新型冠状病毒信息简报

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上海科技大学免疫化学研究所

生物医学大数据平台和高通量筛选平台领衔编译制作

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1. 2021 年 4 月 15 日疫情

数据来源：WHO

发布时间：2021 年 4 月 15 日北京时间下午 4 点

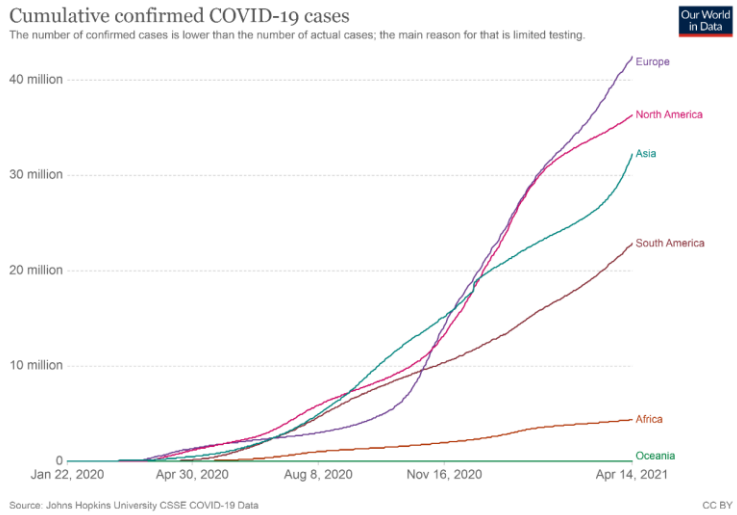
链接：https://covid19.who.int/

根据 WHO 提供的数据，2021 年 4 月 15 日全球累计确诊新型冠状病毒病人 **137,866,311** 例，当日新增确诊 **805,444** 例，累计死亡 **2,965,707** 例，当日新增死亡 **13,036**。全球至少接种一剂疫苗的人数为 **406,918,962**。

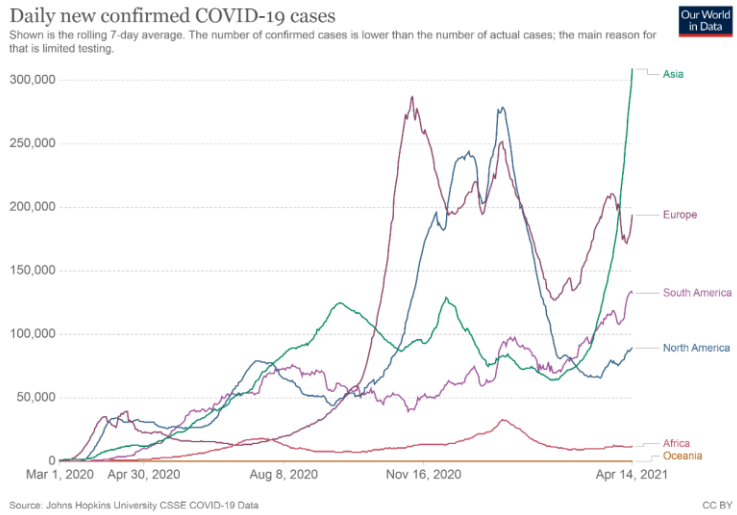
中国累计确诊 103,185 例，累计死亡 4,856 例，当日新增确诊 20 例，新增死亡 1 例。

截至 2021 年 4 月 14 日，31 个省（自治区、直辖市）和新疆生产建设兵团累计报告接种新冠病毒疫苗 **17921.6** 万剂次。

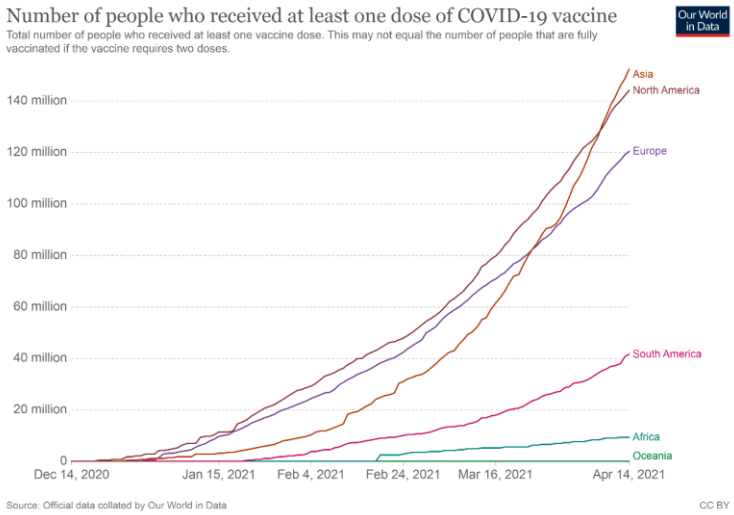
(http://www.nhc.gov.cn/xcs/yqfkdt/202104/fdc6ca0da1f240298a6274d0b6a539fe.shtml)



世界各洲确诊人数分布图（https://ourworldindata.org/covid-cases?country=~OWID_WRL#what-is-the-daily-number-of-confirmed-cases）



世界各洲每日新增确诊人数分布图（https://ourworldindata.org/covid-cases?country=~OWID_WRL#what-is-the-daily-number-of-confirmed-cases）



世界各洲接种疫苗人数分布图（https://ourworldindata.org/covid-cases?country=~OWID_WRL#what-is-the-daily-number-of-confirmed-cases）

全国新型冠状病毒肺炎新增确诊病例分布图（4 月 15 日，来源：http://2019ncov.chinacdc.cn/2019-nCoV/）

2. 美国的突变株地图

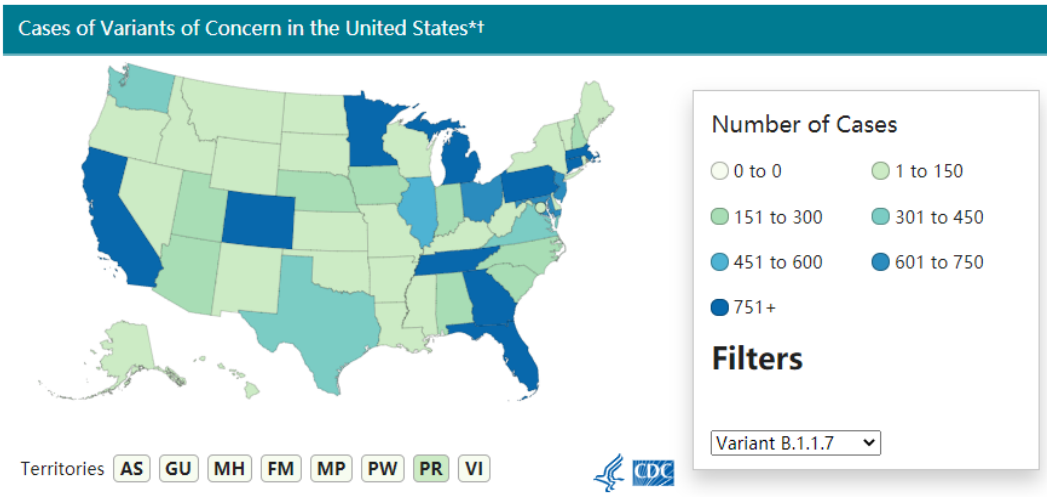
来源:美国 CDC 官方网站

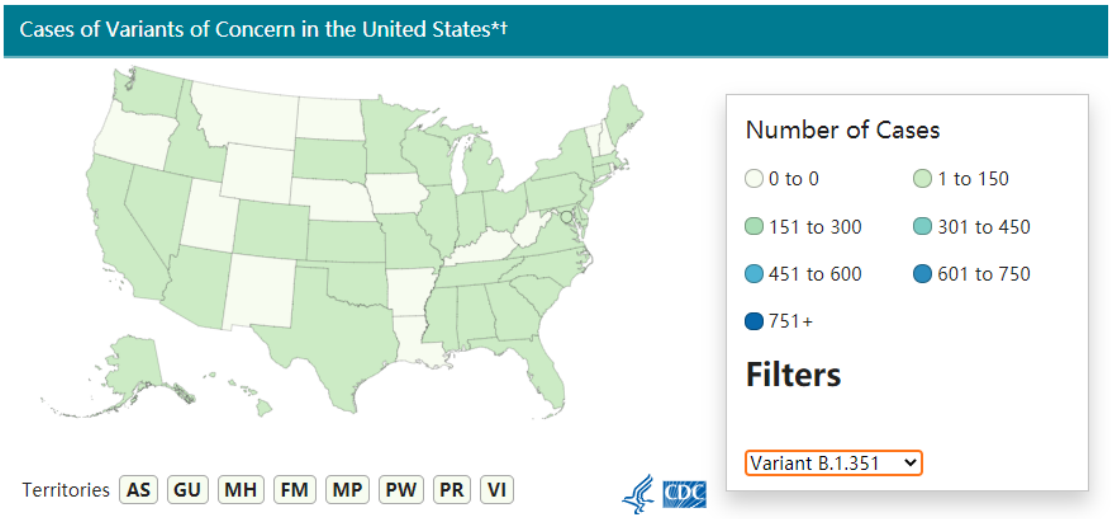
发布时间：2021-04-12

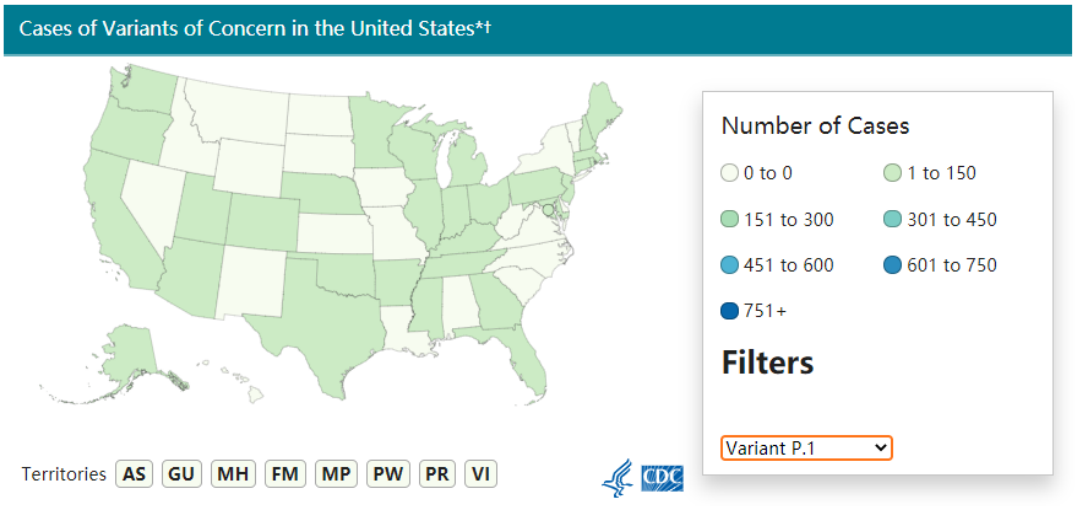
链接：https://www.cdc.gov/coronavirus/2019-ncov/transmission/variant-cases.html

