

## Boletim BiblioCovid

Boletim BiblioCovid v.2 n.11, novembro 2021 | Imunização, vacinas e COVID-19

Boletim destinado a apresentação de estratégias e artigos científicos sobre temas relacionados à Covid-19. Gostaria de um boletim com sua temática?

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## Imunização, Vacinas e COVID-19



### Vocabulário controlado

MeSH – Medical Subject Headings (NLM/NIH)

### Bases utilizadas

Pubmed

### Termos Utilizados (com base no Medical Subject Headings – MeSH):



### Descritores e/ou palavras-chave

Immunization  
COVID-19  
Vaccines  
Sars-CoV-2  
COVID-19

### Filtros utilizados

Free full text  
Journal Article  
Ano: Todos de 2020-2021  
(31/10/2021)

### Estratégias de busca

("Immunization"[MAJR] OR "COVID-19 Vaccines"[MAJR]) AND ("COVID-19"[MAJR] OR "SARS-CoV-2"[MAJR])

Seleção dos dez artigos mais relevantes, segundo critérios da base de dados Portal regional BVS, incluindo o filtro "Artigo (tipo de documento)" e "Medline (base de dados)"

## 1. A comprehensive analysis of the efficacy and safety of COVID-19 vaccines

[doi:https://doi.org/10.1016/j.ymthe.2021.08.001](https://doi.org/10.1016/j.ymthe.2021.08.001)

### Resumo

The numbers of cases and deaths from coronavirus disease 2019 (COVID-19) are continuously increasing. Many people are concerned about the efficacy and safety of the COVID-19 vaccines. We performed a comprehensive analysis of the published trials of COVID-19 vaccines and the real-world data from the Vaccine Adverse Event Reporting System. Globally, our research found that the efficacy of all vaccines exceeded 70%, and RNA-based vaccines had the highest efficacy of 94.29%; moreover, Black or African American people, young people, and males may experience greater vaccine efficacy. The spectrum of vaccine-related adverse drug reactions (ADRs) is extremely broad, and the most frequent ADRs are pain, fatigue, and headache. Most ADRs are tolerable and are mainly grade 1 or 2 in severity. Some severe ADRs have been identified (thromboembolic events, 21-75 cases per million doses; myocarditis/pericarditis, 2-3 cases per million doses). In summary, vaccines are a powerful tool that can be used to control the COVID-19 pandemic, with high efficacy and tolerable ADRs. In addition, the spectrum of ADRs associated with the vaccines is broad, and most of the reactions appear within a week, although some may be delayed. Therefore, ADRs after vaccination need to be identified and addressed in a timely manner.

### Referência

CAI, Changjing et al. A comprehensive analysis of the efficacy and safety of COVID-19 vaccines. **Molecular Therapy**, v. 29, n. 9, p. 2794-2805, 1 set. 2021.

## 2. Safety and immunogenicity of heterologous versus homologous prime-boost schedules with an adenoviral vectored and mRNA COVID-19 vaccine (Com-COV): a single-blind, randomised, non-inferiority trial

[doi:https://doi.org/10.1016/S0140-6736\(21\)01694-9](https://doi.org/10.1016/S0140-6736(21)01694-9)

