# COVID-19 Vaccine Update

## January 2021

The COVID-19 pandemic has brought many challenges and changes to our lives, including tremendous uncertainty, altered daily routines and social isolation. While we watch the development and rollout of COVID-19 vaccines with anticipation, we recognise that there is still a great deal of uncertainty around vaccine efficacy and availability. The sheer volume of information about COVID-19 and the coming vaccines can be overwhelming, making it difficult to know how to prepare for the next phase.

Combining our resources and market experience, Generali Employee Benefits and Granite Management Limited (Granite) have worked in collaboration to develop this short summary offering perspective on available data related to COVID-19 vaccine development, and some suggested applications of that information. We hope this provides you with some initial insight on the many possible vaccines under development, and actions you can take to ensure you are addressing the health needs of your employees, as well as your own business needs.

## January Updates

### New variants a serious concern

- B.1.1.7 (aka 20B/501Y.V1) was first identified in the UK in September and has now been reported in more than 50 countries. Preliminary data indicates B.1.1.7 is 56-70% more infectious than the existing COVID variant. Early data appears to indicate that the UK variant should respond to existing vaccines, though continuing tests and study will yield more conclusive answers in the days and weeks ahead;

- B.1.351 (aka 20C/501Y.V2) was identified in South Africa, and B.1.1.248 was identified in Brazil. The scientific community is actively assessing the efficacy of new vaccines on these emerging variants. The South African and Brazilian variants may be of even greater concern due to the type of mutations identified;

- Another variant recently reported in the USA (Ohio) is suspected to be the cause of a large spike in local infections.

How and if vaccines remain effective or can be modified to address these and other potential variants remains to be seen.

### Current status of vaccine candidates

As of 4 January there are approximately 50 serious candidate vaccines in clinical evaluation. **Please refer to the updated table on page 2: Summary of vaccines under development** for information on vaccines already approved, and those in Phase 3 clinical trials.

### Supply and demand issues 2021-2022

Demand will likely surpass supply of all vaccines through 2021 and possibly 2022; supplies in the first year estimated to only meet the demand for less than 1/3 of the world's population;

- The current projected supply through 2021 of the most promising vaccines has already been purchased by wealthier countries/territories (e.g. USA, UK, Canada, the EU). High-income countries have in fact reserved enough doses to immunise their populations many times over, thereby monopolising vaccine supplies and precluding much availability to lower income countries;

- To address potential supply inequity issues, the COVAX initiative, a cooperation of the WHO[1] and GAVI[2], are raising funds and working with vaccine manufacturers to offer low-cost COVID-19 vaccines to low income countries. Their objective is to ensure every country can inoculate 20% of their population;

- Vaccine rollout varies dramatically by country, with Israel being by far the most successful with over 20% of the population vaccinated and the UAE following closely behind with circa 12%. The rest of the world lags far behind, battling issues surrounding supply, delivery difficulties (due to extreme storage requirements), the reluctance of many health care workers to get vaccinated (driven by misinformation surrounding the safety of vaccines) and overall poor supply-chain management. The USA and UK have managed to vaccinate approximately 3% of their populations, EU countries are barely at 1% and the rest of the world are either just beginning to vaccinate or still waiting for supplies of vaccine to be delivered.

### Vaccine rollout complicated and highly variable

Even for countries with advanced purchased vaccines, rollout will be phased and based on essential worker status, health risk and other factors. Based on reports seen to-date, the common prioritisation for vaccinations globally is as follows (may vary by country/territory/state):

1. Essential medical personnel (medical & social care workers)
2. Nursing home residents and care givers
3. First responders (police, firemen, ambulance, military), educators
4. Individuals with higher risk of developing more severe form of COVID-19 (e.g. those with identified high risk conditions including Obesity, Diabetes, Heart Disease, Cystic Fibrosis, etc)
5. Other individuals over age 75, and between 50-75

[1]WHO/World Health Organization: specialised agency of the UN responsible for intl public health.
[2]Gavi: intl organisation created in 2000 to improve access to new & underused vaccines for children in world's poorest countries.
[3]PIP: Pandemic Influenza Preparedness

## The impact on Employers

- Vaccine rollout is expected to be inconsistent across the globe, especially for lower income countries, as the COVAX foundation is facing issues in obtaining sufficient supply from manufacturers, meaning they may not reach their stated 20% goals;

- To-date, additional private purchase of vaccine is not available anywhere globally, except potentially on the black market. Expectation is that reliance on the public health distribution system will be the only option for some time, at least through 2021;

- Should companies wish to pre-purchase vaccines for their employees, there are not yet clear options and we do not recommend this course of action since the vaccines which are most promising have largely been pre-ordered and those remaining may be further away from final approval. In addition, private purchase of the most promising vaccines may not be available until late 2021 or 2022 due to priority being given to the public healthcare sector/governmental bodies/authorities;

- It is likely that full rollout of the vaccines will be managed under the global WHO-PIP[3] initiative, giving full control and management to governments and health systems globally under UN guidance, including the assumption of the costs, as has largely been the case for global testing and treatment of the pandemic since its declaration by the WHO.

