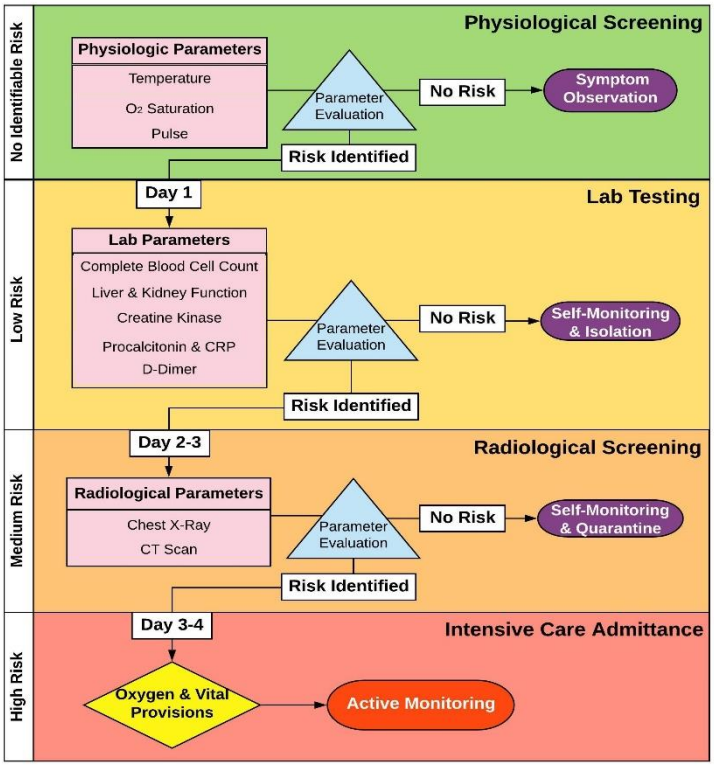
COVID-19 Forward Triage Using Physiologic Parameters From Paired Sensors and Patient Reported Symptoms

Sorting Patients for Pre-Emergency Department Exposure

Recently recognized as a worldwide pandemic, COVID-19 has brought forth critical repercussions and revealed alarming disparities within the US healthcare infrastructure. Having no determined cure, monitoring and containment of the disease remain the most effective courses of action. EagleForce Health (EFH) has modeled the disease progression and stratified an early surveillance and containment response that takes advantage of an application previously funded by the National Institute of Health. The description of the basis of the surveillance methodology and the Medication and Immunization Tracking Initiative (MIMI-Rx) is presented below:

In a recently published study of COVID-19 patients in Wuhan, China, the initial indicators of infection were elevated temperature, followed by increased heart rate and respiratory rate, along with a decrease in oxygen saturation levels. The establishment of these changes early on can identify potential cases and lead to appropriate interventions.



Intelligent Triage Categorization. EagleForce Health, 2020.

Hospitalized patients developed a variety of hematological and blood chemistry abnormalities, including elevated white blood cell counts, D-dimer, C-reactive protein, creatine kinase, procalcitonin and creatine. These are well established tests that can potentially be used as a secondary test in the absence of a COVID-19 test. All study patients showed bilateral involvement of lung fields in their chest CT scan. Many health systems globally may not be able to provide CT scans, and therefore temperature changes and oxygen changes can serve as an early indication of COVID-19 infection. In the Wuhan study the median time from onset of symptoms to ICU admission was 10 days. This would allow efficient use of COVID-19 screening tests, as well as identification and treatment of other illnesses. This method could also trigger the use of early detection "one day/dose" treatments for the flu. Should the one-day treatment work, this method has served to potentially alleviated the secondary escalation for COVID-19 analysis and treatment

MIMI-Rx is customized for use within the clinical setting and is established to support the early alert clinical symptom baseline. This baseline is applicable in elderly adults, persons with co-morbidities, and groups of people in close contact (school children), and operates by analyzing changes in body temperature levels that suggest progression to clinically-defined fever, plus associated oxygen saturation (O_2 sat) level changes. The products of the aforementioned operations

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can be utilized in establishing simple and effective first alerts to COVID-19 and other flu symptoms.

Intelligent triage categorization operates as evidence based alert component of the MIMI-Rx profile, abiding by the CDC-mandated self-monitoring and categorization policies. The platform also serves as an exemplar of the functionality that the platform brings to first responders in a nationwide pandemic.

The EFH solution aims to provide a mature patented, real-time, interoperable analytics and secure platform that uniquely stratifies an individual, providing assessment of clinical tests, screenings, and triage categorization. Constructed using interoperability as a foundational pillar, interstate and intrastate data streaming takes place across a centralized-cloud platform, enabling disparate system integration, and eliminating redundancy of incomplete information. The Patient is able to download the MIMI-Rx application for free from either the Google or Apple application stores.

As we know, nationwide efforts to mitigate the outbreak have been met by communicational and technological challenges stemming from the lack of care coordination across the care continuum as evidenced through the cumbersome testing methods and inefficient data collection processes currently in use. The critical necessity for a scalable, interoperable data collection, analysis and evidence based alert solution capable of early identification, self-monitoring, and triage categorization remains the single highest priority in the wake of this pandemic that will ward off the potential overrun of the hospital and other clinical enterprise.