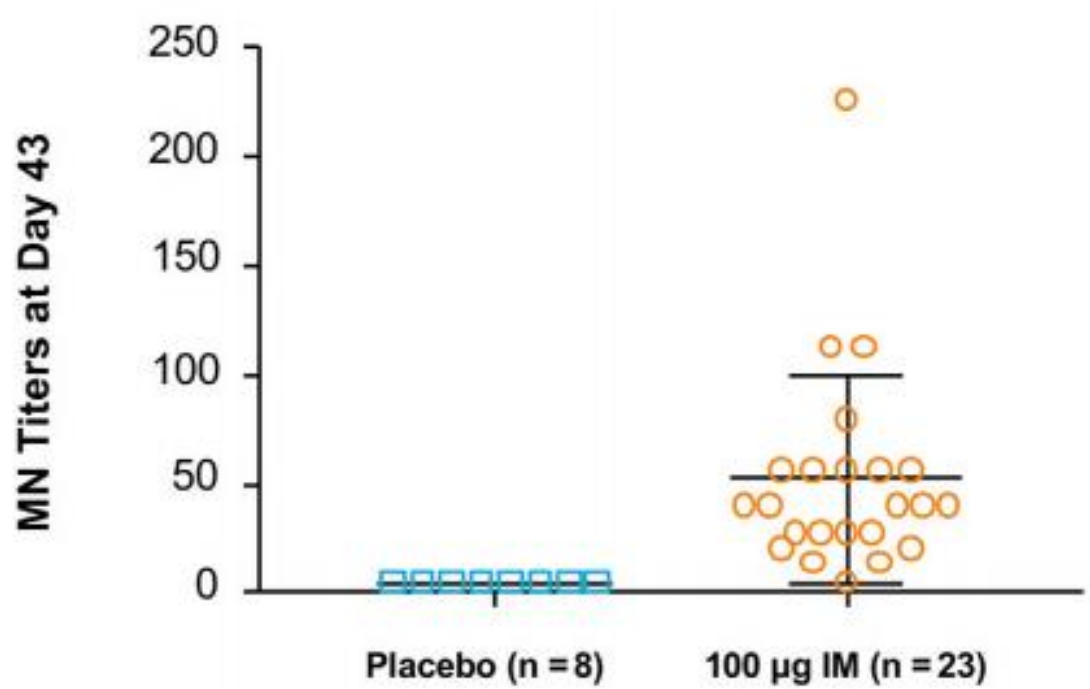
Molecular Therapy
Original Article

2017

Preclinical and Clinical Demonstration of Immunogenicity by mRNA Vaccines against H10N8 and H7N9 Influenza Viruses

Kapil Bahl,[1] Joe J. Senn,[2] Olga Yuzhakov,[1] Alex Bulychev,[2] Luis A. Brito,[2] Kimberly J. Hassett,[1] Michael E. Laska,[2] Mike Smith,[2] Örn Almarsson,[2] James Thompson,[2] Amilcar (Mick) Ribeiro,[1] Mike Watson,[1] Tal Zaks,[2] and Giuseppe Ciaramella[1]



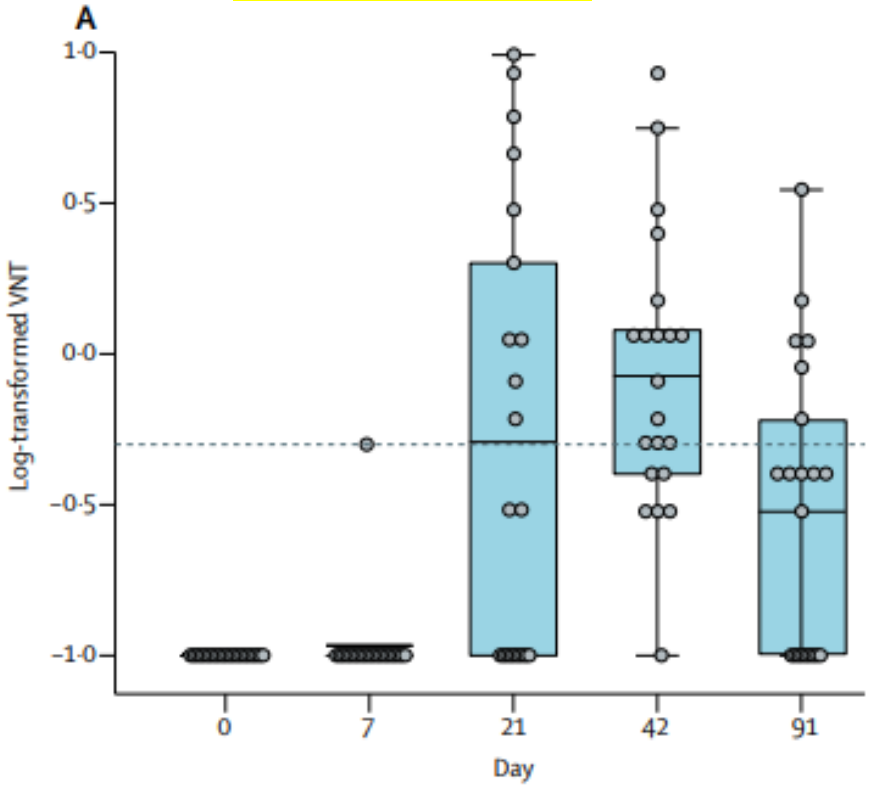


Safety and immunogenicity of a mRNA rabies vaccine in healthy adults: an open-label, non-randomised, prospective, first-in-human phase 1 clinical trial

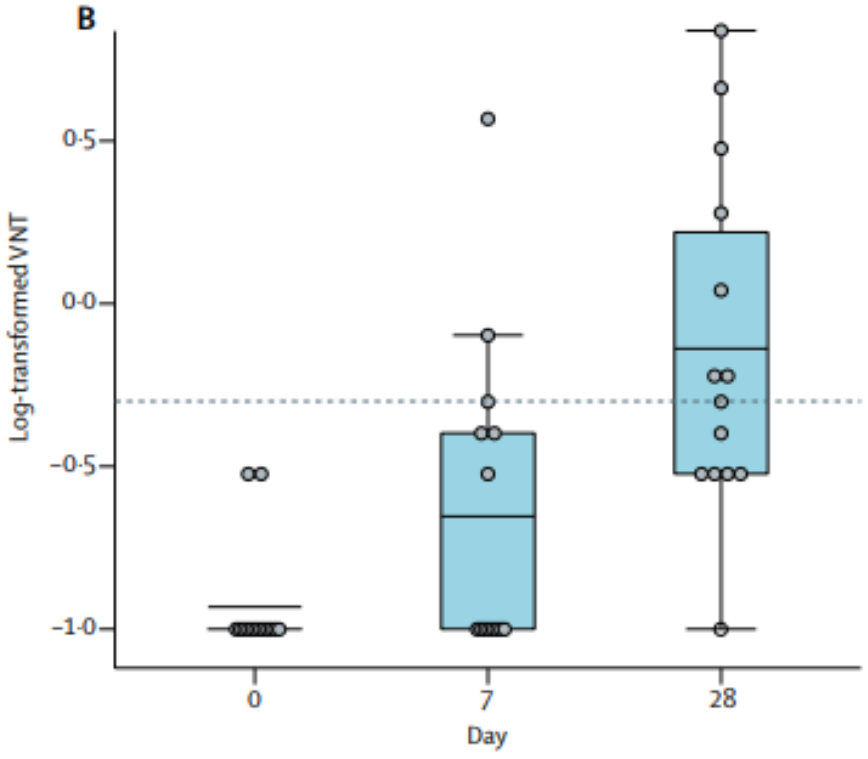
2017

Martin Alberer, Ulrike Gnad-Vogt, Henoch Sangjoon Hong, Keyvan Tadjalli Mehr, Linus Backert, Greg Finak, Raphael Gottardo, Mihai Alexandru Bica, Aurelio Garofano, Sven Dominik Koch, Mariola Fotin-Mleczek, Ingmar Hoerr, Ralf Clemens, Frank von Sonnenburg

Réponse initiale



Après le rappel à 1 an



Phase I clinical trial of an intranodally administered mRNA-based therapeutic vaccine against HIV-1 infection

Lorna Leal[a,b], Alberto C. Guardo[b], Sara Morón-López[c], Maria Salgado[c], Beatriz Mothe[c], Carlo Heirman[f], Pieter Pannus[g], Guido Vanham[g], Henk Jan van den Ham[h], Rob Gruters[h], Arno Andeweg[h], Sonja Van Meirvenne[f], Judit Pich[b], Joan Albert Arnaiz[b], Josep M. Gatell[a,b], Christian Brander[c], Kris Thielemans[f], Javier Martínez-Picado[c,d,e], Montserrat Plana[b], Felipe García[a,b], on behalf of the iHIVARNA consortium

2018

The NEW ENGLAND JOURNAL of MEDICINE

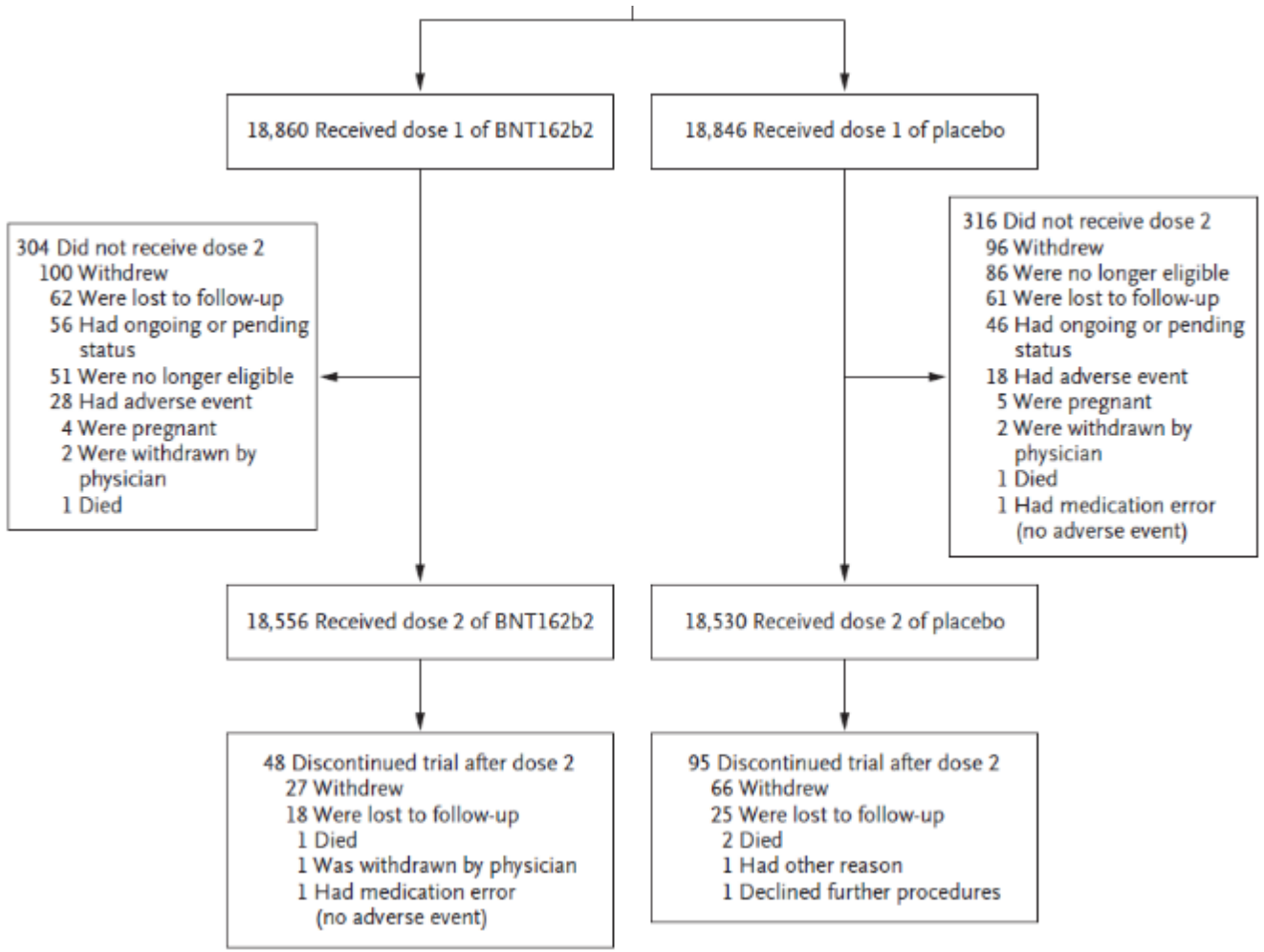
December 10, 2020

ORIGINAL ARTICLE

Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine

Fernando P. Polack, M.D., Stephen J. Thomas, M.D., Nicholas Kitchin, M.D., Judith Absalon, M.D., Alejandra Gurtman, M.D., Stephen Lockhart, D.M., John L. Perez, M.D., Gonzalo Pérez Marc, M.D., Edson D. Moreira, M.D., Cristiano Zerbini, M.D., Ruth Bailey, B.Sc., Kena A. Swanson, Ph.D., Satrajit Roychoudhury, Ph.D., Kenneth Koury, Ph.D., Ping Li, Ph.D., Warren V. Kalina, Ph.D., David Cooper, Ph.D., Robert W. Frenck, Jr., M.D., Laura L. Hammitt, M.D., Özlem Türeci, M.D., Haylene Nell, M.D., Axel Schaefer, M.D., Serhat Ünal, M.D., Dina B. Tresnan, D.V.M., Ph.D., Susan Mather, M.D., Philip R. Dormitzer, M.D., Ph.D., Uğur Şahin, M.D., Kathrin U. Jansen, Ph.D., and William C. Gruber, M.D., for the C4591001 Clinical Trial Group*

Phase 3 Pfizer



PHASE 2 | PHASE 3 | COMBINED PHASES

APPROVED IN SEVERAL COUNTRIES | EMERGENCY USE IN U.S., ELSEWHERE

Pfizer BIONTECH

VACCINE NAME: BNT162b2

EFFICACY: 95%

DOSE: 2 doses, 3 weeks apart

TYPE: Muscle injection

STORAGE: Freezer storage only at -94°F (-70°C)

Phase 3 Pfizer

Table 1. Demographic Characteristics of the Participants in the Main Safety Population.*

Characteristic	BNT162b2 (N=18,860)	Placebo (N=18,846)	Total (N=37,706)
Sex — no. (%)			
Male	9,639 (51.1)	9,436 (50.1)	19,075 (50.6)
Female	9,221 (48.9)	9,410 (49.9)	18,631 (49.4)
Race or ethnic group — no. (%)†			
White	15,636 (82.9)	15,630 (82.9)	31,266 (82.9)
Black or African American	1,729 (9.2)	1,763 (9.4)	3,492 (9.3)
Asian	801 (4.2)	807 (4.3)	1,608 (4.3)
Native American or Alaska Native	102 (0.5)	99 (0.5)	201 (0.5)
Native Hawaiian or other Pacific Islander	50 (0.3)	26 (0.1)	76 (0.2)
Multiracial	449 (2.4)	406 (2.2)	855 (2.3)
Not reported	93 (0.5)	115 (0.6)	208 (0.6)
Hispanic or Latinx	5,266 (27.9)	5,277 (28.0)	10,543 (28.0)
Country — no. (%)			
Argentina	2,883 (15.3)	2,881 (15.3)	5,764 (15.3)
Brazil	1,145 (6.1)	1,139 (6.0)	2,284 (6.1)
South Africa	372 (2.0)	372 (2.0)	744 (2.0)
United States	14,460 (76.7)	14,454 (76.7)	28,914 (76.7)
Age group — no. (%)			
16–55 yr	10,889 (57.7)	10,896 (57.8)	21,785 (57.8)
>55 yr	7,971 (42.3)	7,950 (42.2)	15,921 (42.2)
Age at vaccination — yr			
Median	52.0	52.0	52.0
Range	16–89	16–91	16–91
Body-mass index‡			
≥30.0: obese	6,556 (34.8)	6,662 (35.3)	13,218 (35.1)

PHASE 2 | PHASE 3 | COMBINED PHASES

APPROVED IN SEVERAL COUNTRIES | EMERGENCY USE IN U.S., ELSEWHERE

Pfizer BIONTECH

VACCINE NAME: BNT162b2

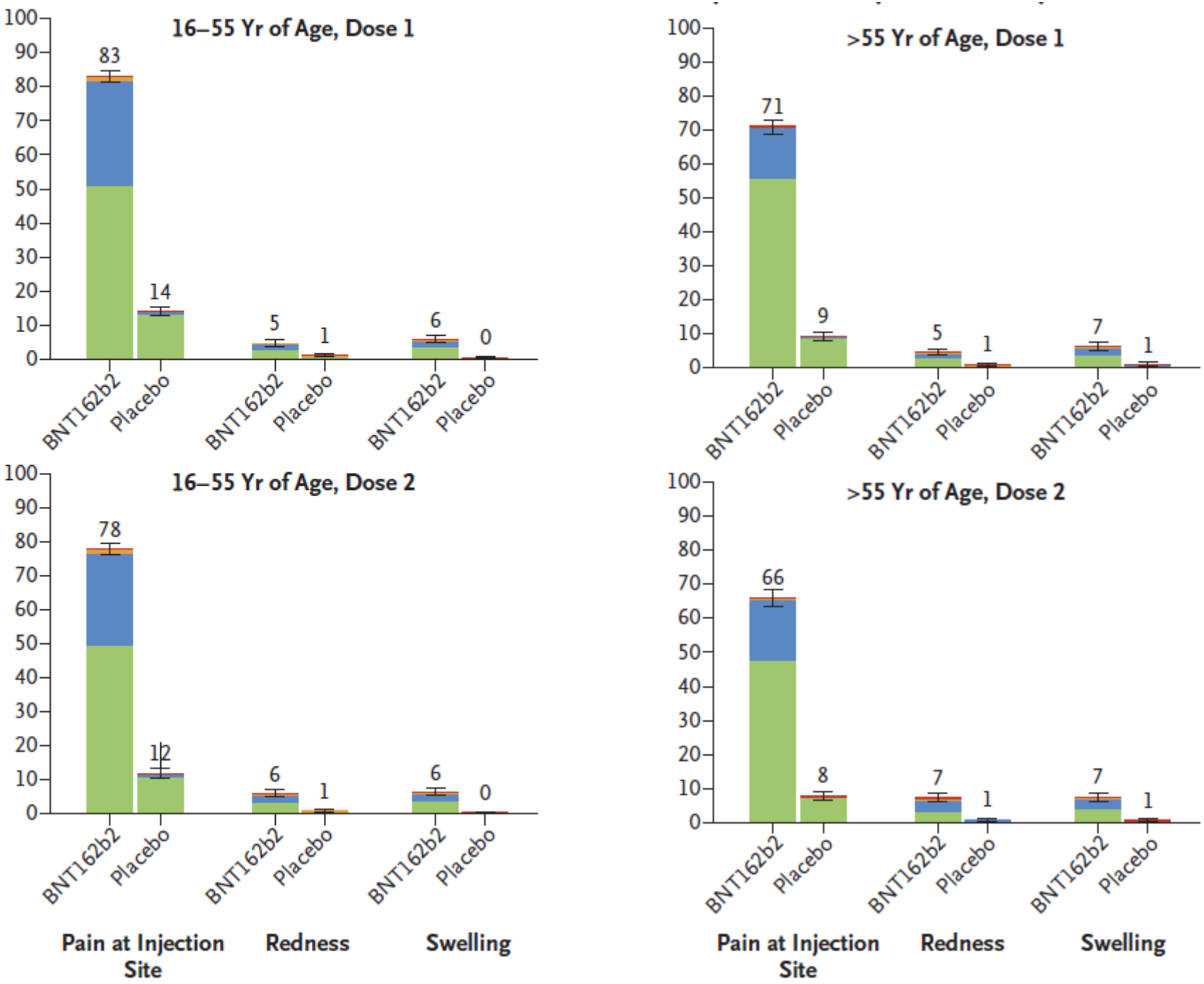
EFFICACY: 95%

DOSE: 2 doses, 3 weeks apart

TYPE: Muscle injection

STORAGE: Freezer storage only at -94°F (-70°C)

