



HIV CURE GOES VIRAL

An Analysis of HIV Cure #Hashtags



Kathryn E. Muessig,^{1,2} Warren L. Whipple,^{1,3} Mary E. Grewe,^{1,4,5} Adam L. Gilbertson,^{1,4,5}
Joseph D. Tucker,^{1,4,6} Arthur J. Thomas,⁷ Elizabeth P. Kelly,^{1,2} Ning Wang,⁸ Lisa B. Hightow-Weidman^{1,4,6}

1 University of North Carolina at Chapel Hill (UNC), Chapel Hill, USA; 2 UNC Gillings School of Global Public Health; 3 UNC Center for Bioethics, Department of Social Medicine; 4 UNC Institute for Global Health and Infectious Diseases; 5 UNC School of Medicine, Department of Social Medicine; 6 UNC School of Medicine, Division of Infectious Diseases; 7 Proteus Associates/University of Oxford, Oxford Internet Institute, Oxford, United Kingdom; 8 University of Oxford, Oxford Internet Institute/Mathematical Institute, Oxford, United Kingdom

Abstract

Media and social media may play powerful roles in shaping public perceptions about HIV cure research. We examined trends in HIV cure-related Tweets on the social media forum Twitter pre and post the 2013 Conference on Retrovirus and Opportunistic Infections (CROI) "cure" announcement of the Mississippi child. Comparing pre- and post-CROI 2013, average number of HIV cure-related Tweets per hour increased from 8.3 to 107.3 ($p < 0.001$). The US CDC had the most posts while the BBC had the most retweeted single post. Most Tweets were from individuals (67.7%) or news organizations (18.2%). 52.1% of Tweets linked to a media article; 39.0% consisted of personal opinions. Post-CROI, positive and neutral Tweets increased, negative and humorous/sarcastic Tweets decreased. Only 0.5% of Tweets came from self-identified HIV-infected individuals and 6.4% from health organizations. HIV cure was widely discussed on Twitter post CROI 2013 announcement. However, Tweets from individuals dominated this platform, while the scientific community, HIV-focused organizations and people living with HIV were relatively under-represented.