美国 CDC 公布了主要突变株在美国各州出现的情况：B1.1.7（英国株）已经出现在 52 个州，B1.351（南非株）已经出现在 36 个州，而 P.1（巴西株）已经出现在 31 个州。

Variant	Reported Cases in US	Number of Jurisdictions Reporting
B.1.1.7	20915	52
B.1.351	453	36
P.1	497	31







3. 一项关于人类 COVID-19 确诊病例家庭宠物感染 SARS-CoV-2 和血清阳性的健康调查——犹他州和威斯康星州，2020 年

One Health Investigation of SARS-CoV-2 Infection and Seropositivity among Pets in Households with Confirmed Human COVID-19 Cases — Utah and Wisconsin, 2020

来源：bioRxiv

发布时间：2021-04-13
链接：https://www.biorxiv.org/content/10.1101/2021.04.11.439379v1
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中文摘要：
背景：大约 67%的美国家庭养宠物。宠物感染 SARS-CoV-2 的数据有限。作为一项正在进行的 COVID-19 家庭传播调查的亚研究，我们评估了宠物同居者中 SARS-CoV-2 感染情况。
方法：2020 年 4 月-5 月，实验室确诊 COVID-19 病例 1 人以上家庭的哺乳动物宠物纳入研究。从登记的宠物中收集人口统计学/暴露信息、口咽、鼻、直肠和皮毛拭子、粪便和血液，并通过 rRT-PCR 和病毒中和试验进行检测。
发现：我们从 41 个符合条件的家庭中挑选了 34 个，其中 37 只狗和 19 只猫。rRT-PCR 检测所有口咽、鼻和直肠拭子均为阴性；在第一次动物取样时，一只狗的毛拭子(2%)经 rRT-PCR 检测为阳性。在 30 户家庭的 47 只宠物的血清学结果中，6 户家庭(20%)的 8 只(17%)宠物(4 只狗，4 只猫)检测到 SARS-CoV-2 中和抗体。在宠物血清阳性的家庭中，经实验室确诊的 COVID-19 患者的比例更高(中位数为 79%;范围:40-100%)，与没有血清宠物阳性的家庭相比(中位数为 37%;范围:13 - 100%)(p = 0.01)。33 例血清学结果阳性的宠物在患者被确诊为 COVID-19 之前曾与患者每日频繁接触(≥1 小时)。这 33 例宠物中，14 例(42%)诊断后与人类患者接触减少，0 例(0%)血清阳性；19 例(58%)持续接中的宠物，4 例(21%)血清阳性。
解释：血清阳性的宠物可能从人类获得感染，这可能比以前认识到的更频繁发生。COVID-19 患者应限制与动物接触。

Abstract:
Background Approximately 67% of U.S. households have pets. Limited data are available on SARS-CoV-2 in pets. We assessed SARS-CoV-2 infection in pet cohabitants as a sub-study of an ongoing COVID-19 household transmission investigation.
Methods Mammalian pets from households with ≥1 person with laboratory-confirmed COVID-19 were eligible for inclusion from April–May 2020. Demographic/exposure information, oropharyngeal, nasal, rectal, and fur swabs, feces, and blood were collected from enrolled pets and tested by rRT-PCR and virus neutralization assays.
Findings We enrolled 37 dogs and 19 cats from 34 of 41 eligible households. All oropharyngeal, nasal, and rectal swabs tested negative by rRT-PCR; one dog's fur swabs (2%) tested positive by rRT-PCR at the first animal sampling. Among 47 pets with serological results from 30 households, eight (17%) pets (4 dogs, 4 cats) from 6 (20%) households had detectable SARS-CoV-2 neutralizing antibodies. In households with a seropositive pet, the proportion of people with laboratory-confirmed COVID-19 was greater (median 79%; range: 40–100%) compared to households with no seropositive pet (median 37%; range: 13–100%) (p=0.01). Thirty-three pets with serologic results had frequent daily contact (≥1 hour) with the human index patient before the person's COVID-19 diagnosis. Of these 33 pets, 14 (42%) had decreased contact with the human index patient after

diagnosis and none (0%) were seropositive; of the 19 (58%) pets with continued contact, 4 (21%) were seropositive.

Interpretations Seropositive pets likely acquired infection from humans, which may occur more frequently than previously recognized. People with COVID-19 should restrict contact with animals.

4. 截至 2021 年 4 月 16 日国家药监局已批准 59 个新型冠状病毒检测产品

来源：国家药品监督管理局

链接：https://www.nmpa.gov.cn/

编译者：宋张悦

截至 2021 年 4 月 16 日，国家药监局已批准 59 个新型冠状病毒检测产品，其中新冠病毒核酸检测试剂 29 个，抗体检测试剂 27 个，抗原检测试剂 3 个。详见参考文件："国家药监局新型冠状病毒检测试剂注册信息_20210416.xlsx"。

5. 巴西医护人员使用 COVID-19 灭活疫苗（科兴疫苗）的有效性和安全性：PROFISCOV 研究

Efficacy and Safety of a COVID-19 Inactivated Vaccine in Healthcare Professionals in Brazil: The PROFISCOV Study

来源：ssrn

发布时间：2021-04-14

链接：https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3822780

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DOI 或 PUBMED ID：Preprint

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中文摘要：

背景：疫苗是解决 COVID-19 前所未有的发病率和死亡率的迫切需要。灭活病毒给药是开发新疫苗的常见和成熟的平台。CoronaVac 是一种经过临床前试验和 I/II 期临床试验的灭活疫苗。

方法：我们在巴西 16 个中心的健康医护人员中进行了一项随机、双盲、安慰剂对照的 III 期临床试验。参与者在第 0 天和第 14 天接受两剂疫苗（3μg/0.5ml）或安慰剂。主要疗效终点是第二次注射疫苗 14 天后经 RT-PCR 证实的有症状 COVID-19 病例数。预防疾病严重程度是主要的次要疗效终点，免疫后 7 天内的不良事件发生率是主要的安全性结果。登记在 ClinicalTrials.gov，NCT04456595。

结果：在 2020 年 7 月 21 日至 12 月 16 日期间，共有 12396 名参与者被纳入研究，并接受了至少一剂疫苗或安慰剂。共有 9823 名参与者接受了这两种剂量的药物，并进行了至少 14 天的随访，因此达到了最终疗效分析。队列中有 253 例确诊的 COVID-19 病例：疫苗组 4953 名参与者中有 85 例（11.0/100 人-年），安慰剂组 4870 名参与者中有 168 例（22.3/100 人-年）。抗 COVID-19 的主要疗效为 50.7%（95%CI 36.0-62.0）。对需要辅助治疗（评分≥3 分）和中、重度（评分≥4 分）的次要疗效分别为 83.7%（95%CI 58.0～93.7）和 100%（95%CI 56.4～100.0）。6 例重度 COVID-19 均发生在安慰剂组。疫苗组的不良反应发生率（77.1%）高于安慰剂组（66.4%），主要是给药部位疼痛。64 名参与者报告了 67 起严重不良事件，所有这些事件都被确定与疫苗接种无关，包括两起致命病例。在一部分受试者中，中和抗体检

测显示抗 B.1.128、P.1 和 P.2 变种的血清转化率和几何平均滴度相似。
解释：在巴西医疗专业人员中进行的一项 III 期临床试验表明，灭活的 CoronaVac 疫苗具有良好的安全性，对任何程度的 SARS-CoV-2 感染都有效，对中度和重度 COVID-19 具有高度保护作用。
Abstract:
Background: Vaccines are urgently needed to tackle the unprecedented morbidity and mortality of COVID-19. Administration of inactivated viruses are the common and mature platform of developing new vaccines. CoronaVac is an inactivated vaccine that has undergone preclinical tests and phase I/II clinical trials.
Methods: We conducted a randomised, double-blind, placebo-controlled phase 3 clinical trial with CoronaVac among healthy healthcare professionals in 16 centres in Brazil. Participants received two doses of vaccine (3 μg in 0.5 mL) vaccine or placebo at day 0 and 14. The primary efficacy endpoint was the number of symptomatic COVID-19 cases confirmed by RT-PCR 14 days after the second dose of the vaccine. Prevention of disease severity was a major secondary efficacy endpoint, and adverse events incidence up to seven days after immunization was the primary safety outcome. The trial was registered at ClinicalTrials.gov, NCT04456595.
Findings: Between July 21 and Dec 16, 2020, 12 396 participants were enrolled and received at least one vaccine or placebo dose. There were 9,823 participants who received the two doses and were followed for at least 14 days and had, therefore, reached the final efficacy analysis. There were 253 confirmed COVID-19 cases in the cohort: 85 cases (11.0/100 person-year) among 4,953 participants in the vaccine group, and 168 cases (22.3/100 person-year) among 4,870 participants in the placebo group. The primary efficacy against symptomatic COVID-19 was 50.7% (95%CI 36.0-62.0). The secondary efficacy against cases requiring assistance (score ≥3) and moderate and severe cases (score ≥4) were 83.7% (95%CI 58.0-93.7) and 100% (95%CI 56.4-100.0) respectively. All 6 cases of severe COVID-19 occurred in the placebo group. The incidence of adverse reactions, which was mainly pain at the administration site, was higher in the vaccine group (77.1%) than in the placebo group (66.4%). There were 67 serious adverse events reported by 64 participants and all were determined to be unrelated to vaccination, including two fatal cases. In a subset of participants, neutralizing antibody assays showed similar seroconversion and geometric mean titres against B.1.128, P.1, and P.2 variants.
Interpretation: A phase 3 clinical trial conducted in healthcare professionals in Brazil demonstrated that the inactivated CoronaVac vaccine has a good safety profile and is efficacious against any symptomatic SARS-CoV-2 infections and highly protective against moderate and severe COVID-19.