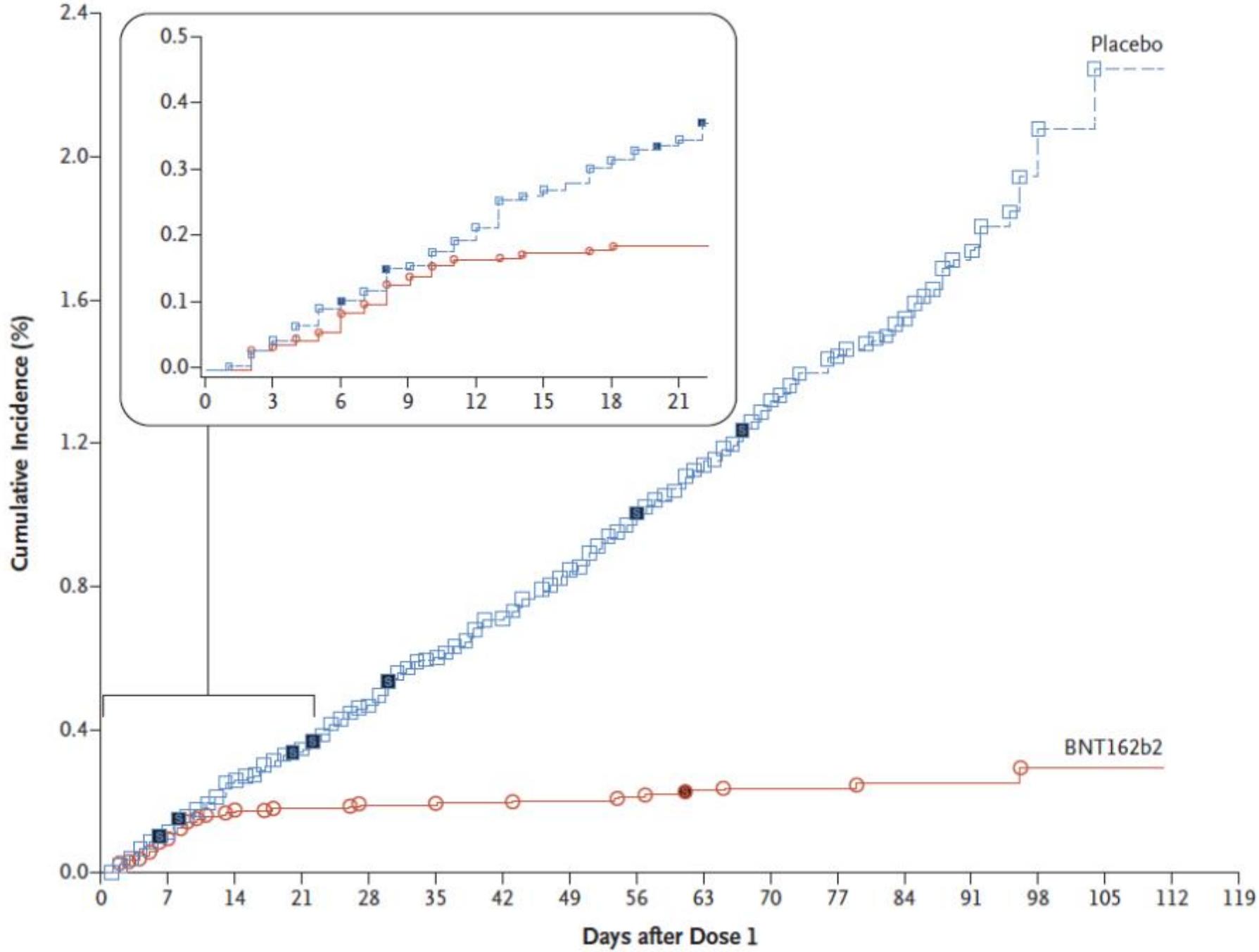
Safety



Phase 3 Pfizer

Phase 3 Pfizer

Protection



PHASE 2 | PHASE 3 | COMBINED PHASES

APPROVED IN SEVERAL COUNTRIES | EMERGENCY USE IN U.S., ELSEWHERE

Pfizer BIONTECH

VACCINE NAME: BNT162b2

EFFICACY: 95%

DOSE: 2 doses, 3 weeks apart

TYPE: Muscle injection

STORAGE: Freezer storage only at -94°F (-70°C)

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

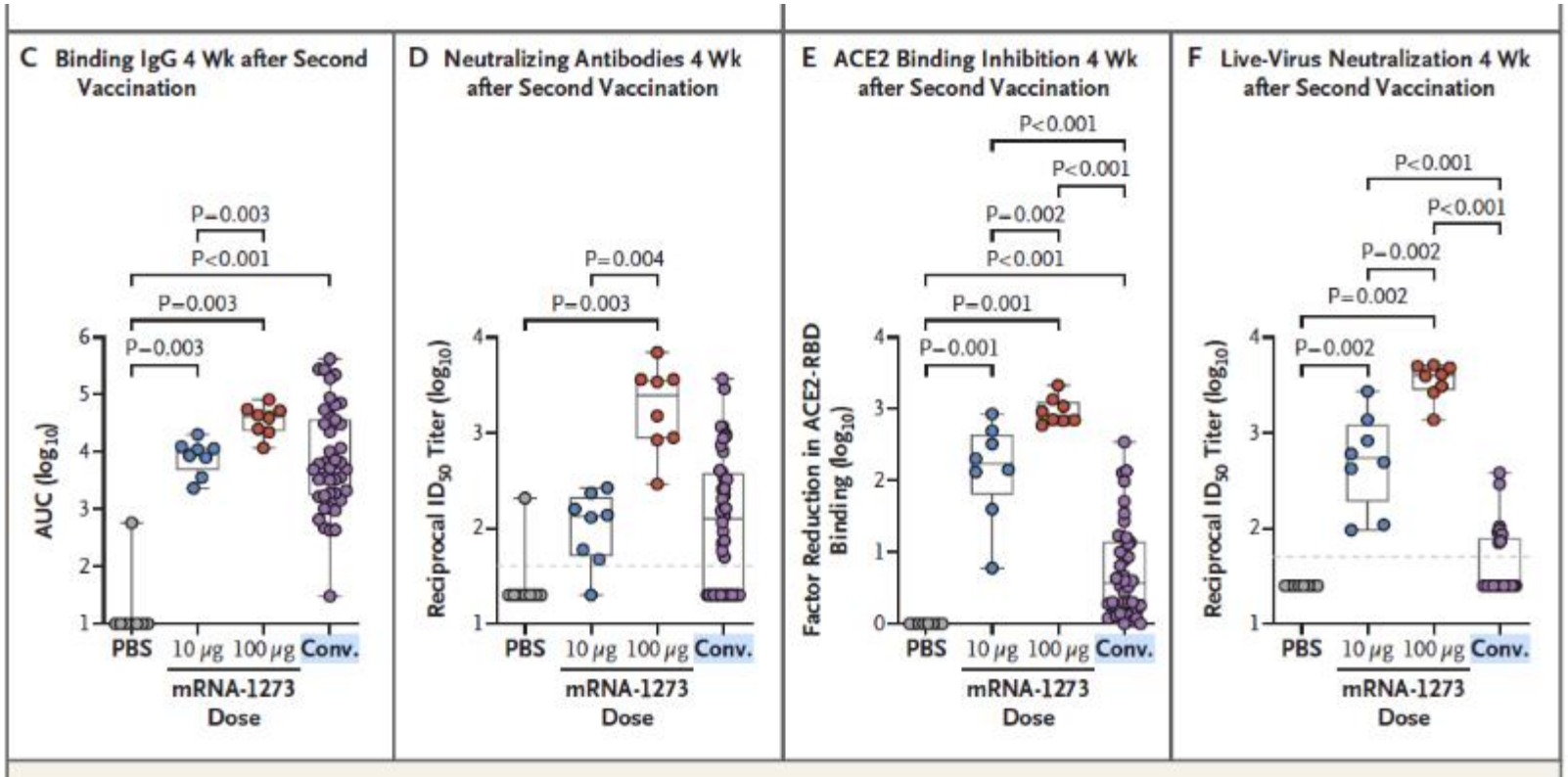
Evaluation of the mRNA-1273 Vaccine against SARS-CoV-2 in Nonhuman Primates

K.S. Corbett, B. Flynn, K.E. Foulds, J.R. Francica, S. Boyoglu-Barnum, A.P. Werner, B. Flach, S. O'Connell, K.W. Bock, M. Minai, B.M. Nagata, H. Andersen, D.R. Martinez, A.T. Noe, N. Douek, M.M. Donaldson, N.N. Nji, G.S. Alvarado, D.K. Edwards, D.R. Flebbe, E. Lamb, N.A. Doria-Rose, B.C. Lin, M.K. Louder, S. O'Dell, S.D. Schmidt, E. Phung, L.A. Chang, C. Yap, J.-P.M. Todd, L. Pessaint, A. Van Ry, S. Browne, J. Greenhouse, T. Putman-Taylor, A. Strasbaugh, T.-A. Campbell, A. Cook, A. Dodson, K. Steingrebe, W. Shi, Y. Zhang, O.M. Abiona, L. Wang, A. Pegu, E.S. Yang, K. Leung, T. Zhou, I-T. Teng, A. Widge, I. Gordon, L. Novik, R.A. Gillespie, R.J. Loomis, J.I. Moliva, G. Stewart-Jones, S. Himansu, W.-P. Kong, M.C. Nason, K.M. Morabito, T.J. Ruckwardt, J.E. Ledgerwood, M.R. Gaudinski, P.D. Kwong, J.R. Mascola, A. Carfi, M.G. Lewis, R.S. Baric, A. McDermott, I.N. Moore, N.J. Sullivan, M. Roederer, R.A. Seder, and B.S. Graham

PHASE 3

moderna NIH National Institutes of Health

VACCINE NAME: mRNA-1273
EFFICACY: 94.5%
DOSE: 2 doses, 4 weeks apart
TYPE: Muscle injection
STORAGE: 30 days with refrigeration, 6 months at -4°F (-20°C)



July 28, 2020

PHASE 3

moderna NIH National Institutes of Health

VACCINE NAME: mRNA-1273
EFFICACY: 94.5%
DOSE: 2 doses, 4 weeks apart
TYPE: Muscle injection
STORAGE: 30 days with refrigeration, 6 months at −4°F (−20°C)

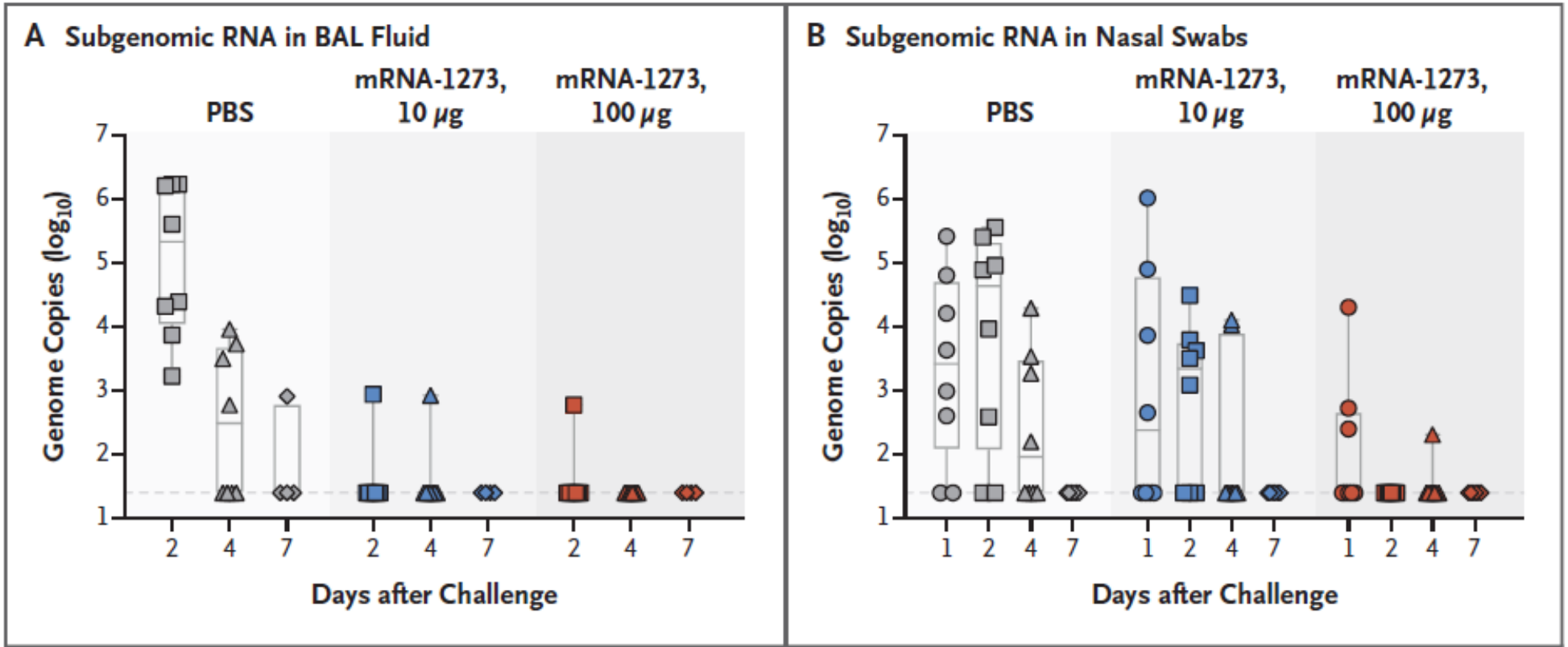


Figure 3. Efficacy of mRNA-1273 against Upper and Lower Respiratory Viral Replication.

Bronchoalveolar-lavage (BAL) fluid (Panel A) and nasal swab (Panel B) specimens were obtained on days 1, 2, 4, and 7 after challenge, where applicable, and viral replication was assessed by analysis of SARS-CoV-2 subgenomic RNA. In the box-and-whisker plots, the horizontal line indicates the median, the top and bottom of the box the interquartile range, and the whiskers the range. Symbols represent individual animals and overlap with one another for equal values where constrained. Dashed lines indicate the assay limit of detection.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

An mRNA Vaccine against SARS-CoV-2 — Preliminary Report

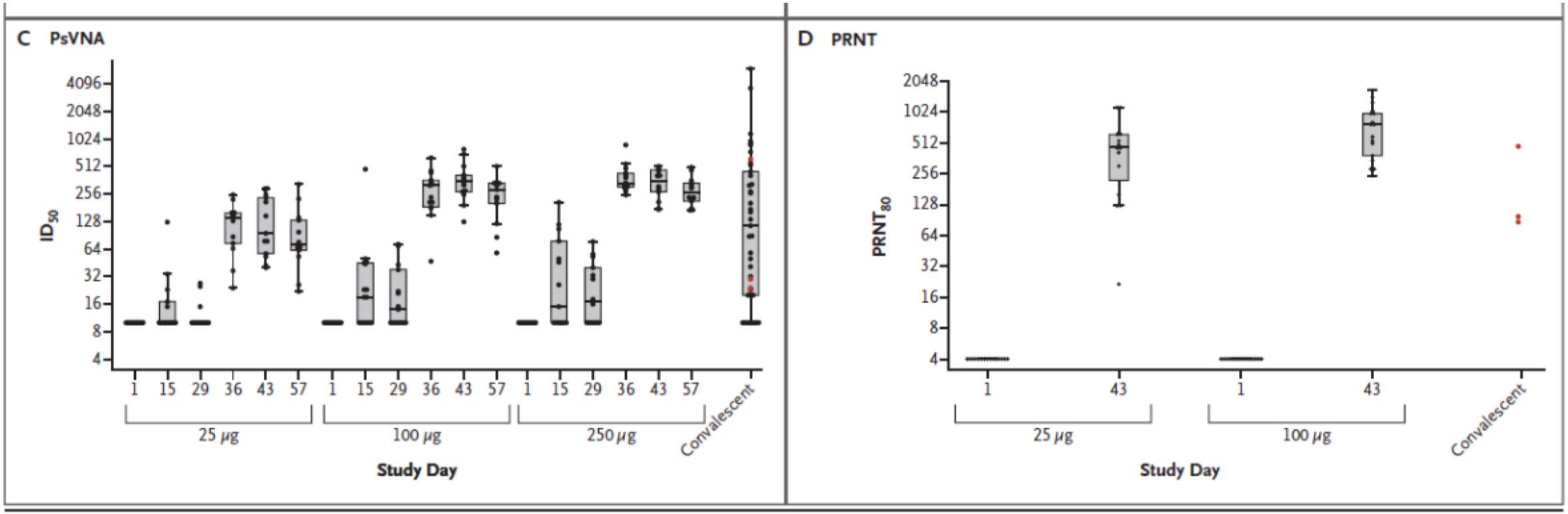
L.A. Jackson, E.J. Anderson, N.G. Rouphael, P.C. Roberts, M. Makhene, R.N. Coler, M.P. McCullough, J.D. Chappell, M.R. Denison, L.J. Stevens, A.J. Pruijssers, A. McDermott, B. Flach, N.A. Doria-Rose, K.S. Corbett, K.M. Morabito, S. O'Dell, S.D. Schmidt, P.A. Swanson II, M. Padilla, J.R. Mascola, K.M. Neuzil, H. Bennett, W. Sun, E. Peters, M. Makowski, J. Albert, K. Cross, W. Buchanan, R. Pikaart-Tautges, J.E. Ledgerwood, B.S. Graham, and J.H. Beigel, for the mRNA-1273 Study Group*

