Stopping Pandemics in their Tracks

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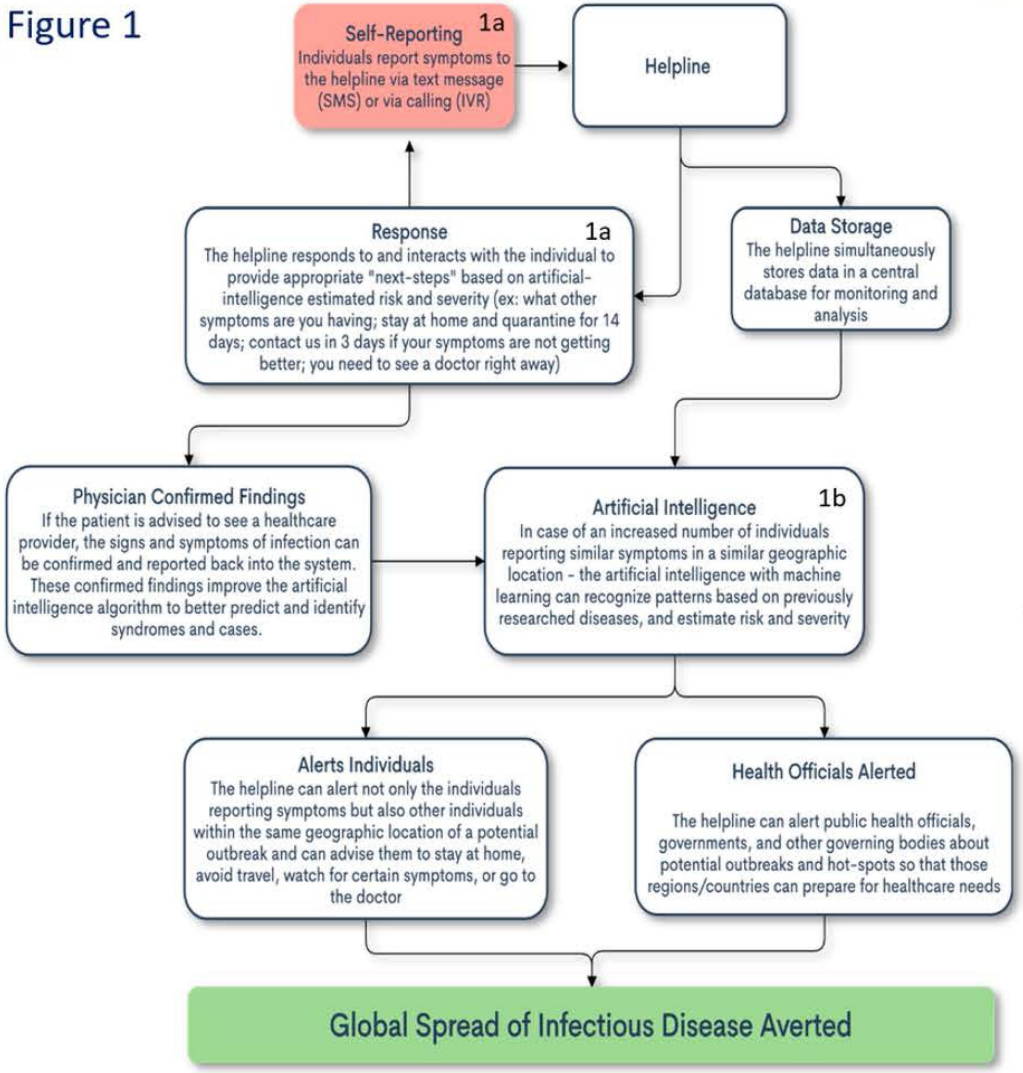
Introduction

The proposed solution is a self-reported, symptoms-based syndromic surveillance system that is universal, interactive, integrative, and combined with artificial intelligence. Once developed, this framework has the potential to stop any future epidemics and pandemic in urban and rural areas worldwide.

Methods

We conducted a thorough literature review of existing short message service (SMS, text messaging) and interactive voice response (IVR, calling) surveillance systems, identified and addressed the shortcomings. We have concluded that many of the previous syndromic surveillance models suffer from data fragmentation, thus hindering their scalability to a global setting.

Figure 1



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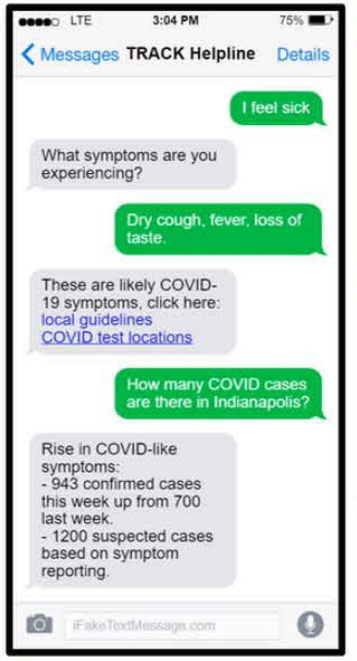

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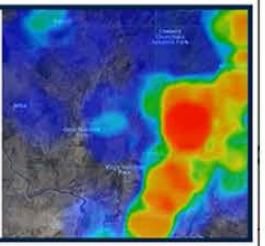
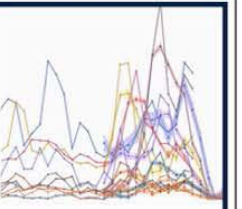
Analytics

Advanced analytical and visualization tools help users quickly extract actionable insights from their data. Visualizations include fully customizable, continuously updating dashboards, interactive charts, time series and geospatial analyses, scorecards and more.



Machine Learning

Our analysis framework applies machine learning and other statistical techniques to generate accurate predictions and identify data anomalies.



QR CODE

Follow code for New York Academy of Science presentation: Top-10 finalist, Syndromic Surveillance challenge.

Proposed Model

This framework (figure 1) outlines the concept of our proposed model. The AI will collect additional information that will help in triaging:

- Age, sex, racial or ethnic background, BMI, past medical history, family history, surgical history, and/or social history (demographical information).
- Develop a demographical subtype in the AI's database.
- Patients will be stratified into high- and low-risk populations.

Conclusion

This proposal will allow decision-making officials and healthcare professionals to robustly identify local disease outbreaks, thus thwarting unchecked spread while preventing a breakdown in the supply chain. Automation of healthcare team reported findings will enable predictive diagnosis and prognosis, thereby allocating medical resources appropriately. Disease-specific databases will benefit from real-time refinement, then utilizable for prospective case mitigation, medical management, and pathogen containment.