An overview of COVID vaccine clinical trial results & some challenges

DCVMN Webinar

December 8th, 2020
Access to COVID-19 tools (ACT) accelerator

ACCESS TO COVID-19 TOOLS (ACT) ACCELERATOR
A Global Collaboration to Accelerate the Development, Production and Equitable Access to New COVID-19 diagnostics, therapeutics and vaccines

Key players

**VACCINES (COVAX)**
- CEPI
  - Development & Manufacturing
  - Led by CEPI, with industry
- Gavi
  - Procurement and delivery at scale
  - Led by Gavi
- World Health Organization
  - Policy and allocation
  - Led by WHO

**DIAGNOSTICS**

**THERAPEUTICS**

**SOURCE:** (ACT) ACCELERATOR Commitment and Call to Action 24th April 2020
ACT-A / COVAX governance

COVAX COORDINATION MEETING
- CEPI Board
  - Co-Chair: Jane Halton
  - Co-Chair: Dr. Ngozi
- Workstream leads + DCVMN and IFPMA-selected Reps
  - As needed – R&D&M Chair; COVAX IPG Chair
- Gavi Board

Development & Manufacturing (COVAX)
- Led by CEPI (with industry)

Procurement and delivery at scale
- Led by Gavi

Policy and allocation
- Led by World Health Organization

R&D&M Investment Committee

Technical Review Group

- Vaccine Teams
- SWAT teams
- RAG

Portfolio Group
COVAX SWAT teams are being set up as a **joint platform** to accelerate COVID-19 Vaccine development and manufacturing by **addressing common challenges together**

### Timely and targeted
Addresses specific cross-developer technical challenges as they are raised and/or identified on an ongoing basis

### Multilateral
Establishes a dialogue and global joint effort across different COVID-19 vaccines organizations (incl. industry and other global networks)

### Knowledge-based
Identifies and collates most relevant materials and insights across the broader COVID-19 ecosystem to accelerate vaccine development and manufacturing

### Resource-efficient
Coordinates between different organizations/initiatives to limit duplications and ensure expertise is efficiently leveraged

<table>
<thead>
<tr>
<th>SWAT teams</th>
<th>Enabling sciences</th>
<th>Clinical Development &amp; Operations</th>
<th>Manufacturing</th>
</tr>
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<tbody>
<tr>
<td>Regulatory Advisory Group</td>
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</table>
COVAX R&D portfolio – 9 assets, 8 in clinical trials

<table>
<thead>
<tr>
<th>Candidate</th>
<th>DNA / mRNA</th>
<th>Viral vectors</th>
<th>Protein-based</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inovio INO-4800</td>
<td>Merck / Themis V591</td>
<td>Novavax NVX-CoV2373</td>
</tr>
<tr>
<td></td>
<td>Moderna mRNA-1273</td>
<td>AstraZeneca ChAdOx1-S</td>
<td>Clover SCB-2019</td>
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<tr>
<td></td>
<td>CureVac CVnCoV</td>
<td>U. of Hong Kong</td>
<td>CSL / Queensland</td>
</tr>
<tr>
<td>Location</td>
<td>USA</td>
<td>USA / Austria</td>
<td>USA</td>
</tr>
<tr>
<td></td>
<td>USA</td>
<td>UK</td>
<td>China</td>
</tr>
<tr>
<td>Antigen /</td>
<td>Full-length S protein</td>
<td>Full-length S protein</td>
<td>Full-length S protein</td>
</tr>
<tr>
<td>adjuvant</td>
<td></td>
<td>Full-length S protein</td>
<td>Receptor Binding Domain / AS03</td>
</tr>
<tr>
<td>Current</td>
<td>Phase I/II</td>
<td>Phase I</td>
<td>Phase III</td>
</tr>
<tr>
<td>phase</td>
<td></td>
<td>Phase III</td>
<td>Pre-clinical</td>
</tr>
</tbody>
</table>