PHASE 3

moderna NIH National Institutes of Health

VACCINE NAME: mRNA-1273
EFFICACY: 94.5%
DOSE: 2 doses, 4 weeks apart
TYPE: Muscle injection
STORAGE: 30 days with refrigeration, 6 months at −4°F (−20°C)

Les humains vaccinés présentent des Ac neutralisants



The NEW ENGLAND JOURNAL of MEDICINE

CORRESPONDENCE

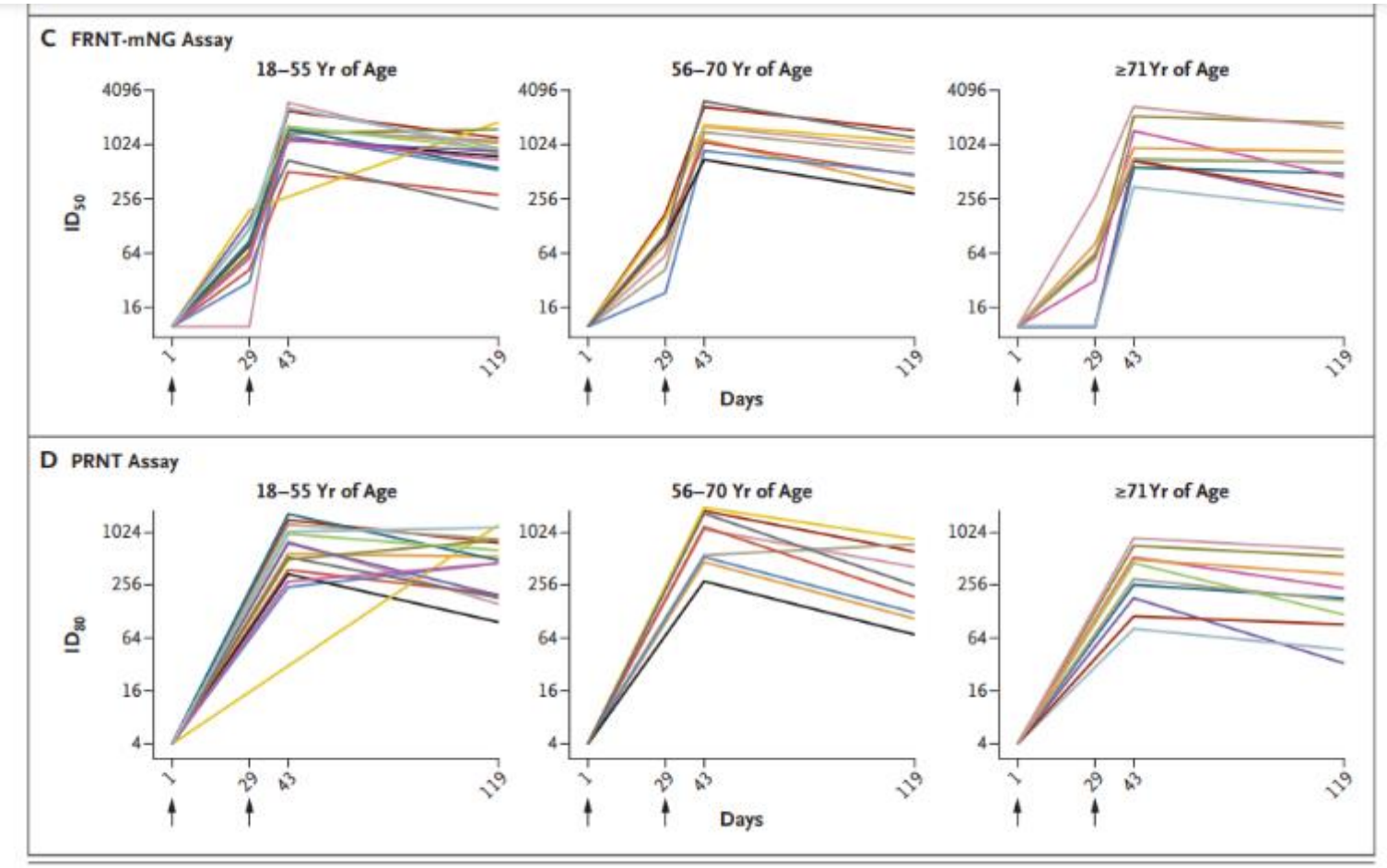
Durability of Responses after SARS-CoV-2 mRNA-1273 Vaccination

PHASE 3

moderna NIH National Institutes of Health

VACCINE NAME: mRNA-1273
EFFICACY: 94.5%
DOSE: 2 doses, 4 weeks apart
TYPE: Muscle injection
STORAGE: 30 days with refrigeration, 6 months at −4°F (−20°C)

Les humains vaccinés présentent toujours des Ac neutralisants 119 jours après la 1ère dose



Après la conférence de presse du 30/12 …

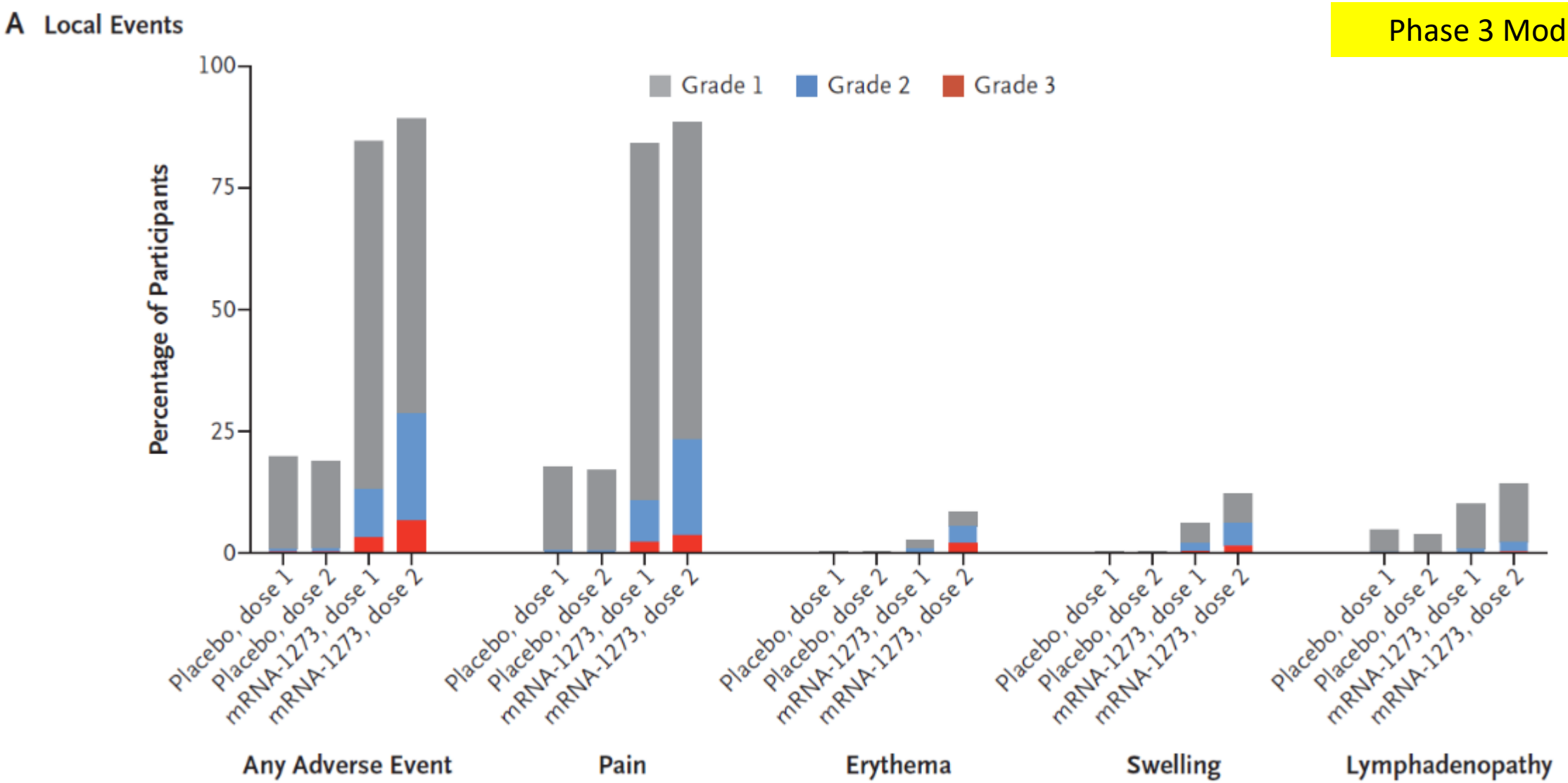
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine

L.R. Baden, H.M. El Sahly, B. Essink, K. Kotloff, S. Frey, R. Novak, D. Diemert, S.A. Spector, N. Rouphael, C.B. Creech, J. McGettigan, S. Khetan, N. Segall, J. Solis, A. Brosz, C. Fierro, H. Schwartz, K. Neuzil, L. Corey, P. Gilbert, H. Janes, D. Follmann, M. Marovich, J. Mascola, L. Polakowski, J. Ledgerwood, B.S. Graham, H. Bennett, R. Pajon, C. Knightly, B. Leav, W. Deng, H. Zhou, S. Han, M. Ivarsson, J. Miller, and T. Zaks, for the COVE Study Group*

Phase 3 Moderna

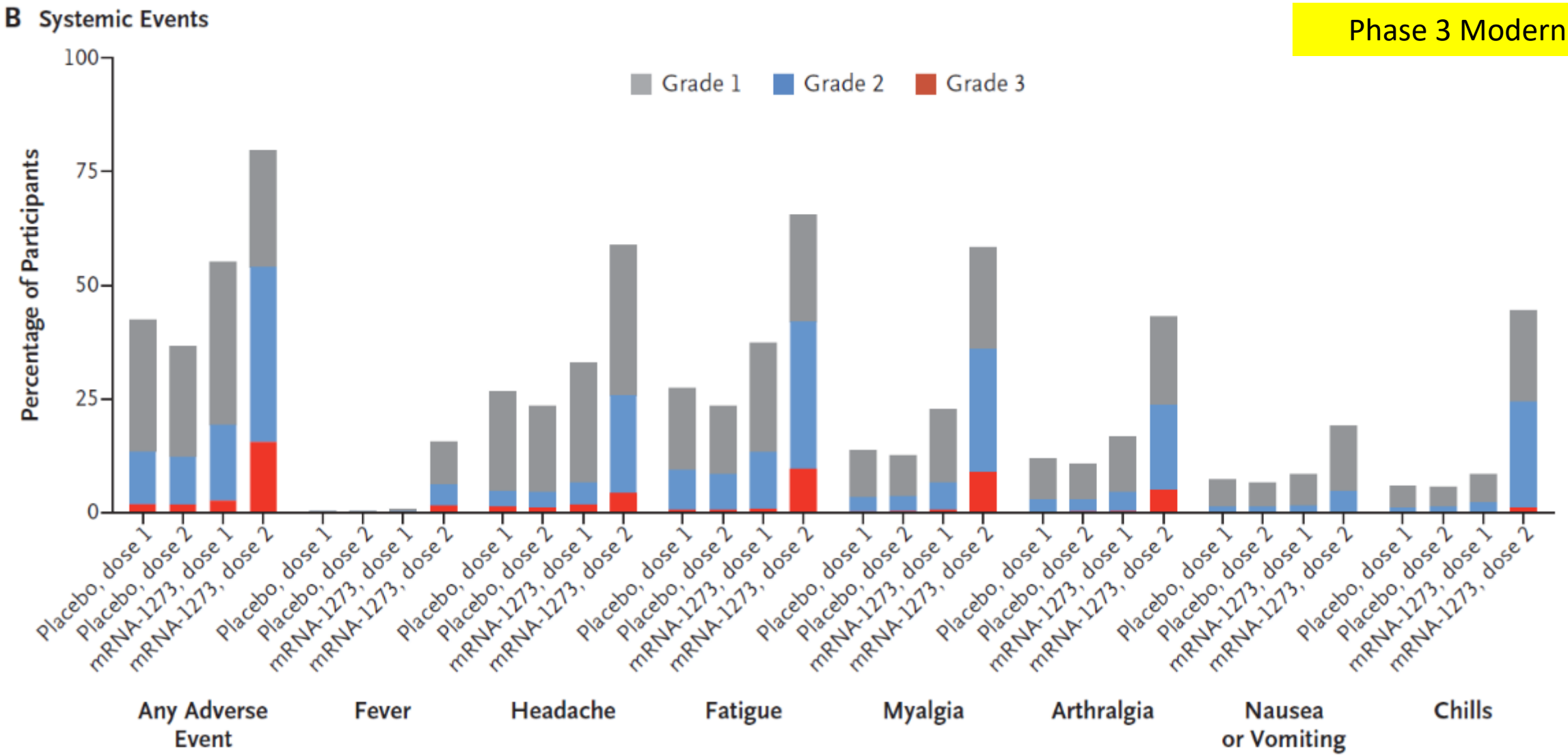


PHASE 3

moderna NIH National Institutes of Health

VACCINE NAME: mRNA-1273
EFFICACY: 94.5%
DOSE: 2 doses, 4 weeks apart
TYPE: Muscle injection
STORAGE: 30 days with refrigeration, 6 months at −4°F (−20°C)

Phase 3 Moderna



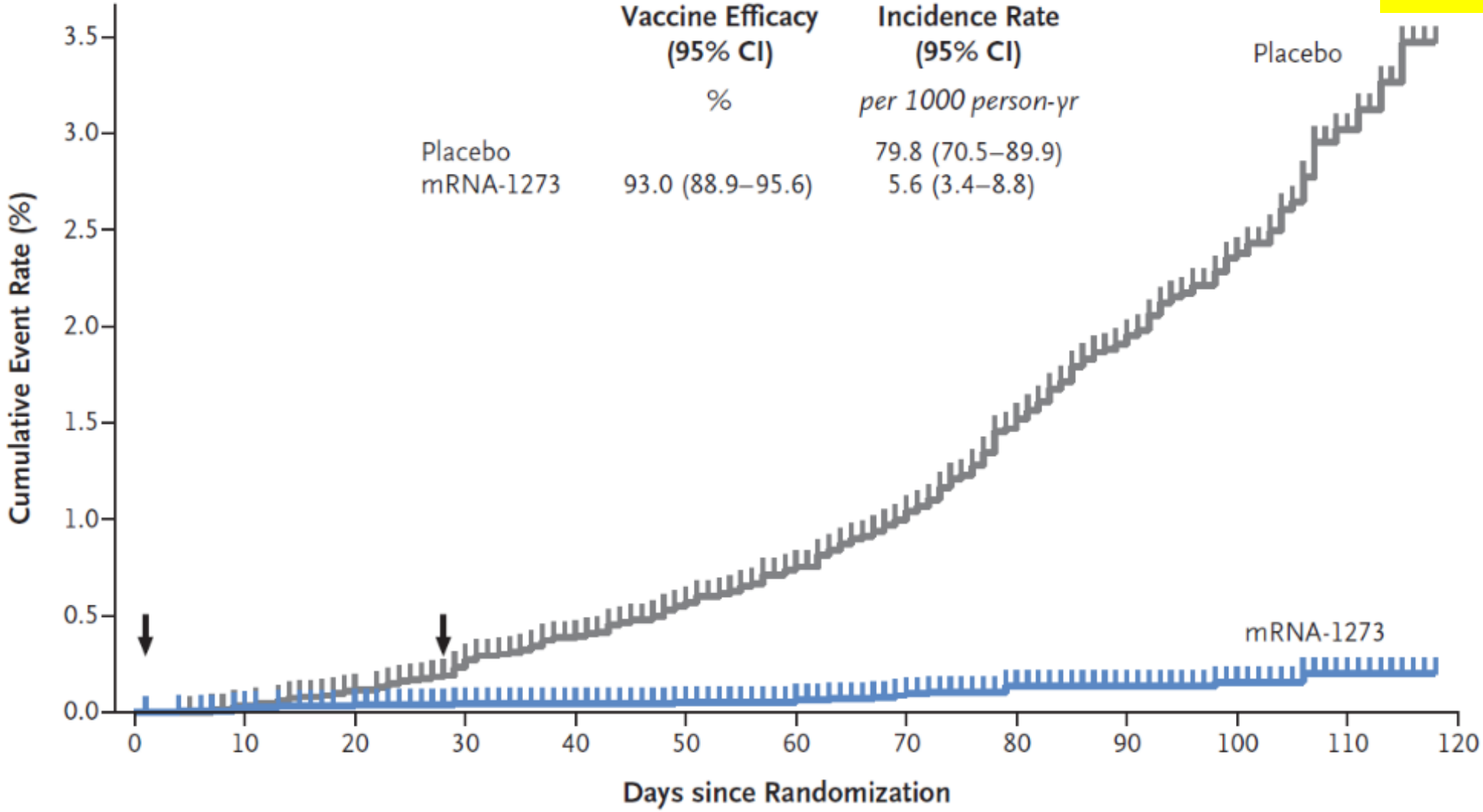
PHASE 3

moderna NIH National Institutes of Health

VACCINE NAME: mRNA-1273
EFFICACY: 94.5%
DOSE: 2 doses, 4 weeks apart
TYPE: Muscle injection
STORAGE: 30 days with refrigeration, 6 months at -4°F (-20°C)

Phase 3 Moderna

B Modified Intention-to-Treat Analysis



No. at Risk

Placebo	14,598	14,590	14,567	14,515	13,806	12,352	12,694	11,450	9736	6729	4067	1200	0
mRNA-1273	14,550	14,543	14,532	14,504	13,825	13,398	12,791	11,573	9911	6871	4179	1238	0

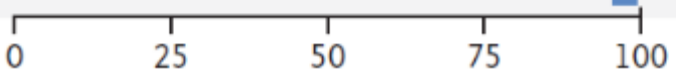
PHASE 3

moderna NIH National Institutes of Health

VACCINE NAME: mRNA-1273
EFFICACY: 94.5%
DOSE: 2 doses, 4 weeks apart
TYPE: Muscle injection
STORAGE: 30 days with refrigeration, 6 months at −4°F (−20°C)

