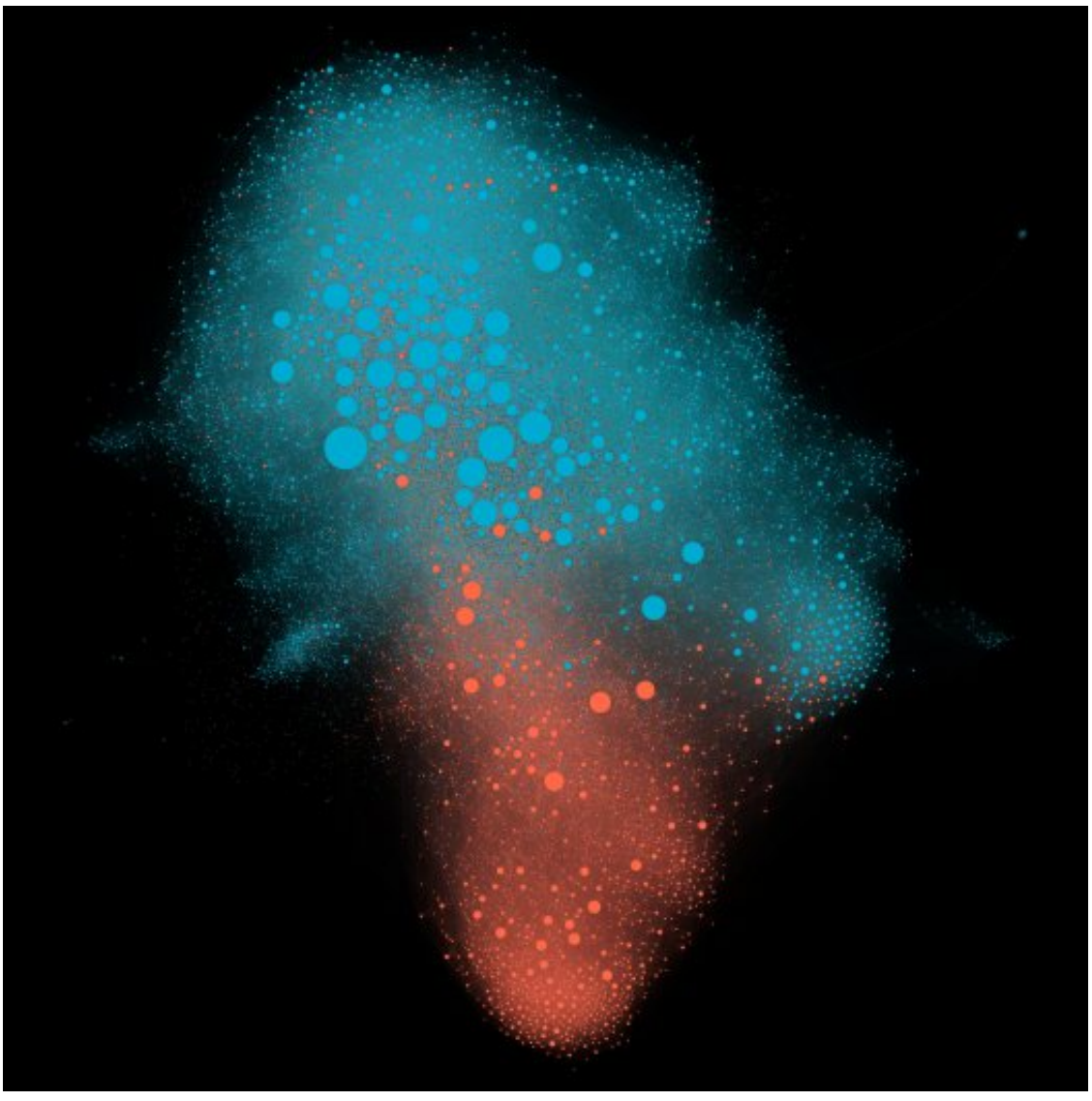
New study shows how the echo chamber effect amplifies misinformation about HPV vaccines online

June 11 2015



A network of 30,621 Twitter users who posted tweets about HPV vaccines in a

New research into the spread of misinformation on social media shows that 24 per cent of the messages posted on Twitter about human papillomavirus (HPV) vaccines could be classified as anti-vaccine, and many Twitter users were more likely to be exposed to negative opinions than to other types of information like clinical evidence or communications from public health organisations.

Dr Adam Dunn, from the Australian Institute of Health Innovation in Macquarie University, led the study: "We found that we could accurately predict which tweets about HPV vaccines were anti-vaccine without needing to look at the text of the tweet or any webpage links, and just using information about social connections."

The study was the first to examine the association between the exposure and expression of anti-vaccine opinions using the social network structure on Twitter. Six months of data covered 83,551 tweets from 30,621 users connected through 957,865 social connections. About 80 per cent of the tweets were linked to external webpages including news articles, blogs, public health organisation webpages, and occasionally peer-reviewed articles.

The results of the study showed a strong link between the information to which users are exposed, and the subsequent expression of opinions. When users were more often exposed to anti-vaccine messages, any of their subsequent tweets about HPV vaccines were much more likely to also present a negative opinion.

Dr Dunn adds: "We think these results are less likely the consequence of opinion contagion and more likely due to an echo chamber effect –

where users are preferentially connected to other users who share their views. This has important implications for trying to deal with polarisation that can shape and hold public opinion about vaccines."

The team of researchers, including Associate Professor Julie Leask from The University of Sydney, Professor Kenneth Mandl from Harvard Medical School, and Professor Enrico Coiera from Macquarie University, have started a program of research measuring the spread and persistence of misinformation in the public domain. Using new methods for estimating the locations of social media users, the team is now developing spatial indicators of misinformation persistence for use by public health organisations.

"If we are able to measure how misinformation spreads into communities from professional opponents of vaccines and false balance in the news media, we can help public health organisations target their communication strategies to address specific concerns when and where they occur."

More information: "Associations Between Exposure to and Expression of Negative Opinions About Human Papillomavirus Vaccines on Social Media: An Observational Study." *J Med Internet Res* 2015;17(6):e144 DOI: 10.2196/jmir.4343

Provided by Macquarie University