**Speed**

**Scale**

**Access**
# COVID-19 Vx landscape – 48 candidates in human clinical trials

**Source:** CEPI Vx landscape

<table>
<thead>
<tr>
<th>Technology platform</th>
<th>Phase I</th>
<th>Phase I/II</th>
<th>Phase II</th>
<th>Phase IIb/III and III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viral vectors</td>
<td>Shenzhen GIMI</td>
<td>Merck / Themis - ChAdOx1-S</td>
<td>Imperial LNP-nCoV</td>
<td>AstraZeneca ChAdOx1-S</td>
</tr>
<tr>
<td></td>
<td>aAPC</td>
<td>VXA-CoV2-1</td>
<td>LNP-SaSarRNA</td>
<td>CanSino Ad5-nCoV</td>
</tr>
<tr>
<td></td>
<td>ReiTera</td>
<td>IDT MVA-SARS-2-S</td>
<td>Arcturus ARCT-021</td>
<td>Gamaleya Gam-COVID-Vac</td>
</tr>
<tr>
<td></td>
<td>Wanti / Xiamen DelNS1</td>
<td>IIBR rVSV</td>
<td>CureVac CVnCoV</td>
<td>Janssen Ad26.COV2-S</td>
</tr>
<tr>
<td>mRNA</td>
<td>Waivax Biotech ARCoV</td>
<td>Arcturus ARCT-021</td>
<td>CureVac CVnCoV</td>
<td>Moderna mRNA-1273</td>
</tr>
<tr>
<td>DNA</td>
<td>Symvivo bacTRL-Spike</td>
<td>Genexine GX-19</td>
<td>Inovio INO-4800</td>
<td>Pfizer / BioNTech BNT162</td>
</tr>
<tr>
<td>Protein-based</td>
<td>Medicago VLP</td>
<td>Finlay FINLAY-FR-2</td>
<td>Vaxine / Medotax COVAX-19</td>
<td>Zydus Cadila ZyCoV-D</td>
</tr>
<tr>
<td></td>
<td>Covaxx UB-612</td>
<td>Vaxine / Medotax COVAX-19</td>
<td>Medigen MVC-COV1901</td>
<td>Osaka / AnGes AG0301 / AG0302</td>
</tr>
<tr>
<td></td>
<td>CSL / U.Q</td>
<td>Clover SCB-2019</td>
<td>FBRLSRC EpiVac</td>
<td>Sinovac / Butantan CoronaVac</td>
</tr>
<tr>
<td>Inactivated</td>
<td>Inst. of Medical Biology / CAMS</td>
<td>SpyBio RBD</td>
<td>Bio E BECOV2</td>
<td>Sinovac / BIBP BBIBP-CorV</td>
</tr>
<tr>
<td></td>
<td>Shenzhen Kangtai</td>
<td>Anhui Zhifei RBD-Dimer</td>
<td>Novavax NVX-CoV2373</td>
<td>Bharat Biotech COVAXIN</td>
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<tr>
<td></td>
<td>RIBSP QAZCOVID-IN</td>
<td>Sichuan RBD</td>
<td></td>
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</tbody>
</table>

1. For advanced purchase agreement (APA); 2. For tech transfer, scale-out and reservation fees

Source: CEPI Vx landscape
Speed: mRNA has demonstrated an unprecedented research and development pace

COVID-19 sequence release

12th January 2020

- Moderna
- Pfizer / BioNTech
- Curveac
- Imperial
- Walvax
- Arcturus

Phase 1

March 16th

May 14th

June 19th

June 23rd

June 29th

August 11th

FSFV

July 27th

July 27th

FSFV

1st VE IA

Nov 16th

306 days total

Nov 9th

300 days total

→ September / October for case detection
**Latest results from Pfizer/BioNTech, Moderna, AstraZeneca and Gamaleya**