Phase 3 Moderna

Subgroup	Placebo (N=14,073)	mRNA-1273 (N=14,134)	Vaccine Efficacy (95% CI)
	no. of events/total no.		
All patients	185/14,073	11/14,134	94.1 (89.3–96.8)
Age			
≥18 to <65 yr	156/10,521	7/10,551	95.6 (90.6–97.9)
≥65 yr	29/3552	4/3583	86.4 (61.4–95.2)
Age, risk for severe Covid-19			
18 to <65 yr, not at risk	121/8403	5/8396	95.9 (90.0–98.3)
18 to <65 yr, at risk	35/2118	2/2155	94.4 (76.9–98.7)
≥65 yr	29/3552	4/3583	86.4 (61.4–95.2)
Sex			
Male	87/7462	4/7366	95.4 (87.4–98.3)
Female	98/6611	7/6768	93.1 (85.2–96.8)
At risk for severe Covid-19			
Yes	43/3167	4/3206	90.9 (74.7–96.7)
No	142/10,906	7/10,928	95.1 (89.6–97.7)
Race and ethnic group			
White	144/8916	10/9023	93.2 (87.1–96.4)
Communities of color	41/5132	1/5088	97.5 (82.2–99.7)



PHASE 3
moderna NIH National Institutes of Health

VACCINE NAME: mRNA-1273
EFFICACY: 94.5%
DOSE: 2 doses, 4 weeks apart
TYPE: Muscle injection
STORAGE: 30 days with refrigeration, 6 months at –4°F (–20°C)

8/12/2020

Safety and efficacy of the ChAdOx1 nCoV-19 vaccine (AZD1222) against SARS-CoV-2: an interim analysis of four randomised controlled trials in Brazil, South Africa, and the UK

Merryn Voysey*, Sue Ann Costa Clemens*, Shabir A Madhi*, Lily Y Weckx*, Pedro M Folegatti*, Parvinder K Aley, Brian Angus, Vicky L Baillie, Shaun L Barnabas, Qasim E Bhorat, Sagida Bibi, Carmen Briner, Paola Cicconi, Andrea M Collins, Rachel Colin-Jones, Clare L Cutland, Thomas C Darton, Keertan Dheda, Christopher J A Duncan, Katherine R W Emary, Katie J Ewer, Lee Fairlie, Saul N Faust, Shuo Feng, Daniela M Ferreira, Adam Finn, Anna L Goodman, Catherine M Green, Christopher A Green, Paul T Heath, Catherine Hill, Helen Hill, Ian Hirsch, Susanne H C Hodgson, Alane Izu, Susan Jackson, Daniel Jenkin, Carina C D Joe, Simon Kerridge, Anthonet Koen, Gaurav Kwatra, Rajeka Lazarus, Alison M Lawrie, Alice Lelliott, Vincenzo Libri, Patrick J Lillie, Raburn Mallory, Ana V A Mendes, Eveline P Milan, Angela M Minassian, Alastair McGregor, Hazel Morrison, Yama F Mujadidi, Anusha Nana, Peter J O'Reilly, Sherman D Padayachee, Ana Pittella, Emma Plested, Katrina M Pollock, Maheshi N Ramasamy, Sarah Rhead, Alexandre V Schwarzbold, Nisha Singh, Andrew Smith, Rinn Song, Matthew D Snape, Eduardo Sprinz, Rebecca K Sutherland, Richard Tarrant, Emma C Thomson, M Estée Török, Mark Toshner, David P J Turner, Johan Vekemans, Tonya L Villafana, Marion E E Watson, Christopher J Williams, Alexander D Douglas*, Adrian V S Hill*, Teresa Lambe*, Sarah C Gilbert*, Andrew J Pollard* on behalf of the Oxford COVID Vaccine Trial Group†

Phase 3 AstraZeneca

Protection

Infections symptomatiques

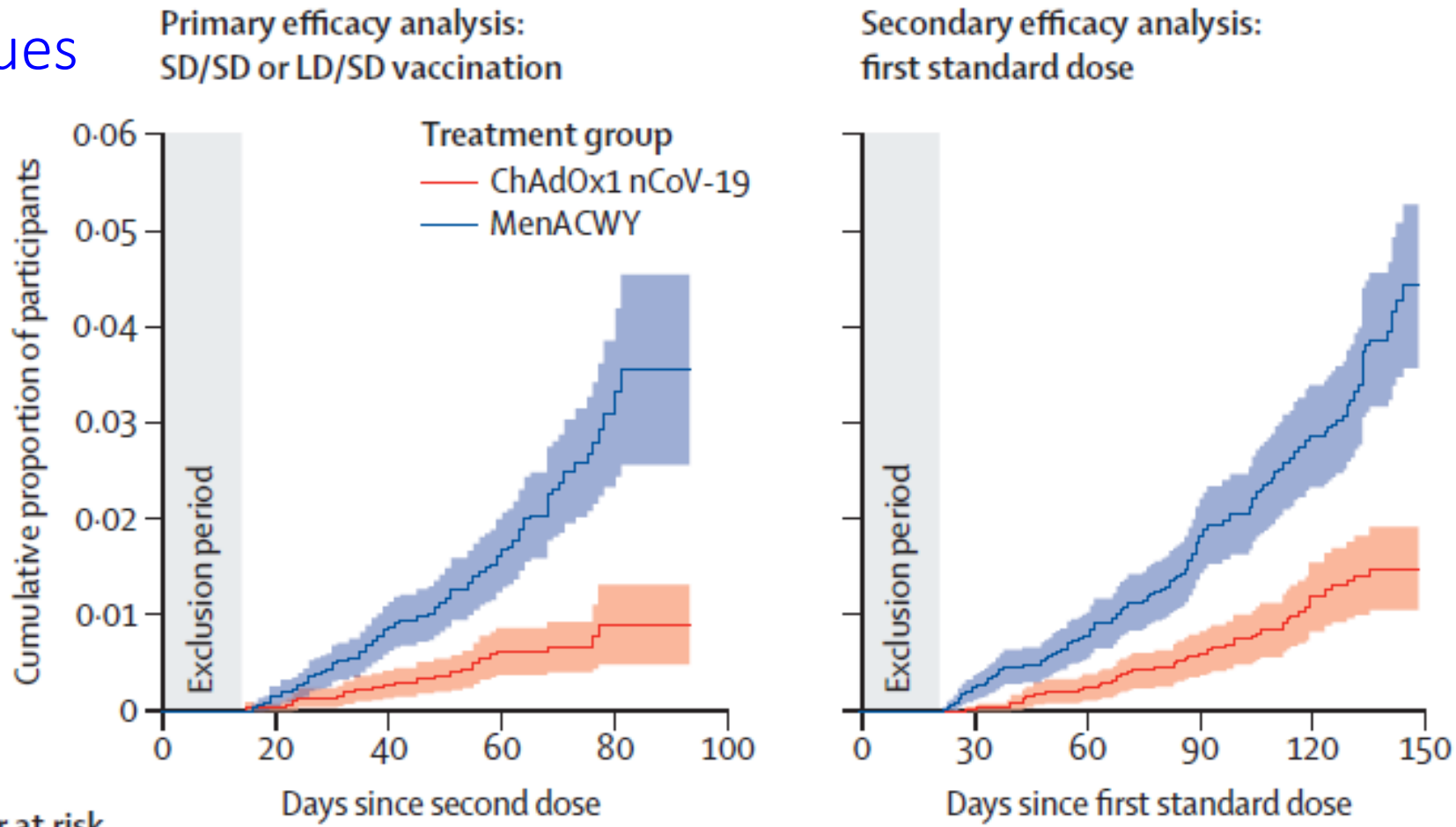
8/12/2020

Phase 3 AstraZeneca

PHASE 2 | PHASE 3 | COMBINED PHASES

UNIVERSITY OF OXFORD AstraZeneca

VACCINE NAME: AZD1222
EFFICACY: Up to 90%
DOSE: 2 doses, 4 weeks apart
TYPE: Muscle injection
STORAGE: Stable in refrigerator for at least 6 months

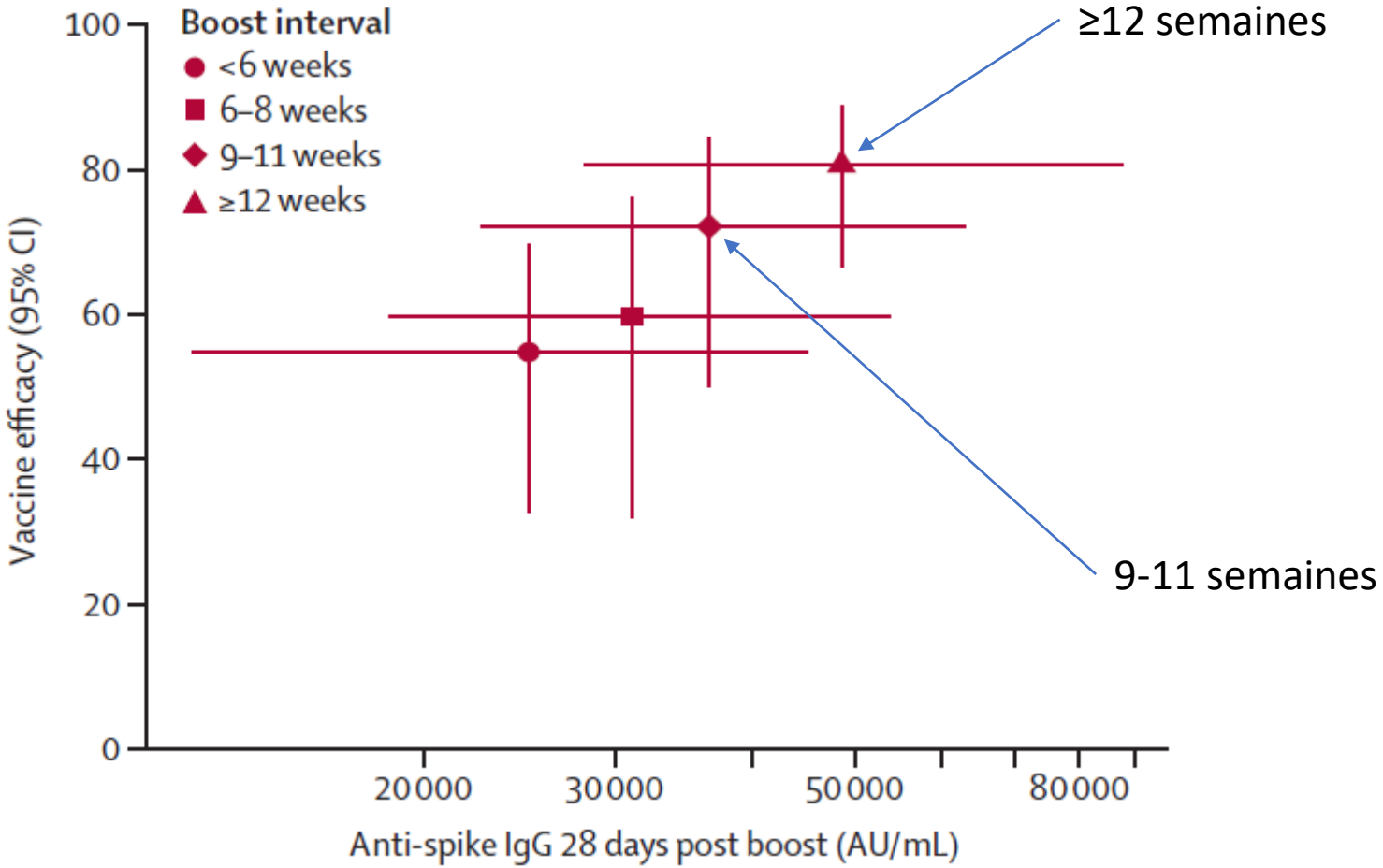


Number at risk (number censored)												
ChAdOx1 nCoV-19	5807	5639	4779	3181	499	0	6307	5732	4857	3681	2490	0
	(0)	(189)	(1162)	(2620)	(5300)	(5777)	(0)	(645)	(1443)	(2636)	(3811)	(6256)
MenACWY	5829	5657	4765	3146	435	0	6297	5718	4836	3652	2452	0
	(0)	(182)	(1164)	(2636)	(5322)	(5728)	(0)	(639)	(1424)	(2599)	(3760)	(6156)

Single-dose administration and the influence of the timing of the booster dose on immunogenicity and efficacy of ChAdOx1 nCoV-19 (AZD1222) vaccine: a pooled analysis of four randomised trials

Merryn Voysey*

Protection clinique



Taux d'anticorps

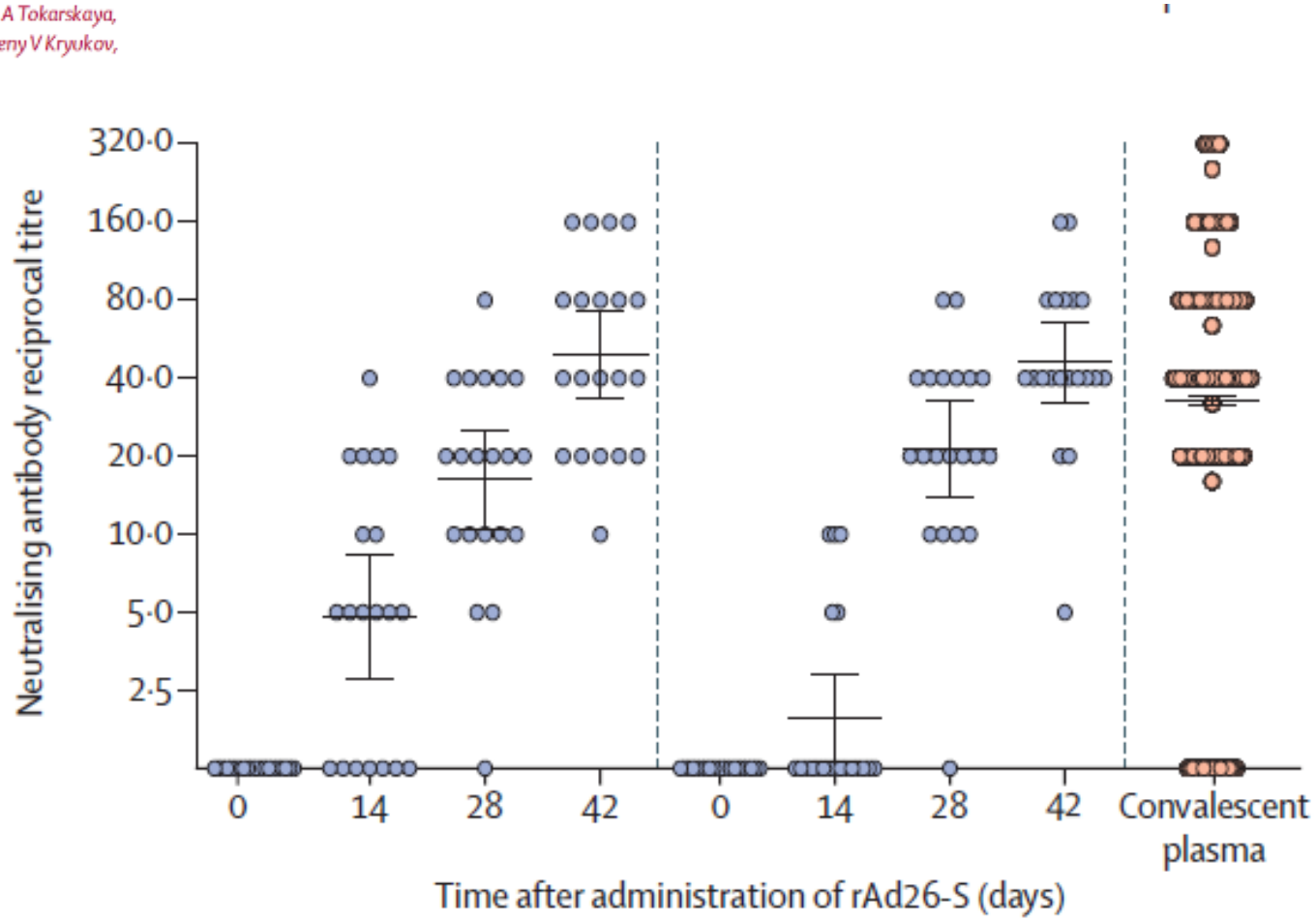
22 / 02 / 2021

Safety and immunogenicity of an rAd26 and rAd5 vector-based heterologous prime-boost COVID-19 vaccine in two formulations: two open, non-randomised phase 1/2 studies from Russia

Denis Y Logunov, Inna V Dolzhikova*, Olga V Zubkova, Amir I Tukhvatullin, Dmitry V Shcheblyakov, Alina S Dzharullaeva, Daria M Grousova, Alina S Erokhova, Anna V Kovyrshina, Andrei G Botikov, Fatima M Izhaeva, Olga Popova, Tatiana A Ozharovskaya, Ilias B Esmagambetov, Irina A Favorskaya, Denis I Zrelkin, Daria V Voronina, Dmitry N Shcherbinin, Alexander S Semikhin, Yana V Simakova, Elizaveta A Tokarskaya, Nadezhda L Lubenets, Daria A Egorova, Maksim M Shmarov, Natalia A Nikitenko, Lola F Morozova, Elena A Smolyarchuk, Evgeny V Kryukov, Vladimir F Babira, Sergei V Borisevich, Boris S Naroditsky, Alexander L Gintsburg*

Phase 2 du vaccin Gamaleya : on obtient des Ac neutralisants

Participants vaccinated with rAd26-S on day 0 and rAd5-S on day 21



PHASE 3 EARLY USE IN RUSSIA

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

VACCINE NAME: Sputnik 5 (formerly Gam-Covid-Vac)
EFFICACY: 92%
DOSE: 2 doses, 3 weeks apart
TYPE: Muscle injection
STORAGE: Freezer storage. Developing an alternative formulation that can be refrigerated.