6. 斯里兰卡 SARS-CoV-2 感染者和未感染者对单剂量 AZD1222/Covishield 疫苗的抗体和 T 细胞反应

Antibody and T-cell responses to a single dose of the AZD1222/Covishield vaccine in previously SARS-CoV-2 infected and naive health care workers in Sri

Lanka
来源：medrxiv
发布时间：2021-04-13
链接：https://www.medrxiv.org/content/10.1101/2021.04.09.21255194v1
第一作者：Chandima Jeewandara
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DOI 或 PUBMED ID：https://doi.org/10.1101/2021.04.09.21255194
编译者：刘焕珍
中文摘要：

背景：为了确定 AZD1222/Covishield 疫苗在实际情况下的单剂量免疫原性，我们在斯里兰卡的一大批医护人员中评估了免疫原性。

方法：对 607 名未感染 SARS-CoV-2 的医务人员和 26 名曾感染过 SARS-CoV-2 的医务人员在单次接种疫苗后 28～32 天进行了 SARS-CoV-2 抗体检测。对 69 名未感染者和 26 名先前感染者进行了针对野生型病毒 B.1.1.7、B.1.351 受体结合域（RBD）抗体的血凝试验（HAT）和替代中和试验（sVNT）。用 ELISpot-IFNγ 法测定了 76 例个体的棘突蛋白（S1 和 S2）特异性 T 细胞反应。

结果：在单次接种疫苗后，92.9%的未感染 SARS-CoV-2 的医务人员有血清转化，与年龄和性别无关；在 67/69（97.1%）未感染 SARS-CoV-2 的医务人员的疫苗接种者中检测到 ACE2 阻断抗体。尽管发现野生型病毒的 RBD 抗体水平很高，但在先前未感染 SARS-CoV-2 的医务人员中，B.1.1.7 和 B.1.351 的滴度较低。在 63.9%的医务人员中观察到了对 S1 的离体 T 细胞反应，在 31.9%的实验中观察到了 S2。在先前感染的医务人员中，用 sVNT 测定的 ACE2 阻断滴度显著增加（$p<0.0001$），从抑制的中位数 54.1%增加到 97.9%，变异株 B.1.1.7 和 B.1.351 的 RBD 抗体也显著增加。

讨论：单剂量 AZD1222/Covishield 疫苗在未感染 SARS-CoV-2 的医务人员中显示出高度免疫原性，诱导抗体水平高于自然感染后的水平。在受感染的个体中，单次剂量可诱导非常高水平的 ACE2 阻断抗体和针对 SARS-CoV-2 变异株 RBD 的抗体。

Abstract:

Background: In order to determine the immunogenicity of a single dose of the AZD1222/Covishield vaccine in a real-world situation, we assessed the immunogenicity, in a large cohort of health care workers in Sri Lanka.

Methods: SARS-CoV-2 antibodies was carried out in 607 naïve and 26 previously infected health care workers (HCWs) 28 to 32 days following a single dose of the vaccine. Haemagglutination test (HAT) for antibodies to the receptor binding domain (RBD) of the wild type virus, B.1.1.7, B.1.351 and the surrogate neutralization assay (sVNT) was carried out in 69 naïve and 26 previously infected individuals. Spike protein (pools S1 and S2) specific T cell responses were measured by ex vivo ELISpot IFNγ assays in 76 individuals.

Results: 92.9% of previously naive HCWs seroconverted to a single dose of the vaccine, irrespective of age and gender; and ACE2 blocking antibodies were detected in 67/69 (97.1%) previously naïve vaccine recipients. Although high levels of antibodies were found to the RBD of the wild type virus, the titres for B.1.1.7 and B.1.351 were lower in previously naïve HCWs. Ex vivo T cell responses were observed to S1 in 63.9% HCWs and S2 in 31.9%. The ACE2 blocking

titres measured by the sVNT significantly increased (p<0.0001) from a median of 54.1 to 97.9 % of inhibition, in previously infected HCWs and antibodies to the RBD for the variants B.1.1.7 and B.1.351 also significantly increased.
Discussion: a single dose of the AZD1222/Covishield vaccine was shown to be highly immunogenic in previously naïve individuals inducing antibody levels greater than following natural infection. In infected individuals, a single dose induced very high levels of ACE2 blocking antibodies and antibodies to RBDs of SARS-CoV-2 variants of concern.

7. INO-4800 DNA 疫苗诱导针对全球 SARS-CoV-2 变体的中和抗体和 T 细胞活性。

INO-4800 DNA Vaccine Induces Neutralizing Antibodies and T cell Activity Against Global SARS-CoV-2 Variants
来源：bioRxiv
发布时间：2020-04-14
链接：https://www.biorxiv.org/content/10.1101/2021.04.14.439719v1
第一作者：Viviane M. Andrade
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DOI 或 PUBMED ID：https://doi.org/10.1101/2021.04.14.439719
编译者：张鹏伟
中文摘要：
全球监测已确定了令人关注的新出现的 SARS-CoV-2 变异（VOC），与宿主特异性，致病性和对疫苗诱导的免疫的逃避免疫功能有关。在这里，我们比较了用 DNA 疫苗 INO-4800 免疫的受试者对 SARS-CoV-2 VOC 的体液和细胞反应。 INO-4800 疫苗接种诱导了针对所有测试变体的中和抗体，并且针对 B.1.351 的检测水平有所降低。 针对所有测试的变体，IFNγT 细胞反应得以完全维持。
Abstract:
Global surveillance has identified emerging SARS-CoV-2 variants of concern (VOC) associated with broadened host specificity, pathogenicity, and immune evasion to vaccine induced immunity. Here we compared humoral and cellular responses against SARS-CoV-2 VOC in subjects immunized with the DNA vaccine, INO-4800. INO-4800 vaccination induced neutralizing antibodies against all variants tested, with reduced levels detected against B.1.351. IFNγ T cell responses were fully maintained against all variants tested.

8. 哺乳期妇女接种 COVID-19 疫苗后母乳中的 SARS-CoV-2 - 特异性抗体

SARS-CoV-2 - Specific Antibodies in Breast Milk After COVID-19 Vaccination of Breastfeeding Women
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编译者：张鹏伟
中文摘要：
2020 年 12 月 20 日，以色列发起了针对 COVID-19 的国家疫苗接种计划。 优先考虑的人群是卫生保健工作者，其中许多是母乳喂养的妇女。 尽管疫苗试验不包括该人群，也没有其他疫苗相关的安全性数据公布，但仍鼓励属于危险组的母乳喂养妇女接种疫苗。 疾病控制与预防中心还建议对属于疫苗目标人群的母乳喂养妇女进行免疫接种。 我们调查了母体免疫接种是否会导致 SARS-CoV-2 抗体分泌到母乳中，并评估了妇女及其婴儿之间的任何潜在不良事件。

方法：

我们对属于选择接种疫苗的疫苗目标人群的母乳喂养妇女（全部或部分）的便利性样本进行了前瞻性队列研究。 2020 年 12 月 23 日至 2021 年 1 月 15 日之间，通过广告和社交媒体从以色列全境招募了参与者。所有参与者均间隔 21 天接受 2 剂 Pfizer-BioNTech 疫苗。接种疫苗前收集母乳样品，然后在第一次给药后的第 2 周开始，每周一次，共 6 周。将样品冷冻保存，等待分析。IgG 水平通过 Elecsys Anti-SARS-CoV-2 S 血清学检测法检测，并在 Cobas e801 分析仪上读取，其水平超过 0.8 U / mL 被认为是阳性(La Roche Ltd)，并通过 EUROIMMUN AG Anti-SARS 获得 IgA -CoV-2 S 试剂盒的样品与校准品的消光比大于 0.8，被认为是阳性（补充品）。在入选时，收集了母婴统计信息，随后每周收集母乳调查表，以收集有关临时健康和疫苗相关不良事件的信息。该研究得到了沙米尔医学中心机构审查委员会的批准；从母亲那里获得了书面知情同意书。

使用配对样本 t 检验，在每个点的抗体水平与基线进行比较，并使用 Benjamini-Hochberg 方法进行多重测试校正，评估研究期间呈阳性测试结果的受试者比例和抗体水平的变化。两侧显著性阈值设置为 P <0.05。 分析中使用到 R 版本 3.6。

结果：

八十四名妇女完成了这项研究，提供了 504 个母乳样品。女性的平均（SD）年龄为 34（4）岁，婴儿的平均（SD）年龄为 10.32（7.3）个月。

母乳中抗 SARS-CoV-2 特异性 IgA 抗体的平均水平迅速增加，并在首次疫苗接种后第 2 周显着升高（比率为 2.05； P <0.001），当 61.8％的样品测试呈阳性时，则增加在第 4 周（第二种疫苗接种 1 周后）达到 86.1％。在随访期间，平均水平仍然升高，在第六周，有 65.7％的样本检测为阳性。抗 SARS-CoV-2 特异性 IgG 抗体在最初的 3 周中保持较低水平，在第 4 周时有所增加（20.5 U / mL； P = 0.004），当时 91.7％的样品检测呈阳性，而在 96％时升高至 97％第 5 周和第 6 周。

在研究期间，没有母亲或婴儿经历过任何严重的不良事件。 第一次接种疫苗后有 47 名女性（55.9％）报告了与疫苗相关的不良事件，第二次接种疫苗后有 52 名女性（61.9％）报告了局部疼痛是最常见的主诉（表）。 在母体疫苗接种后的 7、12、15 和 20 天的研究期内，有 4 名婴儿发烧。 所有患儿均具有上呼吸道感染症状，包括咳嗽和充血，只有一名婴儿因年龄而入院接受新生儿发烧评估，并接受抗生素治疗以待培养，但未经治疗即可治愈。 没有其他不良事件的报道。

讨论：

这项研究发现，疫苗接种后 6 周内，SARS-CoV-2 特异性 IgA 和 IgG 抗体在母乳中大量分泌。IgA 分泌最早在接种疫苗后 2 周出现，随后 4 周（第二种疫苗接种后一周）IgG 含量猛增。

其他一些研究表明，在感染了 COVID-19.5 的妇女中发现了类似的结果，这些妇女的母乳中发现的抗体具有很强的中和作用，表明对婴儿的感染具有潜在的保护作用。
该研究有局限性。 首先，未进行功能测定。 但是，先前的研究表明与该研究相同的抗体的中和能力。 其次，未进行血清抗体检测或 SARS-CoV-2 实时逆转录酶聚合酶链反应检测，这些检测可能提供了有趣的相关性。

Abstract:

On December 20, 2020, Israel initiated a national vaccination program against COVID-19. One prioritized group was health care workers, many of whom are breastfeeding women. Despite the fact that the vaccine trial did not include this population and no other vaccine-related safety data had been published, breastfeeding women belonging to risk groups were encouraged to receive the vaccine. The Centers for Disease Control and Prevention has also recommended that breastfeeding women belonging to vaccine-target groups be immunized. We investigated whether maternal immunization results in secretion of SARS-CoV-2 antibodies into breast milk and evaluated any potential adverse events among women and their infants.

Methods

We conducted a prospective cohort study of a convenience sample of breastfeeding women (either exclusive or partial) belonging to vaccine-target groups who chose to be vaccinated. Participants were recruited from all of Israel between December 23, 2020, and January 15, 2021, through advertisements and social media. All participants received 2 doses of the Pfizer-BioNTech vaccine 21 days apart. Breast milk samples were collected before administration of the vaccine and then once weekly for 6 weeks starting at week 2 after the first dose. Samples were kept frozen pending analysis. IgG levels were detected by the Elecsys Anti-SARS-CoV-2 S serology assay and read on the Cobas e801 analyzer with a level of more than 0.8 U/mL considered positive (La Roche Ltd) and IgA with the EUROIMMUN AG Anti-SARS-CoV-2 S Kit with an extinction ratio of samples over calibrator of more than 0.8 considered positive (Supplement). At enrollment, maternal and infant demographic information was collected, followed by weekly questionnaires coupled to breast milk collection soliciting information about interim well-being and vaccine-related adverse events. The study was approved by the Shamir Medical Center Institutional Review Board; written informed consent was obtained from mothers.