<table>
<thead>
<tr>
<th>Platform</th>
<th>Pfizer/BioNTech mRNA (0-21 days)</th>
<th>Moderna mRNA (0-28 days)</th>
<th>AstraZeneca ChadOx 1 vector (0-28 days ?)</th>
<th>Ad26 &gt;&gt; Ad5 prime-boost (0-21 days)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date of press release</strong></td>
<td>November 18, 2020</td>
<td>November 30, 2020</td>
<td>November 23, 2020</td>
<td>November 24, 2020</td>
</tr>
<tr>
<td><strong>Preliminary point estimate of vaccine efficacy</strong></td>
<td>95% (p&lt;0.0001)</td>
<td>94.1% (p&lt;0.0001)</td>
<td>70% (p&lt;=0.0001) (pooled) 90% and 62% (LH and HH regimens 1) (p&lt;=0.0001)</td>
<td>91.4% 28 days post dose I (7days post dose 2) Statistical significance not reported</td>
</tr>
<tr>
<td><strong>Phase 3 study enrollment</strong></td>
<td>43,661 participants to date, 41,135 of whom have received a second dose of the vaccine candidate</td>
<td>&gt;30,000 participants</td>
<td>UK trial - 12,390 subjects, 2,742 with LH (90% efficacy) UK/Brazil trial – 10,300 HH 62% efficacy</td>
<td>40,000 participants 22,000 vaccinated with the first and &gt;19,000 with second doses of the vaccine</td>
</tr>
<tr>
<td><strong>Total number of cases</strong></td>
<td>170 cases (8 in vaccine group) 10 severe cases (9 in placebo, 1 in vaccine group)</td>
<td>196 cases (11 in vaccine group) 30 severe cases (incl. 1 death), all in placebo group</td>
<td>131 cases across 2 trials No severe cases in vaccines</td>
<td>39 cases No information provided on case severity</td>
</tr>
<tr>
<td><strong>Cold chain</strong></td>
<td>-80°C, 2-8°C for up to 5 days</td>
<td>-20°C, 2-8°C for up to 30 days</td>
<td>Storage, transport and handled 2-8°C for up to 6 months</td>
<td>2 versions: Lyo 2-8°C Liquid Frozen -200°C</td>
</tr>
<tr>
<td><strong>Plans for licensure</strong></td>
<td>• US FDA for EUA • Submitted on Dec 1st: EMA • WHO PQ</td>
<td>Submitted on Nov 30th: EUA with US FDA and EMA conditional marketing authorisation</td>
<td>EMA, MHRA, PQ</td>
<td>Emergency authorization in Russia Plan for global license</td>
</tr>
</tbody>
</table>

1 LH – Low dose followed by High dose, HH – 2 doses of high dose formulation
Deep dive AstraZeneca candidate

Evaluation of current data/approach/…
Interim analysis: Pooled data from the UK and Brazilian trials.

Implications on other technology platforms/ candidates
Together with Gamaleya (Ad36 >> Ad5) first results on a viral vector vaccine platform (2-dose regimen). Oxford / AZ vaccine regimen based on ChAdOx-1 for both, 1st and 2nd dose.

Next steps/missing information
Data
- Precise VE point estimates with 95% CIs (overlap of lo-hi and hi-hi VE confidence intervals?)
- Trial group-specific immunogenicity (nAbs, ELISA, CMI)
- Influence of anti-vector immunity?
- Correlation of immune response and vaccine efficacy over time
- Stratified data (by trial / country, by age group, immunization schedule etc.) with respective 95% CIs
- Confirmative data from other Oxford / AZ trials, in particular the RSA trial as well as the Ph3 trial in the USA
- PCR results re asymptomatic infection → protection against infection?