### Resumo

**Abstract:** BACKGROUND: Use of heterologous prime-boost COVID-19 vaccine schedules could facilitate mass COVID-19 immunisation. However, we have previously reported that heterologous schedules incorporating an adenoviral vectored vaccine (ChAdOx1nCoV-19, AstraZeneca; hereafter referred to as ChAd) and an mRNA vaccine (BNT162b2, Pfizer-BioNTech; hereafter referred to as BNT) at a 4-week interval are more reactogenic than homologous schedules. Here, we report the safety and immunogenicity of heterologous schedules with the ChAd and BNT vaccines. METHODS: Com-COV is a participant-blinded, randomised, non-inferiority trial evaluating vaccine safety, reactogenicity, and immunogenicity. Adults aged 50 years and older with no or well controlled comorbidities and no previous SARS-CoV-2 infection by laboratory confirmation were eligible and were recruited at eight sites across the UK. The majority of eligible participants were enrolled into the general cohort (28-day or 84-day prime-boost intervals), who were randomly assigned (1:1:1:1:1:1) to receive ChAd/ChAd, ChAd/BNT, BNT/BNT, or BNT/ChAd, administered at either 28-day or 84-day prime-boost intervals. A small subset of eligible participants (n=100) were enrolled into an immunology cohort, who had additional blood tests to evaluate immune responses; these participants were randomly assigned (1:1:1:1) to the four schedules (28-day interval only). Participants were masked to the vaccine received but not to the prime-boost interval. The primary endpoint was the geometric mean ratio (GMR) of serum SARS-CoV-2 anti-spike IgG concentration (measured by ELISA) at 28 days after boost, when comparing ChAd/BNT with ChAd/ChAd, and BNT/ChAd with BNT/BNT. The heterologous schedules were considered non-inferior to the approved homologous schedules if the lower limit of the one-sided 97.5% CI of the GMR of these comparisons was greater than 0.63. The primary analysis was done in the per-protocol population, who were seronegative at baseline. Safety analyses were done among participants receiving at least one dose of a study vaccine. The trial is registered with ISRCTN, 69254139. FINDINGS: Between Feb 11 and Feb 26, 2021, 830 participants were enrolled and randomised, including 463 participants with a 28-day prime-boost interval, for whom results are reported here. The mean age of participants was 57.8 years (SD 4.7), with 212 (46%) female participants and 117 (25%) from ethnic minorities. At day 28 post boost, the geometric mean concentration of SARS-CoV-2 anti-spike IgG in ChAd/BNT recipients (12 906 ELU/mL) was non-inferior to that in ChAd/ChAd recipients (1392 ELU/mL), with a GMR of 9.2 (one-sided 97.5% CI 7.5 to ∞). In participants primed with BNT, we did not show non-inferiority of the heterologous schedule (BNT/ChAd, 7133 ELU/mL) against the homologous schedule (BNT/BNT, 14 080 ELU/mL), with a GMR of 0.51 (one-sided 97.5% CI 0.43 to ∞). Four serious adverse events occurred across all groups, none of which were considered to be related to immunisation. INTERPRETATION: Despite the BNT/ChAd regimen not meeting non-inferiority criteria, the SARS-CoV-2 anti-spike IgG concentrations of both heterologous schedules were higher than that of a licensed vaccine schedule (ChAd/ChAd) with proven efficacy against COVID-19 disease and hospitalisation. Along with the higher immunogenicity of ChAd/BNT compared with ChAd/ChAd, these data support flexibility in the use of heterologous prime-boost vaccination using ChAd and BNT COVID-19 vaccines.

### Referência

LIU, Xinxue et al. Safety and immunogenicity of heterologous versus homologous prime-boost schedules with an adenoviral vectored and mRNA COVID-19 vaccine (Com-COV): a single-blind, randomised, non-inferiority trial. **The Lancet**, v. 398, n. 10303, p. 856-869, 4 set. 2021.

## 3. Effectiveness of COVID-19 vaccines against SARS-CoV-2 infection with the Delta (B.1.617.2) variant: second interim results of a living systematic review and meta-analysis

[doi:https://doi.org/10.2807/1560-7917.ES.2021.26.41.2100920](https://doi.org/10.2807/1560-7917.ES.2021.26.41.2100920)

### Resumo

The Delta variant has become the dominant strain of SARS-CoV-2. We summarised the evidence on COVID-19 vaccine effectiveness (VE) identified in 17 studies that investigated VE against different endpoints. Pooled VE was 63.1% (95% confidence interval (CI): 40.9-76.9) against asymptomatic infection, 75.7% (95% CI: 69.3-80.8) against symptomatic infection and 90.9% (95% CI: 84.5-94.7) against hospitalisation. Compared with the Alpha variant, VE against mild outcomes was reduced by 10-20%, but fully maintained against severe COVID-19.

### Referência

HARDER, Thomas et al. Effectiveness of COVID-19 vaccines against SARS-CoV-2 infection with the Delta (B.1.617.2) variant: second interim results of a living systematic review and meta-analysis, 1 January to 25 August 2021. **Eurosurveillance**, v. 26, n. 41, out. 2021.

## 4. Boosting with heterologous vaccines effectively improves protective immune responses of the inactivated SARS-CoV-2 vaccine

[doi:https://doi.org/10.1080/22221751.2021.1957401](https://doi.org/10.1080/22221751.2021.1957401)

### Resumo

Since the outbreak of COVID-19, a variety of vaccine platforms have been developed. Amongst these, inactivated vaccines have been authorized for emergency use or conditional marketing in many countries. To further enhance the protective immune responses in populations that have completed vaccination regimen, we investigated the immunogenic characteristics of different vaccine platforms and tried homologous or heterologous boost strategy post two doses of inactivated vaccines in a mouse model. Our results showed that the humoral and cellular immune responses induced by different vaccines when administered individually differ significantly. In particular, inactivated vaccines showed relatively lower level of neutralizing antibody and T cell responses, but a higher IgG2a/IgG1 ratio compared with other vaccines. Boosting with either recombinant subunit, adenovirus vectored or mRNA vaccine after two-doses of inactivated vaccine further improved both neutralizing antibody and Spike-specific Th1-type T cell responses compared to boosting with a third dose of inactivated vaccine. Our results provide new ideas for prophylactic inoculation strategy of SARS-CoV-2 vaccines.