Changes in the proportion of participants with positive test results and in antibody levels during the study were evaluated using paired-sample t tests, comparing antibody levels at each point with the baseline and correcting for multiple testing using the Benjamini-Hochberg procedure. A 2-sided significance threshold was set at $P < .05$. Analyses were performed with R version 3.6

Results

Eighty-four women completed the study, providing 504 breast milk samples. Women were a mean (SD) age of 34 (4) years and infants 10.32 (7.3) months (Table).

Mean levels of anti-SARS-CoV-2-specific IgA antibodies in the breast milk increased rapidly and were significantly elevated at 2 weeks after the first

vaccine (2.05 ratio; P < .001), when 61.8% of samples tested positive, increasing to 86.1% at week 4 (1 week after the second vaccine). Mean levels remained elevated for the duration of follow-up, and at week six, 65.7% of samples tested positive. Anti–SARS-CoV-2-specific IgG antibodies remained low for the first 3 weeks, with an increase at week 4 (20.5 U/mL; P = .004), when 91.7% of samples tested positive, increasing to 97% at weeks 5 and 6 (Figure). No mother or infant experienced any serious adverse event during the study period. Forty-seven women (55.9%) reported a vaccine-related adverse event after the first vaccine dose and 52 (61.9%) after the second vaccine dose, with local pain being the most common complaint (Table). Four infants developed fever during the study period 7, 12, 15, and 20 days after maternal vaccination. All had symptoms of upper respiratory tract infection including cough and congestion, which resolved without treatment except for 1 infant who was admitted for neonatal fever evaluation due to his age and was treated with antibiotics pending culture results. No other adverse events were reported.

Discussion

This study found robust secretion of SARS-CoV-2 specific IgA and IgG antibodies in breast milk for 6 weeks after vaccination. IgA secretion was evident as early as 2 weeks after vaccination followed by a spike in IgG after 4 weeks (a week after the second vaccine). A few other studies have shown similar findings in women infected with COVID-19.5 Antibodies found in breast milk of these women showed strong neutralizing effects, suggesting a potential protective effect against infection in the infant.

The study has limitations. First, no functional assays were performed. However, previous studies have showed neutralizing capacities of the same antibodies as measured for this study. Second, serum antibody testing or SARS-CoV-2 real-time reverse-transcriptase polymerase chain reaction testing were not performed, which would have provided interesting correlates.

9. 既往自然感染人群中新型冠状病毒抗体反应

SARS-CoV-2 Antibody Response in Persons with Past Natural Infection

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中文摘要：

已感染严重急性呼吸综合征冠状病毒 2 型(新型冠状病毒)的人是否应接种疫苗尚不清楚。只有少数研究显示，以前感染过新型冠状病毒病毒的疫苗接种者比以前未感染的疫苗接种者具有显著更高的抗体应答。此项研究中招募了 100 名卫生保健工作者，两组受试者均接种了 RNA 疫苗 bnt162b2(Pfizer-biontech)。在第一剂给药 10 天后，从先前感染的受试者

获得血清样本，在第二剂给药 10 天后，从先前未感染的受试者获得血清样本。检测结果显示在既往感染组与正常组样本之间未观察到抗 S 蛋白 IgG 抗体滴度的显著差异。两组血清样本中抗 SARS-CoV-2 中和抗体水平存在显著差异，既往感染者(几何平均滴度，569；95% CI，467 至 670)和正常组(几何平均滴度，118；95% CI，85 至 152）. 根据从感染到接种疫苗所经过的时间，既往感染者分为 3 组:1 至 2 个月(8 名受试者)、2 个月以上至 3 个月(17 名受试者)和 3 个月以上(12 名受试者)。三组之间的差异在中和抗体水平方面更为明显，几何平均滴度在感染后 1 至 2 个月接种的受试者中为 437 (95% CI，231 至 643)，在感染后 2 个月至 3 个月以上接种的受试者中为 559 (95% CI，389 至 730)，在感染后 3 个月以上接种的受试者中为 694 (95% CI，565 至 823)。虽然这些发现表明，当疫苗在感染后 3 个月以上给药时，强化应答更有效，但样本量有限，没有足够的信息得出明确的结论。本研究最显著的发现是，在先前未感染的患者中，第二剂疫苗给药后的中和抗体滴度显著低于先前感染的受试者中仅单剂疫苗给药后的滴度。这些发现提供了证据，表明在单剂量疫苗给药后，有新型冠状病毒感染史的受试者中针对新型冠状病毒的体液应答大于先前未感染但接受过第二剂疫苗给药的受试者中的应答。

Abstract

Whether or not persons who have already been infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) should be vaccinated is unclear. Only a few studies have shown that vaccinees who were previously infected with SARS-CoV-2 had a significantly higher antibody response than previously uninfected vaccinees. In an observational cohort study, we enrolled 100 health care workers, including 38 with a documented history of SARS-CoV-2 infection. Both groups of participants received the messenger RNA vaccine BNT162b2 (Pfizer–BioNTech). Serum samples were obtained from the previously infected participants 10 days after the administration of the first dose and from the previously uninfected participants 10 days after the administration of the second dose. Thereafter, all the participants were screened for the presence of specific anti–SARS-CoV-2 spike IgG by means of a chemiluminescence microparticle immunoassay. No significant difference in circulating anti-spike IgG antibody titers was observed between the samples from previously infected participants. The same serum samples were also analyzed for the presence of specific anti–SARS-CoV-2 neutralizing antibodies. We observed a difference in levels of neutralizing antibodies between samples from the previously infected participants (geometric mean titer, 569; 95% CI, 467 to 670) and those from the previously uninfected participants (geometric mean titer, 118; 95% CI, 85 to 152). The previously infected participants were categorized into three groups according to the time that had elapsed from infection to vaccination: 1 to 2 months (8 participants), more than 2 months to 3 months (17 participants), and more than 3 months (12 participants). The most remarkable finding of this study was the significantly lower neutralizing antibody titer after administration of a second dose of vaccine in previously uninfected patients than the titer after only a single dose of vaccine in previously infected participants. It is unclear how the neutralizing antibody titers influence the ability of the host to transmit the virus. These findings provide evidence that after the administration of a single dose of vaccine, the humoral response against SARS-CoV-2 in persons with

a history of SARS-CoV-2 infection is greater than the response in previously uninfected participants who have received a second dose.

10. ChAdOx1 nCov-19 疫苗接种后血栓形成性血小板减少症

Thrombotic Thrombocytopenia after ChAdOx1 nCov-19 Vaccination

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DOI: 10.1056/NEJMoa2104840

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中文摘要：

背景：用编码 SARS-CoV-2 刺突蛋白抗原的重组腺病毒载体(ChAdOx1 nCov-19，阿斯利康)接种疫苗后发生了几例罕见血栓和血小板减少事件。

方法：通过对德国和奥地利 11 例接种 ChAdOx1 nCov-19 疫苗后发生血栓或血小板减少的患者的临床研究。研究者用标准的酶联免疫吸附法检测血小板因子 4 (PF4) -肝素抗体，用改良的(PF4 增强)血小板激活试验检测不同反应条件下的血小板激活抗体。在这项测试中的样本来自于有疫苗相关血栓事件调查的血液样本的患者，其中 28 例 PF4-肝素免疫检测呈阳性。

结果：11 例患者中，9 例为女性，中位年龄 36 岁(22-49 岁)。接种疫苗后 5 至 16 天，患者出现一次或多次血栓事件，1 例患者出现致命的颅内出血。发生一次或多次血栓事件的患者中，脑静脉血栓形成 9 例，内脏静脉血栓形成 3 例，肺栓塞 3 例，其他血栓形成 4 例，其中 6 例死亡。5 例患者弥散性血管内凝血。所有患者在症状出现前均未接受肝素治疗。所有 28 例 PF4 -肝素抗体检测呈阳性的患者，在存在 PF4 独立于肝素的情况下，血小板激活试验均呈阳性。高水平肝素、Fc 受体阻断单克隆抗体和免疫球蛋白(10 mg /ml)抑制血小板激活。在 2 例患者中使用 PF4 或 PF4-肝素亲和纯化抗体的其他研究证实了 PF4 依赖的血小板激活。

结论：接种 ChAdOx1 型新型冠状病毒可导致 PF4 血小板激活抗体介导的罕见免疫性血栓性血小板减少，临床上类似于自身免疫性肝素诱导的血小板减少。

Abstract

BACKGROUND Several cases of unusual thrombotic events and thrombocytopenia have developed after vaccination with the recombinant adenoviral vector encoding the spike protein antigen of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (ChAdOx1 nCov-19, AstraZeneca).

METHODS We assessed the clinical and laboratory features of 11 patients in Germany and Austria in whom thrombosis or thrombocytopenia had developed after vaccination with ChAdOx1 nCov-19. We used a standard enzyme-linked immunosorbent assay to detect platelet factor 4 (PF4)–heparin antibodies and a modified (PF4-enhanced) platelet-activation test to detect platelet-activating antibodies under various reaction conditions. Included in this testing were samples from patients who had blood samples referred for investigation of vaccine-associated thrombotic events, with 28 testing positive on a screening PF4–heparin

immunoassay.
RESULTS Of the 11 original patients, 9 were women, with a median age of 36 years (range, 22 to 49). Beginning 5 to 16 days after vaccination, the patients presented with one or more thrombotic events, with the exception of 1 patient, who presented with fatal intracranial hemorrhage. Of the patients with one or more thrombotic events, 9 had cerebral venous thrombosis, 3 had splanchnic-vein thrombosis, 3 had pulmonary embolism, and 4 had other thromboses; of these patients, 6 died. Five patients had disseminated intravascular coagulation. None of the patients had received heparin before symptom onset. All 28 patients who tested positive for antibodies against PF4–heparin tested positive on the platelet-activation assay in the presence of PF4 independent of heparin. Platelet activation was inhibited by high levels of heparin, Fc receptor–blocking monoclonal antibody, and immune globulin (10 mg per milliliter). Additional studies with PF4 or PF4–heparin affinity purified antibodies in 2 patients confirmed PF4-dependent platelet activation.
CONCLUSIONS Vaccination with ChAdOx1 nCov-19 can result in the rare development of immune thrombotic thrombocytopenia mediated by platelet-activating antibodies against PF4, which clinically mimics autoimmune heparin-induced thrombocytopenia.

