UNIVERSITÉ DE GENÈVE

PRESS RELEASE

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A participatory system to track down the flu

In 2016, researchers from UNIGE and ETHZ launched grippenet.ch to provide participatory monitoring of Influenza. Early results open new perspectives for the prevention of epidemics

The flu is a major public health issue, resulting in issues such as increased medical care consumption, absenteeism and mortality, to name a few. Along with several partners, researchers from the University of Geneva (UNIGE), Switzerland, developed grippenet.ch, the Swiss component of a European initiative for participatory influenza surveillance called Influenzanet. Contrary to Sentinella, the epidemiological surveillance system active in Switzerland since 1986, the data is not obtained through the filter of health practitioners, but directly from patients. Early results show that this novel system could prove a useful supplemental tool for early detection and monitoring of infectious outbreaks, through increased speed and flexibility. In addition to this, it could allow scientists to better understand the transmission of the virus and how human behavioral responses can help to contain epidemics.

Each year in Switzerland, the flu causes from 112'000 to 275'000 medical consultations, as well as an excess of mortality rate among the elderly and an additional 97 million francs in costs to the health care system. Absenteeism-related costs amount to an additional 200 million francs. These reasons motivated the start of the Grippenet project in December 2016, allowing for the monitoring of influenza epidemics though the direct action of Swiss citizens and residents. Based on the European Influenzanet platform launched in 2003 in the Netherlands and Belgium, grippenet.ch was implemented and launched in Switzerland by the Institute of Global Health of the Faculty of Medicine at UNIGE, the Professorship of Computational Social Sciences (ETH, Zürich), the Digital Epidemiology Lab (EPFL, Lausanne) and the National Reference Center for Influenza (HUG, Geneva).

"The principle is very simple. After an anonymous and free registration on grippenet.ch, participants receive a short survey on a weekly basis, enquiring whether or not they have suffered from potentially flu-related symptoms", explains Aude Richard, medical doctor at the Institute of Global Health at the Faculty of Medicine of UNIGE and coordinator for the French speaking Grippenet platform. Throughout the winter of 2016-2017, 342 Swiss residents informed researchers about the presence or absence of flu-like symptoms both in themselves and in those living with them.

The website is also an educational and information platform. "The more aware and informed people are, the better they can protect themselves", says Dirk Helbing, Professor of Computational Social Science at the ETH Zurich. "I am thinking, for example, about measures such as vaccination, avoiding contact with crowds, hand hygiene and the reduction of physical contacts with others." Contributors can view a map of Switzerland to see the flu levels reported by the community in different cantons, including their own, as well as other statistics on flu incidence. They can also

Antoine Flahault, Director of the Institute of Global Health at the Faculty of Medicine of UNIGE.

High definition pictures

access more information about influenza and preventive measures. “Our ultimate goal is to create a tool that gives people accurate information about their exposure to flu so that they have the power to take smart actions to protect themselves and avoid spreading the flu to others”, explains Olivia Woolley, who leads Grippenet.ch at ETH Zurich.

Taking a leap towards this goal, the grippenet.ch team just launched a state-of-the-art smartphone app, initiating a research study to develop artificial intelligence methods to predict flu exposure through sensor data collected with the utmost respect for user privacy. This app and study are developped in collaboration with the the Computational Epidemiology Laboratory (ISI, Turin), and the center for Embeded Intelligence (DFKI, Germany).

Grippenet.ch, a complement to the Sentinella system

In Switzerland, the Sentinella epidemiological surveillance system has been monitoring flu outbreaks since 1986. Based on weekly reports by doctors, it provides a continuous observation of influenza viruses circulating within the country. Sentinella works in the surveillance of many acute communicable diseases and is used for research in general medicine. Since its start in 1986, 150 to 250 GPs have participated voluntarily in the Sentinella system each year.

If Sentinella is a well-established and effective system, then why was grippenet.ch developed? “Unlike the Sentinella network that relies on medical practitioners for the declaration of cases of flu, grippenet.ch gets its data directly from the population”, explains Antoine Flahault, Director of the Institute of Global Health at the Faculty of Medicine of UNIGE. This provides us with a surveillance system that could potentially be faster and more flexible than Sentinella, and allows for direct international comparisons of flu epidemics, since the data is directly comparable with other European countries. In addition, not everyone who gets sick with the flu sees a doctor, which is why grippenet.ch is complementary to Sentinella. “The comparison of the two systems gives us important insights for the planning and prioritization of the public health epidemic response, allowing us, for example, to estimate the percentage of people who do not consult a doctor in case of flu-like symptoms”, adds Antoine Flahault.

A precursor system

Thanks to demographic and geographical localization data allowing greater insight into the causes and localization of rising disease clusters, grippenet.ch could give rise to novel research on the transmission and risk factors of influenza epidemics. “Ultimately, our hope is to better prevent and control the course of the epidemic, as well as its negative consequences”, explains Antoine Flahault. In the future, this precursor system could be extended to the surveillance of other diseases, including emerging diseases, providing more reactive data than current surveillance systems, thus allowing for earlier action.

If you wish to help grippenet.ch by participating in the project, you can register here.

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