

# Intermediate literature screening report

## Covid-19 vaccines and post-vaccination data: literature update (3)

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<i>Responsible author:</i>	Muaamar Al-Gobari, Bsc Pharm, MPH, PhD
<i>Affiliation:</i>	Médecins sans frontières (MSF), Geneva, Switzerland
<i>Co-authors:</i>	-

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## Preamble

A large number of scientific publications become available on a daily basis, reflecting the rapid development of knowledge and progress of science on COVID-19 related issues. Leading authorities should base decisions or policies on this knowledge; hence they need to master the actual state of this knowledge. Due to the large number of publications shared daily, decision makers heavily depend on accurate summaries of these publications, in the different public health domains. Therefore, the authors of this report were mandated by the Swiss School of Public Health plus (SSPH+), upon request of the Federal Office of Public Health (FOPH), to inform the FOPH on recent findings from the literature.

**This intermediate update shares important studies that have been published since the previous full or intermediate report. A more thorough analysis of these and other studies will be provided in the next full report.**

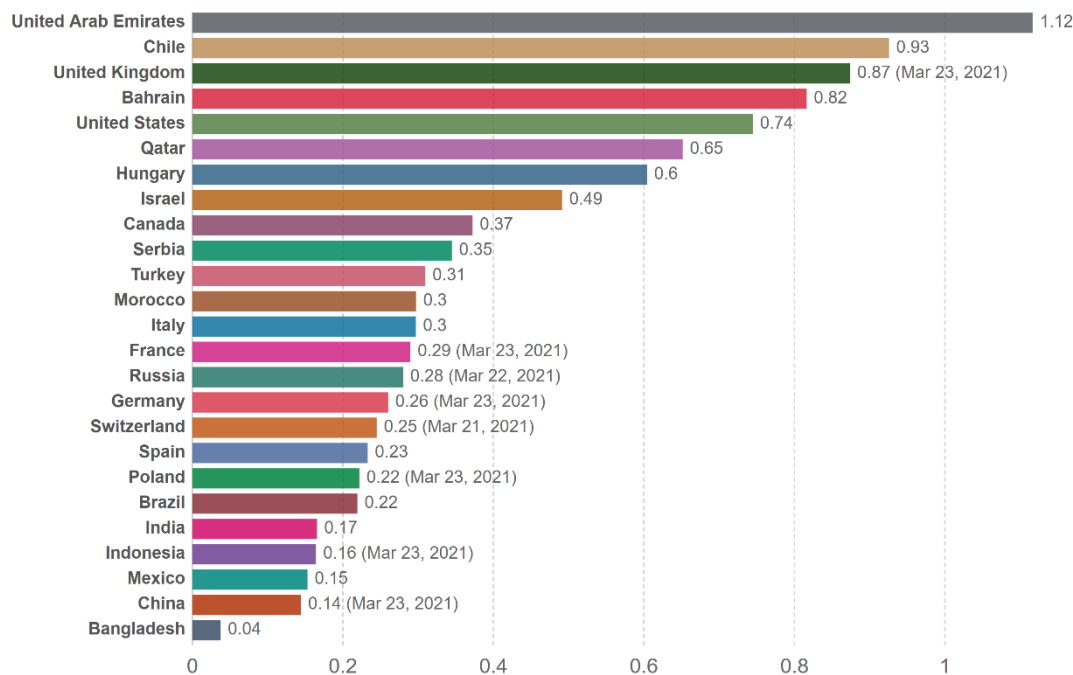
## Background

In Switzerland, the current projections<sup>1</sup> of the Covid-19 epidemic are somehow worrisome with a hospital occupancy of 86.1% in the canton of Vaud (of which 31.5% are Covid-19-related hospitalizations)<sup>2</sup>. Besides public health interventions, a vaccination campaign took place early January 2021, although with slower pace the past 7 days (figure below)<sup>3</sup>. Since the last report, several studies and press releases about Covid-19 vaccines have been published. We focused here on the most important subtopics:

- Safety of emergency-authorized vaccines
- The impact of new variants on the current vaccination strategies
- New emergency-authorized vaccines

### Daily COVID-19 vaccine doses administered per 100 people, Mar 24, 2021

Shown is the rolling 7-day average per 100 people in the total population. This is counted as a single dose, and may not equal the total number of people vaccinated, depending on the specific dose regime (e.g. people receive multiple doses).