11. ChAdOx1 nCoV-19 疫苗接种后血栓形成和血小板减少

Thrombosis and Thrombocytopenia after ChAdOx1 nCoV-19 Vaccination
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中文摘要：
作者报告了 5 名患者在接受第一剂 ChAdOx1 nCoV-19 腺病毒载体疫苗预防 Covid-19 后 7 至 10 天出现静脉血栓形成和血小板减少。患者为医护人员，年龄 32-54 岁。所有患者均有高水平的血小板因子 4 -聚阴离子复合物抗体（这种聚合物通常在接受肝素注射的患者中出现）；然而，他们之前没有接触过肝素。由于这 5 例病例发生在超过 13 万的接种人群中，作者认为它们代表了一种罕见的疫苗相关的自发肝素诱导血小板减少症，称之为疫苗诱导的免疫性血小板减少症。
Abstract
We report findings in five patients who presented with venous thrombosis and thrombocytopenia 7 to 10 days after receiving the first dose of the ChAdOx1 nCoV-19 adenoviral vector vaccine against coronavirus disease 2019 (Covid-19). The patients were health care workers who were 32 to 54 years of age. All the patients had high levels of antibodies to platelet factor 4–polyanion complexes; however, they had had no previous exposure to heparin. Because the five cases occurred in

a population of more than 130,000 vaccinated persons, we propose that they represent a rare vaccine-related variant of spontaneous heparin-induced thrombocytopenia that we refer to as vaccine-induced immune thrombotic thrombocytopenia.

12. COVID 疫苗如何导致血凝块？科学家竞相调查

How could a COVID vaccine cause blood clots? Scientists race to investigate

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通讯作者单位：

DOI 或 PUBMED ID：

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中文摘要：

截至 3 月 22 日，EMA 已汇总了 86 例在服用一剂牛津-阿斯利康疫苗后两周内在大脑或腹部出现血凝块的报告。该疫苗由剑桥的阿斯利康和牛津大学在英国研发。近期在《新英格兰医学杂志》在线发表的一项研究表示该疫苗导致某些人发生血小板因子 4 的蛋白质抗体，该蛋白质可促使血小板发挥作用并激活凝血级联反应而血凝。也有科学家表示很难确认疫苗的疑似罕见效应是否真的与疫苗相关联——尤其是当它已经在数千万人中使用时。有研究人员表示科学家们收集并分享更多关于未接种人群中这种凝血状况发生率的数据是很有必要的。对疫苗接种与该综合征之间可能联系的认识提高，可能导致已接种疫苗者与未接种者之间的报告率上升，这可能会错误地夸大该综合征发生的感知率。这种担忧可能会蔓延到其他冠状病毒疫苗。 凯尔顿的实验室目前正在全时解决这个问题，试图确定是什么导致疫苗接受者出现 HIT 样症状（肝素诱导的血小板减少症），所有这些活动的一个结果将是人们更加关注免疫系统和凝血之间的关系，这些结果可能会为进一步的疫苗开发提供信息。

Abstract

By 22 March, the EMA had assembled 86 reports of people who had experienced blood clots in the brain or abdomen within two weeks of receiving a dose of the Oxford–AstraZeneca vaccine, developed in Britain by AstraZeneca in Cambridge and the University of Oxford. Other researchers are keen to pick apart what triggers the syndrome. HIT is thought to be the result of an immune reaction to complexes formed when negatively charged heparin molecules bind to a positively charged protein called platelet factor 4, which is important for clotting. This activates platelets, kicking off a chain reaction. It is notoriously difficult to confirm whether a suspected rare effect of a vaccine is truly linked to the vaccine — particularly when it is one that has been used in tens of millions of people. Bikdeli would also like to see researchers collect — and share — more data about the incidence of this clotting condition in unvaccinated populations. Heightened awareness of the possible link between vaccination and the syndrome could lead to increased reporting rates among those who have been vaccinated compared with those who have not, which could falsely inflate the

perceived rate at which the syndrome occurs, he says. And such concerns could spread to other coronavirus vaccines. Kelton's lab is now working full time to try to determine what might be causing HIT-like symptoms in vaccine recipients, and he's confident that other labs will be doing the same. It is a tricky phenomenon to study: its rarity makes patient samples difficult to come by, and there are no good animal models, Kelton says. One result of all of this activity will be increased attention to the relationship between the immune system and blood coagulation, says van Gorp, and the results could inform further vaccine development. "We are going to get new coronavirus variants and are going to develop new vaccines," he says. "We need answers for the future."

13. 强生疫苗导致 4 例血栓，腺病毒载体疫苗还安全吗？

来源：MedSci

发布时间：2020-04-13

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编译者：张鹏伟

中文摘要：

4 月 9 日，欧洲药品监管机构表示，正在审查四名接种强生新冠疫苗的人中出现的罕见血凝块的报道，并已将对阿斯利康接种事件的调查范围扩大到包括出血情况的报道。欧洲药品管理局（EMA）在周五表示，在四例严重的凝血和低血小板病例中，三例发生在接种美国强生旗下扬森分公司推出新冠疫苗的临床试验中报道。

这是 EMA 首次调查强生疫苗导致血栓事件，而阿斯利康（AstraZeneca）的新冠疫苗由于可能与大脑和腹部罕见的血凝块有关而受到了数周的关注，这已经得到 EMA 的证实。欧洲药品管理局执行董事库克（Emer Cooke）表示，这些罕见副作用的 "合理解释是（个体）对疫苗的免疫反应"。这种情况类似于接受过药物肝素治疗的人的情况，肝素是一种用于防止血栓形成的血液稀释剂。在某些情况下，对该药物产生的潜在危险免疫不良反应导致一种称为肝素诱导的血小板减少症。

该研究已经于 9 日在《新英格兰医学杂志》上发表。研究结果表明，5 位患者的共同点是血小板因子 4（PF4）和聚阴离子的复合物的抗体水平都非常高，这些类型的抗体可以激活并导致血小板数值低，研究人员将其称为疫苗诱导的免疫性血小板减少症（VITT）。挪威早在 3 月初就停止了对阿斯利康新疫苗的接种，挪威公共卫生研究所将于 4 月 15 日公布是否重新接种阿斯利康疫苗。

美国 FDA 于 2 月 27 日批准美国强生公司旗下杨森制药公司研发的新冠疫苗投入紧急使用。欧洲药品管理局（EMA）于 3 月 11 日也批准强生疫苗有条件上市。强生疫苗因为针对新冠变种病毒的保护效力高，对年长人士也具有效力，因此极为抢手。此外，强生疫苗只需接种一剂，无需低温保存，便于运输。

强生疫苗三期临床试验的评估数据显示，接种疫苗四周后，出现中度乃至重度新冠肺炎症状的风险降低 66%。这个数值虽低于其他获得审批的疫苗，但原因可能在于，去年夏末时针对其他疫苗的评估尚未将新冠变种病毒纳入考量。临床研究表明，这款新型疫苗可有效

预防巴西以及南非变种病毒。但目前还不知强生疫苗对英国变种 B.1.1.7 的防护力。
但近期，随着拜登政府持续大举推动强生疫苗接种，美国国内多地发生了接种该款疫苗后出现头晕、呼吸急促等不良反应状况。目前，美国佐治亚州、科罗拉多州以及北卡罗来纳州的部分地区已宣布暂停接种强生新冠疫苗。
我国疫苗主要目前有五款，按技术路线划分三类：一是灭活疫苗，包括国药中生北京公司、国药中生武汉公司、北京科兴中维公司生产的 3 款灭活疫苗；二是腺病毒载体疫苗，为天津康希诺公司生产的 5 型腺病毒载体疫苗；三是重组蛋白疫苗，为重组新型冠状病毒疫苗（CHO 细胞）。
目前制造新冠病毒载体疫苗的主要有牛津大学/阿斯利康、俄罗斯的 Gamaleya 研究所，中国的康希诺生物和强生公司，如果强生疫苗的血栓事件进一步证实，可能需要关注腺病毒载体疫苗产生血栓问题，值得关注的是此前有较多类似观点。
哈尔滨医科大学附属第一医院检验科于修楠等此前综述文章就指出，在进行腺病毒载体基因治疗时会引起血小板减少，但是其机制仍然不明。大量的报道显示血小板减少症是高剂量全身应用以腺病毒为载体进行基因治疗带菌者后产生的一个主要的副作用。然而以前的报道并没有发现血小板通过腺病毒活化。最近的研究发现腺病毒可能会引起活化血小板。腺病毒诱导的血小板减少症被认为是剂量依赖性的，有饱和性与可逆性，这与配体一受体机制是一致的，关于这一机制尚存在多种观点。
2007 年 Othman 等人用流式细胞仪对人血小板表面受体进行分析显示血小板表面有强烈的 CAR 表达。为研究表明腺病毒可以直接通过 CAR 与血小板结合，引起血小板减少。此外，腺病毒还可以通过以下 2 个途径进一步促进血小板的减少：
①腺病毒 5 经由血小板表面的 CAR 受体结合使其活化后。P-选择素暴露于血小板表面，通过位于白细胞表面的 P-选择素配体(PS. GL—1)结合，引起血小板～白细胞的聚集。
②腺病毒 5 载体作用于小鼠后会引起黏附蛋白(VWF)水平升高。VWF 与血小板相互作用，介导血小板迁移和黏附到暴露的内皮下膜，进一步诱导血小板一白细胞的聚集，引起血小板活化，加重血小板的减少。
未来还是需要在腺病毒的分子生物学、载体优化设计，安全性评估等方面展开深入广泛地研究，解决其作为载体治疗中的各种副作用，从而真正发挥其在基因转导和基因治疗上的优势和潜力，最终为传染性疾病、重症疾病的安全化基因治疗发挥作用。

14. FDA 可能推迟对阿斯利康 COVID-19 疫苗的决定

FDA could delay decision on AstraZeneca COVID-19 vaccine
来源：BioCentury
发布时间：2021-04-07
链接：
https://www.biocentury.com/article/635518?editionId=cknbbiq3sidk30b26ket67rty&editionType=weekly
第一作者：Steve Usdin
通讯作者单位：BioCentury
编译者：张丽双
中文摘要：
欧洲监管机构和卫生部承认 AZ 疫苗可能会增加罕见凝血事件的风险，特别是在年轻人群中，但同时也表示它的好处大于风险。MHRA 因此建议 18-30 岁的人可以得到辉瑞和 Moderna 疫苗，但是它并没有禁止这个年龄段的人接受 AZ 的疫苗。目前 EMA 没有针对任何特定人群提出建议或采取监管措施以避免接种疫苗。然而，一些欧洲卫生机构已经采取行动，防止或阻