Manufacturing
- Understand manufacturing: Oxford CTM facility versus CMO
Pfizer and BioNTech Conclude Phase 3 Study of COVID-19 Vaccine Candidate, Meeting All Primary Efficacy Endpoints

November 18, 2020

- Primary efficacy analysis demonstrates BNT162b2 to be 95% effective against COVID-19 beginning 28 days after the first dose; 170 confirmed cases of COVID-19 were evaluated, with 162 observed in the placebo group versus 8 in the vaccine group.
- Efficacy was consistent across age, gender, race and ethnicity demographics; observed efficacy in adults over 65 years of age was over 94%.
- Safety data milestone required by U.S. Food and Drug Administration (FDA) for Emergency Use Authorization (EUA) has been achieved.
- Data demonstrates vaccine was well tolerated across all populations with over 43,000 participants enrolled; no serious safety concerns observed; the only Grade 3 adverse event greater than 2% in frequency was fatigue at 3.8% and headache at 2.0%.
- Companies plan to submit within days to the FDA for EUA and share data with other regulatory agencies around the globe.
- The companies expect to produce globally up to 50 million vaccine doses in 2020 and up to 1.3 billion doses by the end of 2021.

NEW YORK and MAINZ, GERMANY, November 18, 2020 — Pfizer Inc. (NYSE: PFE) and BioNTech SE (Nasdaq: BNTX) today announced that, after conducting the final efficacy analysis in their ongoing Phase 3 study, their mRNA-based COVID-19 vaccine candidate, BNT162b2, met all of the study’s primary efficacy endpoints. Analysis of the data indicates a vaccine efficacy rate of 95% (p<0.0001) in participants without prior SARS-CoV-2 infection (first primary objective) and also in participants with and without prior SARS-CoV-2 infection (second primary objective), in each case measured from 28 days after the first dose, 7 days after the second dose. The first primary objective analysis is based on 170 cases of COVID-19, as specified in the study protocol, of which 162 cases of COVID-19 were observed in the placebo group versus 8 cases in the BNT162b2 group. Efficacy was consistent across age, gender, race and ethnicity demographics. The observed efficacy in adults over 65 years of age was over 94%.

There were 10 severe cases of COVID-19 observed in the trial, with nine of the cases occurring in the placebo group and one in the BNT162b2 vaccinated group. To date, the Data Monitoring Committee for the study has not reported any serious safety concerns related to the vaccine. A review of unblinded reactogenicity data from the final analysis which consisted of a randomized subset of at least 8,000 participants 18 years and older in the Phase 2/3 study demonstrates that the vaccine was well tolerated, with most solicited adverse events resolving shortly after vaccination. The only Grade 3 (severe) solicited adverse events greater than or equal to 2% in frequency after the first or second dose were fatigue at 3.8% and headache at 2.0% following dose 2. Consistent with earlier shared results, older adults tended to report fewer and milder solicited adverse events following vaccination.

[https://investors.biontech.de/node/8771/pdf, published 18th November 2020]
Modern Announces Primary Efficacy Analysis in Phase 3 COVE Study for Its COVID-19 Vaccine Candidate and Filing Today with U.S. FDA for Emergency Use Authorization

Primary efficacy analysis of the Phase 3 COVE study of mRNA-1273 involving 30,000 participants included 196 cases of COVID-19, of which 30 cases were severe.

Vaccine efficacy against COVID-19 was 94.1%; vaccine efficacy against severe COVID-19 was 100%

mRNA-1273 continues to be generally well tolerated; no serious safety concerns identified to date.

Phase 3 COVE Study has exceeded 2 months of median follow-up post vaccination as required by the U.S. FDA for Emergency Use Authorization (EUA).

Moderna plans today to request EUA from the U.S. FDA, to apply for a conditional marketing authorization with the European Medicines Agency (EMA) and to progress with the rolling reviews, which have already been initiated with international regulatory agencies.

FDA has told Company to expect VRBPAC meeting for mRNA-1273 likely on December 17, 2020.

