

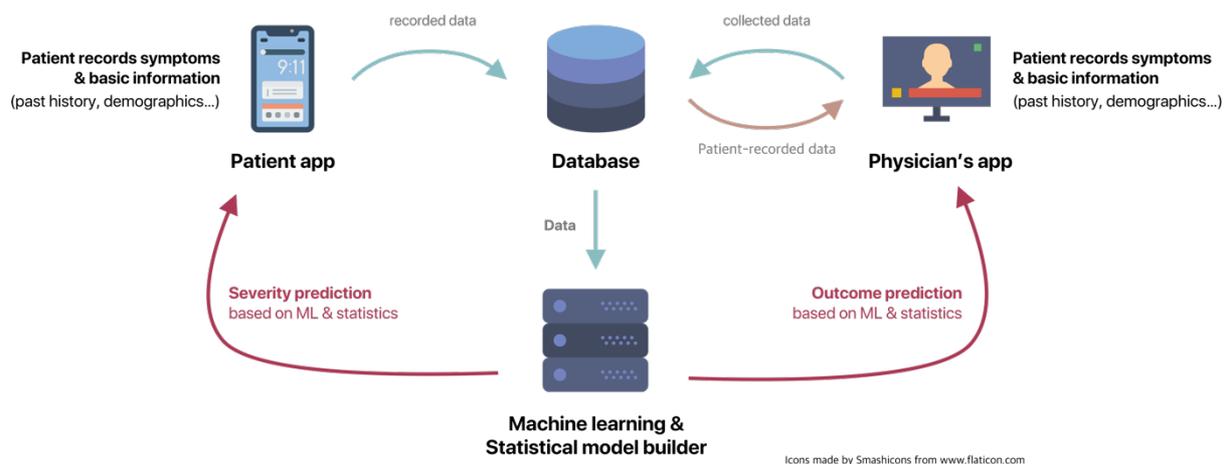
## BACKGROUND

As the virus spreads to the entire world, fatality became closely related with the capacity of the medical resources, and the appropriate allocation of medical resources, or choosing the right patient for hospital admission became more and more important. Patient triage/selection algorithms are currently expert opinion based, and not specific to the coronavirus itself. However, considering the recent findings that the virus is unique and unlike any other virus previously known, concerns may arise to the effectiveness of the traditional triage models.

In this light, the CDC recommended the facilities to develop protocols that can triage and access patients quickly, determine algorithms to identify patients who can be managed by telephone and advised to stay home and patients who need to be sent for emergency care. Data collection and clinical trials are on the way to decisively understand the characteristics of the virus, but the time-consuming manner of the methods are not adequate for the current situation.

DOCL Project's new platform delivers continuously updated evidence-based decision support system to 1) assess which patient needs hospital admission, 2) monitors patient with outcome prediction model to seek which patients will need professional care, and 3) utilizes data acquired by users who use the service (both the patients and the medical professionals) to further enhance the decision support algorithm.

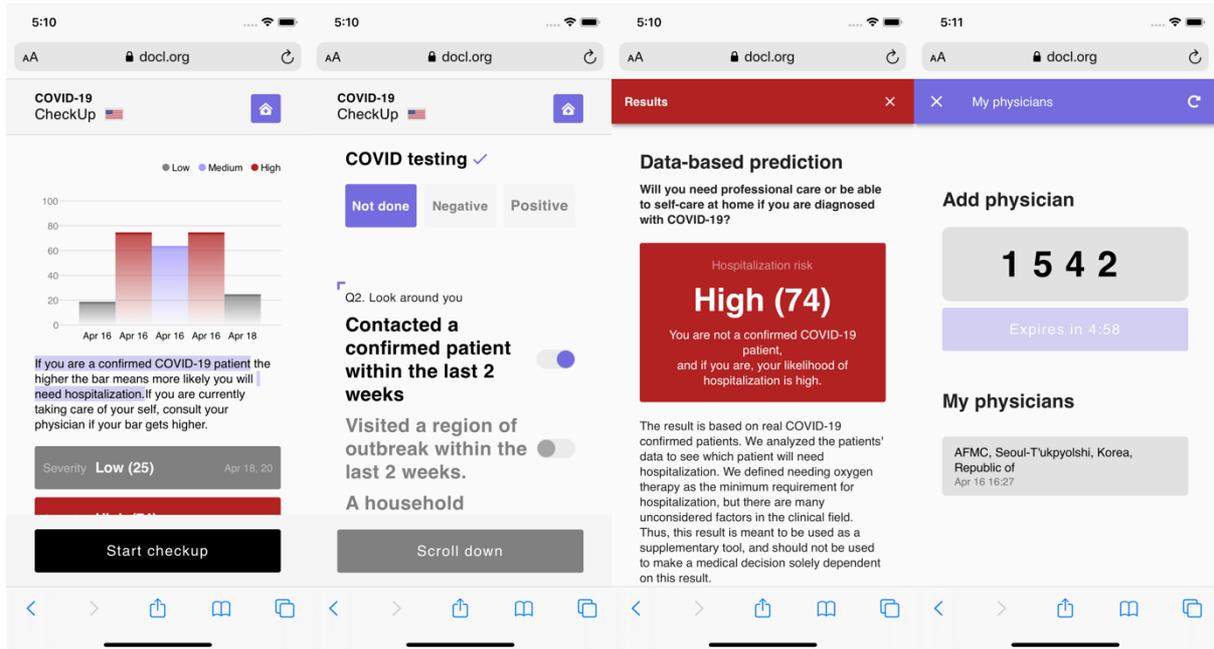
## HOW DOES IT WORK?