止年轻人接受 Vaxzevria(AZ 疫苗)。
此后，美国现任和前任 HHS 官员告诉 BioCentury，阿斯利康的 COVID-19 疫苗安全性的不确定性和对三种 FDA 已授权疫苗供应的信心，可能导致 FDA 和该公司想办法推迟在美国生产阿斯利康疫苗的决定。
辉瑞、摩德纳和强生公司的前三种 COVID-19 疫苗发布 EUAs 后 HHS 迅速采取行动，尽快推广到弱势人群，预计供应足以满足整个美国人口的需要。对于阿斯利康疫苗则可能要求其提交 BLA（生物制品执照申请）。FDA 要求 COVID-19 疫苗 BLA 的安全性数据中位数为 6 个月，而 EUA 的安全性数据中位数为 2 个月。BLA（生物制品执照申请）还必须包含更广泛的制造业数据。
目前 HHS 已经将其 COVID-19 疫苗的重点转移到将适应症扩大到儿科人群，并开发针对 SARS-CoV-2 变异的优化疫苗。
Abstract:
The precedents set with the first three COVID-19 vaccines from Pfizer Inc. (NYSE:PFE) and its partner BioNTech SE (NASDAQ:BNTX), Moderna Inc. (NASDAQ:MRNA), and Johnson & Johnson (NYSE:JNJ) are unlikely to be replicated with the vaccine from AstraZeneca plc (LSE:AZN; NASDAQ:AZN), the officials said. In those cases, HHS urged the companies to file EUAs quickly after data meeting FDA's criteria were available. FDA then scrambled to review the data, convene advisory committee meetings, and issue EUAs within days of the meetings, and HHS acted to get the vaccines into the arms of vulnerable individuals as quickly as possible.
Speculation about the fate of Vaxzevria in the U.S. follows mixed signals from European regulators and health ministries, which have acknowledged that it may increase the risk of rare blood clotting events, especially in younger populations, but also state that its benefits outweigh its risks.
On Wednesday, MHRA recommended that individuals ages 18-30 be offered Comirnaty from Pfizer and BioNtech or COVID-19 Vaccine Moderna, but it is not prohibiting individuals in this age group from receiving AZ's vaccine.
EMA has not made recommendations or taken regulatory actions for any specific populations to avoid the vaccine. Several European health agencies, however, have acted to prevent or discourage younger people from receiving Vaxzevria.

15. 逃离进退两难的境地-克服 Covid 疫苗的犹豫

Escaping Catch-22 — Overcoming Covid Vaccine Hesitancy
来源：NEJM
发布时间：2021-4-8
链接：https://www.nejm.org/doi/full/10.1056/NEJMms2101220?query=featured_home
作者：Lisa Rosenbaum, M.D.（a national correspondent for the Journal）
DOI: 10.1056/NEJMms2101220
编译者：雷颖
中文摘要：
尽管许多人最初认为疫苗是神奇的子弹，可以使我们免于毁灭性的大流行并使我们的生活恢复正常，但现在我们发现自己正在同时考虑如何从道德上分配有限数量的疫苗给许多想要的人，以及如何增加疫苗的供给。尽管估计数值不尽相同，但公共卫生官员建议，大约 80％至 85％的美国人需要接种疫苗才能使该国获得群体免疫。疫苗的信心似乎正在上升，但最近的

民意调查显示，约 31%的美国人希望采取观望态度，而约 20%的人仍然不太愿意。因此，广泛接种疫苗的执行障碍与科学和后勤的障碍一样重要。尽管科学界的义务总是始于拥护真理，但这次大流行表明，社会的健康还取决于对为何如此多的人拒绝真理的理解。尽管有些人信任科学专家，但拉森指出，其他人则在其他地方寻求“真相”，即他们的经历，也许是他们的社交网络中的“传闻”。因此，这种流行病已经提醒拉尔森（Larson）为什么让公众了解科学可能是不够的。她建议，或许也应该是科学了解公众的时候了。

Abstract

Though many people initially believed a vaccine was the magic bullet that would save us from a devastating pandemic and return our lives to normalcy, we now find ourselves contemplating simultaneously how to ethically allocate a limited number of vaccine doses to the many people who want them and how to increase vaccine uptake among those who don’t. Though estimates vary, public health officials suggest that about 80 to 85% of Americans would need to be vaccinated for the country to achieve herd immunity. Vaccine confidence seems to be rising, but recent polling suggests that about 31% of Americans wish to take a wait-and-see approach, and about 20% remain quite reluctant. The behavioral obstacles to widespread vaccination are thus as important to understand as the scientific and logistic hurdles.

Although the scientific community’s obligation will always begin with championing truth, the pandemic has shown that society’s health also depends on understanding why so many people reject it. While some trust scientific experts, Larson notes that others seek “truth” elsewhere — their experiences, perhaps, or “heard truths” from their social networks. The pandemic, then, has reminded Larson why getting the public to understand science may be insufficient. Maybe, she suggests, it’s also time for science to understand the public.

16. 印度的新冠疫苗灾难—印度爆增的感染将全球疫苗供应带来的危机

India’s COVID-vaccine woes — by the numbers

How an explosion of coronavirus cases in India is putting global vaccine supplies at risk.

来源：nature

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链接：https://www.nature.com/articles/d41586-021-00996-y

编辑：T. V. Padma

DOI 或 PUBMED ID：https://doi.org/10.1038/d41586-021-00996-y

编译者：刘焕珍

中文摘要：

4 月 12 日，印度新增 168912 例 COVID-19 病例。目前，印度确诊病例总数已超过 1350 万例。截至 4 月 14 日，该国已有 1.11 亿人接种了疫苗。自 3 月份以来，印度的病例迅速上升，但印度一直在努力提高疫苗接种计划。今年早些时候，首席执行官 adarpoonawala 表示，印度政府已指示印度投资研究所“优先考虑印度的巨大需求，同时兼顾世界其他地区的需求”。但政府官员抱怨疫苗短缺。Ashoka 大学的病毒学家 Shahid Jameel 说，解决当前困境的部分办法将是批准其他几个在印度有生产合作伙伴的国际研发疫苗。4 月 13 日，印度批准使用俄罗斯的人造卫星 V 型疫苗，政府说，在国内生产开始之前，疫苗将进口。

Abstract:
On 12 April, India reported 168,912 new COVID-19 cases. It has now had more than 13.5 million confirmed cases in total. By 14 April, more than 111 million people had been vaccinated in the country. Cases in India have been rising rapidly since March yet India has struggled to ramp up its vaccination programme. Earlier this year, chief executive Adar Poonawala said on Twitter that the SII had been directed by the Indian government "to prioritise the huge needs of India and along with that balance the needs of the rest of the world". But state officials have complained of vaccine shortages. Part of the solution to the current woes will be approving several other internationally developed vaccines that have manufacturing partners in India, such as Johnson & Johnson's single-shot vaccine, says Shahid Jameel, a virologist at Ashoka University in Sonipat. On Tuesday, India approved the use of Russia's Sputnik V vaccine, which the government says will be imported until domestic production can begin.

17. 美国疫苗接种后仍 5800 人感染 74 死？辉瑞加推第三针，国产疫苗拟跟进

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发布时间：2021-04-16
链接：https://mp.weixin.qq.com/s/MvjAa-xii1DdNWSXxBkSmw
通讯作者：张洪涛
通讯作者单位：宾夕法尼亚大学
核心提要：
1、 "突破性感染"是指病毒突破了免疫保护，民众在接种完两剂疫苗后仍被感染。但这并不能说明疫苗无效，美国当前每日新增病例大幅下降，离不开疫苗的保护作用。
2、 对于年老、有基础病、免疫功能低下的人来说，两剂疫苗无法完全建立免疫保护，仍较容易感染病毒。
3、除了一些特殊人群是免疫保护的短板之外，即便是在健康人群中，疫苗所建立的保护，也可能会随时间推移与病毒变异而有所衰退。为了应对这一问题，辉瑞、Moderna、国药、科兴等公司目前正在开展疫苗加强针的临床研究。
4、 为了控制疫情，减少"突破性感染"，不但特殊人群有可能需要加强针，对一般人来说，打加强针也是大概率事件，并且除了注射疫苗外，其他抗疫措施仍然不能放弃。

18. 南非停止接种强生疫苗，其在欧洲的推广被推迟

South Africa halts J&J vaccine jabs; Europe rollout delayed
来源：Yahoo Finance
发布时间：2021-04-13
链接：https://finance.yahoo.com/news/johnson-johnson-delays-vaccine-rollout-135550583.html
作者：Frank Jordans, Maria Cheng and Andrew Meldrum
编译者：宋珂
中文摘要：

美联社 4 月 13 日约翰内斯堡报道，本周二，南非政府宣布暂停作为"预防措施"而注射强生公司的疫苗。此前，FDA 决定暂停接种强生公司生产的疫苗，以检查非常罕见出现的血栓病例的原因。强生公司因此也推迟了其生产的疫苗在欧洲的推广。

南非卫生部长 Zweli Mkhize 博士告诉记者，南非已经给该国卫生工作者提供了超过 28.9 万剂强生疫苗，目前未发现任何罕见血栓的报告。

他说，南非“出于谨慎考虑”而停止使用强生的疫苗，并希望有关强生疫苗的问题“在几天内就能解决”。

Mkhize 同时表示，“万一”强生的疫苗被永久停用，南非将在 5 月继续使用辉瑞生物技术公司的疫苗进行接种。

早些时候，强生公司表示，在美国调查期间，将推迟在欧洲推广其新冠病毒疫苗，专家担心此举可能进一步动摇民众对疫苗的信心，并使全球 COVID-19 防疫工作复杂化。

此前，美国监管机构表示，建议“暂停”单剂量注射，以调查罕见但有潜在危险的血栓报告。

Abstract:

JOHANNESBURG (AP) — South Africa suspended giving Johnson & Johnson vaccine shots Tuesday as a “precautionary measure” and the company delayed its European vaccine rollout following an FDA decision to pause the jabs while very rare blood clot cases are examined.

South Africa has given more than 289,000 doses of the J&J vaccine to the country’s health workers without any reports of rare blood clots, Health Minister Dr. Zweli Mkhize told reporters.

He said South Africa was halting the use of J&J jabs “out of an abundance of caution” and expected that questions over the J&J vaccine should “be cleared within a matter of days.”

Mkhize said “in the unlikely event” that the J&J vaccines are permanently halted, South Africa would continue with its vaccination campaign in May using doses from Pfizer-BioNTech.

Earlier, Johnson & Johnson said it was delaying the rollout of its coronavirus vaccine across Europe amid the U.S. probe, a move that experts worried could further shake vaccine confidence and complicate worldwide COVID-19 immunization efforts.

The announcement came after regulators in the United States said they were recommending a “pause” in the single-dose shot to investigate reports of rare but potentially dangerous blood clots.

