Pandemic influenza warning in A hospital modeling and simulating

Type: project based on DEVS
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Problem Statement:
Every year, there are different kind of season influenza in USA or other countries. Some flus can be prevented by flu vaccine. Some flus can be treatment by medicine after couple weeks. But some flus are lethal flu and lead out breaking in national wide or worldwide. Such type of lethal influenza can be asymptomatic for a period of time, or it can act as common cold in early stage. However, the condition of the flu can develop rapidly and deteriorate quickly. It can even cause death. Finally, if there is no effective warning for the people, such pandemic influenza can lead more deaths after it’s spreading out of the whole country. For example: in the winter season of 2017-2018, the pandemic flu with H3N2 and H1N1 virus covered 49 states. There are nearly 12,000 people receive flu treatment in hospital. And there are a total of 114 influenza-associated pediatric deaths for the 2017-2018 flu season reported to CDC until February 2018. [1] We hope to set up a pandemic influenza warning system in the hospital for the normal people, not only used by the medical staff or the epidemiologist. We can implant flu warning to the weather app, acting as pollen allergy warning system in the normal app. So the people are easy to know about the flu situation and decide to take what kind of prevention or treatment in next step.

Modeling and simulation goals:
The goal of the project is to distinguish the normal season flu and lethal pandemic flu, and set up the pandemic influenza warning system to the normal people: flu in the local place, flu reason (virus type), sign or symptoms, diagnosis, prevention and treatment etc. We will use different color for the warning level: green, yellow, orange and red based on the condition of flu spreading and death rate.

(Basic diagnose background: flu reported by the hospital.)
Input: number of deaths per week reported in hospital
Output: flu alert message

No deaths – Warning “Passive”.
If deaths occur – Warning “Active”. (This would depend on the time duration that we are considering for our analysis and number of deaths reported during the same.)
References:
1. Situation Update: Summary of Weekly FluView Report, CDC
   https://www.cdc.gov/flu/weekly/summary.htm
3. Strategies for mitigating an influenza pandemic, NM Ferguson, DAT Cummings, C Fraser, JC Cajka…, Nature volume 442, pages 448–452, 2006