CAMBRIDGE, Mass.—November 30, 2020 – Moderna, Inc. (Nasdaq: MRNA), a biotechnology company pioneering messenger RNA (mRNA) therapeutics and vaccines to create a new generation of treatments for infectious diseases, chronic conditions, and genetic disorders, today announced preliminary results of the Phase 3 COVE study of its COVID-19 vaccine candidate (mRNA-1273).
Challenges Moving Forward

• Continue placebo-controlled trials or (partially) cross-over from placebo to...
  ➢ … trial vaccine
  ➢ … other vaccine

• Correlates of Protection (CoP)
  ➢ Breakthrough cases
  ➢ Standardised assays allowing comparability across programmes / platforms

• Evidence on infection / transmission

• Heterologous prime-boost

• Clinical trial sites

• (Long-term) vaccine safety
  ➢ Pre-licensure
  ➢ Post-licensure

• Long COVID
• …

Manufacturing / supply: cold chain, 2-dose regimen: different formulations for 1st / 2nd dose, …
Placebo groups: Continue or Cross-over?

- Continue placebo groups for as long as possible
  - SWAT Workshop, Oct 28th
  - WHO consultation, Nov 6th → position paper published 2nd December
- Some developers may choose to cross-over quickly …
  - … in countries where EUA has been obtained
  - … specific risk (=trial) populations with a public health recommendation to get vaccinated (HCW, elderly, underlying medical conditions, …)
Placebo-Controlled Trials of Covid-19 Vaccines — Why We Still Need Them

WHO Ad Hoc Expert Group on the Next Steps for Covid-19 Vaccine Evaluation

Recent announcements that some Covid-19 vaccines are estimated to have high short-term efficacy provide new hope that vaccination will soon contribute to controlling the pandemic.

The initial roll-out of limited quantities of vaccines that are still investigational will provide the opportunity to ethically obtain pivotal data to improve regulatory and public health decision making, thereby increasing public and professional confidence in these and other vaccines.

After relatively short follow-up exposure to SARS-CoV-2, information on protection against clinically severe forms of Covid-19, and knowledge of any associations between the degree of protection and the recipient’s age or coexisting conditions. Even after the first vaccines become available, it will still be important to evaluate additional vaccines in while it is still feasible and ethical, ongoing studies and others that are about to start should continue to collect high-quality information using directly randomized comparisons against placebo to address as many of the data requirements as possible. While vaccine supplies are limited, available vaccines are still investigational, or public health recommendations to use those vaccines have not been made, we believe it is ethically appropriate to continue blinded follow-up of placebo recipients in existing trials and to randomly...
Placebo groups: Continue or Cross-over?

Points to consider:

• Ethical / regulatory aspects
• Vaccine-related safety events usually occur within 2-3 months post vaccination
• Unrealistic to maintain placebo-group for 12 or even 24 months anyway
• Rapid and complete cross-over would …
  • … facilitate conduct of the trial / data analysis
  • … simplify maintaining the blinding
• … increase the absolute number of breakthrough cases → accelerate establishment of a CoP
Placebo groups: Continue or Cross-over – next steps

FDA VRBPACs:
- Pfizer / BioNTech → 10th December
- Moderna → 17th December

Ongoing Ph3 trials with pivotal results available
- BioNTech / Pfizer
- Moderna
- Astra Zeneca / Oxford (…)
- Gamaleya (?)

Ph3 data expected soon
- China (Sinovac, Cansino, Sinopharm)

Pivotal Ph3 trials to start in the next few months (possibly before end of 2020)
- Novavax
- CureVac
- Clover
- SP / GSK
- BioE

Ph3 trials to start after spring 2021 (→ alternative trial design / strategy to establish VE / CoP ???)
- Merck (IAVI, Themis)
• Strong endorsement of the **neutralizing antibody titer**
  • Bob Seder, Chief, Cellular Immunology Section, Vaccine Research Center (NIH/NIAID): “*It seems like with the number of antibodies you get with vaccines, which often are well in excess of what you get with primary infection, they should be able to protect in the lower airway and potentially in the upper airway for transmission…*the glass is 95% full.*”

• Strong promotion of the **NIBSC / WHO International Standard and Reference Panel for anti-SARS-CoV-2 antibody**, expected to be endorsed in early December
• Analyse efficacy / immune response data across vaccine platform technologies
• Investigate long(er) term immune response in the context of efficacy (and safety)
  • Waning nAbs
  • Memory B-cell
  • …
### Landscape and timing of early phase III VE trials that may contribute data to correlates analyses