19. 三期临床试验表明 REGEN-COV 显著地降低了无症状感染者进展为有症状的 COVID-19 患者

PHASE 3 TREATMENT TRIAL IN RECENTLY INFECTED ASYMPTOMATIC PATIENTS SHOWED REGEN-COV™ (CASIRIVIMAB WITH IMDEVIMAB) SIGNIFICANTLY REDUCED PROGRESSION TO SYMPTOMATIC COVID-19

来源：regeneron 官方网站

发布时间：2021-04-12

链 接 ： https://investor.regeneron.com/news-releases/news-release-details/phase-3-prevention-trial-showed-81-reduced-risk-symptomatic-sars

编译者：蒋立春

中文摘要：

Regeneron 的一项三期临床试验表明 REGEN-COV（两种单克隆抗体 casirivimab 和 imdevimab，

REGN10933 和 REGN10987 的混合物，设计专门用来阻断 SARS-CoV-2 的感染性）可以快速为家庭环境下 SARS-CoV-2 的暴露提供保护作用。在第一周对有症状的感染的保护率为 72%，在接下来的周为得 93%

在感染并且发生症状的个体中，REGEN-COV 的受试者能更快地清除病毒，并且症状的持续时间更短。

Regeneron 会和美国 FDA 共享相关数据并且申请将此前的 1200 毫克的皮下注射紧急使用授权扩展到用于特定人群的 COVID-19 预防。

Highlights:

REGEN-COV rapidly protected household contacts from exposure to SARS-CoV-2 at home, with 72% protection against symptomatic infections in the first week, and 93% in subsequent weeks

Among individuals who developed symptomatic infections, REGEN-COV recipients cleared the virus faster and had much shorter symptom duration

Regeneron will share data with U.S. FDA and request EUA expansion to include COVID prevention for appropriate populations, using a 1,200 mg subcutaneous dose

TABLE: Key Results from Phase 3 Trial for the Prevention of COVID-19 in Uninfected Individuals[1]

	REGEN-COV (single 1,200 mg dose)	Placebo
	n=753	n=752
Risk of symptomatic SARS-CoV-2 infection		
Through day 29 (primary endpoint)		
Risk reduction	81% (p<0.0001)	
# of patients with events	11 (1.5%)	59 (7.8%)
Within 1 week[2]		
Risk reduction	72% (nominal p=0.0002)	
# of individuals with events	9 (1.2%)	32 (4.3%)
Post-1 week[2]		
Risk reduction	93% (nominal p<0.0001)	
# of individuals with events	2 (0.3%)	27 (3.6%)
Symptoms and viral load		
Total weeks with symptoms		
Reduction	93% (p<0.0001)	
Total # of weeks (cumulative for all individuals in each arm)	13	188
# of weeks with symptoms (average) in symptomatic individuals	1.2	3.2
Total weeks with high viral load (>10^4 copies/mL)		
Reduction	90% (p<0.0001)	
Total # of weeks (cumulative for all individuals in each arm)	14	136
# of weeks with high viral load (average) in qPCR positive subjects	0.4	1.3

1.Based on the seronegative modified Full Analysis Set population, which includes all randomized subjects without evidence of current or prior SARS-CoV-2 infection.

2.These analyses were not part of the pre-planned statistical analysis plan, so p-values are nominal

备注：

此前 REGEN-COV 的紧急授权使用以及重要的安全信息：

用于治疗确诊感染 SARS-CoV2 的很可能进展为重症 COVID-19 或者需要入院的尚处在轻中度 COVID-19 症状的成人以及体重 40 公斤以上满 12 岁的青少年病人。

20. 礼来要求 FDA 不再允许单独使用 COVID-19 药物 bamlanivimab

Lilly asks FDA to not allow lone use of COVID-19 drug bamlanivimab

来源：yahoo 新闻

发布日期：2021-04-16

链接：https://news.yahoo.com/lilly-asks-fda-revoke-authorization-104438468.html

编译者：蒋立春

中文摘要：

（路透社）礼来公司要求美国 FDA 取消对该公司的 COVID-19 抗体 bamlanivimab 的授权，称该抗体和另一个抗体的组合对新发的病毒突变株有更好的保护效力。礼来的一份申明中说，对 FDA 的该请求不是因为任何安全问题，而是考虑到美国出现的新突变株可能对单独使用 bamlanivimab 产生抗性。美国政府上个月已经停止了相关药物的分发。礼来说尚有 bamlanivimab 库存的医院现在应该订购 etesevimab 以混合使用。本周早些时候，礼来修订了其和美国政府的约定，从而使得 etesevimab 的供应剂量能匹配政府已经购买的 bamlanivimab. 周五，礼来称这两种抗体联用可以比单个抗体使用能中和更多的美国出现的新发 COVID-19 突变株，其中包括快速增长的 B.1.427/B.1.429 加州株。礼来说它不会取消 bamlanivimab 在其他国家的授权，但是该抗体最好和 etesevimab 联合使用。礼来公司预期会和合作方 Amgen 一起为全球提供足够量的混合药剂。

English:

(Reuters) - Eli Lilly and Co said it had requested cancellation of the U.S. authorization granted to its COVID-19 antibody, bamlanivimab, which will now be used in combination with another to achieve greater efficacy against emerging virus variants.

The request made to the U.S. Food and Drug Administration is not due to any new safety issues, but in response to the new variants in the country that could be resistant to bamlanivimab when used alone, the drugmaker said in a statement.

The U.S. government stopped the distribution of the therapy last month.

Hospitals with bamlanivimab supply should now order etesevimab to pair with it, Lilly said. Earlier this week, Lilly revised its pact with the U.S. government to enable the supply of etesevimab to complement doses of bamlanivimab that the government had already purchased. Etesevimab and bamlanivimab together neutralize more emerging COVID-19 variants in the U.S. than bamlanivimab alone, including the rapidly growing B.1.427/B.1.429 California strain, Lilly said on Friday.Lilly said it was not seeking cancellation of bamlanivimab's authorization in other countries, but its use was preferred in combination with etesevimab.

The drugmaker said it expects to make enough of the cocktail therapy along with partner Amgen to meet global supply needs.

21. 不同的 SARS-CoV-2 Spike 变异对 Sputnik V 的疫苗的逃逸存在定性差异

Qualitatively distinct modes of Sputnik V vaccine-neutralization escape by SARS-CoV-2 Spike variants

来源：medRxiv

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链接：https://www.medrxiv.org/content/10.1101/2021.03.31.21254660v2

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编译者：宋珂
中文摘要：

自从 COVID-19 疫情爆发以来，造成疫情的病原体-新型流行性乙型冠状病毒即 SARS-CoV-2 已感染了至少 1.2 亿人。人们以空前的速度开发出了相应的疫苗，目前全球已有 6 种疫苗在使用。然而，在不同地域出现的需要关注的 SARS-CoV-2 病毒变异（VOC）表明，依靠群体免疫可能无法战胜病毒。三个官方发布的 SARS-CoV-2 病毒变异均具有 Spike（S）多态性，因此被认为能够对疫情初期产生的中和性抗体产生免疫逃逸。本文中，作者对引起担忧的株系 B.1.1.7（501Y.V1）和 B.1.351（501Y.V2）中存在的全部 S 突变所导致的生物学后果进行了研究。使用具有复制能力的携带 EGFP 报告基因的水泡性口炎病毒(VSV)系统 rcVSV-CoV2-S（将 SARS-CoV-2 中 S 的基因替代 VSV-G），再与能高效导致 S 蛋白介导的感染而优化的克隆 HEK-293T ACE2 TMPRSS2 细胞系进行混合。作者发现，在 12 例 Gamaleya Sputnik V Ad26 / Ad5 疫苗接种者的血清样本中，有 8 例（67%）表现出的剂量反应曲线斜率说明其无法中和 rcVSV-CoV2-S：B.1.351。而同一组血清则有效地中和了 B.1.1.7 中的 S，对仅携带 E484K 突变的 S 的中和活性仅稍有下降。综上所述，作者的数据表明，需要不断对疫苗进行升级才能有效控制新出现的 SARS-CoV-2 变异。

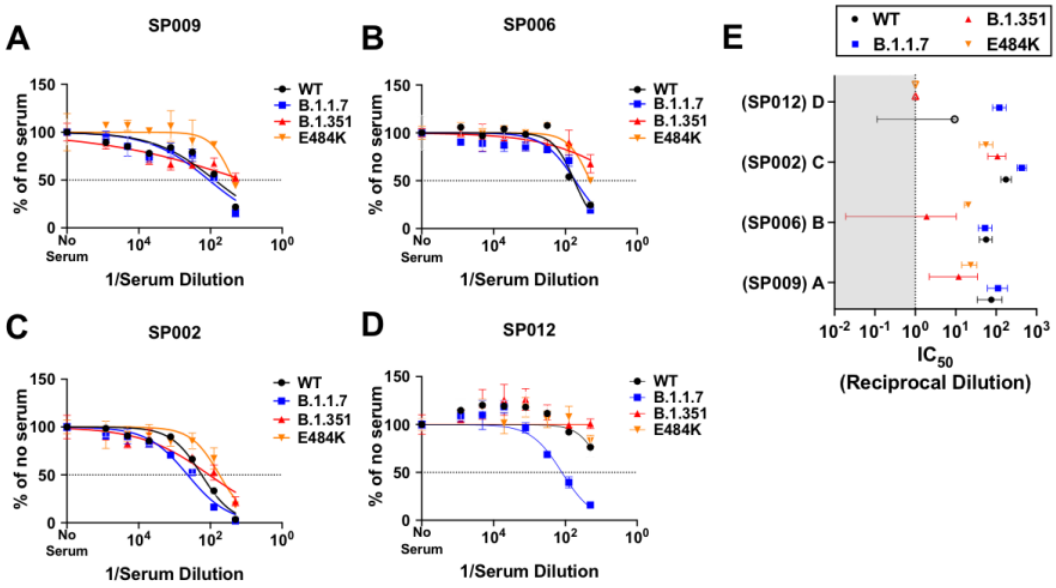

Figure 3. Dose response curves reveal distinct patterns of neutralizing antibody responses. Groups (A - D) represent distinct classes of virus neutralizing activity present in the sera samples analyzed. A representative member from each group is shown. Full neutralization curves for all sera tested against all viruses bearing the variant and mutant spike proteins are shown in supplementary Fig. S2. (E) graphs the virus neutralizing titers (VNT = 1/IC50) and 95% CI that can be extrapolated from the nonlinear regression curves. Different colored symbols represent the viruses indicated in the figure key. The open symbols in SP012 (Group D) represent assigned values of 1.0 (for B.1.351 and E484K) when no

significant neutralization activity could be detected at the lowest serum dilution used (1:20) or ambiguous fits (for WT) due to very low neutralizing activity. The shaded area represents values that are not physiologically relevant.

Abstract:
The novel pandemic betacoronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has infected at least 120 million people since its identification as the cause of a December 2019 viral pneumonia outbreak in Wuhan, China. Despite the unprecedented pace of vaccine development, with six vaccines already in use worldwide, the emergence of SARS-CoV-2 'variants of concern' (VOC) across diverse geographic locales suggests herd immunity may fail to eliminate the virus. All three officially designated VOC carry Spike (S) polymorphisms thought to enable escape from neutralizing antibodies elicited during initial waves of the pandemic. Here, we characterize the biological consequences of the ensemble of S mutations present in VOC lineages B.1.1.7 (501Y.V1) and B.1.351 (501Y.V2). Using a replication-competent EGFP-reporter vesicular stomatitis virus (VSV) system, rcVSV-CoV2-S, which encodes S from SARS coronavirus 2 in place of VSV-G, and coupled with a clonal HEK-293T ACE2 TMPRSS2 cell line optimized for highly efficient S-mediated infection, we determined that 8 out of 12 (67%) serum samples from a cohort of recipients of the Gamaleya Sputnik V Ad26 / Ad5 vaccine showed dose response curve slopes indicative of failure to neutralize rcVSV-CoV2-S: B.1.351. The same set of sera efficiently neutralized S from B.1.1.7 and showed only moderately reduced activity against S carrying the E484K substitution alone. Taken together, our data suggest that control of emergent SARS-CoV-2 variants may benefit from updated vaccines.

