

Social Media in Public Health

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Briefing Note

For up-to-date knowledge relating to healthy public policy

As more people turn to the internet for health-related information, social media has emerged as a tool for public health messaging (Viswanath, Bigman-Galimore, McCauley, Jung, & Ramanadhan, 2012). But before public health units adopt social media, there are questions to consider, including What is the effectiveness of social media for public health messaging? What is the impact of social media on different populations? and Does the use of social media address health inequalities?

Based on a systematic review done in 2010 and updated by the author, this briefing note summarizes the evidence on these questions. The paper begins by defining social media, followed by a discussion of how social media can be used in public health, how it has been effectively applied, and its major contributions to public health. The paper then addresses the key questions: What is the effectiveness of social media? and What is the impact on health inequalities?

What is 'social media'?

Twitter, Facebook, YouTube, and blog sites are all representative of social media and are defined by their interactive user environments where communication and discussion flows in multiple

directions so that users are able to contribute content (Schein et al., 2010). Social media generally links networks made up of peers, enabling collaborative communities where content is generated and shared (Edward & Nichols, 2010). Social media applications are often referred to as 'Web 2.0,' implying a new generation of social technologies that arose from the previous generation of 'Web 1.0,' where information tended to be more unidirectional and typically defined by less interactive web pages, e-mail and list servers, and where content did not rely on the input of users (Rietmeijer & McFarlane, 2009).

Although social media can refer to a variety of different applications, including content sharing, media sharing and blogging servers, social networking sites such as Facebook allow users to create online networks of friends and acquaintances (Vance, Howe, & Dellavalle 2009). These networks provide immense market potential, since a user's social network can view the pages within the website to which the user subscribes (Vance et al., 2009). Despite this obvious advantage, social networking sites remain underused in the public health sphere (Newbold & Campos, 2011).



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What are the potential uses?

USING SOCIAL MEDIA FOR DISSEMINATING HEALTH INFORMATION

As a form of communication, social media is used by the general population to keep in touch with family and friends, engage in conversations, disseminate information, and to learn. It is also increasingly seen as a news source, as users link or share information taken from, for example, news websites. From a public health perspective, a systematic review identified the use of social media for health communication purposes by the public, patients, and health care professionals (Moorhead et al., 2013). The power of social media lies in its ability to empower users and provide them with a platform to speak, as anyone with access to the internet has the ability to publish and/or broadcast information (Bertot, Jaeger, & Grimes, 2010; Househ, Borycki, & Kushniruk, 2014). The US Centers for Disease Control and Prevention (CDC) lists the 'Three P's' of social media: personalization, presentation and participation, highlighting the characteristics of social media that makes it an effective health promotion tool. Because social media can be used to create tailored and personalized messages for target audiences, messages can be presented in multiple formats that appeal to a variety of users. Most importantly, it allows (and encourages) participatory contributions from users themselves, facilitating two-way communication of information in an environment that has traditionally disseminated information from provider to consumer.

Social media can be used to disseminate a variety of health-related topics, including information relating to flu clinic locations and hours, beach closings, and weather advisories. This real-time delivery allows public health officials to take advantage of social media for transmitting seasonal messages such as heat alerts or humidex warnings, promote current events such as open houses or free clinics and communicate with the public in times of crisis. The range of social media platforms allows information to be conveyed in different forms (i.e., video or text) and bring information to people with special needs. Facebook, for example, is used to share health experiences and information, and YouTube videos can expand upon text information while providing visuals. Blogging sites allow individuals, including health professionals, to share stories, information and resources. Consequently, the benefits for health

Box 1 – Social media options

Social media includes a number of options, with the most common ones listed below.

