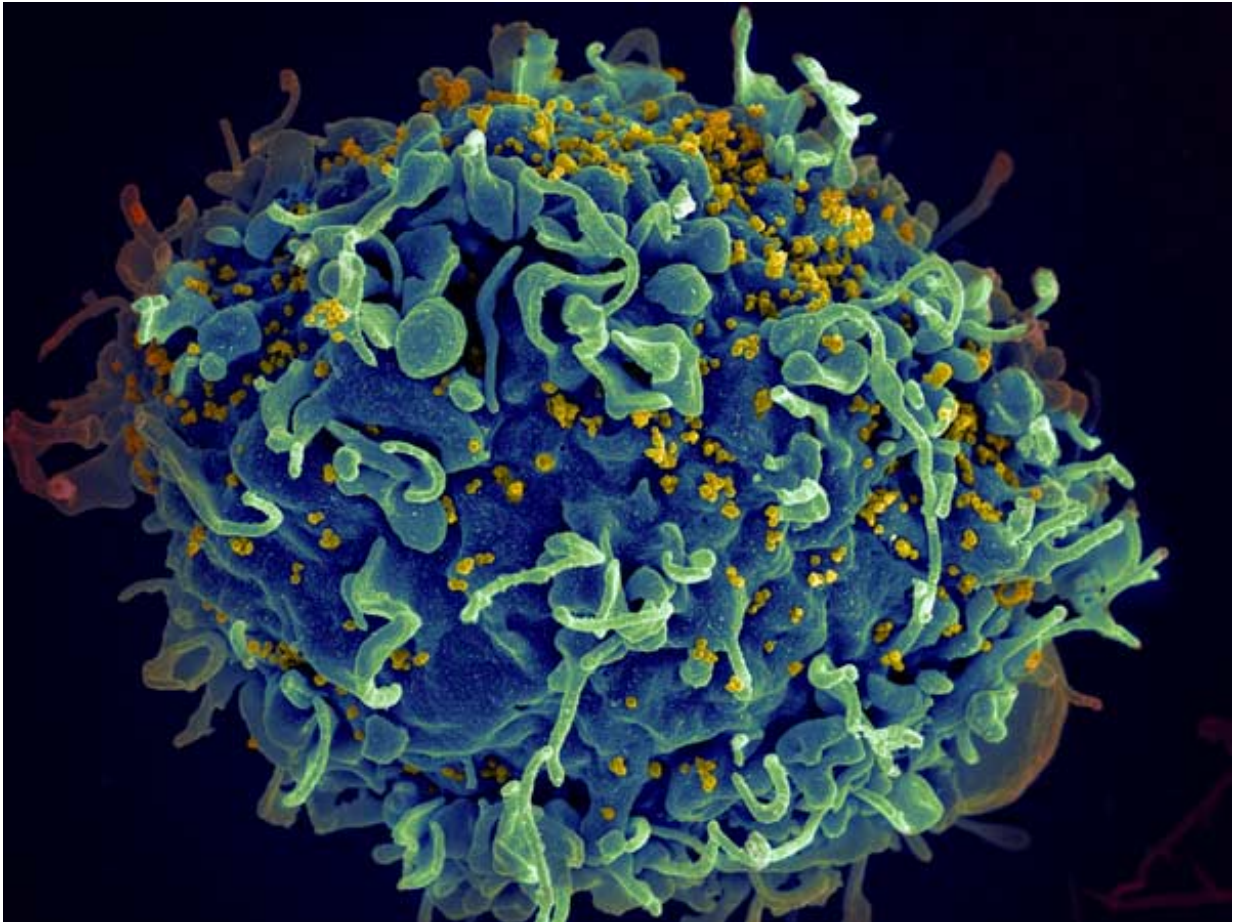


The Charlie Sheen effect on HIV prevention

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HIV (yellow) infecting a human immune cell. Credit: Seth Pincus, Elizabeth Fischer and Austin Athman, National Institute of Allergy and Infectious Diseases, National Institutes of Health

On November 17, 2015 actor Charlie Sheen on NBC's Today Show

publicly disclosed he was human immunodeficiency virus (HIV)-positive. For some time scientists and advocates have recognized the importance of celebrity in public health. Could Sheen's disclosure, albeit tragic, generate renewed national attention for HIV and HIV prevention, providing an important public health benefit?

