

Early warning: Internet surveillance predicts disease outbreak

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(Medical Xpress)—The habit of Googling for an online diagnosis before visiting a GP can provide early warning of an infectious disease epidemic.

In a new study published in *Lancet Infectious Diseases*, internet-based surveillance has been found to detect infectious diseases such as Dengue Fever and Influenza up to two weeks earlier than traditional surveillance methods.

Senior author of the paper titled Internet-based [surveillance systems](#) for monitoring emerging infectious diseases, QUT Senior Research Fellow Dr Wenbiao Hu said when investigating the occurrence of epidemics, spikes in searches for information about infectious diseases could accurately predict outbreaks of that disease.

Dr Hu, based at QUT's Institute for Health and Biomedical Innovation, said there was often a lag time of two weeks before traditional surveillance methods could detect an emerging infectious disease.

"This is because traditional surveillance relies on the patient recognising the symptoms and seeking treatment before diagnosis, along with the time taken for health professionals to alert authorities through their health networks," Dr Hu said.

"In contrast, digital surveillance can provide real-time detection of epidemics."

Dr Hu said the study found by using digital surveillance through search engine algorithms such as Google Trends and Google Insights, detecting the 2005-06 avian influenza outbreak "Bird Flu" would have been possible between one and two weeks earlier than official surveillance reports.

"In another example, a digital data collection network was found to be able to detect the SARS outbreak more than two months before the first publications by the World Health Organisation (WHO)," he said.

"Early detection means early warning and that can help reduce or contain an epidemic, as well alert public health authorities to ensure risk management strategies such as the provision of adequate medication are implemented."

Dr Hu said the study found social media and micoblogs including Twitter and Facebook could also be effective in detecting disease outbreaks.

"There is the potential for digital technology to revolutionise emerging infectious disease surveillance," he said.

"While this study has looked at the effectiveness of digital surveillance systems retrospectively, Australia is well-placed to take the lead in developing a real-time infectious disease warning surveillance system.

"The next step would be to combine the approaches currently available such as social media, aggregator websites and search engines, along with other factors such as climate and temperature, and develop a real-time infectious disease predictor."

He said it was also important for future research to explore ways to apply internet-based [surveillance](#) systems on a global scale.

"The international nature of emerging [infectious diseases](#) combined with the globalisation of travel and trade, have increased the interconnectedness of all countries and means detecting, monitoring and controlling these diseases is a global concern."

More information: "Internet-based surveillance systems for monitoring emerging infectious diseases." Gabriel J Milinovich PhD, Prof Gail M Williams PhD, Prof Archie C A Clements PhD, Wenbiao Hu PhD. *The Lancet Infectious Diseases* - 28 November 2013. [DOI: 10.1016/S1473-3099\(13\)70244-5](https://doi.org/10.1016/S1473-3099(13)70244-5)

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