Facebook (facebook.com): Facebook is perhaps the best known social networking site and is a common way for many to keep in touch or up-to-date. Public health bodies can sign up for an organizational or institutional page through Facebook. Organizations such as the Public Health Agency of Canada, Health Canada's Healthy Canadians campaign, the US Centers for Disease Control and the World Health Organization all subscribe to Facebook in this way. These pages allow for most of the features of Facebook (i.e., a wall for posts, photo and video uploads, discussion boards, etc.), but settings can be modified according to the needs of the organization. For example, most institution pages allow users to 'like' the page instead of 'friending' between private users. When users 'like' a Facebook page, they can automatically receive updates and posts that the institution releases through their page. Organizations often ask users of their website to 'like' them on Facebook by posting a link to their official website. Additionally, awareness of social media can be spread to consumers by networking with existing social media applications of other organizations. Institutions can access information on the users that have 'liked' them, and receive updates from other organizations by 'liking' their pages. Users can also see which institutions have 'liked' each other, thus networking with other community partners in this way is also an effective method of advertising on Facebook. As with all social media, Facebook can be used both to push and pull information but also to engage in a conversation with multiple users. The feedback people leave in comments are input for assessing awareness and acceptability of different public health initiatives.

YouTube (youtube.com): YouTube is a video sharing website on which users can upload, view and share videos. Creating a YouTube channel, or collection of uploaded videos, comes at no cost to users, including corporate and public organizations. A link to the channel can be embedded on an organizational website or other social media the organization is using. Organizations using YouTube also have access to analytic information on who is accessing their YouTube channel.

professionals of using social media include an increased number of interactions, shared and tailored information, increased number of sources of health information, spaces where health issues can be shared and discussed by different audiences, and provision of peer, social, and emotional support for the public.

Social media can also be used to link or 'follow' similar organizations. 'Following' allows an organization to receive messages broadcast by other public health agencies, which can then be re-broadcast (or, in the language of Twitter, 're-tweeted') to followers of that organization. This essentially creates a ripple effect and expands the message's reach. The advantages of following include receiving instant updates on activities or news and messages can be re-broadcast to reach larger audiences. Similar advantages exist for messages on other social media applications, including Facebook and blogs.

USING SOCIAL MEDIA TO TRACK PUBLIC HEALTH EVENTS

Public health officials have expressed interest in using social media as a means to track public health events such as influenza or food-borne diseases, with the H1N1 pandemic serving as a catalyst for initiating social media strategies. Social media has the potential to provide quick and effective delivery of information in real time to the public, medical professionals and government agencies and administrators at a depth not achievable by traditional media. In cases of public health emergencies, timely and consistent information is important, as is the accuracy of information (Hobbs, Kittler, Fox, Middleton, & Bates, 2014).

The use of social media for disease surveillance is relatively new, and the methods and tools for doing so continue to evolve (see, for example, Young, Rivers, & Lewis, 2014). Programs such as Google Flu (<http://www.google.org/flutrends/ca/#CA>) provide insights into the progress of flu and monitors online behaviour to trace illness trends (Munson, Cavusoglu, Frisch, & Fels, 2013). The advantage of using social media is its real time analysis of disease trends, which could contribute to rapid disease detection and response, although such methods are not yet ready to replace more traditional methods of surveillance and reporting (Lazer, Kennedy, King, & Vespignani, 2014). For emergency preparedness, the field of 'crisis mapping' is an

Box 1 – Social media options (cont.)

Twitter (Twitter.com): Twitter is micro-blogging platform that limits communication to 140 characters or less, with all of the 'tweets' in the public domain. Creating a Twitter account with all available features comes at no cost to users, including corporate and public organizations. Twitter feeds can also be embedded on external websites, including the official websites of public health departments at no extra cost. Users can 'follow,' for example, a health department by clicking on the link provided and logging into their own Twitter account to confirm their interest in following the organization. Then they will automatically receive updates (either through their Twitter account, text messaging, or smartphone applications) broadcast by that organization. Alternatively, non-Twitter users can click the link provided and be taken to that organization's Twitter feed to view recent posts, though non-Twitter subscribers are not able to 'follow' the feed to get updates sent to them. Besides being an interactive outreach medium that broadcasts in real time, Twitter is a networking tool. Organizations can follow community partners for their updates and 're-tweet' (or re-broadcast) messages broadcast by them. Similar to Facebook, this type of direct networking doubles as extra promotion for an organization's Twitter page.