### Referência

ZHANG, Jialu et al. Boosting with heterologous vaccines effectively improves protective immune responses of the inactivated SARS-CoV-2 vaccine. **Emerging Microbes & Infections**, v. 10, n. 1, p. 1598-1608, 18 ago. 2021.

## 5. 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

[doi:https://doi.org/10.1016/S0140-6736\(20\)32661-1](https://doi.org/10.1016/S0140-6736(20)32661-1)

### Resumo

A safe and efficacious vaccine against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), if deployed with high coverage, could contribute to the control of the COVID-19 pandemic. We evaluated the safety and efficacy of the ChAdOx1 nCoV-19 vaccine in a pooled interim analysis of four trials.

Methods: This analysis includes data from four ongoing blinded, randomised, controlled trials done across the UK, Brazil, and South Africa. Participants aged 18 years and older were randomly assigned (1:1) to ChAdOx1 nCoV-19 vaccine or control (meningococcal group A, C, W, and Y conjugate vaccine or saline). Participants in the ChAdOx1 nCoV-19 group received two doses containing  $5 \times 10^{10}$  viral particles (standard dose; SD/SD cohort); a subset in the UK trial received a half dose as their first dose (low dose) and a standard dose as their second dose (LD/SD cohort). The primary efficacy analysis included symptomatic COVID-19 in seronegative participants with a nucleic acid amplification test-positive swab more than 14 days after a second dose of vaccine. Participants were analysed according to treatment received, with data cutoff on Nov 4, 2020. Vaccine efficacy was calculated as  $1 - \text{relative risk}$  derived from a robust Poisson regression model adjusted for age. Studies are registered at ISRCTN89951424 and ClinicalTrials.gov, NCT04324606, NCT04400838, and NCT04444674.

Findings: Between April 23 and Nov 4, 2020, 23 848 participants were enrolled and 11 636 participants (7548 in the UK, 4088 in Brazil) were included in the interim primary efficacy analysis. In participants who received two standard doses, vaccine efficacy was 62.1% (95% CI 41.0-75.7; 27 [0.6%] of 4440 in the ChAdOx1 nCoV-19 group vs 71 [1.6%] of 4455 in the control group) and in participants who received a low dose followed by a standard dose, efficacy was 90.0% (67.4-97.0; three [0.2%] of 1367 vs 30 [2.2%] of 1374; pinteraction=0.010). Overall vaccine efficacy across both groups was 70.4% (95.8% CI 54.8-80.6; 30 [0.5%] of 5807 vs 101 [1.7%] of 5829). From 21 days after the first dose, there were ten cases hospitalised for COVID-19, all in the control arm; two were classified as severe COVID-19, including one death. There were 74 341 person-months of safety follow-up (median 3.4 months, IQR 1.3-4.8): 175 severe adverse events occurred in 168 participants, 84 events in the ChAdOx1 nCoV-19 group and 91 in the control group. Three events were classified as possibly related to a vaccine: one in the ChAdOx1 nCoV-19 group, one in the control group, and one in a participant who remains masked to group allocation.

Interpretation: ChAdOx1 nCoV-19 has an acceptable safety profile and has been found to be efficacious against symptomatic COVID-19 in this interim analysis of ongoing clinical trials.

### Referência

VOYSEY, Merryn et al. 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. **The Lancet**, v. 397, n. 10269, p. 99-111, 9 jan. 2021.