## What can Employers do now?

1. Local HR functions should begin to investigate and report on which vaccines are being purchased and provided through local government health agencies/authorities, and when/how these will be available to the local population;

2. Using this information, multinational employers should work closely with local HR functions to ensure employees and their dependents know how to access vaccines through public health systems once they become available in-country. HR functions should also consider providing paid time off for employees to get vaccinated;

3. If vaccinations are restricted by age / condition, it is recommended that local HR functions encourage and support employees who meet the criteria to get the vaccine. Since patient privacy laws are likely to prevent specific identification of eligible individuals based on health conditions, it is recommended that local HR develop a general and wide reaching education and information campaign to make all employees aware of vaccine availability and access based on health status, age, etc;

4. HR functions should liaise with local insurers to:

    - Determine how they could potentially support vaccinations that might be available outside the public system (i.e. direction to providers, employee education etc);

    - Consider a potential strategy/plan to provide coverage for COVID-19 vaccinations within the local plans. As this strategy is explored, the following points should be considered:

        - Cost; Frequency; Availability of cover within Public Sector; Accessibility in remote areas;

        - The advisability of additional cover beyond Public Sector vaccines (if the vaccines chosen by the local health authorities are considered less effective or if they are subject to limited availability);

        - Liability issues associated with the employer "recommending" a specific vaccine, should any negative side effects/health events result from the vaccination.

# Summary of vaccines under development

Note: to-date it is estimated that over 51% of the world's existing and future vaccine doses have been pre-purchased and/or reserved by the wealthiest countries representing only 15% of the global population (estimate from Johns Hopkins School of Public Health, reported by Reuters Dec 2020)

## APPROVED VACCINES

| Vaccine name | Sponsors | Institutions | Comments |
|---|---|---|---|
| **AZD1222** | Astra Zeneca | The University of Oxford; The Jenner Institute | • Authorised in the UK, India, Argentina, Mexico, US<br>• Muscle injection; 2 doses given 28 days apart<br>• Up to 90% effective<br>• Stable if refrigerated for at least 6 months |
| **BBIBP-CorV** | Beijing Institute of Biological Products; China National Pharmaceutical Group (Sinopharm) | | • Authorised in China, UAE, Egypt, Bahrain<br>• Muscle injection; 2 doses given 3 weeks apart<br>• 79.34% effective |
| **Comirnaty (also known as BNT162b2 or tozinameran)** | Pfizer; BioNTech; Fosun Pharma | Multiple | • Authorised in Argentina, Chile, Costa Rica, Ecuador, Kuwait, Panama, UK, Bahrain, Canada, Mexico, US, Singapore, Oman, Saudi Arabia, Switzerland, EU, WHO<br>• Muscle injection; 2 doses given 3 weeks apart<br>• 95% effective<br>• Freezer storage at -94$^{O}$ F (-70$^{O}$ C) |
| **CoronaVac** | Sinovac | Sinovac R&D | • Authorised in China<br>• 91.2% effective in Turkish studies; only 50.4% efficacy in recent Brazilian studies |
| **Covaxin** | Bharat Biotech; National Institute of Virology | | • Authorised in India<br>• 2 doses given 4 weeks apart<br>• Efficacy unknown<br>• Stable at least a week at room temperature |
| **EpiVacCorona** | Federal Budgetary Research Institution State Research Center of Virology & Biotechnology | | • Authorised in Russia |
| **mRNA-1273** | Moderna, BARDA, NIAID | Kaiser Permanente Washington Health Research Institute | • Authorised in USA, Canada, Israel, UK, EU<br>• Muscle injection; 2 doses given 4 weeks apart<br>• 94.5% effective; may show some impact on asymptomatic infection<br>• Can be stored for 30 days with refrigeration, 6 months at -4$^{O}$ F (-20$^{O}$ C) |
| **No name announced** | Wuhan Institute of Biological Products; China National Pharmaceutical Group (Sinopharm) | Henan Provincial Center for Disease Control and Prevention | • Authorised in China |
| **Sputnik V (formerly Gam-Covid-Vac)** | Gamaleya Research Institute; Acellena Contract Drug R&D | Various | • Authorised in Russia, Belarus, Argentina, Serbia<br>• Muscle injection; 2 doses, 3 weeks apart<br>• 91.4% effective; additional trials underway combining Sputnik V with Astra Zeneca vaccine to increase effectiveness<br>• Freezer storage |

## VACCINES IN PHASE 3 CLINICAL TRIALS

| Vaccine name | Sponsors | Institutions | Comments |
|---|---|---|---|
| **Convidicea (Ad5-nCoV)** | CanSino Biologics | Tongji Hospital, Wuhan, China | • Muscle injection, 1 dose<br>• Efficacy unknown<br>• Requires refrigeration |
| **JNJ-78436735 (formerly Ad26.COV2.S)** | Johnson & Johnson | Johnson & Johnson | • Muscle injection, 1 dose<br>• Efficacy unknown<br>• Freezer storage up to 2 years at -4$^{O}$ F (-20$^{O}$ C); up to 3 months if refrigerated at 36-46$^{O}$ F (2-8$^{O}$ C) |
| **NVX-CoV2373** | Novavax | Novavax | • Muscle injection; 2 doses given 3 weeks apart<br>• Efficacy unknown<br>• Stable if refrigerated |
| **ZyCoV-D** | Zydus Cadila | Zydus Cadila | • Skin injection; 3 doses given 4 weeks apart<br>• Stable at room temperature for 3 months |

Table updated 5January 2021; Vaccines listed in alphabetical order; Sources: WHO; Bloomberg.com; Nature.com; NYTimes (https://www.nytimes.com/interactive/2020/science/coronavirus-vaccine-tracker.html); Financial Times; https://www.who.int/csr/don/31-december-2020-sars-cov2-variants/en/; https://www.washingtonpost.com/business/why-the-uks-mutated-coronavirus-is-fanning-worries/2021/01/04/7a6cc6e0-4e4a-11eb-a1f5-fdaf-28cfca90_story.html; https://www.cnbc.com/2021/01/04/south-african-coronavirus-variant-more-of-a-problem-than-uk-one.html; https://www.niid.go.jp/niid/en/2019-ncov-e/10108-covid19-33-en.html; https://www.cdc.gov/coronavirus/2019-ncov/more/science-and-research/scientific-brief-emerging-variants.html