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Interim Report

Flu Vaccine

Our project is focusing on the efficiency of the flu vaccine and if it possible for the Flu vaccine to cover more strains. Currently the flu vaccine reduces the risk of catching the influenza virus by 50% to 60%,but only if you vaccinate against the strain covered in the vaccine for that year. Our project focuses on all the influenza strains that the CDC has record of people testing positive for 2015-2016. From 2006 to 2007 flu related deaths ranged from 3,000 to 49,000. Many people believe that the flu vaccine gives them the flu or that the flu vaccine does not work because of it being 50% to 60% effective to preventing the flu.

If the Flu vaccine was more efficient we believe that people would be more willing to get the Flu vaccine. How we plan to solve this problem computationally is by making a model of how the most common flu is passed around in a small community of people. Making a model of what happens when a small group of vaccinated people come in contact with people with the flu strain that the vaccine covers. Then how fast the flu can pass in a group of people who are not vaccinated against the flu. We did a survey for students at our school to make a model based on the answers we get and an estimated amount of students we have at our school.

We do know that the flu can be spread to people if the infected person is standing within 6 feet of the infected person. The flu can also be caught if the infected person left droplets with the flu virus and a uninfected person touched it and touched their nose or mouth. But the flu can be

passed Day one of being infected with the flu without showing symptoms. The Flu can be caught at any season of the year. The cold weather just brings people inside more so germs spread faster.

What we are doing is to make a computerized model of students in our school. How many got vaccinated against the flu and how many did not. How fast a flu strain will spread if it's introduced to the vaccinated students, when it's introduced into the unvaccinated students, and how fast will it spread with both unvaccinated and vaccinated students. The vaccinated students would give us an answer of how effective the vaccine was to protect people against the flu. So far what we have researched is studies done and research involving the flu vaccine. We have been looking at the CDC weekly report on the influenza. We also found a interesting article about a group of vaccine researchers that are researching in developing a Universal Flu vaccine that would induce a high enough titters for this cross-protective immune response. Influenza virus mutate and makes it harder for vaccines to match the influenza virus. We also found that a research team led by Dr. Yoshihiro have been simulating influenza strain mutations before it happened. That their can help predict mutations and develop a better flu vaccine.

Source: universal flu vaccine on the making <http://www.medscape.com/viewarticle/865154>

Cross-protective immunity to influenza A virus

<https://www.ncbi.nlm.nih.gov/pubmed/21087110>

Flu view <http://gis.cdc.gov/grasp/fluview/fluportaldashboard.html> ,

Chart data for the flu http://www.cdc.gov/flu/weekly/weeklyarchives2015-2016/data/whoAllregt_cl39.html

Strategies for a better seasonal flu vaccine

<https://www.nih.gov/news-events/nih-research-matters/strategy-may-improve-seasonal-flu-vaccines>