4

DEFENSE INTELLIGENCE AGENCY

U-20-0002/OSG **April 16, 2020**

(U) Office of the Surgeon General (OSG): COVID-19 Vaccine and Therapy Development Update

(U) This paper responds to a Director request for information on Vaccine and Therapy Development against COVID-19 during the 1700 CICG Sync meeting on 08 April 2020.

(U) Potential Treatments for COVID-19: The current need for a therapeutic treatment for COVID-19 is paramount and we are seeing large scale public and private sector investment and engagement. A vaccine to COVID-19 is likely to be the most favorable method of controlling the current pandemic and preventing further COVID-19 spread. Potential treatments, via antivirals or other methodologies, is needed to treat those already infected with COVID-19. The timelines for both a publically available vaccine(s) and effective COVID-19 treatments are currently unknown, with the FDA's COVID-19 Treatment Accelerated Program likely to accelerate future availability.

(U) Vaccines

(U) Vaccine(s) are likely our best method for controlling and suppressing the spread of the COVID-19 pandemic. There are numerous government and private institutes involved in the research and development of COVID-19 vaccines. The timeline to a publicly available vaccine is unknown but it is likely to be at least a minimum of 18 months.

- (U) As of 14 April, 2020, according to academic and open source reporting, there are 79 potential candidate vaccines in various stages of research and development. Currently, 3 of the candidate vaccines are undergoing Phase 1 of 3 for vaccine development, with an additional 12 vaccines slated to begin Phase 1 (human clinical trials) within the next 12 months

- (U) The ongoing COVID-19 pandemic will likely increase the demand for vaccine development. Vaccine development requires significant financial support and a tolerance for high rates of failure. The COVID-19 pandemic will likely lead to high levels of government support, private sector engagement, and increasing public demand that will offset traditional barriers.

- (U) The ongoing COVID-19 pandemic will likely expedite candidate vaccine testing and approval. Vaccine trials require large and diverse population samples size to ensure proper testing of the efficacy and safety of candidate vaccines. The global nature of the COVID-19

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pandemic and continued presence of large cohorts of infected individuals will ensure these needs are met.

(U) Antivirals

(U) Antivirals are drugs that are created to attack the virus and may do so in a variety of ways, such as inhibiting viral replication or preventing viral entry in the cell.

- (U) Gilead Corporation's Remdesivir is receiving the most media attention likely due to the World Health Organizations public show of support. Remdesivir was originally developed as a treatment for Ebola, and is now in clinical trials as a treatment for COVID-19. Previously developed therapeutics, such as Remdesivir, offer a faster path to market and are likely to attract continued interest.

- (U) As of 15 April, according to scientific reporting, there are at least 13 different anti-viral candidates being studied for their potential repurposing as a COVID-19 treatment. This number is likely to increase as scientist identify more viable therapeutic candidates.

(U) Human Antibody Therapy

(U) Human Antibody Therapy is the treatment of COVID-19 via antibodies harvested from the plasma of recovered COVID-19 patients. This type of treatment holds promise but is likely to be used with caution due to concerns of potentially serious side effects.

(U) **Engineered Antibodies**

(U) Engineered Antibodies are manufactured antibodies that are designed to be an effective treatment for COVID-19 without the risk associated with antibodies harvested from recovered patients. Currently, this an ongoing area of research and there is no viable engineered antibody treatment for COVID-19 infection at this time.

(U) Drug Therapies

(U) Drug therapy is currently an area of ongoing research for potential COVID-19 treatment. Hydroxychloroquine has recently gained a lot of public attention as a potential treatment for COVID-19. As of 15 April, based on scientific reporting, there is no conclusive evidence to support the efficacy of this treatment. Common side effects of Hydroxychloroquine includes vomiting, diarrhea, stomach cramps, skin rash, headache, dizziness, and vision related toxicity. Hydroxychloroquine side effects can be serious and sometimes fatal, with reported side effecting including cardiac arrhythmia, bronchospasm, angioedema, and seizures.

cc: DIA Dep DIR
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