Source: Official data collated by Our World in Data – Last updated 25 March, 09:40 (London time)

OurWorldInData.org/coronavirus • CC BY

<sup>1</sup> <https://covid19.healthdata.org/switzerland?view=total-deaths&tab=trend> (accessed on 25.03.2021).

<sup>2</sup> <https://www.covid19.admin.ch/en/hosp-capacity/icu> (accessed on 25.03.2021).

<sup>3</sup> <https://ourworldindata.org/covid-vaccinations> (accessed on 25.03.2021)

## Methodology

Please refer to the previous reports if needed. The current report screened the published data as of March 25<sup>th</sup>, 2021.

## Summary of findings

### Safety of emergency-authorized vaccines

The media<sup>4</sup> widely covered the suspension of AstraZeneca/Oxford vaccine (ChAdOx1 nCoV-19/AZD1222/Covishield)] by many European countries over suspicious cases of thromboses – blood clots that impact body organs such as the brain. The verdict of the European Medicine Agency (EMA) was that the vaccine benefits outweighed the risks despite a possible link<sup>5</sup>. Few hours before the EMA decision, a Norwegian study<sup>6</sup> established a link between the AstraZeneca/Oxford vaccine and some cases of cerebral thromboses. Moreover, German experts concluded that there was a possible link to the cases of brain venous thrombosis<sup>7,8</sup>. As of March 8, 2021, 37 cases were reported in Europe from 17 million people who received the AstraZeneca/Oxford vaccine<sup>9</sup>. Of note, the AstraZeneca/Oxford vaccine was reported to have an overall efficacy of 76% against symptomatic infections by analysing data after phase III clinical trial completion, slightly lower than previously reported from the interim analyses<sup>10</sup>. Interestingly, it has been suggested by the French health authorities that the AstraZeneca/Oxford vaccine is given to the elderly people (over 55 years old) - to avoid blood clot issues<sup>11</sup>. The decision is supported by the fact that almost 70 to 80% of cerebral venous thrombosis cases implicate childbearing women, not among children or elderly persons [1]. Therefore, young women, in particular, might be excluded according to such data as they present a higher risk compared to the general population regardless of the vaccination. For instance, contraceptive pills use was reported as a risk factor among others in childbearing age women [2].

<sup>4</sup> <https://www.ladepeche.fr/2021/03/23/vaccins-contre-le-covid-19-quelles-sont-les-personnes-qui-presentent-le-plus-de-risques-de-thromboses-9444701.php>

(accessed on 25.03.2021).

<sup>5</sup> <https://www.ema.europa.eu/en/news/covid-19-vaccine-astrazeneca-benefits-still-outweigh-risks-despite-possible-link-rare-blood-clots>

(accessed on 25.03.2021).

<sup>6</sup> <https://sciencenorway.no/covid19/norwegian-experts-say-deadly-blood-clots-were-caused-by-the-astrazeneca-covid-vaccine/1830510>

(accessed on 25.03.2021).

<sup>7</sup> <https://www.wsj.com/articles/scientists-say-they-found-cause-of-blood-clotting-linked-to-astrazeneca-vaccine-11616169108> (accessed on 25.03.2021).

<sup>8</sup> <https://www.pei.de/EN/newsroom/hp-news/2021/210315-pei-informs-temporary-suspension-vaccination-astra-zeneca.html> (accessed on 25.03.2021).

<sup>9</sup> <https://www.astrazeneca.com/media-centre/press-releases/2021/update-on-the-safety-of-covid-19-vaccine-astrazeneca.html> (accessed on 25.03.2021).