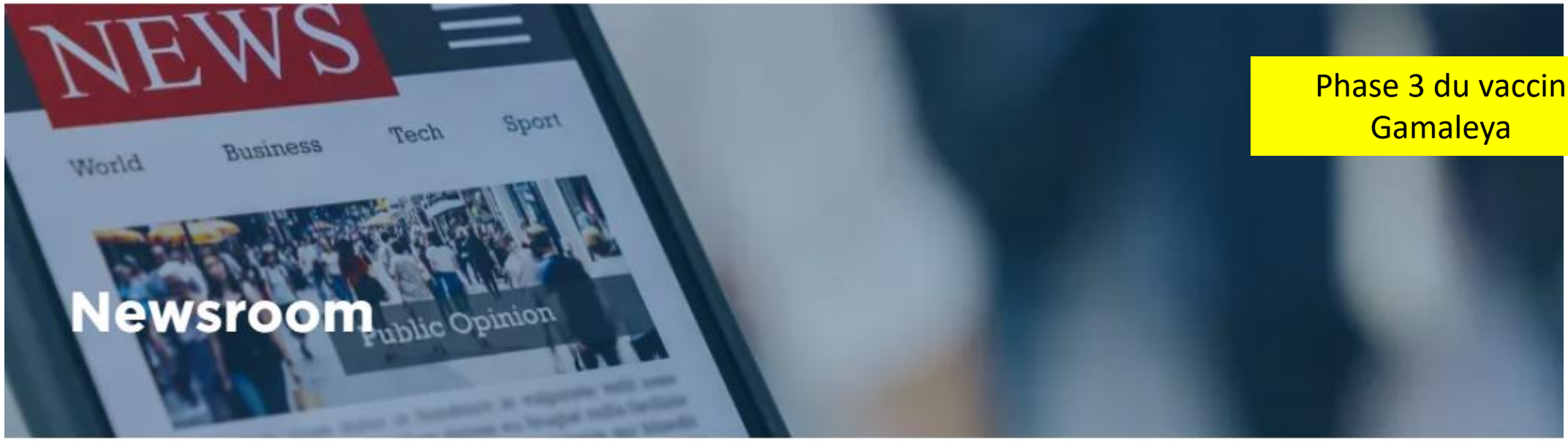
14/12/2020

Phase 3 du vaccin Gamaleya

Sputnik V

THE FIRST REGISTERED COVID-19 VACCINE

PROVEN HUMAN ADENOVIRAL VECTOR TECHNOLOGY



THE SPUTNIK V VACCINE'S EFFICACY IS CONFIRMED AT 91.4% BASED ON DATA ANALYSIS OF THE FINAL CONTROL POINT OF CLINICAL TRIALS

- ***The efficacy of the Sputnik V vaccine is 91.4%, based on the final control point analysis of data obtained 21 days after administering the first dose.***
- ***Calculation was based on the analysis of data of volunteers (n = 22 714)*** *who received both the first and second doses of the Sputnik V vaccine or placebo at the third and final control point of 78 confirmed cases in accordance with the Phase III clinical trials protocol.*

PHASE 3 EARLY USE IN RUSSIA

МИНИСТЕРСТВО ЗДРАВООХРАНЕНИЯ РОССИЙСКОЙ ФЕДЕРАЦИИ

VACCINE NAME: Sputnik 5 (formerly Gam-Covid-Vac)

EFFICACY: 91%

DOSE: 2 doses, 3 weeks apart

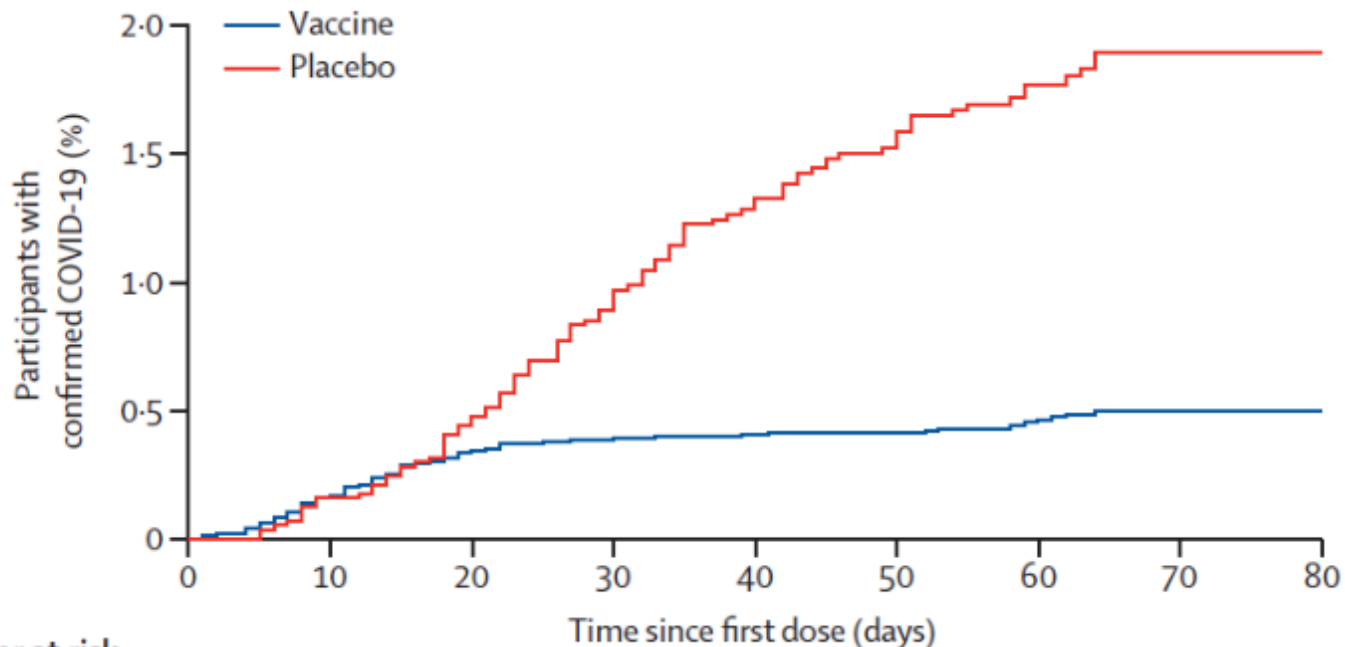
TYPE: Muscle injection

STORAGE: Freezer storage. Developing an alternative formulation that can be refrigerated.

2 février 2021

Safety and efficacy of an rAd26 and rAd5 vector-based heterologous prime-boost COVID-19 vaccine: an interim analysis of a randomised controlled phase 3 trial in Russia

Denis Y Logunov, Inna V Dolzhikova*, Dmitry V Shcheblyakov, Amir I Tukhvatulin, Olga V Zubkova, Alina S Dzharullaeva, Anna V Kovyrshina, Nadezhda L Lubenets, Daria M Grousova, Alina S Erokhova, Andrei G Botikov, Fatima M Izhaeva, Olga Popova, Tatiana A Ozharovskaya, Ilias B Esmagambetov, Irina A Favorskaya, Denis I Zrelkin, Daria V Voronina, Dmitry N Shcherbinin, Alexander S Semikhin, Yana V Simakova, Elizaveta A Tokarskaya, Daria A Egorova, Maksim M Shmarov, Natalia A Nikitenko, Vladimir A Gushchin, Elena A Smolyarchuk, Sergey K Zyryanov, Sergei V Borisevich, Boris S Naroditsky, Alexander L Gintsburg, and the Gam-COVID-Vac Vaccine Trial Group†*



Number at risk (number of COVID-19 cases)								
Vaccine	16427 (0)	15338 (35)	15117 (61)	14683 (66)	10970 (70)	6686 (71)	3314 (77)	398 (79)
Placebo	5435 (0)	5121 (10)	5046 (30)	4895 (54)	3662 (71)	2223 (87)	1106 (92)	133 (96)

Johnson & Johnson Announces Single-Shot Janssen COVID-19 Vaccine Candidate Met Primary Endpoints in Interim Analysis of its Phase 3 ENSEMBLE Trial

Vaccine Candidate 72% Effective in the US and 66% Effective Overall at Preventing Moderate to Severe COVID-19, 28 Days after Vaccination

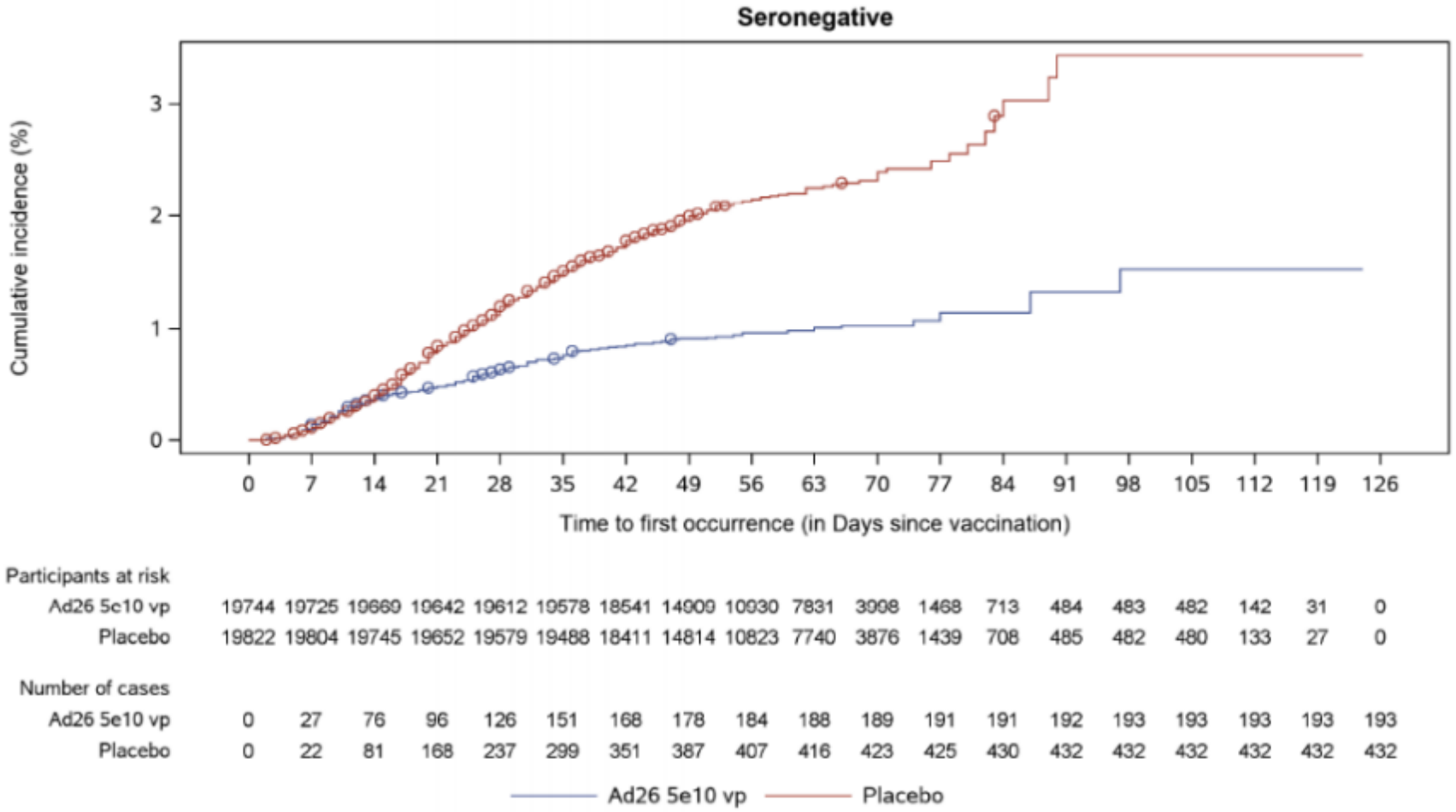
85% Effective Overall in Preventing Severe Disease and Demonstrated Complete Protection Against COVID-19 related Hospitalization and Death as of Day 28

Protection Against Severe Disease Across Geographies, Ages, and Multiple Virus Variants, including the SARS-CoV-2 Variant from the B.1.351 Lineage[1] Observed in South Africa

Single-shot compatible with standard vaccine distribution channels provides important tool in pandemic setting

Janssen (Johnson&Johson)
Adenovirus Ad26
24/02/2021

Figure 1. Cumulative Incidence Curve of Centrally Confirmed Moderate to Severe/Critical COVID-19 Cases With Onset at Least 1 Day After Vaccination, Full Analysis Set



Janssen (Johnson&Johson) - Ad26 - 24/02/2021

Table 10. Vaccine Efficacy Against Centrally Confirmed Moderate to Severe/Critical COVID-19 With Onset at Least 14 and at Least 28 Days After Vaccination, Per-Protocol Set, Study 3001

	Onset at Least 14 Days			Onset at Least 28 Days		
Co-primary Endpoint Subgroup	**Ad26.COV2.S Cases (N)[a] Person-yrs[b]**	**Placebo Cases (N) Person-yrs**	**VE% (95% CI)**	**Ad26.COV2.S Cases (N) Person-yrs**	**Placebo Cases (N) Person-yrs**	**VE% (95% CI)**
All participants	116 (19514) 3116.6	348 (19544) 3096.1	66.9% (59.0, 73.4)	66 (19306) 3102.0	193 (19178) 3070.7	66.1% (55.0, 74.8)
Age 18-59 years	95 (12750) 2106.8	260 (12782) 2095.0	63.7% (53.9, 71.6)	52 (12617) 2097.6	152 (12527) 2077.0	66.1% (53.3, 75.8)
Age ≥60 years	21 (6764) 1009.8	88 (6762) 1001.2	76.3% (61.6, 86.0)	14 (6689) 1004.4	41(6651) 993.6	66.2% (36.7, 83.0)

Source: Sponsor tables GEFPE02_A and GEFPE02_C

[a] N=Total number of participants at risk per category

[b] Person-years include time from vaccination to the onset of moderate to severe/critical COVID-19, discontinuation from study, major protocol deviation, unblinding to receive alternative vaccine, or data cutoff, whichever comes first.

Subgroup	Onset at Least 14 Days			Onset at Least 28 Days		
	Ad26.COV2.S Cases (N) Person-yrs	Placebo Cases (N) Person-yrs	VE%[a] (95% CI)	Ad26.COV2.S Cases (N) Person-yrs	Placebo Cases (N) Person-yrs	VE%[a] (95% CI)
Region						
Northern America (U.S.)	51 (9119) 1414.0	196 (9086) 1391.3	74.4% (65.0, 81.6)	32 (8958) 1403.4	112 (8835) 1375.6	72.0% (58.2, 81.7)
Southern Africa (South Africa)	43 (2473) 377.6	90 (2496) 379.2	52.0% (30.3, 67.4)	23 (2449) 376.1	64 (2463) 376.9	64% (41.2, 78.7)
Latin America	79 (7922) 1322.2	223 (7962) 1318.5	64.7% (54.1, 73.0)	58 (7899) 1320.8	148 (7880) 1313.3	61.0% (46.9, 71.8)

N=Total number of participants at risk per category

[a] If fewer than 6 cases are observed for an endpoint then the VE is not shown.

Source: Sponsor tables GEFPE09A, GEFPE09C

Immunogenicity and safety of a recombinant adenovirus type-5-vectored COVID-19 vaccine in healthy adults aged 18 years or older: a randomised, double-blind, placebo-controlled, phase 2 trial

Feng-Cai Zhu*, Xu-Hua Guan*, Yu-Hua Li, Jian-Ying Huang, Tao Jiang, Li-Hua Hou, Jing-Xin Li, Bei-Fang Yang, Ling Wang, Wen-Juan Wang, Shi-Po Wu, Zhao Wang, Xiao-Hong Wu, Jun-Jie Xu, Zhe Zhang, Si-Yue Jia, Bu-Sen Wang, Yi Hu, Jing-Jing Liu, Jun Zhang, Xiao-Ai Qian, Qiong Li, Hong-Xing Pan, Hu-Dachuan Jiang, Peng Deng, Jin-Bo Gou, Xue-Wen Wang, Xing-Huan Wang, Wei Chen

Aout 2020

Phase 2 du vaccin CanSino

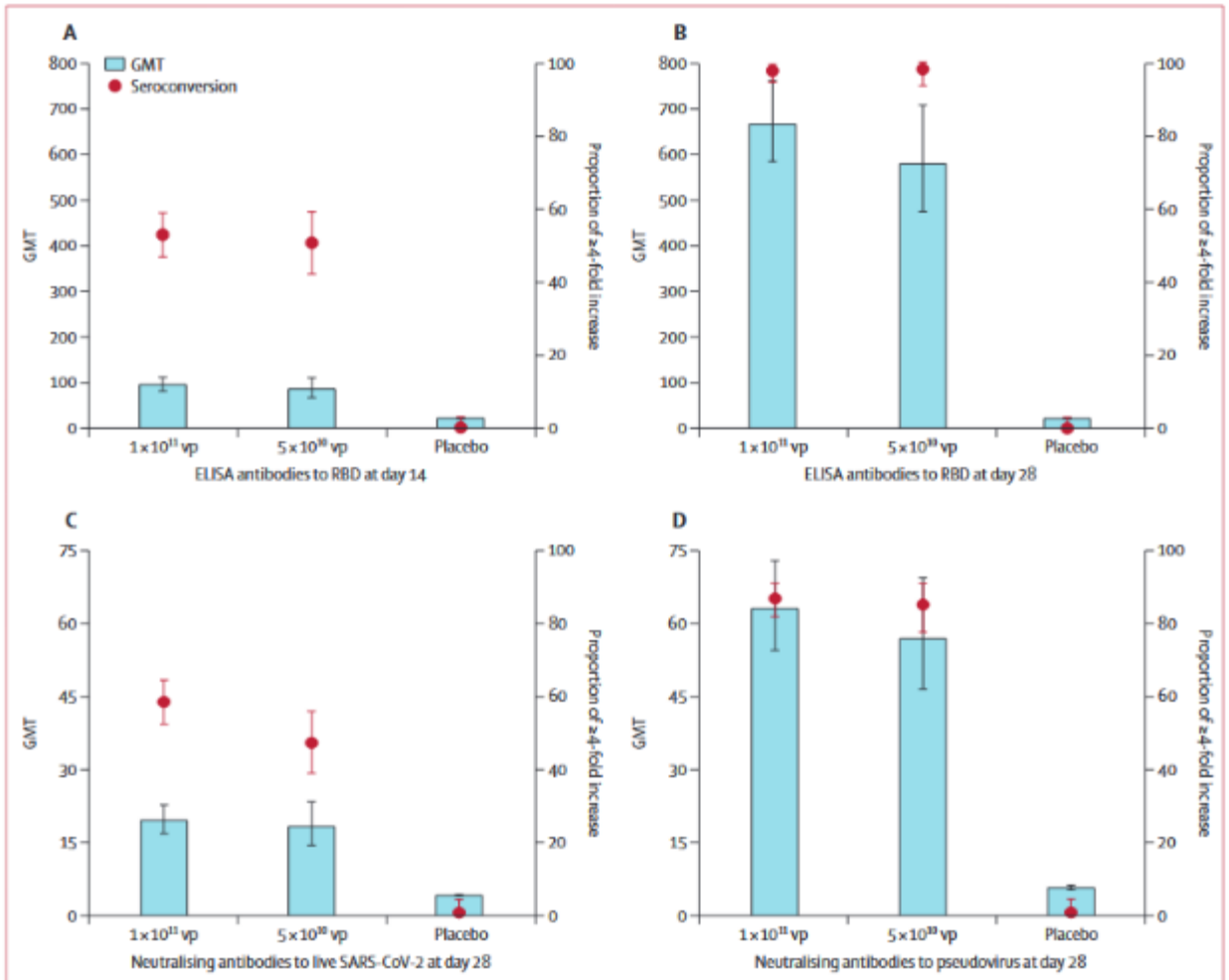


***Figure 2*: Specific antibody responses to RBD, neutralising antibodies to live severe acute respiratory syndrome coronavirus 2 and pseudovirus post vaccination**

Seroconversion was defined as an increase in post-vaccination titre of at least four-times baseline. The baseline antibody titres are shown in the appendix (p 1). All comparisons across the three treatment groups are p<0·0001. Multiple comparisons showed no significant difference between the 1×10^{11} vp and 5×10^{10} vp dose groups. GMT=geometric mean antibody titre. RBD=receptor binding domain. vp=viral particles.