Blogger (blogger.com): Blogger, as well as other blogging sites such as Blogspot, LiveJournal and WordPress are free applications that allow users to create and design their own blog. With unique features like allowing lists of 'followers' and 'favourite blogs' Blogger is versatile enough to fit almost any need at no cost to the user. It can also be linked to Google accounts and other social media applications. Like Twitter, Blogger allows other Blogger users to follow an organization's blog and receive instant updates notifying them of new posts, simply by clicking a button on the blog. Non-Blogger users can also easily access agency-authored blogs as long as the blog's privacy settings are set to be available to the public.

RSS feeds: RSS or 'real simple syndication' provides a way in which users can subscribe to receive updates whenever there is new content on a particular website or page. RSS readers allow users to manage their lists of RSS feeds, in a way similar to favourites for web pages.

emerging application of the crowdsourcing (populating with data provided from users) and crowdfunding (returning information to users, in real time) to help communities cope with emergencies. In the case of hurricane Katrina in New Orleans, crisis mapping provided information on where to get food and shelter (Liu & Palen, 2010). However, given that social media is not used equally across population groups, messages and data may be incomplete and not representative or meeting the needs of all groups.

Adoption and use of social media by public health

The Public Health Agency of Canada (PHAC), Health Canada, and various provincial health units and public health units currently use social media. Health Canada, for example, broadcasts messages to Canadians using Facebook, mobile applications, RSS feeds, Twitter, a YouTube channel and a video gallery, providing up-to-date health information on a variety of topics. Similarly, PHAC engages in using RSS feeds, Twitter, Facebook, a mobile website and widgets. These can be accessed at: www.phac-aspc.gc.ca/sm-ms/index-eng.php and <http://hc-sc.gc.ca/home-accueil/sm-ms/index-eng.php>.

Given the rapid growth of social media and the resources needed to manage it, social media policies and strategies are becoming more common in public health units (See Box 2 for Best Practices). By engaging users, social media facilitates the spread of health information and knowledge sharing, informing consumers and enabling health decisions. Different types of applications are adopted by health organizations based on their target audiences, resources and specific goals (Eckler, Worsowicz, & Rayburn, 2010). Social media may be used in addition to more traditional forms of communication including broadcast and print media. In this way, social media is used to complement existing media, and is often used to drive traffic to websites, telephones, or clinics.

Social media can also be used for spreading health messages, providing support related to chronic illness and connecting population with providers (Vance et al., 2009). Each type of social media application can cater to a different demographic, and each can have a unique and ever evolving role in the

Box 1 – Social media options (cont.)

Mobile website: a site that is formatted to be compatible with smartphones, tablets, etc.

Widgets: Widgets are typically automatically-updated content boxes that can be installed on websites. For example, an organization A can make a widget available so that another organization B can embed that widget on its own website. Visitors to organization B's site will then have access to the automatically-updated content, fed from site A into a small box on site B.

Box 2 – Best practice guidelines

Like any health promotion tool, resources are required to implement social media in public health practice. It is recommended that health organizations have clearly identified objectives, resources (i.e., staffing, budget), target audiences, and key messages before starting any campaign. Questions about content, content approval, staffing (e.g., Who is responsible for posting? How often will postings be made? Are they made on weekends and/or after hours? Who approves posts?) must be considered given that staff time is scarce, making it important to address social media strategies from a feasibility and sustainability standpoint.

Social media is a comparatively new way to communicate information. Due to lingering questions over its effectiveness and the quality and consistency of information, particularly given that there is relatively little regulation or evaluation of social media as a source of information, the CDC has developed a set of best practices documents and a toolkit. These are often consulted by public health organizations to aid the development of social media strategies. These documents not only provide a good overview of the utility of social media for different health objectives, but they also contain checklists, recommendations and other valuable tools to help public health agencies create their own communication strategies and policies surrounding social media. All best practice documents can be found at <http://www.cdc.gov/SocialMedia/Tools/guidelines/>.

modern social media landscape. Beyond public health providers, some health professionals use social media to collect data on patients and to communicate with patients (Morehead et al., 2013), although this use is limited and raises issues around confidentiality and data security.