## 6. Ethical Considerations Regarding Mandatory Vaccination in Children

[doi:https://doi.org/10.1016/j.jpeds.2021.01.021](https://doi.org/10.1016/j.jpeds.2021.01.021)

### Resumo

Whether children should be vaccinated against coronavirus disease-2019 (COVID-19) (or other infectious diseases such as influenza) and whether some degree of coercion should be exercised by the state to ensure high uptake depends, among other things, on the safety and efficacy of the vaccine. For COVID-19, these factors are currently unknown for children, with unanswered questions also on children's role in the transmission of the virus, the extent to which the vaccine will decrease transmission, and the expected benefit (if any) to the child. Ultimately, deciding whether to recommend that children receive a novel vaccine for a disease that is not a major threat to them, or to mandate the vaccine, requires precise information on the risks, including disease severity and vaccine safety and effectiveness, a comparative evaluation of the alternatives, and the levels of coercion associated with each. However, the decision also requires balancing self-interest with duty to others, and liberty with usefulness. Separate to ensuring vaccine supply and access, we outline 3 requirements for mandatory vaccination from an ethical perspective: (1) whether the disease is a grave threat to the health of children and to public health, (2) positive comparative expected usefulness of mandatory vaccination, and (3) proportionate coercion. We also suggest that the case for mandatory vaccine in children may be strong in the case of influenza vaccination during the COVID-19 pandemic.

### Referência

SAVULESCU, Julian; GIUBILINI, Alberto; DANCHIN, Margie. Global Ethical Considerations Regarding Mandatory Vaccination in Children. **The Journal of Pediatrics**, v. 231, p, 10-16, 01 abr. 2021.

## 7. Factors Associated with Willingness to be Vaccinated Against COVID-19 in a Large Convenience Sample

[doi:https://doi.org/10.1007/s10900-021-00987-0](https://doi.org/10.1007/s10900-021-00987-0)

### Resumo

Willingness and reasons to be vaccinated against COVID-19 were examined among 26,324 respondents who completed a survey on willingness and questions related to Confidence in vaccine safety, Complacency about the disease, Convenience of vaccination, tendency to Calculate risks versus benefits, and Concern for protecting others. Willingness to be vaccinated differed by age ( $p < 0.001$ ), by race and ethnicity ( $p < 0.001$ ) and by level of education ( $p < 0.001$ ). Willingness generally increased with age and education. Asians were most willing to be vaccinated, followed by non-Hispanic Whites, Hispanics, and non-Hispanic Blacks ( $p < 0.001$ ). Occupational groups differed in willingness ( $p < 0.001$ ). Retired and students were more willing than all others ( $p < 0.001$ ) followed by disabled or unemployed, healthcare workers, and educators. First Responders were least willing to be vaccinated ( $p < 0.001$ ) followed by construction, maintenance and landscaping, homemakers, housekeeping, cleaning and janitorial workers, and retail and food service. The strongest predictor of willingness was confidence with the safety of the vaccine ( $r = 0.723$ ,  $p < 0.001$ ), followed by concern with protecting others by being vaccinated ( $r = 0.574$ ,  $p < 0.001$ ), and believing COVID-19 was serious enough to merit vaccination ( $r = 0.478$ ,  $p < 0.001$ ). Using multiple regression, confidence in safety was the strongest predictor for all groups. Protecting others was strongest for 13 of 15 demographic groups and 8 of 11 occupational groups. College educated, non-Hispanic Whites, first responders, construction, maintenance and landscape workers, housekeeping, cleaning and janitorial workers all gave greater weight to complacency about the disease. These results can help in designing programs to combat vaccine hesitancy.

### Referência

DORMAN, Casey et al. Factors Associated with Willingness to be Vaccinated Against COVID-19 in a Large Convenience Sample. **Journal of Community Health**, v. 46, n. 5, p. 1013-1019, out. 2021.



## 8. COVID-19 Vaccine Acceptance and Beliefs among Black and Hispanic Americans

[doi:https://doi.org/10.1371/journal.pone.0256122](https://doi.org/10.1371/journal.pone.0256122)

### Resumo

The introduction of COVID-19 vaccines is a major public health breakthrough. However, members of US Black and Hispanic communities, already disproportionately affected by the COVID-19 virus, may be less willing to receive the vaccine. We conducted a broad, representative survey of US adults (N = 1,950) in order to better understand vaccine beliefs and explore opportunities to increase vaccine acceptance among these groups. The survey results suggested that Black and Hispanic individuals were less willing than Whites to receive the vaccine. US Blacks and Hispanics also planned to delay receiving the COVID-19 vaccine for a longer time period than Whites, potentially further increasing the risk of contracting COVID-19 within populations that are already experiencing high disease prevalence. Black respondents were less likely to want the COVID-19 vaccine at all compared with Whites and Hispanics, and mistrust of the vaccine among Black respondents was significantly higher than other racial/ethnic groups. Encouragingly, many Black and Hispanic respondents reported that COVID-19 vaccine endorsements from same-race medical professionals would increase their willingness to receive it. These respondents said they would also be motivated by receiving more information on the experiences of vaccine study participants who are of their own race and ethnicity. The results have implications for improved messaging of culturally-tailored communications to help reduce COVID-19 vaccine hesitancy among communities disproportionately impacted by the pandemic.