## Patient's CheckUp App

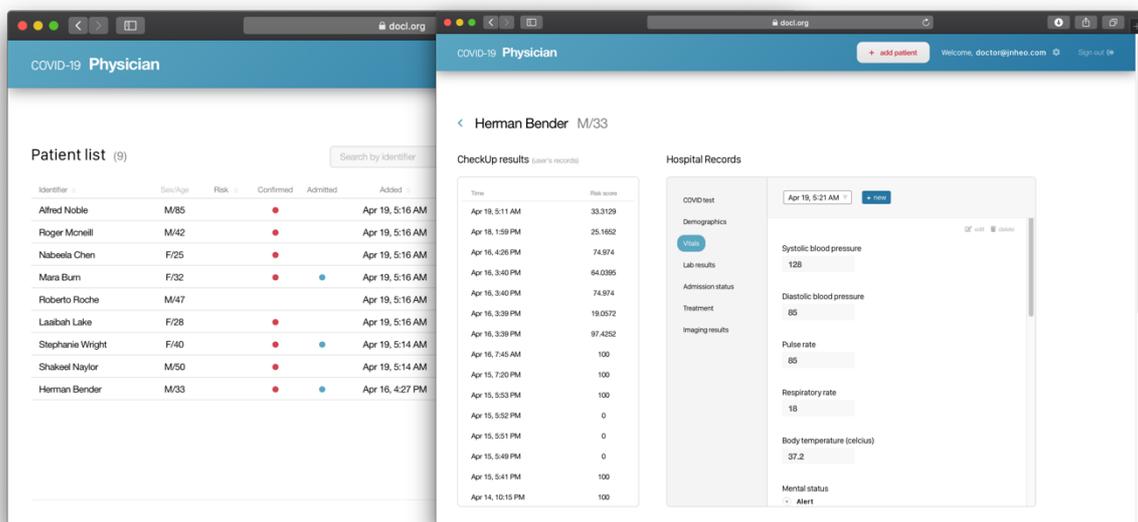
The most important feature of the CheckUp app, which is intended for the patients, is that it presents the user's outcome prediction based on provided demographics and symptoms. The prediction model is an evidence-based model initially developed from Korean patient's data and is continuously improved from the data acquired from the app itself. The initial model has an accuracy of ~95%<sup>1</sup>. The app is designed to 1) help the patient decide if he/she should consult to a doctor, by presenting the outcome prediction result based on patient's demographics and symptoms 2) warns the patient if his/her symptom becomes too dangerous even if they have been instructed to stay home initially, and 3) to keep track and share their status to their physician, if previously appointed.

<sup>1</sup> AUC(Area under the receiver operated characteristic curve) 0.955 at 10 days of the survival estimation. The results are under review for publication.



## Physician's App

The new Physician's app is designed to 1) acquire variables generated at the clinical setting, 2) check up on the patient without direct contact through the data received from the patient app, and 3) process the received data (from the patient and from the clinic) to provide the advanced outcome prediction result. The outcome prediction result is more sophisticated than the result from the Patient's app since the model was provided with more data acquired from the clinical setting.



## Expected results

Even though the spread of the disease is catastrophic, developed countries will fight through the disease with the advanced medical infrastructure. However, the disease is starting to spread through the developing countries like the countries in Africa, Southeast Asia, and South America. There is nothing else we can do to save these worlds, but to share the whatever we learned through the horrible experience.

Our platform, which consists of two apps for both the patient and the physician, collects data of unprecedented quality, and in exchange provides the results from the outcome prediction model, which is continuously updated from the collected data. The platform will guide the patients and the physicians to focus on the most critical patient, and at the same time monitor the patients without having to contact them directly. The effective management of medical resources using our platform is expected to decrease mortality and provide guidance to self-care for people without appropriate medical care.

Our services are completely free of charge, and can be accessed through the web, <https://docl.org>.

**DOCL Project**

<https://docl.org>

*JOONNYUNG HEO, MD, Principal Investigator, The Armed Forces Medical Command, Seoul, S. Korea*

*SANGCHUL YOON, MD, PhD, Investigator, Yonsei University College of Medicine, Dept. Medical Humanities and Social Sciences, Seoul, S. Korea.*

*YU RANG Park, PhD, Investigator, Yonsei University College of Medicine, Dept. Biomedical Systems Informatics, Seoul, S. Korea.*