The use of social media by public health units remains relatively limited and variable, with public health units that use social media more likely to be located in larger urban communities. Public health practitioners typically use social networking sites, followed by new media broadcasts, then blogs and discussion boards, podcasts, and finally Twitter. From a practitioner perspective, very few reported using text messaging applications or wikis/blogs to distribute health information (Avery et al., 2010). Rural practitioners, however, were significantly more likely to incorporate podcasts into their practice than were their urban and suburban counterparts.

In theory, using social media for health communication means the potential to increase the accessibility and depth of information available to various groups, regardless of socioeconomic status, age, race, ethnicity or location as compared to traditional media and communication methods (Hesse, 2009).

Although social media platforms may not be used equally across population groups, there is substantial evidence that increasing numbers of North Americans are going online to search for health information, and are using social media for health information management (Kontos, Emmons, Puleo, & Viswanath, 2010). In general, youth are more likely to use social media platforms and the elderly are increasingly inclined to join social networking websites, representing an excellent target for public health messaging (Madden, 2010). Social media can be integrated into existing public health campaigns to improve and expand outreach and participation, and has been used for health promotion and health education, including providing social support to promote smoking cessation. However, while social media initiatives are not costly to implement, human resources are an important determinant of success.

Box 2 – Best practice guidelines (cont.)

However, the following guidelines (based on the CDC Toolkit) are instrumental in developing social media campaigns:

1. Develop clear goals for social media.
2. Be strategic when deciding on the objectives, audience and key messages for a social media campaign. This includes taking into account the time and effort necessary for such a campaign.
3. Social media is ‘where the people are,’ so it makes sense to take the messages you want to provide to them.
4. Adopt low-risk solutions first as a way to experiment with social media and avoid investing too many resources too quickly.
5. Social media messages should be accurate, credible and accountable.
6. Take advantage of portable content, such as videos, which make it easy for users to spread your message.
7. Using social networking sites to facilitate viral information sharing among users can expand reach and allow users to become health advocates.
8. Encourage participation by interacting with users and accepting contributions which can facilitate future communication.
9. Take advantage of the existing social networks of your audience on social networking sites, enabling reach to be extended.
10. Multiple social media formats expand reach by giving users different ways to engage with health information and interact with public health.
11. Take advantage of metrics provided by social media for evaluation purposes.

Question 1: What is the effectiveness of social media?

While social media holds much promise, its effectiveness as a means of communication and information sharing remains questionable. Moreover, individual behavioural responses to information will vary based on individual values, peers, social, demographic, socioeconomic, and cultural situations. In looking at the effectiveness of social media, we can consider how the public reacts to social media as measured by behavioural change, who uses social media, the drawbacks of social media, and the effectiveness of social media relative to traditional media.

First, it is unclear how the public reacts to social media messages. Given social media's predominant role in linking family and friends, it is not surprising that a key attraction and use of social media is reading and hearing stories and accounts of other people's health experiences. Ziebland and Wyke (2012), for instance, note that health information is created by sharing stories through blogging or networking sites, with implications for both individuals' as well as health professionals' understanding of health. Importantly, health information may not be generated by those with the greatest knowledge (i.e., health professionals, public health officials) and may instead be generated by patients, parents, or other users, with implications for the reliability and accuracy of information. Yet, social media and web-based resources are an important and trusted source of information for others facing similar issues, and may potentially inform health choices, alert people to health issues, improve health literacy, and improve the understanding of illness among the lay public.

For health professionals and public health units, social media offers the opportunity to target and customize messages to different audiences, potentially minimizing inequalities. However, while there is some evidence that access to health information through social media positively affects behaviour, few studies report on actual behavioural changes associated with public health messaging through social media, with those that are available indicating mixed outcomes or modest effects at best (Maher et al., 2014). A study looking at use of social media for diet and exercise interventions showed limited behavioural change (Williams, Hamm, Shulhan, Vandermeer, & Hartling, 2014), while a

study looking at smoking cessation (Chen et al., 2012) found that computer and electronic resources increased the likelihood of cessation in comparison to other sources. However, neither of these studies clearly identified social media as a component of the campaign, and additional research and evaluation needs to be completed on the efficacy of social media (and the different types of social media) as tools to promote behavioural change related to health.