### Referência

KRICORIAN, Katherine; Turner, Karin. COVID-19 Vaccine Acceptance and Beliefs among Black and Hispanic Americans. **PLoS One**, v. 16, n. 8, e0256122, 24 ago. 2021.

## 9. Acceptance of a vaccine against COVID-19: a systematic review of surveys conducted worldwide

[doi:https://doi.org/10.4149/BLL\\_2021\\_086](https://doi.org/10.4149/BLL_2021_086)

### Resumo

**Objectives:** The most promising strategy for managing COVID-19 pandemic is achieving sufficient vaccination rate worldwide. The question is how many people will be willing to get vaccinated. **Study design:** We systematically reviewed peer-reviewed manuscripts monitoring people's intention to receive a vaccine against COVID-19. **Methods:** Up to December 28, 2020 we identified 62 relevant peer-reviewed articles in PubMed, Web of Science, Scopus and GoogleScholar. **Results:** Total sample size was 118 855 respondents with overall average COVID-19 vaccine acceptance rate of 72.5% which is "just" the level estimated to be sufficient for reaching herd immunity threshold. Surprisingly, healthcare workers showed smaller interest in receiving the vaccine when compared to general adult population and university students. On the other hand, their attitude to vaccination did not change over time. In case of general adult population, the longer the pandemic lasts, the smaller proportion of population wants to get vaccinated. Vaccination intentions were independent of gross domestic product and human development index. **Conclusion:** Willingness of population to receive COVID-19 is just at the herd immunity threshold and it is decreasing over time (Tab. 2, Fig. 3, Ref. 110). **Keywords:** vaccination, survey, COVID-19, pandemic, review.

### Referência

SNEHOTA M. et al. Acceptance of a vaccine against COVID-19 - a systematic review of surveys conducted worldwide. **Bratislava Medical Journal**, v. 122, n. 8, p. 538-547, 20 jul. 2021.

## 10. Safety of SARS-CoV-2 vaccines: a systematic review and meta-analysis of randomized controlled trials

[doi:https://doi.org/10.1186/s40249-021-00878-5](https://doi.org/10.1186/s40249-021-00878-5)

### Resumo

**Abstract:** Background: Various modalities of vaccines against coronavirus disease 2019 (COVID-19), based on different platforms and immunization procedures, have been successively approved for marketing worldwide. A comprehensive review for clinical trials assessing the safety of COVID-19 vaccines is urgently needed to make an accurate judgment for mass vaccination. **Main text:** A systematic review and meta-analysis was conducted to determine the safety of COVID-19 vaccine candidates in randomized controlled trials (RCTs). Data search was performed in PubMed, Embase, Cochrane library, Scopus, Web of Science, and MedRxiv. Included articles were limited to RCTs on COVID-19 vaccines. A total of 73,633 subjects from 14 articles were included to compare the risks of adverse events following immunization (AEFI) after vaccinating different COVID-19 vaccines. Pooled risk ratios (RR) of total AEFI for inactivated vaccine, viral-vectored vaccine, and mRNA vaccine were 1.34 [95% confidence interval (CI) 1.11-1.61,  $P < 0.001$ ], 1.65 (95% CI 1.31-2.07,  $P < 0.001$ ), and 2.01 (95% CI 1.78-2.26,  $P < 0.001$ ), respectively. No significant differences on local and systemic AEFI were found between the first dose and second dose. In addition, people aged  $\leq 55$  years were at significantly higher risk of AEFI than people aged  $\geq 56$  years, with a pooled RR of 1.25 (95% CI 1.15-1.35,  $P < 0.001$ ). **Conclusions:** The safety and tolerance of current COVID-19 vaccine candidates are acceptable for mass vaccination, with inactivated COVID-19 vaccines candidates having the lowest reported AEFI. Long-term surveillance of vaccine safety is required, especially among elderly people with underlying medical conditions.

### Referência

CHEN, Musha et al. Safety of SARS-CoV-2 vaccines: a systematic review and meta-analysis of randomized controlled trials. **Infectious Diseases of Poverty**, v. 10, n. 1, p. 94, 5 jul. 2021.



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## Expediente

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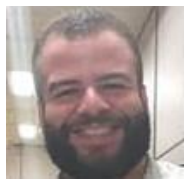
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