

Facebook and Twitter may yield clues to preventing the spread of disease

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Facebook and Twitter could provide vital clues to control infectious diseases by using mathematical models to understand how we respond socially to biological contagions.

Cold and flu season prompts society to find ways to prevent the spread of disease through measures like vaccination all the way through to covering our mouths when we cough and staying in bed. These social responses are much more difficult to predict than the way biological contagion will evolve, but new methods are being developed to do just that.

Published this week in *Science*, Chris Bauch, a Professor of Applied Mathematics at the University of Waterloo, and co-author Alison Galvani from Yale University, review social factors in epidemiology. They suggest that the biological spread of diseases is intertwined with how society responds to those contagions.

"Social media and other data sources can be tapped for insights into how people will react when faced with a new disease control measure or the threat of infectious disease," said Professor Bauch. "We can create models from this data that allows researchers to observe how social contagion networks interact with better-known biological contagion networks."

Researchers found that—like disease—ideas, sentiments and information can also be contagious. They looked at examples such as

pediatric vaccine coverage, public health communications aimed at reducing the spread of infection and acceptance of quarantine during the SARS outbreak.

"Predictive modelling isn't perfect, but it can help gauge how people will respond to [disease control](#) measures," said Professor Bauch, who works with epidemiologists and population health researchers. "All sorts of variables can effect something as complex as the spread of disease. This is why it's important to bring a variety of perspectives into play, not just the biological considerations."

Bauch will continue to study the intersection of theory and data in order to build better predictive models. Understanding how [social contagion](#) networks and biological contagion networks interact with one another can help [public health](#) officials prepare to save lives in the case of future disease outbreaks.

More information: "Social Factors in Epidemiology," by C.T. Bauch, *Science*, [DOI: 10.1126/science.1244492](https://doi.org/10.1126/science.1244492)

Provided by University of Waterloo

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