New research led by San Diego State University Graduate School of Public Health research professor, John W. Ayers—just published by the *JAMA Internal Medicine* finds there were record highs of domestic news coverage of HIV and Google searches for information about HIV and HIV prevention following Charlie Sheen's disclosure.

"Charlie Sheen's disclosure was a potential earth shaking event for HIV prevention in the United States," Ayers said.

Identifying trends

The team relied on public archives for news media trends using the Bloomberg Terminal and Google Trends to describe HIV and HIV prevention engagement since 2004.

Focusing on the hours after Sheen's disclosure, the team monitored news reports mentioning HIV and Google searches originating from the United States broken into four categories: HIV (all searches with "HIV"), condoms (all searches with "condom" or "condoms"), HIV symptomology (all searches with "symptom," "symptoms" or "signs of" and "HIV"), and HIV testing (all searches with "test," "tests," or "testing" and "HIV").

"This big data strategy allowed us to provide a formative assessment of the potential impacts of Charlie Sheen's HIV-positive disclosure at no cost," said Benjamin Althouse, a research scientist at the Institute for Disease Modeling and the Santa Fe Institute, and data architect of the

study. "We can directly assess the diffusion of media in the population and how the population is seeking out information based on the timing and content of their Google searches."

The day of Sheen's disclosure coincided with a 265 percent increase in news reports mentioning HIV (97 percent of which also mentioned Sheen) archived on the Bloomberg Terminal, even though HIV-related news reports have been in historic decline. An additional 6,500 stories were reported on Google News alone. This placed Sheen's disclosure among the top 1 percent of historic HIV-related media events.

Sheen's disclosure also corresponded with the greatest number of HIV-related Google searches ever recorded in the United States on a single day. About 2.75 million more Google searches than expected, based on previous trends, included the term HIV on the day of Sheen's disclosure, with 1.25 million more searches than expected including terms for condoms, HIV symptoms, or HIV testing; after adjusting for changes in overall search volume and historic trends.

In relative terms, all HIV searches were 417 percent higher than expected the day of Sheen's disclosure. Condom searches (such as "buy condoms") increased 75 percent. HIV symptom (such as "signs of HIV") and HIV testing (such as "find HIV testing") searches increased 540 and 214 percent, respectively, the day of Sheen's disclosure and remained higher for three days.

A public health challenge

"While no one should be forced to reveal their HIV status and all diagnoses are tragic, Sheen's disclosure may benefit public health by potentially helping many learn more about HIV and HIV prevention," Ayers said.

This potential comes on the heels of historic declines in domestic HIV awareness and prevention. Just two weeks before Sheen's disclosure Tom Frieden, director of the Centers for Disease Control and Prevention, publicly bemoaned the state of domestic HIV control. Of the more than 1.2 million people in the United States living with HIV, nearly one in eight are unaware of their HIV-positive status.

"Sheen's disclosure could be an important event to immediately raise public consciousness around HIV, and make public health messages about HIV that much more salient," said Seth Noar, University of North Carolina professor, an expert on HIV prevention media campaigns and coauthor of the study.

"Celebrity disclosures are not new to HIV, with Rock Hudson and Magic Johnson serving as noteworthy examples. Yet, Sheen's disclosure could be different," said Eric Leas, a student of health communication at the University of California San Diego and study coauthor. "The Web 2.0 era may heighten the impact of Sheen," added Leas.

"With Sheen, unlike with Magic Johnson for instance, we have smartphones in our pockets that we can easily use to learn about HIV within seconds with a single search or click," Leas said.

"At the same time, social media can expand the effect of Sheen's disclosure beyond the initial television broadcast as networks form around celebrities."

"Sadly, the public health community may be missing the mark," Ayers added. "I'm unaware of any major HIV educational campaigns that are using Sheen's disclosure for public health outreach."

"Sheen is a controversial figure and it's incredibly hard to frame public health messages around a figure whose behavior, not unlike any non-

celebrity or myself, may at times conflict with public health science," said Ayers.

Controversy itself merits additional study to stay ahead of public debate, according to Mark Dredze, research scientist with Bloomberg LP, assistant research professor at Johns Hopkins University, and study coauthor. "Public health can use and expand our approach to further monitor HIV-related trends and be responsive to these changes in near real-time."

Still, the team notes that Sheen's disclosure has already produced tremendous public health benefits. "More must be done to make the Charlie Sheen effect larger and lasting," Ayers concluded.

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