<table>
<thead>
<tr>
<th>Developer</th>
<th>Ph III Sites</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Jun</td>
<td>Jul</td>
</tr>
<tr>
<td>CanSino</td>
<td>SAU, PAK, RUS</td>
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<tr>
<td>Gamaleya</td>
<td>RUS, BLR, UAE, VEN, IND</td>
<td>Enrollment</td>
<td>Interim analysis</td>
</tr>
<tr>
<td>Sinopharm</td>
<td>UAE, PER, MAR, ARG, BHR, JOR, EGY</td>
<td>Enrollment</td>
<td>Interim analysis</td>
</tr>
<tr>
<td>Sinovac</td>
<td>BRA, IDN, TUR</td>
<td>Enrollment</td>
<td>Interim analysis</td>
</tr>
<tr>
<td>Pfizer</td>
<td>USA, ARG, BRA, GER, RSA</td>
<td>Enrollment</td>
<td>Interim analysis</td>
</tr>
<tr>
<td>Moderna</td>
<td>USA</td>
<td>Enrollment</td>
<td>Interim analysis</td>
</tr>
<tr>
<td>Oxford / AZ</td>
<td>BRA, UK, IND, RUS USA</td>
<td>Enrollment</td>
<td>Interim analysis</td>
</tr>
<tr>
<td>Janssen</td>
<td>USA, BRA, ARG, CHL, COL, MEX, PER, PHL, RSA, UKR</td>
<td>Enrollment</td>
<td>Interim analysis</td>
</tr>
<tr>
<td>Novavax</td>
<td>RSA, UK, MEX USA</td>
<td>Enrollment</td>
<td>Interim analysis</td>
</tr>
</tbody>
</table>

#### Assumptions:
- 6-month attack rate:
  - US, UK: 2%
  - Others: 5%
- VE: 50%
- Interim analysis: 75 cases
- Primary analysis: 150 cases
- Recruitment / vaccination: 3 mo.
- Follow up for VE endpoint: 2 mo.
- Data mgt & analysis before IA and PA: 1 mo.
- Preparation of correlates report: 2 mo.

#### How we might expedite?
- “Real time” analysis: Cases analyzed as they accrue
- Minimize time between primary and correlates analyses
- Pool data within platforms

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1. Where developers are conducting multiple Phase III studies, timeline represents site with predicted earliest readout (bolded), based on public sources (primarily clinicaltrials.gov) and modeled assumptions. 2. Actual start date and study design TBC.
CEPI Centralized Laboratory Network

Why

• To facilitate rapid evaluation, approval, and dissemination of the most effective vaccine candidates
• To standardize immunological testing of Covid-19 vaccines

What

Qualified assays:
• Full length S, RBD, N ELISA
• Pseudo virus and wild type virus neutralization assays
• IFN-γ, IL-5 ELISPOT

Who

All COVID-19 vaccine developers are invited to apply to use the Network for samples from preclinical up to clinical Phase IIa studies

Nexelis (Canada)
PHE Porton Down (UK)
Q2 Solutions (US)
NIBSC (UK)
VisMederi Srl (Italy)
Viroclinics (The Netherlands)
icddr.b (Bangladesh)
THSTI (India)

When

From October 2020

The testing service is free of charge, except for the shipment costs

To check your eligibility, complete the Sample Analysis Request Form

How

For more information: centralizedlab@cepi.net
• **Next workshop on December 17**th: Pre-/Post-Licensure Assessments of COVID-19 Vaccine Efficacy against Infection and Transmission
  - Data from ongoing (and planned) Ph3 trials re infection / transmission
  - What are the gaps?