PHASE 3 | LIMITED USE IN CHINA

CanSinoBIO

VACCINE NAME: Ad5-nCoV
EFFICACY: Unknown
DOSE: Single dose
TYPE: Muscle injection
STORAGE: Refrigerated

COMMUNIQUÉS DE PRESSE • 11 décembre 2020

Sanofi et GSK annoncent un retard dans leur programme de vaccin adjuvanté à protéine recombinante contre la Covid-19 afin d'améliorer la réponse immunitaire chez les personnes âgées

Données de la « vraie vie »

FDA-authorized COVID-19 vaccines are effective per real-world evidence synthesized across a multi-state health system

Colin Pawlowski[1+], Patrick Lenehan[1+], Arjun Puranik[1], Vineet Agarwal[1], AJ Venkatakrishnan[1], Michiel J.M. Niesen[1], John C. O'Horo[2], Andrew D. Badley[2], John Halamka[2], Venky Soundararajan[1*]

[1] nference, One Main Street, East Arcade, Cambridge, MA 02142, USA
[2] Mayo Clinic, Rochester, MN 55902, USA
+ Joint first authors
* Address correspondence to Venky Soundararajan (venky@nference.net)

Preliminary assessment of real-world vaccination efficacy in 62,138 individuals from the Mayo Clinic and associated health system (Arizona, Florida, Minnesota, Wisconsin) between December 1st 2020 and February 8th 2021.

Our retrospective analysis contrasts 31,069 individuals receiving at least one dose of either vaccine with 31,069 unvaccinated individuals who are propensity-matched based on demographics, location (zip code), and number of prior SARS-CoV-2 PCR tests.

263 of 31,069 (0.85%) vaccinated individuals tested positive for SARS-CoV-2 compared to 661 of 31,069 (2.13%) matched unvaccinated individuals

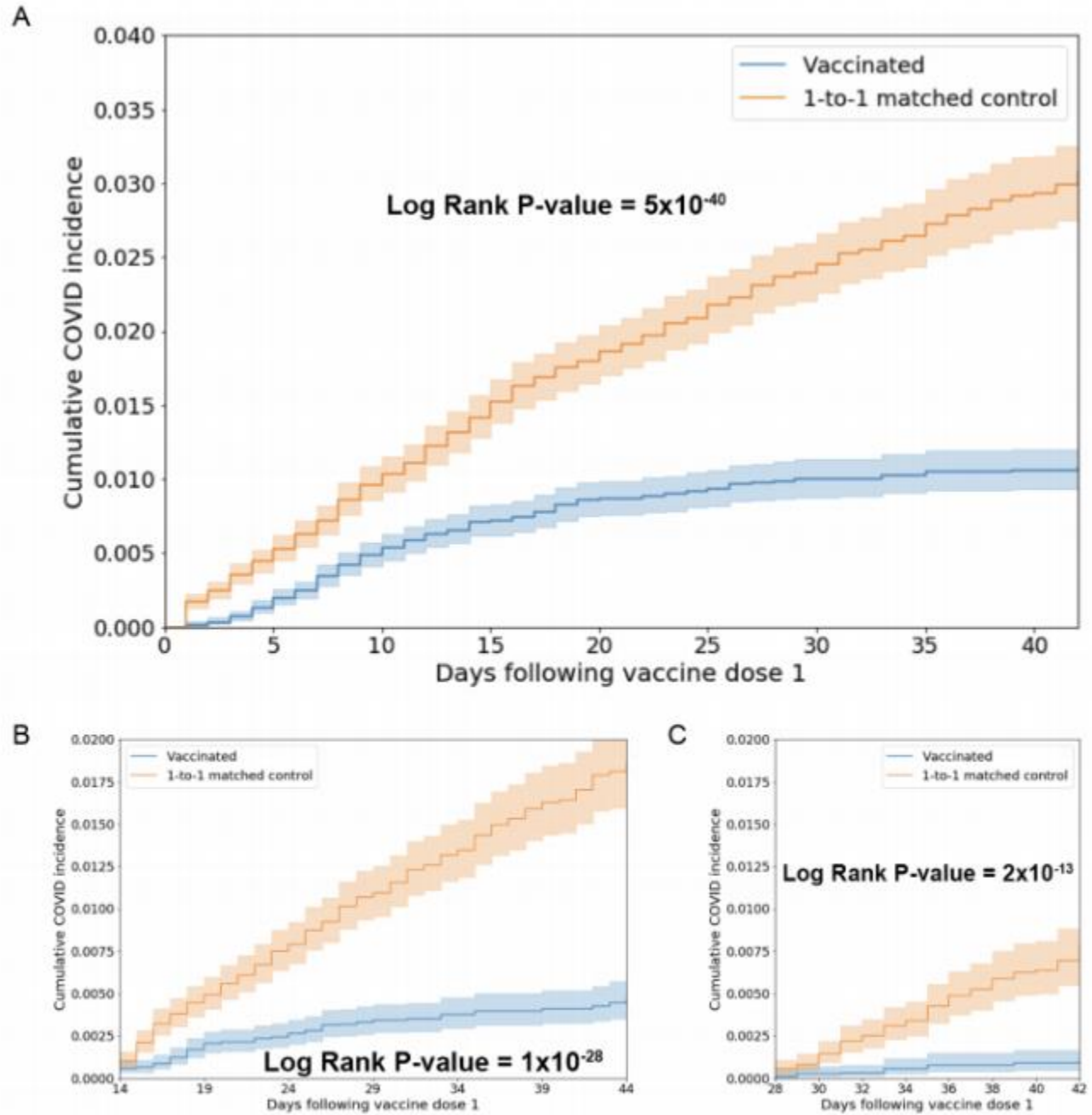


Figure 2. Kaplan Meier analyses to assess cumulative proportional incidence of SARS-CoV-2 infection between vaccinated and unvaccinated individuals. Cumulative proportional incidence at time

Early rate reductions of SARS-CoV-2 infection and COVID-19 in BNT162b2 vaccine recipients

18 février 2021

	Unvaccinated	Vaccinated	
		1–14 days after first dose	15–28 days after first dose
All SARS-CoV-2 positive			
Number of cases	89	55	26
Number of exposure days	120 575	100 433	88 126
Rate per 10 000 person-days	7·4	5·5	3·0
Rate reduction compared with unvaccinated (95% CI)	..	26% (–4 to 47)	60% (38 to 74)
Adjusted rate reduction compared with unvaccinated (95% CI)*	..	30% (2 to 50)	75% (72 to 84)
Symptomatic COVID-19			
Number of cases	60	28	11
Number of exposure days	120 575	100 433	88 126
Rate per 10 000 person-days	5·0	2·8	1·2
Rate reduction compared with unvaccinated (95% CI)	..	44% (12 to 64)	75% (52 to 87)
Adjusted rate reduction compared with unvaccinated (95% CI)*	..	47% (17 to 66)	85% (71 to 92)

SARS-CoV-2 positivity was determined by PCR. *Rate ratios of new cases in vaccinated compared with unvaccinated health-care workers each day were adjusted for community exposure rates using Poisson regression (appendix). The adjusted estimates were subtracted from 1 to obtain rate reductions.

Table: **Rate reductions of SARS-CoV-2 infections and COVID-19 cases in health-care workers at the Sheba Medical Centre, Israel, from December, 2020, to January, 2021**

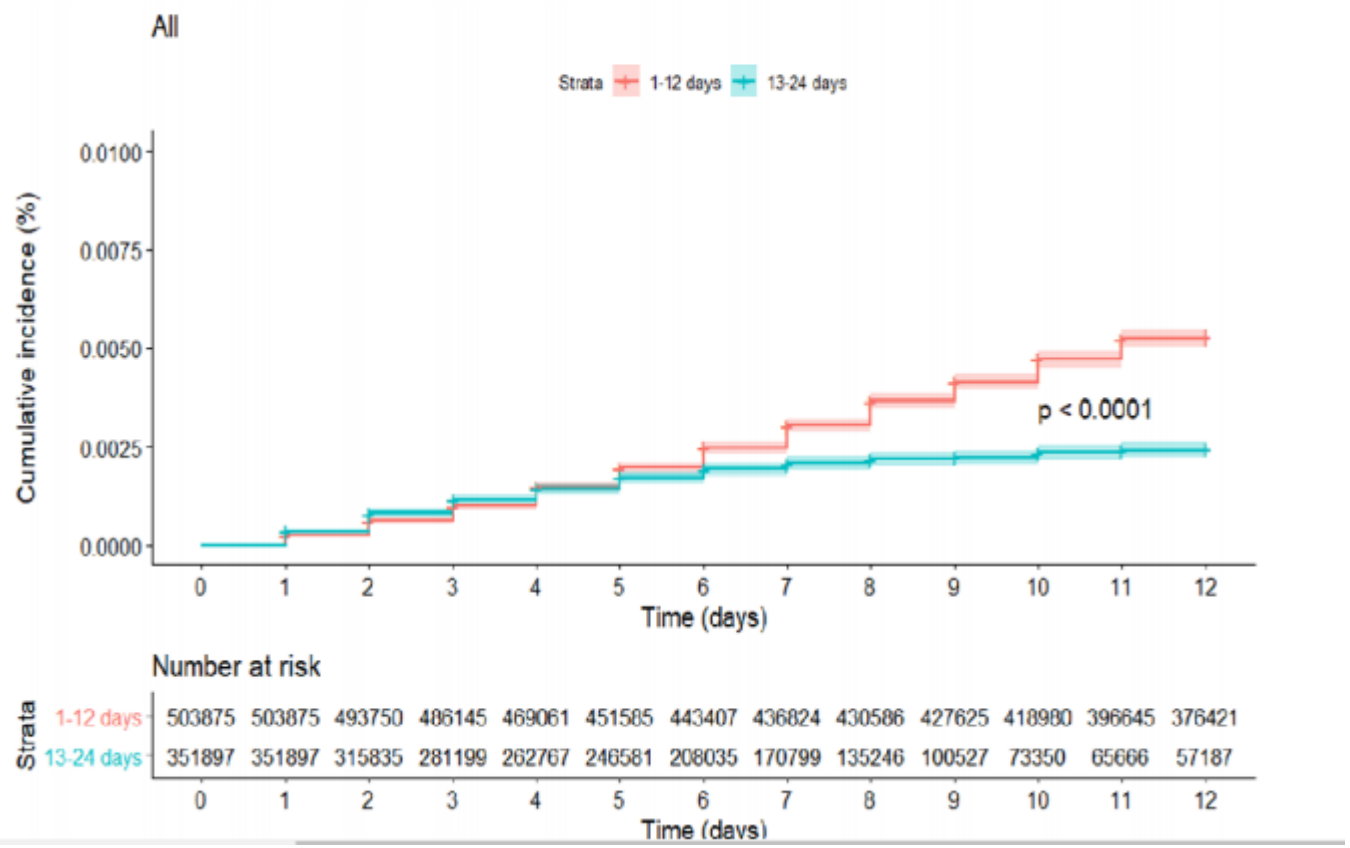
THE EFFECTIVENESS OF THE FIRST DOSE OF BNT162b2 VACCINE IN REDUCING SARS-COV-2 INFECTION 13-24 DAYS AFTER IMMUNIZATION: REAL-WORLD EVIDENCE

Gabriel Chodick, PhD[1,2] *, Lilac Tene, MSc [1], Tal Patalon, MD[1], Sivan Gazit, MD[1], Amir Ben Tov, MD [1], Dani Cohen [3], PhD [2], Khitam Muhsen, PhD[# 2]

[1] Maccabi Institute for Research & Innovation, Maccabi Healthcare Services, Kaufman 4, Tel Aviv Israel

[2] Department of Epidemiology and Preventive Medicine, School of Public Health, Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv Israel

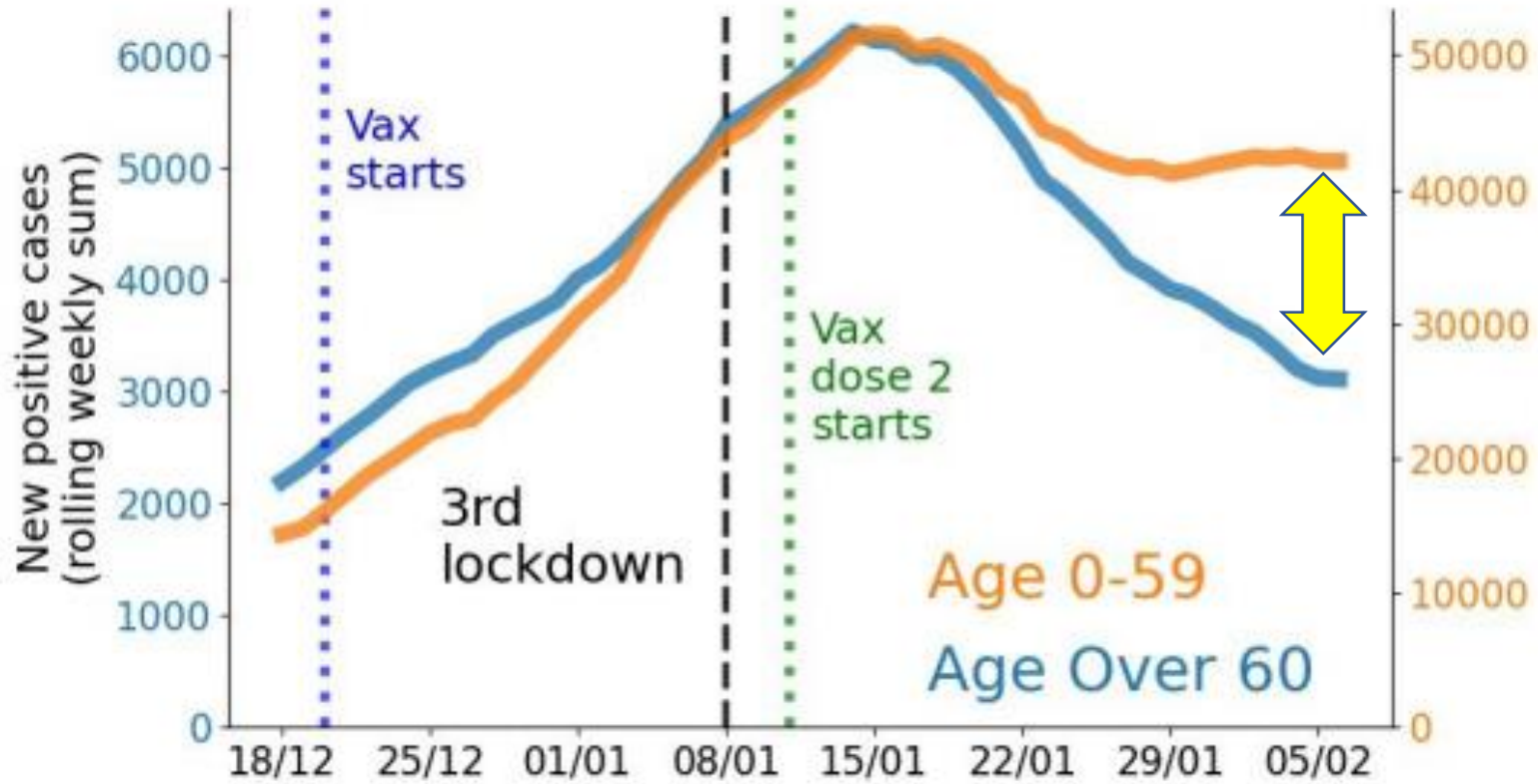
Legend to Figure 2: Cumulative incidence of SARS-CoV-2 infection by days since index date in the period of 1 to 12 days after first dose and 13 to 24 days after first dose.



Patterns of COVID-19 pandemic dynamics following deployment of a broad national immunization program

Hagai Rossman[1,2], Smadar Shilo[1,2,3], Tomer Meir[1,2], Malka Gorfine[4*], Uri Shalit[5*], Eran Segal[1,2*]

1. Department of Computer Science and Applied Mathematics, Weizmann Institute of Science, Rehovot, Israel
2. Department of Molecular Cell Biology, Weizmann Institute of Science, Rehovot, Israel
3. Pediatric Diabetes Clinic, Institute of Diabetes, Endocrinology and Metabolism, Rambam Health Care Campus, Haifa, Israel.
4. Department of Statistics and Operations Research, Tel Aviv University, Ramat Aviv, Israel
5. Technion - Israel Institute of Technology, Haifa, Israel



Estimating the effectiveness of the Pfizer COVID-19 BNT162b2 vaccine after a single dose. A reanalysis of a study of 'real-world' vaccination outcomes from Israel.

Paul R Hunter[1], Julii Brainard[1]

[1]The Norwich Medical School, University of East Anglia, Norwich, NR4 7TJ, UK

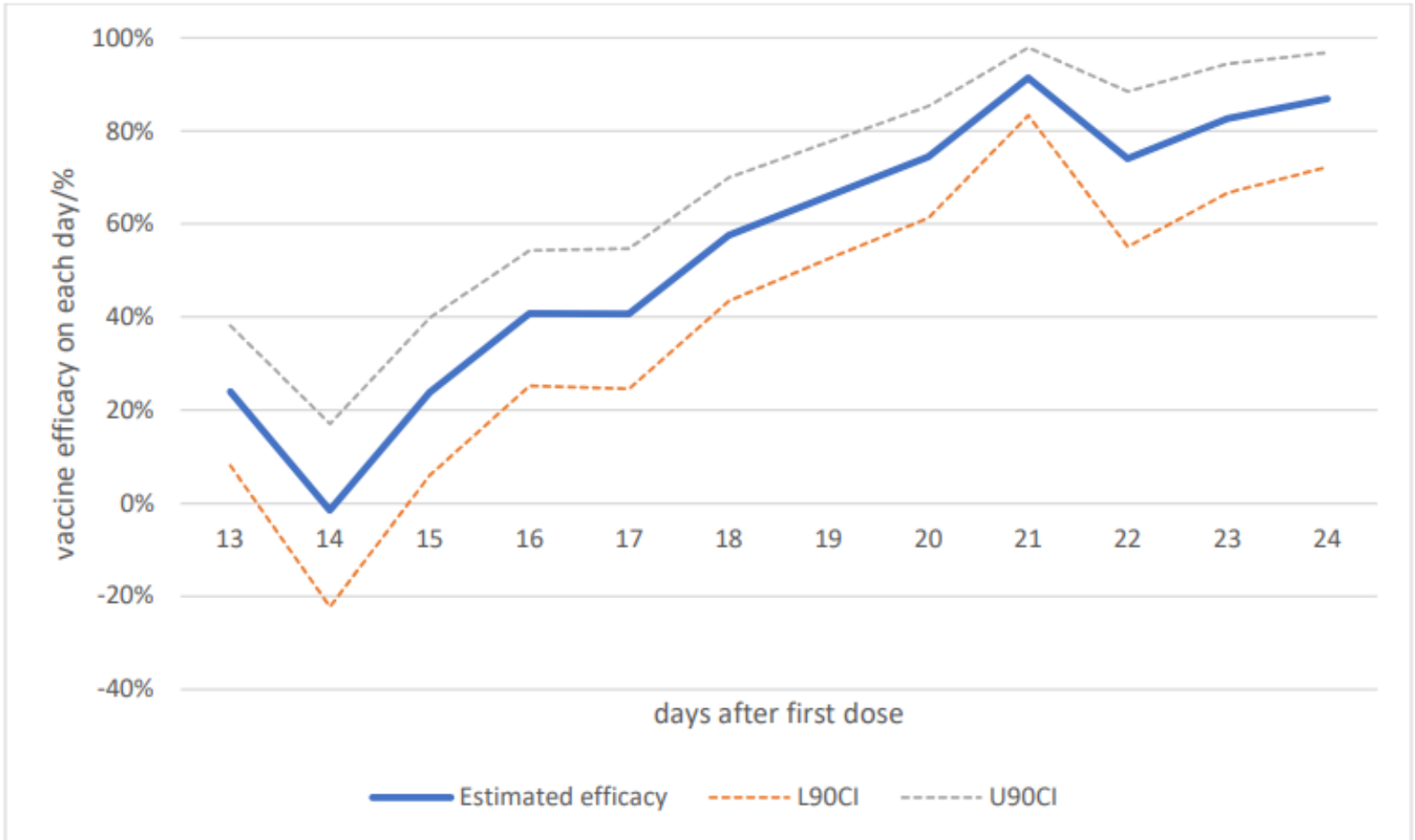


Figure 3. Estimated vaccine effectiveness on each day from day 13 to 24 after a single dose with upper and lower 90% credible intervals.