Second, who is actually using social media? While there is certainly evidence of the use of social media by public health units and officials, the public may not yet be using it or relying on it as a source of information. One study (Harris, Choucair, Maier, Jolani, & Bernhardt, 2014) found that Twitter feeds from local health departments were more likely to be followed by other organizations than individual users. Likewise, it remains unclear as to the reach and effectiveness of social media in general.

Third, there are clearly drawbacks to the effectiveness of social media use (Morehead et al., 2013). Since multiple users, including public health and the general public can contribute to social media sites, the reliability of information, the potential inability to identify authors, the large volume of information and the potential for information inaccuracies pose challenges. From a user perspective, social media may provide too much information, and may result in adverse health outcomes. In addition, users may not know how to apply the information, and it may preclude users from consulting health professionals. These issues are also reflected in discussions of eHealth literacy where economic, social, demographic, and cultural differences in terms of the skills required to use interactive tools and to understand, assess and properly apply health information differs across population sub-groups (Norman & Skinner, 2006).

The use of social media for surveillance purposes is also problematic. In a scoping review, Bernardo et al. (2013) identified that social media-based surveillance was correlated with existing surveillance programs, and that social media was particularly good at rapid detection of disease trends. However, use of social media for surveillance purposes was also associated with a high potential for both false positives and false negative results. Moreover, online surveillance tools such as Google Flu are still poor at detecting atypical flu trends. Consequently, the existing consensus is that social media should be

used to complement and support existing surveillance programs so that all population groups are represented and reached.

Finally, an ongoing question refers to the effectiveness and efficacy of social media relative to traditional media (i.e., print, television, radio) sources. While this is also a comparatively under-researched area, the literature also suggests mixed results. In an analysis of the use of social media to transmit information on sexual health, younger adults were not comfortable using social media to access sexual health information. Instead, they were more likely to use other media sources, doctors, or their schools as sources of information, even though they regularly used social media (Lim, Vella, Sacks-Davis, & Hellard, 2014). In other examples, traditional media and social media have been observed to discuss the same topics, but differ in their actual message. In a Dutch analysis regarding the dissemination of health information related to influenza (Lehmann, Ruiter, & Kok, 2013), social media was less objective (i.e., regarding the need for vaccination), while traditional media was more objective in its reporting. The authors speculated that since social media lacks the same controls and oversight of traditional media, it may undermine public health recommendations.

Question 2: What is the impact on health inequalities?

As with many innovations, the internet and social media might at first contribute to increasing social inequalities in health because they could especially benefit the most privileged people – as people in better health and with better socioeconomic and psychosocial resources are those who have access to health information and use more diverse sources (Renahy, 2012). An increasing number of people search online for health information, and many use social media for health information management.

The literature is mixed with respect to who uses social media. Viswanath et al. (2012) suggest that social media enjoys widespread use regardless of socioeconomic status (SES), race, or ethnicity. For this reason, social media may play an important role in levelling the field in terms of accessing and sharing information. Other literature, however, suggests that users of social media are more likely to be younger, university-educated adults (Ramanadhan, Mendez, Rao, & Viswanath, 2013).

While results differ due to different study designs, the population sub-groups that are targeted and message content, common barriers to the use of social media include geography (especially remote locations), with social media unable to reach those without access to the internet or mobile devices such as cellphones or tablets. Additional barriers include knowledge of computing (eHealth literacy), low education, low income, and language ability/literacy (Clayman, Manganello, & Viswanath, 2010; Norman & Skinner, 2006; Taylor, 2011). Although social media may be used by various groups, the language and context of communication is also important, making language a barrier to use of social media platforms. In a study of the uptake of health messaging amongst Latinos in the US, individuals who were more comfortable with English were more likely to use the internet as a source of information. Hispanics who were not comfortable with English were harder to reach, regardless of the media source (Clayman et al., 2010).