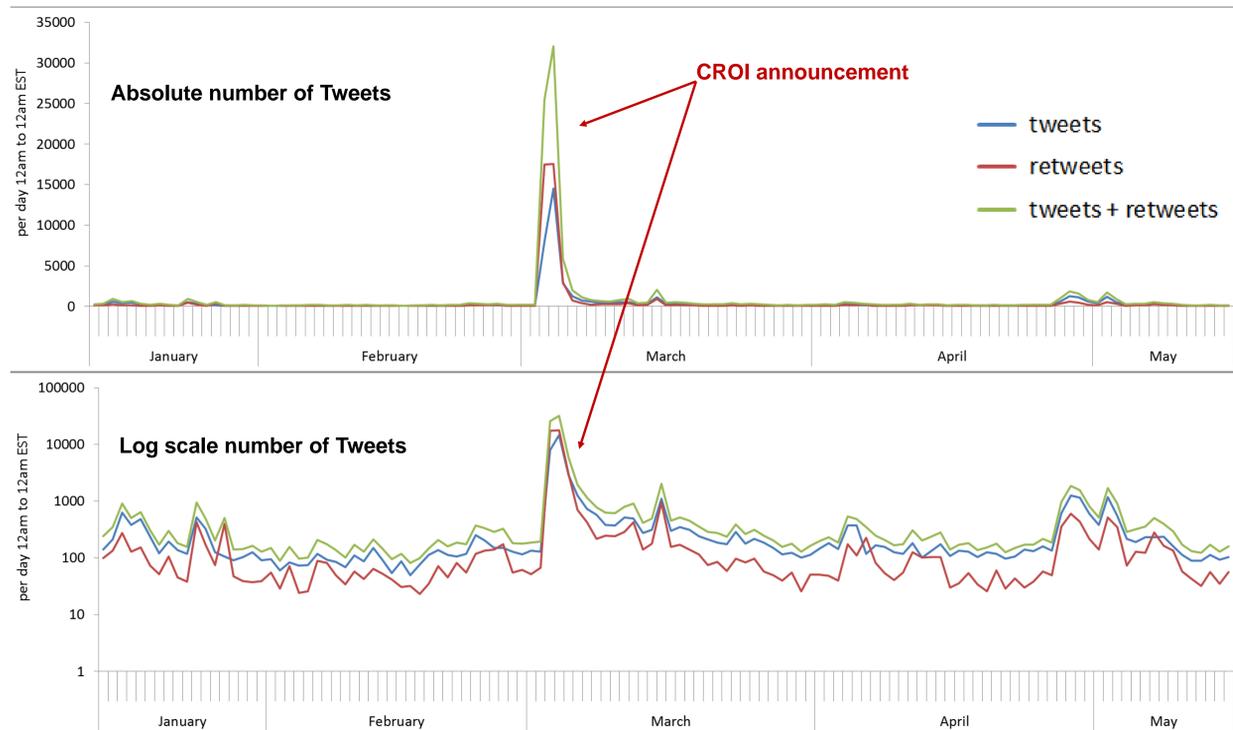
Background

- Media coverage of HIV "cures" – most notably Timothy Brown ("the Berlin patient"),¹ a 26-month old child ("the Mississippi baby"),² two Boston patients,³ and 14 others⁴ – alongside a host of ground-breaking basic science discoveries have launched HIV cure research to the center of public and scientific attention.
- Twitter - with over 302 million active users worldwide sending over 500 million Tweets per day⁵ - is a unique medium to study HIV cure discourse across temporal, geographic and socioeconomic strata.
- A better understanding of public perceptions of HIV cure and HIV cure-related research is needed to help scientists tailor accurate communication messages, advocate for continued support and funding, and correct misinformation regarding HIV-cure.

Methods

- We purchased a dataset filtered down to 106,805 HIV cure related Tweets and retweets, restricted to 48.9 days pre and 74.1 days post CROI (3 March 2013, BBC announcement 5:26pm EST), using the nested boolean search: (*#hivcure* OR *#curehiv* OR *#aidsure* OR *#cureaids* OR *#hivbaby* OR *#Mississippibaby* OR *#timothybrown* OR *#defeatHIV* OR *#TheBerlinPatient* OR *#BerlinPatient* OR *#HIVCureForum* OR *#CROI* OR "hiv cure" OR "aids cure" OR "hiv baby" OR "Mississippi baby" OR "cure for aids" OR "cure for hiv" OR (*#HIV* OR *#AIDS*) AND *cure*) OR (*HIV* OR *AIDS*) AND *#cure*)).
- We used Splunk® software (application for searching, transforming, and extracting information from large machine generated data) to examine temporal trends.
- We conducted detailed content and sentiment analysis on a sample of 1,111 Tweets (613 Tweets retweeted ≥ 9 times and 505 randomly sampled Tweets with < 9 retweets, minus 7 non-cure Tweets) and compared trends before and after the CROI announcement. Pooled proportion t-test was used to assess differences.

Results

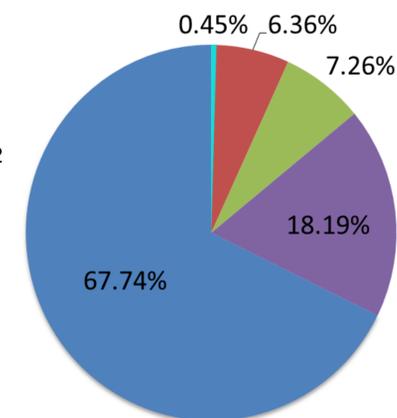


Temporal Trends in HIV Cure-Related Tweets: January 13th to May 15th, 2013

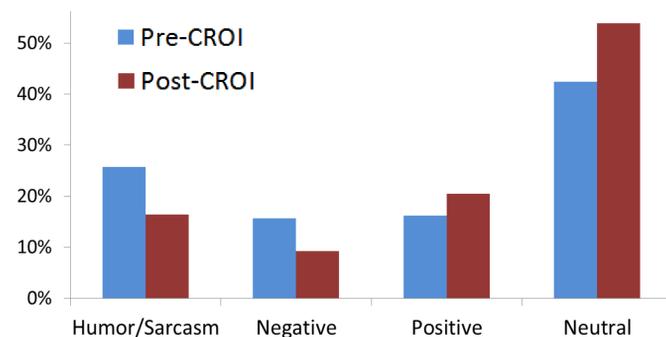
- Comparing pre- and post-CROI 2013, average number of HIV cure-related Tweets per hour increased from 8.3 to 107.3 ($p < 0.001$).