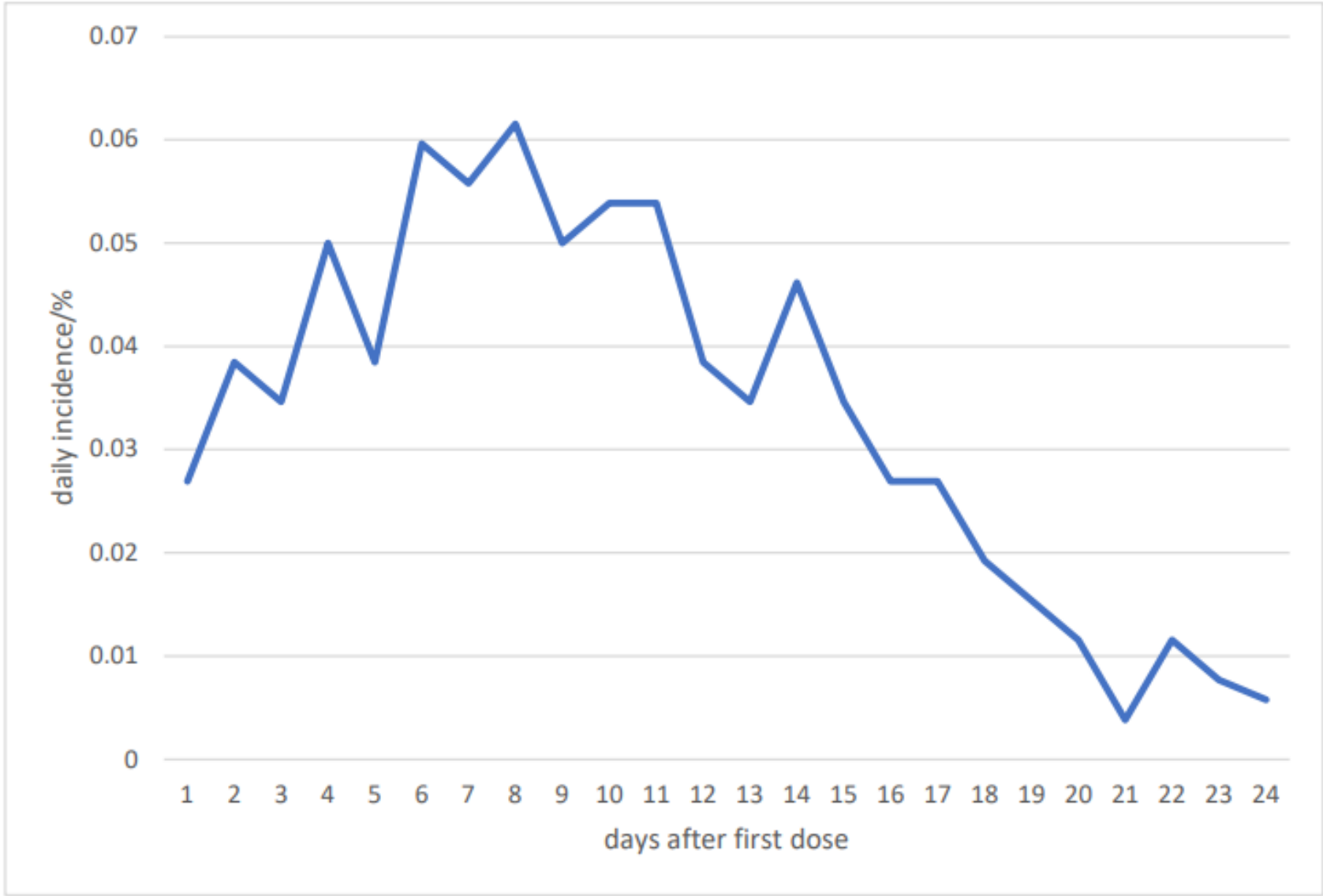


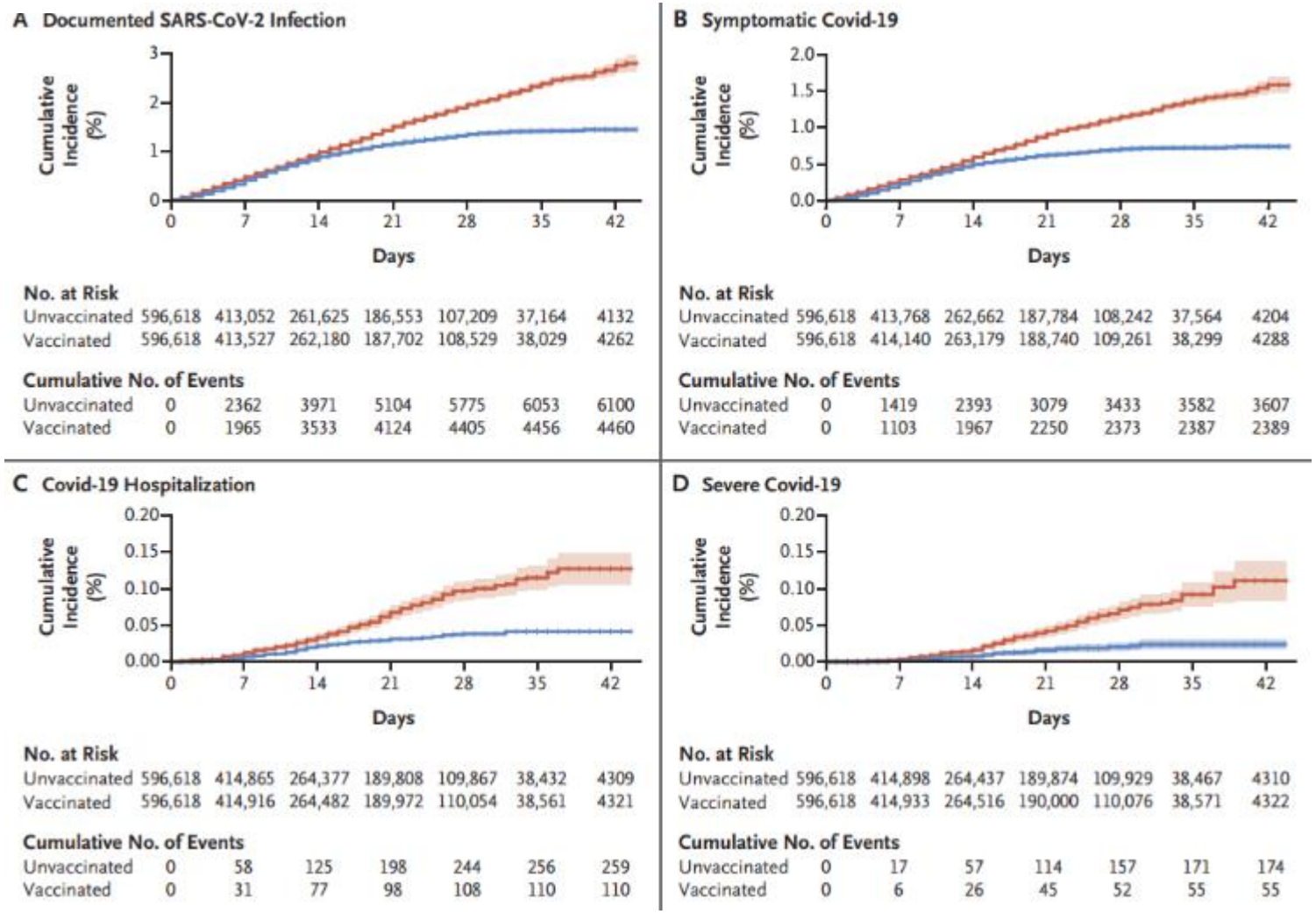
Figure 2. Daily incidence of new infections by days from first dose

The NEW ENGLAND JOURNAL of MEDICINE

BNT162b2 mRNA Covid-19 Vaccine in a Nationwide Mass Vaccination Setting

Noa Dagan, M.D., Noam Barda, M.D., Eldad Kepten, Ph.D., Oren Miron, M.A., Shay Perchik, M.A., Mark A. Katz, M.D., Miguel A. Hernán, M.D., Marc Lipsitch, D.Phil., Ben Reis, Ph.D., and Ran D. Balicer, M.D.

596 618 personnes vaccinées
Appariées avec le même nombre de non-vaccinées



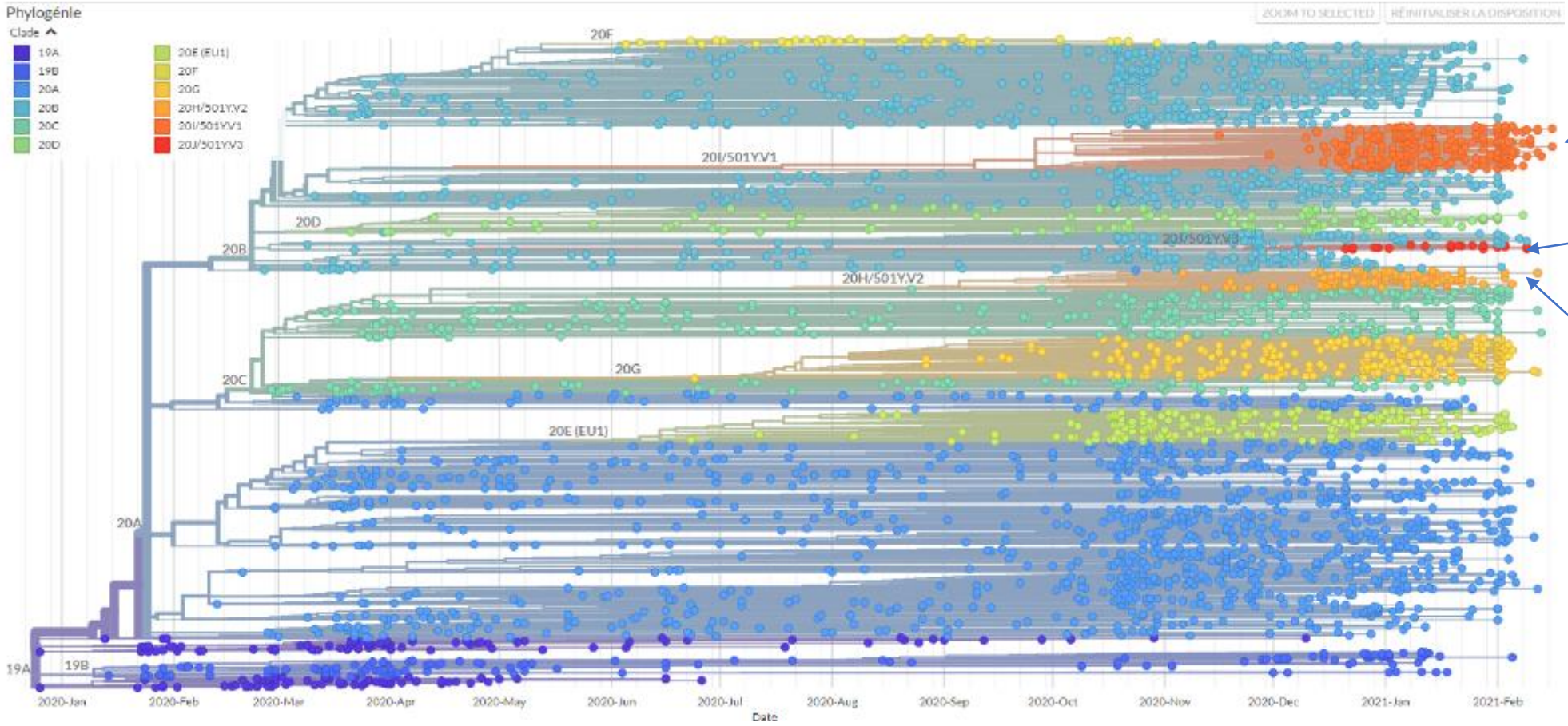
24/02/2021

Table 2. Estimated Vaccine Effectiveness against Covid-19 Outcomes during Three Time Periods.*

Period	Documented Infection		Symptomatic Illness		Hospitalization		Severe Disease		Death	
	1–RR	Risk Difference	1–RR	Risk Difference	1–RR	Risk Difference	1–RR	Risk Difference	1–RR	Risk Difference
	% (95% CI)	*no./1000 persons (95% CI)*	*% (95% CI)*	*no./1000 persons (95% CI)*	*% (95% CI)*	*no./1000 persons (95% CI)*	*% (95% CI)*	*no./1000 persons (95% CI)*	*% (95% CI)*	*no./1000 persons (95% CI)*
14 to 20 days after first dose	46 (40–51)	2.06 (1.70–2.40)	57 (50–63)	1.54 (1.28–1.80)	74 (56–86)	0.21 (0.13–0.29)	62 (39–80)	0.14 (0.07–0.21)	72 (19–100)	0.03 (0.01–0.07)
21 to 27 days after first dose	60 (53–66)	2.31 (1.96–2.69)	66 (57–73)	1.34 (1.09–1.62)	78 (61–91)	0.22 (0.13–0.31)	80 (59–94)	0.18 (0.10–0.27)	84 (44–100)	0.06 (0.02–0.11)
7 days after second dose to end of follow-up	92 (88–95)	8.58 (6.22–11.18)	94 (87–98)	4.61 (3.29–6.53)	87 (55–100)	0.22 (0.08–0.39)	92 (75–100)	0.32 (0.13–0.52)	NA	NA

* Confidence intervals were estimated using the percentile bootstrap method with 500 repetitions. Estimates were calculated only for cells with more than 10 instances of an outcome across the two groups. NA denotes not available, and RR risk ratio.

« Dérive » virale au cours du temps



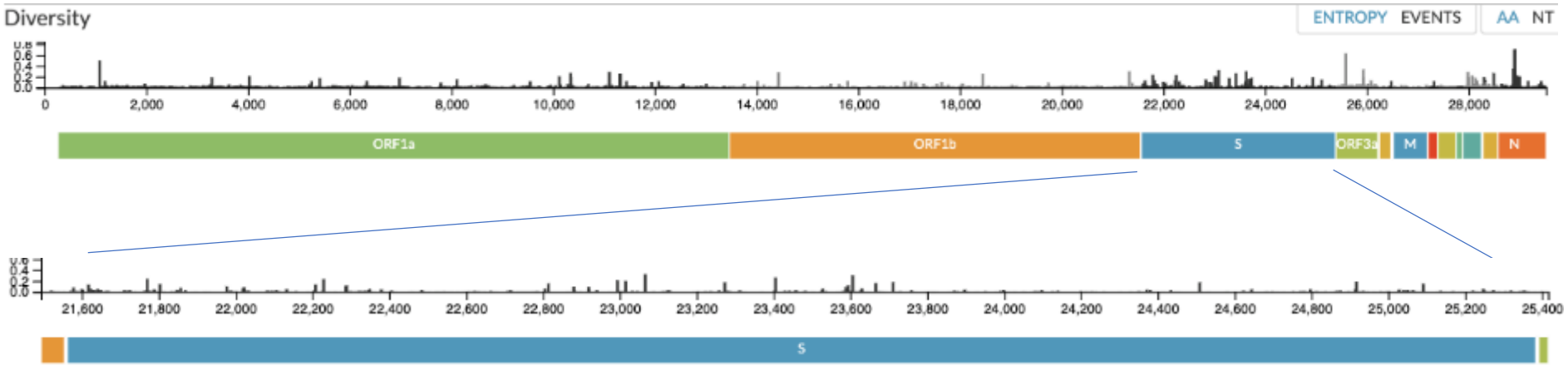
Variant B1.1.7
(découvert au R-U)

Variant P.1
(découvert au Brésil)

Variant B1.351
(découvert en Afr. du S)

Les mutations du SARS-CoV-2

(GISAID 3/02/2021)



VOC 202012/01
501Y.V1 (B.1.1.7)

dél 69-70 et 144 — 501* 570 614 681 716 982 1118

501Y.V2
(B.1.351)