IMPACT ON DIFFERENT SUB-POPULATIONS IN CANADA

Social media resources are often used to connect various groups, including rare disease groups, by offering the ability to connect, engage, and share information between peers. Similar opportunities exist amongst vulnerable populations. As such, social media may provide an important way to improve health information access among populations that would typically face greater barriers in accessing health information. Recent Canadian studies have suggested that Aboriginal peoples, the elderly, newly-arrived immigrants and even the homeless are surprisingly well connected and are common users of the internet and social media (Taylor, 2011). There is anecdotal evidence that the use of social media is high among newly-arrived immigrants in Canada given their desire to remain in touch with family and friends and that many may have already been users of social media and technology before arriving in Canada. For many, social media may provide an informal network for information, problem solving and mentoring in addition to keeping in touch with family and friends 'back home.'

However, the reality of connectedness may be less real, with remoteness and low incomes two important factors decreasing access and use. Canada's 'digital divide' remains, as was highlighted in a 2013 report from Statistics Canada. Although 83% of Canadians

use the internet, there is a large gap in use that reflects income, with over 90% of the richest Canadians using the internet, while only 62.5% of Canadians with the lowest incomes report using the internet. Additionally, the report shows that the digital divide reflects wireless costs, with just 25% of lower-income Canadians using wireless internet services. However, while internet access is important, knowing what to do when online (including how to use social media) is equally as important, raising questions around web literacy in general and eHealth literacy in particular. Likewise, access to and use of social media and the internet more generally are likely lower among low-income immigrants and refugees, where language limits access, along with a relatively lower priority placed on health as compared to other immediate needs including shelter, food, and employment. Consequently, access to social media and the internet is typically less among low-income groups. For other access-related reasons, this is also true for remote areas.

Among disabled populations, the use of social media may be an important way to improve connections with peers and health providers given that disabilities may limit or prohibit engagement with mainstream society. Disabled users share the same barriers to use as observed in the broader population, although disability may create an additional disadvantage in that individuals with disability may be further isolated from society (Taylor, 2011). Adaptive technology devices will help to facilitate access.

ABORIGINAL PEOPLES AND SOCIAL MEDIA

Taylor reports high use of social media among Aboriginal peoples, including Aboriginal youth, along with examples such as the Native Aboriginal Health Organization's (NAHO) use of social media for sharing health information (Taylor, 2011). Other examples of the use of social media among Aboriginal peoples include the promotion of cultural identity and political advocacy, for example in using participatory geographical information systems (P-GIS) to take ownership of their projects (Brauen, Pyne, Hayes, Fiset, & Taylor, 2011). But use is likely decreased by income and remoteness. Lower access among low-income groups would be exacerbated in remote Aboriginal communities, where the lack of broadband or cell connectivity limits or prohibits the use of social media. Moreover,

and mirroring findings from the broader population, elderly Aboriginal persons, or those with lower education levels or incomes, are associated with lower use (Taylor, 2011).

Conclusion

The use of social media is rapidly expanding and offers a new way for public health information to be communicated to the broader population, with an increased focus within the literature on the questions posed in this paper. Because of its two-way nature, social media blurs the traditional boundaries between 'experts' and consumers, creating challenges for organizations to maintain control over content and requiring a shift toward a more participatory approach (Ramanadhan et al., 2013). However, there is a need for the evaluation of the use of social media given remaining questions regarding its effectiveness as a method of communication and its impact on health behaviours, since certain population demographics, including the vulnerable and those in remote locations, are less likely to have access to social media and/or to use social media. Although it is relatively easy to adopt, it requires adequate and appropriate human resources to maintain. The success of social media applications may also be related to the development of a strategic business plan for its use in a particular public health context. Given the rapid and exponential growth of social media use, development of best practices guidelines for public health organizations based on current research are crucial for adapting social media to everyday public health practice.

Beyond actual use, questions also remain as to the effectiveness and user uptake of messages relayed by social media, but social media use continues to evolve, meaning it is difficult to define and evaluate the success of interventions. Likewise, there is little information on what the most effective type of social media communication is, and how the effectiveness of social media compares to traditional media. Beyond questions of effectiveness and efficacy of message delivery, public health groups considering the use of social media need to be aware of the resource implications associated with social media, including staff time, workload, message content and the populations they reach.

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