**Approaches:**
- Pre-clinical data
- Prevention of clinical symptoms facilitating transmission (e.g. cough)
- Vaccine efficacy on asymptomatic infections, either based on
  - Weekly PCR / RDTs (sensitivity? specificity?)
  - (repeated) seroconversion to antigens not included in the vaccine, e.g. N-protein (duration of anti-N post natural infection?)
- Viral shedding in confirmed COVID-19 cases (impact of specimen / sampling technique?)
- Household transmission (sub-studies in participants with confirmed COVID-19)
- Observational studies (cluster-randomized studies, cohort studies)
Primary Immunization: Heterologous Prime-Boost

Advantages:
• May improve immune response (titre level, persistence of Ab levels, breadth of the immune response, …)
• Increase manufacturing capacity
• Reduce cost

But:
• Logistical challenge
  – Different storage conditions
  – Different application route / technique
  – What if prime or boost are out of stock?
• Different contraindication for prime-boost?
• Different tolerability profile?
• Errors:
  – Can I give vaccine B and the vaccine A?
  – Can I give vaccine A twice?
  – Can I give vaccine B twice?
Site readiness funding for efficacy studies

The purpose of these investments is to fund PDPs to identify and fund experienced clinical trial sites in LMIC countries to build their readiness for eventual implementation of COVID-19 Phase 3 clinical efficacy trials.

## Scope of Work

- Three PDPs will identify sites and distribute funds:
  - PATH
  - International Vaccine Institute
  - D'Or Institute for Research & Education

## Site Readiness Timeline (sites supported by COVAX delayed by ~2-3 months)

<table>
<thead>
<tr>
<th>Deadline</th>
<th>Activities</th>
<th></th>
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<tbody>
<tr>
<td>September 30</td>
<td>• Sites assessed and selected for funding</td>
<td></td>
</tr>
<tr>
<td>October 31</td>
<td>• Site contracts in place with selected sites</td>
<td></td>
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<tr>
<td>November 15</td>
<td>• Sites funded to address trial readiness gaps</td>
<td></td>
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<tr>
<td></td>
<td>• Funded activities include infrastructure expansion, equipment needs, staff time and training, regulatory / ethics preparation, and disease surveillance</td>
<td></td>
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<tr>
<td>December 1</td>
<td>• Site strengthening activities finalized</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PDP defines country-specific readiness criteria</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Majority of sites ready to begin enrolling subjects for Phase 3 trial</td>
<td></td>
</tr>
<tr>
<td>December 30</td>
<td>• Sites assessed as formally ready by independent evaluator</td>
<td></td>
</tr>
</tbody>
</table>
Overview of sites (selected and under current consideration)
As of December 3: 30 sites contracted with BMGF funding; 8 more under consideration with COVAX funding

Map indicates new COVID-19 cases per 100k (7-day avg) as of December 3 from Google Maps, map available here (to see incidence, must be using iOS device)
Vaccine Safety / Pharmacovigilance

- Support the developers’ needs encompassing pre-, peri- and post-authorization PV activities within COVAX with IFPMA and DCVMN input
- Support PV integration and capacities considering vaccine allocation post-authorization
- Address concerns:
  - Vaccine distribution / procurement pathways and respective PV roles and responsibilities:
    - How to ensure vaccine exposure and legal PV responsibility by product and country, when developers / manufacturers / MAHs do not know which vaccine will be used where, when, by which mechanism.
  - PV post-authorization ecosystem – global roles and responsibilities:
    - How to avoid overlaps, duplicates, omissions in PV post-authorization / post-introduction (e.g., active post-licensure activities master protocols for PASS, CEM, sentinel methods etc.)
    - How to allow data sharing, pooling outputs etc.
    - Mapping of existing platforms (HIC vs LMIC)
    - Mapping of updated recommendations and their feasibility (e.g., what data to be collected for which product in which countries / regions etc.)
  - Safety signal post-introduction:
    - Need for broader platform, not only including individual groups but also different stakeholders
    - Need for and expert advisory group for developers needs to facilitate and coordinate discussions and safe data sharing
    - Need for transparency, i.e., global overview of safety of all vaccines from different platforms
    - Causality assessment and recommendations for countries, regions, regulatory agencies and developers
Thank you for your attention!!

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https://epi.tghn.org/covax-overview/