18 80 215 246 417* 484(*) 501* 614 701 del 242-244

484 K.V2
501Y.V3
(B.1.1.28) P1

18 20 26 138 190 417* 484(*) 501* 614 655 1027

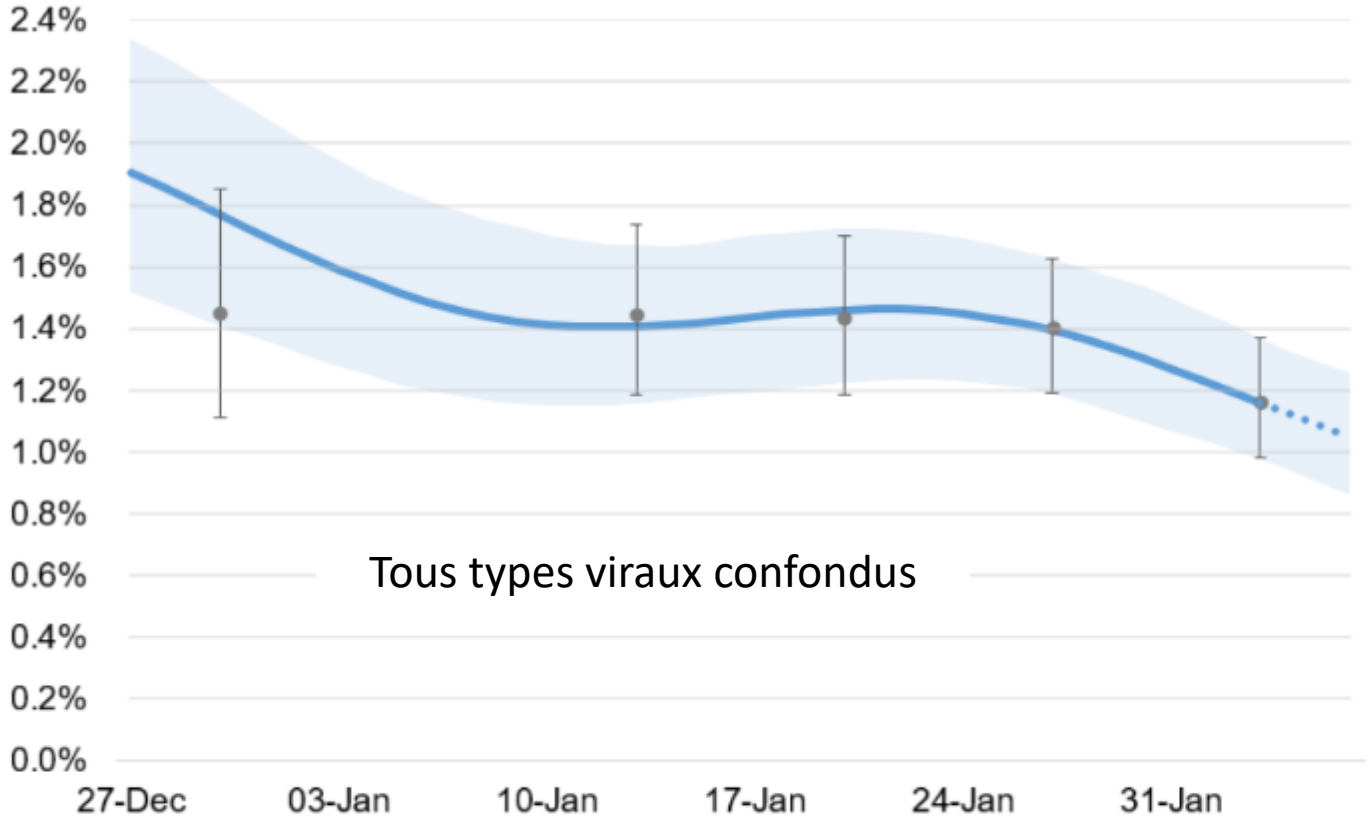
CAL.20C
452R.V1
(B.1.429)

13 152 452(*) 614

RBD

Variant B.1.1.7 au Pays de Galles

Chart 1: Official estimates of the percentage of the population in Wales testing positive for the coronavirus (COVID-19) on nose and throat swabs since 27 December 2020

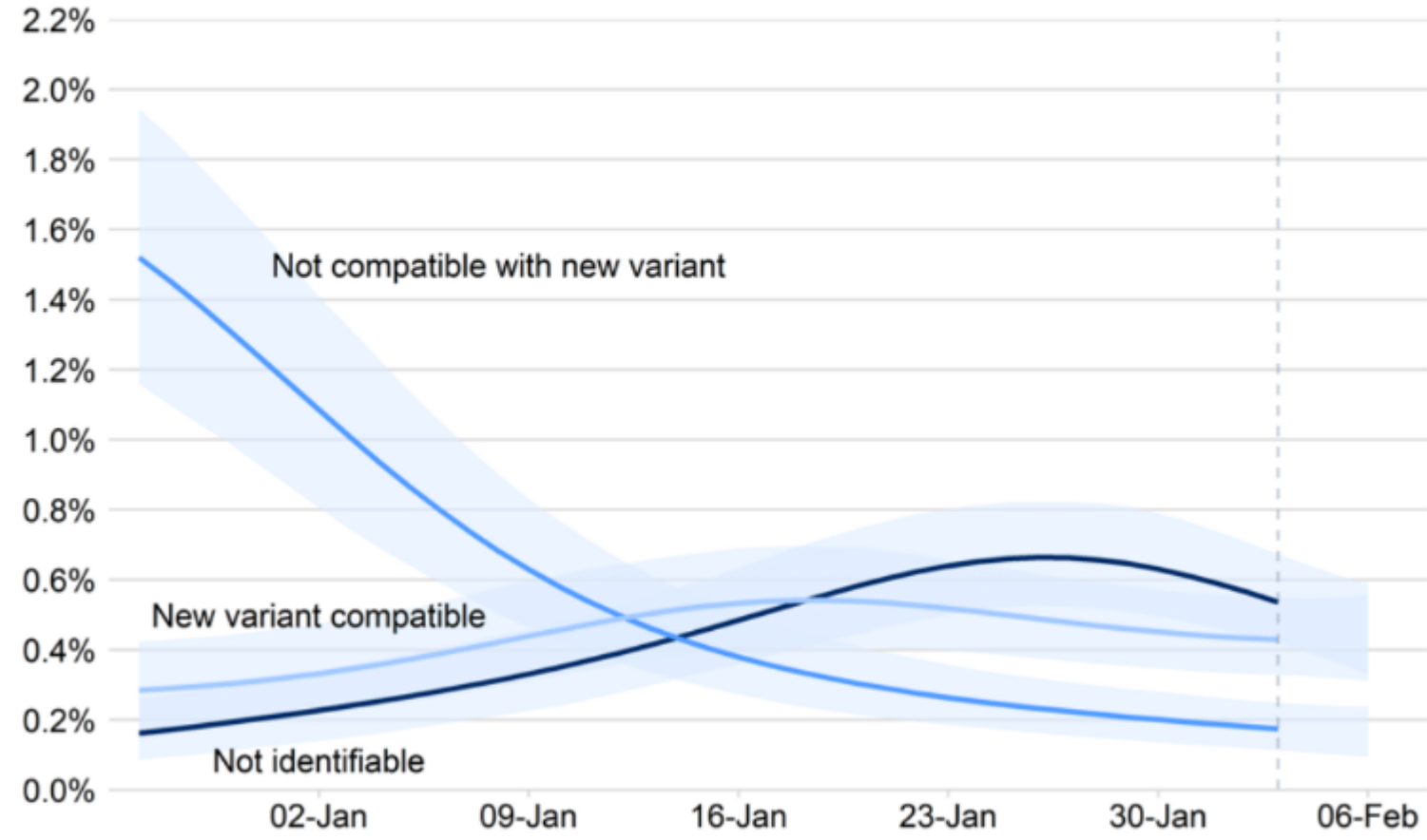


Source: Coronavirus (COVID-19) Infection Survey, ONS

https://gov.wales/coronavirus-covid-19-infection-survey-31-january-6-february-2021-html

Variant B.1.1.7 au Pays de Galles

Chart 2: Estimates of the percentage of positive cases compatible with the new UK variant and other positive cases since 27 December 2020

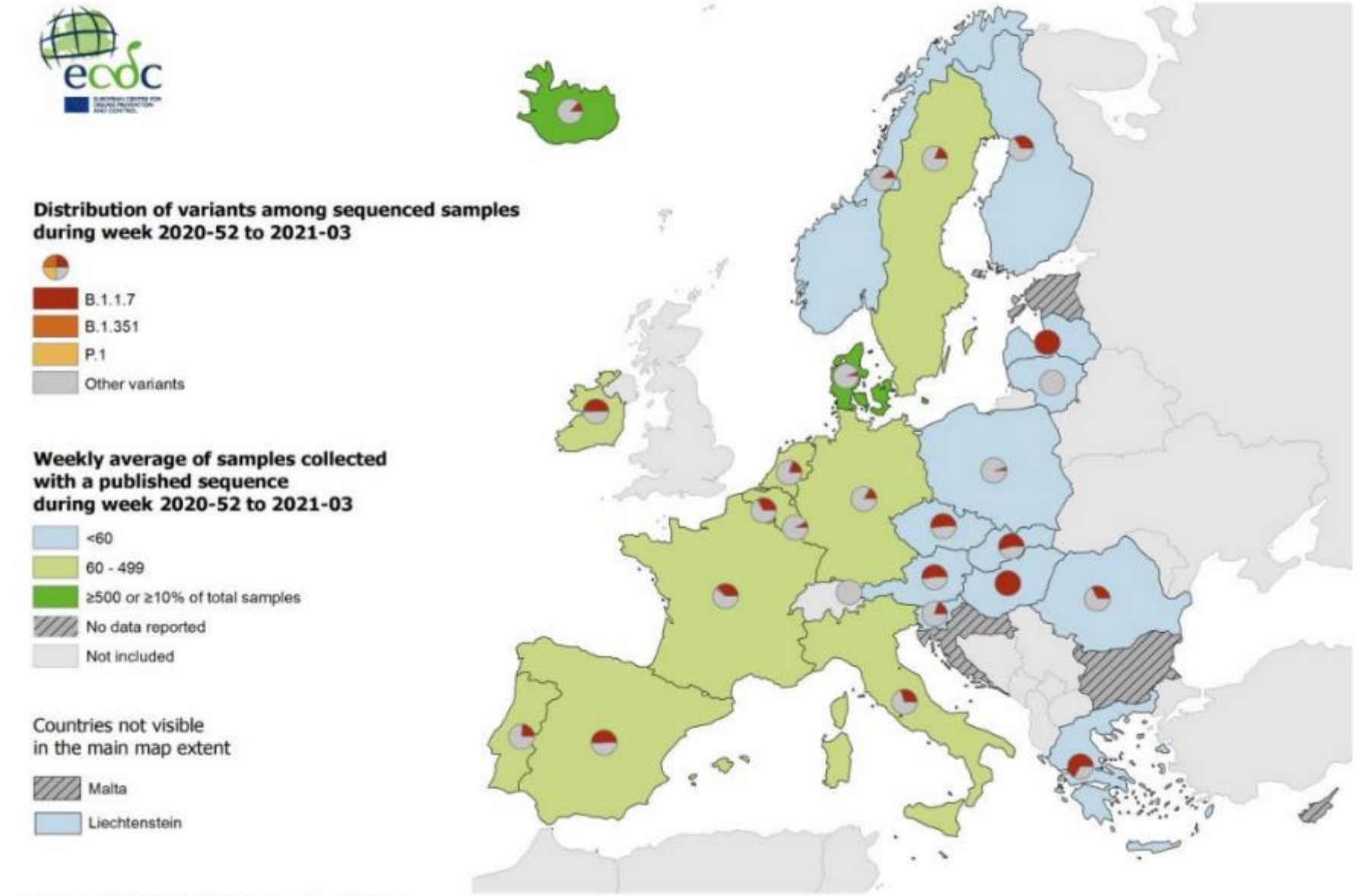


Source: Coronavirus (COVID-19) Infection Survey, ONS

https://gov.wales/coronavirus-covid-19-infection-survey-31-january-6-february-2021-html

Variants en Europe

Figure 1. Distribution of SARS-CoV-2 variants and average number of samples sequenced in EU/EEA countries, weeks 2020-52 to 2021-03



Source:GISAID EpiCoV data™. Administrative boundaries: © EuroGeographics
The boundaries and names shown on this map do not imply official endorsement or acceptance by the European Union. ECDC. Map produced on: 10 Feb 2021

Efficacité du vaccin en Écosse après une 1ère dose

Nombre et type de vaccin par classe d'âge

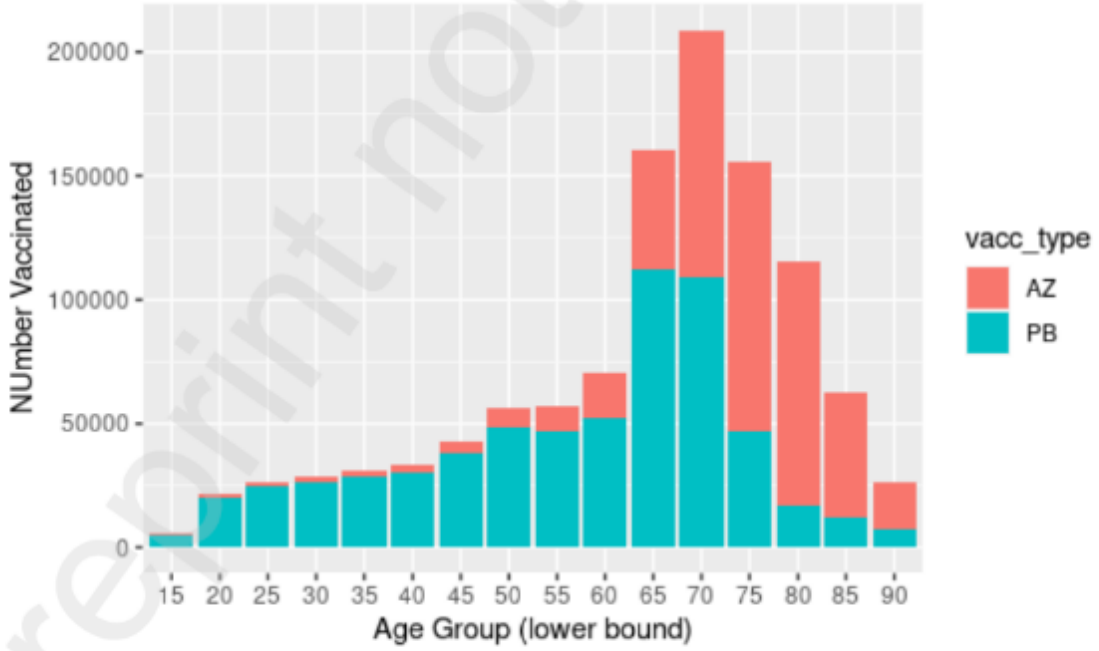


Figure 2: Vaccine uptake by age and vaccine type (AZ: Oxford-AstraZeneca. PB: Pfizer-BioNTech).

Efficacité contre les hospitalisations pour Covid-19 :

- AstraZeneca quel que soit l'âge :

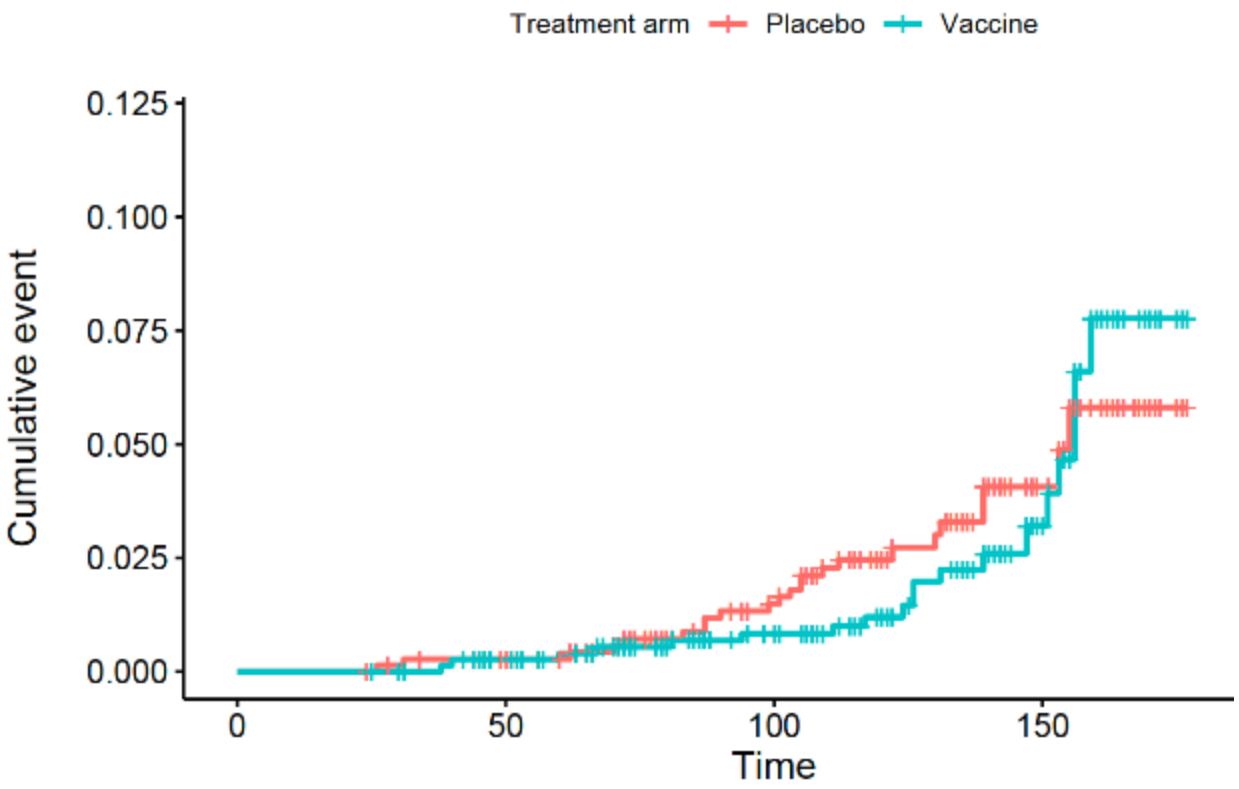
  74% à 2 semaines,
  84% à 3 semaines,
  94% à 4 semaines

- Après 80 ans :

  67% à 2 semaines,
  75% à 3 semaines,
  81% à 4 semaines

5,4 millions de personnes, dont 1,4 millions vaccinées – majorité de variant B.1.1.7

Protection contre B.1.351 « Sud Africain » - Vaccin AZ de phase 3



Baseline serology[a]	Total number of cases	Placebo n/N (%)	IR[b] per 1000 person-years (person-days)	Vaccine n/N (%)	IR per 1000 person-years (person-days)	Vaccine efficacy (95%Confidence Interval)
Primary outcome: All severity COVID-19 illness >14 days post-boost						
Sero-negative	42[c]	23/717 (3.2)	93.6 (89714)	19/750 (2.5)	73.1 (94881)	21.9% (-49.9 to 59.8)
Secondary objective: All severity B1.135 variant COVID-19 illness >14 days post-boost						
Sero-negative	39	20/714 (2.8)	81.6 (89448)	19/750 (2.5)	73.1 (94881)	10.4% (-76.8; 54.8)

Mahdi S et al, *medRxiv*, **2021**
doi :10.1101/2021.02.10.21251247

- Poliomyélite
- variole
- Rougeole
- Rage
- Hépatite B (pour l'hépatite fulminante)
- Fièvre jaune
- Ebola
- (Grippe)
- …

La solution à toutes ces maladies infectieuses virales aiguës n'a pas été l'élaboration d'un traitement, mais le vaccin