22. 疫苗接种增强保护性反应并诱导抗 SARS-CoV-2 的记忆 B 细胞

Vaccination boosts protective responses and counters SARS-CoV-2-induced pathogenic memory B cells

来源：medrxiv

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中文摘要：

鉴于 SARS-CoV-2 感染的迅速传播和 SARS-CoV-2 疫苗接种的实施，我们对免疫保护的持续时间以及对感染的免疫反应与疫苗接种之间的关系有许多需要了解的内容。为了解决这些问题，我们监测了恢复期患者在 7 个月内以及在 mRNA 疫苗接种后对 SARS-CoV-2 感染的免疫反应。刺突受体结合域（RBD）特异性循环抗体和血浆中和活性通常随着时间的推移而降低，而 RBD 特异性记忆 B 细胞则持续存在。此外，利用抗体去除技术，我们发现血浆的中和活性

特异性地存在于抗 RBD 抗体中。与未感染的对照组相比，先前感染的受试者对疫苗的抗体和 B 细胞反应更强烈，这可能是由于感染引起的免疫启动。SARS-CoV-2 感染还导致双阴性 B 记忆细胞数量增加，被描述为功能失调的 B 细胞亚群。这种效应被 SARS-CoV-2 疫苗所逆转，为疫苗诱导的长期性的 COVID-19 患者后遗症减轻提供了潜在的机制解释。

Abstract:

Given the rapid spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection and the recent implementation of SARS-CoV-2 vaccination, we have much to learn about the duration of immune protection and the interface between the immune responses to infection and to vaccination. To address these questions, we monitored immune responses to SARS-CoV-2 infection in convalescent individuals over seven months and following mRNA vaccination. Spike Receptor-Binding-Domain (RBD)-specific circulating antibodies and plasma neutralizing activity generally decreased over time, whereas RBD-specific memory B cells persisted. Additionally, using antibody depletion techniques, we showed that the neutralizing activity of plasma specifically resides in the anti-RBD antibodies. More vigorous antibody and B cell responses to vaccination were observed in previously infected subjects relative to uninfected comparators, presumably due to immune priming by infection. SARS-CoV-2 infection also led to increased numbers of double negative B memory cells, which are described as a dysfunctional B cell subset. This effect was reversed by SARS-CoV-2 vaccination, providing a potential mechanistic explanation for the vaccination-induced reduction in symptoms in patients with "Long-COVID".

23. 新冠信息简报前 99 期词云

我们将前 99 期新冠信息简报的中文摘要进行了分词统计，得到了下图中的词云

编译者：宋张悦

24. 中国对 COVID-19 的响应：一个合作的机会

China's response to COVID-19: a chance for collaboration

来源：lancet 柳叶刀
发布时间：2021-04-10
链接：https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00823-0/fulltext
编译者：蒋立春
中文：
4 月 8 日是中国结束对疫情中心的武汉进行为期 76 天封城政策一周年的日子。武汉重启之后，中国对防止疫情的复发和境外输入等疫情防控方面到目前为止是成功的。中国同时也重启了国家的各项社会和经济活动。虽然在包括北京、青岛等几个地区有零星的 COVID-19 小爆发，这些疫情都得到了有效控制。中国是怎样控制住 COVID-19 的？全球的科学界将如何获益于中国的经验？
根据中国疾控中心的介绍，中国的策略建立在积极检出活动病例以及对病例和密切接触者进行隔离在内的病例管理方案之上，同时采取基于风险的解封策略。中国政府的目标是对所有疑似病例以及感染者的密切接触者进行测试。2020 年 10 月，在青岛发现了三例 COVID-19 之后，在政府的协调和民众的配合下，青岛采用混池测试的方法在 5 天之内就对对几乎全城的 1090 万人进行了检测。虽然报道只有少数几例 COVID-19，民众们基本都遵守非药物方式的疫情防控策略—比如避免大型聚集性活动等。政府督促民众们放弃旅游计划之后，各级当地政府出台实施严格的隔离措施，农历新年前的 2 周内全国的旅客同比 2019 年同期降低了 7 成。中国的公共卫生的方法以及公众的依从性对防疫措施的奏效有很重要的作用，而这些方法和公众的依从性很大程度上取决于对政府的高度信任。中国方法里的一些元素，比如追踪公民的行踪的措施，在很多西方国家可能没法获得支持。但是，中国国内对 COVID-19 的良好控制和其他国家的疫情控制情况相比，高下立现，其他国家应该从中国学习公共卫生的经验。
尽管如此，国际上一直对中国存在高度的怀疑态度。针对中国的情绪甚至加剧了。从科学方面来讲，数据的透明度是一个持续的关注点。WHO-中国关于 SARS-CoV-2 起源的联合报告在 3 月 30 日发表后，WHO 总干事谭赛德就国际小组在武汉的工作发表评论：“在我和小组们讨论中，他们表达了在获取和接触的原始数据方面存在困难。我希望将来的合作研究包括更及时的全面的数据共享”
缺乏透明度也是中国 COVID-19 疫苗的一个问题。截止 2021 年 3 月 27 日，中国已经接种了 1 亿剂的国产疫苗，它计划在 2021 年 7 月底对大约 5 亿民众完成接种（中国人口的 40%）。2020 年 12 月 30 日，国药生产的疫苗成为中国批准的第一个疫苗。在接下来的几个月里，其他几个疫苗也获得批准。但是，迄今还没有中国开发的疫苗的 3 期临床试验结果发表到同行评议的期刊上（编者注：近期已经有几项相关结果见诸于预印本—比如巴西关于科兴的灭活疫苗）。中国管理方面承诺会持续对疫苗进行追踪和检测，但是目前为止很少有上市后的调研结果披露出来。
全球能够获得更多疫苗将可能对疫情发展动向如何发展起到非常大的作用，WHO 希望在 2021 年 4 月底发布对中国灭活疫苗的推荐。提供全面公开的数据对于理解这些疫苗的有效性和安全性非常紧要，这也是对疫苗建立信任所必需的。
当谈到科学和健康领域，合作会比对抗更加具有成效。Liming Li 和同事们认为美中在医药方面的紧密合作对于应对 COVID-19 和将来的大流行是必要的。他们也强调了中美之间对包括非传染性疾病，全球卫生健康、精神健康、老龄化、城市化以及气候变化等等其他共同关注的卫生健康方面。他们呼吁两国政府机构以及学术和科学界能够重建在医疗卫生方面的合作关系。这些合作比以往更加重要。相互学习有助于促进中国和世界其他国家的卫生健康事业以及科学事业。全球面对的卫生健康挑战需要全球的响应和合作。这些合作纽带建立于透明、信任和共同的目标之上。现在不是批评哪个国家或者进行国家间竞争的时候，应该是一

个国与国携手一起应对全人类共同挑战的时候。

English:

April 8 marks a year since China's lifting of the 76-day lockdown in Wuhan—the epicentre of the COVID-19 outbreak. Since the reopening of Wuhan, efforts to control the pandemic in China have thus far successfully prevented resurgence and importation of new cases, while re-establishing the country's social and economic activities. Although China has since had sporadic outbreaks of COVID-19 in several areas, including Beijing and Qingdao, they were all contained. How has China managed to control COVID-19? And is the global scientific community in a position to benefit from China's experiences?

According to the Chinese Center for Disease Control and Prevention, China's strategy was built on active case finding and case management with identification and quarantine of close contacts, as well as risk-based lifting of restrictions. Chinese authorities aim to test each suspected case and all close contacts of those infected.

After three COVID-19 cases were identified in October, 2020, in Qingdao, a pooled testing approach coordinated by the government with the cooperation of residents enabled 10.9 million people—almost the entire population of the city—to be tested within 5 days. Although few COVID-19 cases have been reported, people are generally adhering to non-pharmaceutical interventions, such as avoiding large gatherings.

After the government urged people to abandon travel plans, and with local governments imposing strict quarantine measures, there was a 70% drop in the number of passenger trips across the country in the 2 weeks leading up to the Chinese Lunar New Year this year, compared with the same period in 2019.

China's public health measures, as well as the public's compliance, largely owing to high trust in the government, have contributed to the effective response. Elements of China's approach, such as those that involve monitoring citizens' whereabouts, might not be countenanced in many western countries. However, China's domestic successes in controlling COVID-19 stand in contrast with outcomes elsewhere, and other countries should learn what public health lessons they can.

Internationally though, there is a high level of scepticism towards China. Anti-China sentiment has intensified. With respect to science, transparency over data is a continuing point of contention. After the WHO–China joint report investigating SARS-CoV-2 origins, published on March 30, Tedros Adhanom Ghebreyesus, WHO Director-General, commented on the international team's work in Wuhan: "In my discussions with the team, they expressed the difficulties they encountered in accessing raw data. I expect future collaborative studies to include more timely and comprehensive data sharing."

Lack of transparency is also an issue for Chinese COVID-19 vaccines. China had administered over 100 million doses of domestically developed vaccines by March 27, 2021, and it aims to vaccinate around half a billion people (40% of the Chinese population) by the end of July, 2021. The first Chinese vaccine,

manufactured by Sinopharm, was approved by domestic regulators on Dec 30, 2020. Other vaccines have been approved in subsequent months. However, as we go to press, no phase 3 trial results for any China-developed vaccine have been published in a peer-reviewed journal. The Chinese regulator promised to continue monitoring the vaccines, but very little post-marketing surveillance data are available. Global access to more vaccines could make an important impact on the trajectory of the pandemic, and WHO hopes to issue recommendations on Chinese inactivated vaccines by the end of April, 2021. Having comprehensive data publicly available is imperative for understanding the efficacy and safety of these vaccines, which is vital for building trust in them.

When it comes to science and health, collaboration is much more productive than antagonism. In a Viewpoint, Liming Li and colleagues argue that strong US–China collaboration on matters of medicine is crucial for efforts against COVID-19 and future pandemics. They also highlight other common health interests of China and the USA, including non-communicable diseases, global health, mental health, ageing, urbanisation, and climate change. They call for the restoration of partnerships on health and medicine between government agencies, as well as the academic and scientific communities.

Such collaborations are as important now as ever. Learning from each other has advanced health and science in China and the rest of the world. Global health challenges require global responses and cooperation. These bonds are built on transparency, trust, and mutual goals. This is not a time for blame or competition between countries but a time to work together on the common threats to all people.