Who Tweeted?

- Among all accounts, the 3 with the largest number of posts were the US CDC (categorized as "medical organization") and 2 HIV news aggregator accounts (categorized as "news/media" organizations).
- Among all Tweets, the majority were from individuals (67.74%) and news/media organizations (18.19%).
- The most retweeted post was from the BBC (Retweeted 20,047 times).
- Only 5 Tweets (0.45%) came from self-identified HIV-infected individuals.

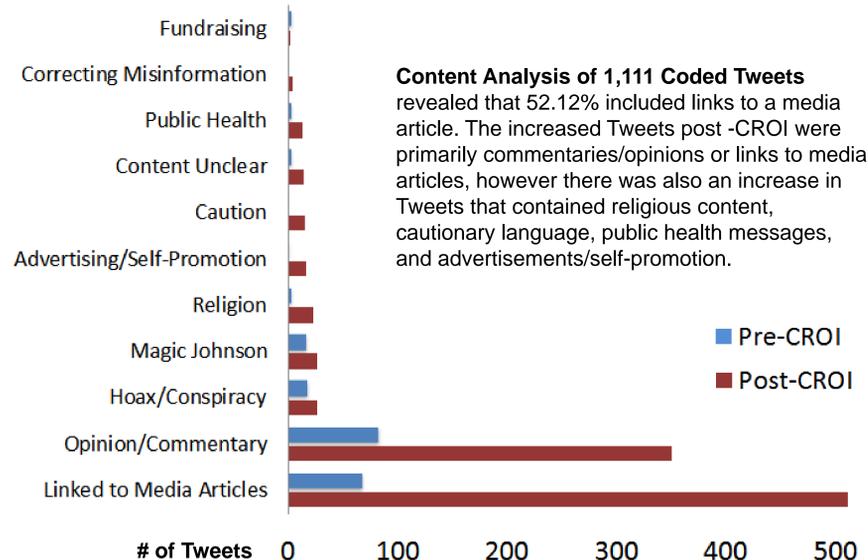


■ PLHIV ■ Medical ■ Other/Unclear
■ News/Media ■ Individual



Sentiment of 1,111 Coded Tweets

Following the CROI announcement, the amount and proportion of positive and neutral Tweets increased (16.20% to 20.49%, $p = 0.19$; and 42.46% to 53.86%, $p < 0.01$), while negative and humorous/sarcastic Tweets decreased (15.64% to 9.23%, $p = 0.001$; and 25.70% to 16.42%, $p < 0.01$).



Conclusions

This analysis explored the public expression of sentiment around HIV cure research at a particular point in time. The CROI announcement of the Mississippi child substantially increased public messages about HIV cure research on Twitter, the social media platform with the largest global presence. Encouragingly, our content analysis found a significant difference in the sentiment of Tweets before and after the announcement, leaning toward more positive or neutral language and expressions. Although the user account with the highest number of Tweets was the US CDC, the majority of all Tweets were from individuals and quickly diverged from the science. Furthermore, HIV-focused organizations and self-identified people living with HIV were under-represented in the overall body of HIV cure-related Tweets, revealing an opportunity for expanding positive/neutral, informed HIV cure-related messages from these sources.

Better understanding of HIV cure-related public discourse and concerns regarding HIV cure could inform strategic planning for enrolling and garnering support for cure research trials, and, eventual implementation of the advances these trials may bring. This form of social media analysis could help identify key opinion leaders and common language related to HIV-cure to guide tailored communication campaigns.

References and Acknowledgements

References: ¹Hutter G et al. NEJM.2009;360(7):692. ²Persaud D et al. Abstract 48LB. CROI; March 3-6, 2013, Atlanta, Georgia. ³Henrich T et al. Journal of Infectious Diseases. 2013;207(11):1694. ⁴Saez-Cirion A et al. PLoS Pathogens.2013;9(3),e1003211. ⁵Twitter Usage/Company Facts. Accessed 6/29/15, <https://about.twitter.com/company>

Ethics statement: This study was determined "exempt" by the Institutional Review Board at UNC Chapel Hill.

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