<sup>10</sup> <https://www.astrazeneca.com/media-centre/press-releases/2021/azd1222-us-phase-iii-primary-analysis-confirms-safety-and-efficacy.html> (accessed on 25.03.2021).

<sup>11</sup> <https://www.ladepeche.fr/2021/03/19/la-vaccination-avec-astrazeneca-peut-reprendre-sans-delai-pour-les-55-ans-et-plus-annonce-la-haute-autorite-de-sante-9437802.php> (accessed on 25.03.2021).

Notwithstanding that 43 cases of immune thrombocytopenia – similar issue but apparently less severe clinically - were reported as adverse events of Pfizer-BioNTech COVID-19 vaccine (BNT162b2/COMIRNATY®), and Moderna COVID-19 vaccine/ mRNA-1273. The clinical markers involve low platelet counts. However, it is likely that some cases went undiagnosed as nearly one-third of patients with low platelet counts do not show symptoms (e.g., bleeding) [3].

## Vaccines and new variants

Many studies [4-16] focused on the impact of SARS-CoV-2 variants on the mass vaccination efforts, termed variants of interest (VOI). Most studies used neutralizing antibodies to measure the VOI resistance to currently used vaccines. Indeed, the efficacy of vaccines may be diminished but all vaccines still offer some protection especially the severity of disease. Nevertheless, the more effective the vaccines, the less coverage we would need to, in combination to other preventive measures, reach herd immunity – the level where the transmission of the virus is at its minimum level. Importantly, the Covid-19 epidemic need to be curbed with combination of public health strategies (e.g., physical interventions, lockdowns, travel restrictions...etc), given the fact that a vaccine-acquired herd immunity is difficult to achieve or would take longer time<sup>12</sup>.

## New emergency-authorized vaccines

The European Medicine Agency (EMA) has already authorized four vaccines (namely, the Pfizer-BioNTech COVID-19 vaccine (BNT162b2/COMIRNATY®), Moderna COVID-19 vaccine/ mRNA-1273, and Janssen Covid-19 vaccine (Johnosn & johnosn/Ad26.COV2.S). Three other vaccines are undergoing a roll review [namely, CVnCoV, NVX-CoV2373, and Sputnik V (Gam-COVID-Vac)]. Swissmedic has recently approved Janssen Covid-19 vaccine and is still evaluating AstraZeneca/Oxford vaccine<sup>13</sup>. The Swissmedic authorization for Janssen Covid-19 vaccine, however, will not immediately impact the current vaccination strategies in Switzerland due to an absence of a purchase agreement between the Federal Office of Public Health (FOPH)

<sup>12</sup> <https://www.nature.com/articles/d41586-021-00728-2> (accessed on 25.03.2021).

<sup>13</sup> <https://www.swissmedic.ch/swissmedic/fr/home/news/coronavirus-covid-19/dritten-impfstoff-gegen-covid-19-erkrankung.html> (accessed on 23.03.2021)

and the Janssen-Cilag AG company<sup>14</sup>. Interestingly, the efficacy of Novavax Covid-19 vaccine (one of those pre-ordered by the FOPH) demonstrated an efficacy of 89.3% in phase III clinical trial in the United Kingdom<sup>15</sup>. However, no published peer-reviewed data were released so far.

## Ongoing studies and further research questions

Despite some reassured data (at least for vaccines used in Switzerland), the efficacy and safety of currently used vaccines remain the main factor behind vaccine hesitancy among the population including young people. Fortunately, research and more knowledge on many Covid-19 vaccines issues are accumulating in the literature.

## Conflict of interest

The current report expressed solely the opinion of the author and, therefore, does not have any link to the affiliated employers.

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<sup>14</sup> <https://www.swissinfo.ch/eng/johnson---johnson-covid-vaccine-approved-for-use-in-switzerland/46469458> (accessed on 25.03.2021)

<sup>15</sup> <https://ir.novavax.com/news-releases/news-release-details/novavax-covid-19-vaccine-demonstrates-893-efficacy-uk-phase-3> (accessed on 25.03.2021).

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