

THE ALCIVAX

Alcimed digests all the Coronavirus science, tech, and industry news to keep you from burning out before the outbreak does.

www.alcimed.com



Edition #1 - 6 March 2020

Prevention & Treatment

Bill Gates asks whether COVID-19 is a "Once in a Century Pandemic" as efforts are already underway to develop prevention and treatment strategies. It will certainly take a great deal of cooperation.

Drugs

Fujifilm's Avigan hopes to have luck treating COVID-19 as it had with Influenza and Ebola, gaining recommendation in Japan. Other Ebola antivirals, such as Gilead's remdesivir (Phase 3) and Biocryst's Galidesivir (Phase 1) are in trials for use. Early *in vitro* testing suggests Abidol (Cold & Flu) and Darunavi (HIV), drugs may possibly be re-purposed to fight COVID-19. Takeda is also working on therapy derived from people previously infected with SARS-CoV-2.

Vaccines

Many major pharma and novel biotechs have submitted entries into the race for a vaccine against SARS-CoV-2.

Moderna is the current front runner with its candidate vaccine already shipped for trials. But CureVac, Gilead, Inovio, Sanofi Pasteur, Johnson & Johnson, Vir Biotechnology, as well as Novovax all have assets in preclinical testing. This list is also by no means exhaustive with a number of other biotech players, such as Clover and a host of academic labs also evaluate vaccine candidates.

The debate over whether any SARS-CoV-2 vaccine will actually be affordable has also already begun.

Diagnostics

Outbreak response teams across many countries have been struggling to keep up with the demands for testing, especially with PCR tests having high false negative rates and some CDC shipped kits arriving non-functional. The US FDA has vowed to speed approval of new kits to rapidly catch-up to the demand. Efforts include work by Abbot, Quiagen, Co-Diagnostics, and bioMérieux. Cepheid and Sherlock Biosciences are collaborating on a -omics diagnostic approach.



Modeling & AI



The MRC Centre for Global Infectious Disease Analysis at Imperial College London indicates that 2/3 of cases have been exported from Wuhan without detection, leaving many more outbreak chains to be detected globally.

Nowcasting, adapted from economic modeling in 2019, is being used for keeping track of present undetected cases.

African countries most in need of WHO support based on international travel patterns have also been identified.

Bluedot, Alibaba, Baidu, Tencent, Huawei and DiDi have all launched new health tech features aimed at diagnosing cases and finding a vaccine for the coronavirus. Some of the products include cloud computing-based analysis of medical images to online doctor consultations.

Biofourmis is using remote monitoring to predict physiological biomarkers of COVID-19, while InferVision's InferRead CT Pneumonia software is improving radiological detection. AI-based diagnostic tools do have their limits if algorithms aren't updated regularly.

Big data analytics has been deployed in Taiwan to aid with disease control including public health announcements.

Med Tech

There has all been a **significant investment** in technology to solve the various challenges presented by the outbreak. Everything from disinfecting robots, smart helmets, thermal camera-equipped drones and advanced facial recognition software are all being deployed in the fight against COVID-19 at the heart of the outbreak in China.

New technology may significantly **reduce diagnostic time** of coronavirus: A new technology, based on a combination of optics and magnetic particles, can rapidly test 100 samples of patients potentially infected with the virus and reduce the diagnostic time to approximately **15 minutes**. Being able to deploy technology of this kind would be instrumental to being able to keep up with the **ever increasing demands for testing**.

In the early days of the outbreak, Wuhan made incredible investments in medical infrastructure to meet the dramatic increase in hospital beds. This additional 1,000 beds also aided in the effort for public health institutions to monitor the progress of the outbreak and coordinate with the industry on outbreak response.

Analysis of the patient pathway in Wuhan reveals the importance of only screening patients to prevent overloading local hospitals. Hospitals can accomplish this and minimize contact by using telemedicine.

Disruption

Apparently the only thing that travels faster than SARS-CoV-2 is the **panic on social media**. To combat the large amount of misinformation, a Coronavirus fact-checking collaboration has brought together in 40 countries and may be the largest in history.

The travel industry is also seeing it's **biggest disruption since 9/11**. Many airlines are offering incentives such as no change fees to ease people back into traveling, but it is unclear whether this will make an impact especially as whole flight routes are canceled.

Gig workers for **tech disruptors** such as Uber, Lyft, Instacart, and DoorDash are rapidly questioning whether such platforms may not be **sustainable or safe outlets** for employment during an outbreak.

Industry Impact

The **biggest industrial loser is the Oil & Gas Industry**, as the impact of the outbreak on other industries drives down fuel demand. As many industries rely on Chinese goods for chemical and raw materials, no industry is safe from impact. This supply chain disruptions could have long lasting effects.

Big pharma companies like **Merck, Pfizer and Astra Zeneca** warn that the coronavirus might impact supplies for certain drugs and potentially sales, due to the raw material shortage.

The **protective mask** market has seen a huge boom, with industry leaders such as **Foxconn** having already shifted production from iPhones to face masks.



All Joking Aside:

COVID-19 has proven to be too much for **007**, as the new James Bond film is delayed 6 months and the Mulan premier was canceled. But the Louvre is back open.

How much virus do people shed with SARS-CoV-2? Enough to cause low level positive tests in their family pets. Hong Kong has already placed one dog in quarantine.

Fun is now dangerous to one's health as Venice made the decision to cancel Carnival and the Summer Olympics may be next.

Want to read more about COVID-19? Check our Logbook articles!

Diagnostic kits



COVID-19 diagnostic kits: A game-changer for the disease transmission in China?

Patient pathway



The patient pathway of COVID-19: 4 key challenges to overcome in Wuhan

The outbreak impact



Coronavirus outbreak: the impact of the healthcare industry to tackle the epidemic

Wuhan infrastructures



How is Wuhan, China fighting with coronavirus in terms of medical infrastructure?