

3-2-12 Mobile Public Health

George Orwell's *Nineteen Eighty Four* planted the scary idea that someday Big Brother might be watching us. And he was right; even more so than he could not have envisioned!

We now live in an era where technology is developing faster than I can comprehend and this technology brings detriments as well as benefits. The search engine Google will soon change its privacy standards, collecting even more information about our habits, choices and lifestyles. Who knows what the results of that will be? Parents, are you watching your child's use of facebook and cell phone use? I hope so!

The technology will speed onward with or without us, though, so we might as well be aware of it and use it to our best advantage. So, it was a pleasure to recently read Elizabeth Dougherty's journal article "*Mobilizing a Revolution: How Cellphones are Transforming Public Health*" in the Winter 2012 *Harvard Public Health Review*. There, I learned of some beneficial applications and use of cell phone data for public health. One application was "simply" watching how and where people move about. If, for instance, the cell phones moving about a city have certain routine patterns, then these patterns become the norm, to be used as a reference point. When these patterns change by significantly slowing down, it could mean that people are home sick and, thus, an outbreak has been identified before the hospitals even know it. Once that reason for lack of travel is confirmed, the same cell phones can be used to receive useful information such as a text message with advice and health status updates.

When combined with other data, such as public health records, the result is a huge, complex, and varied amount of information called by some, "Big Data". Nathan Eagle is one of many early users of big data for public health. Nathan, who looks about twelve to my eyes, is an adjunct assistant professor of epidemiology for the Harvard School of Public Health. One of his first applications of cell phone surveillance was to detect cholera outbreaks in Rwanda. His theory was great and it did work, but in an unexpected way. When he realized some areas of people had slowed to almost a halt, he assigned cholera as the cause. It turned out that people were unable to travel, not because of illness, but because of floods. This still proved to be a useful model, as cholera frequently follows flooding conditions.

Another time Eagle used cell phones to inform public health was when he taught nurses in Kenya a texting program to alert blood banks of upcoming shortages. When the nurses complained of the extra phone charges for the text messages, he responded brilliantly by compensating them for their information with free cell usage.

Another young bright Harvard School of Public Health assistant professor of epidemiology, Caroline Buckee, has applied the information derived from 15 million cell phone

users in Kenya to warn them of malaria outbreaks. People can sign up to receive these updates and when entering a cell phone tower in the zone of an outbreak, they can receive messages reminding them of the importance of their actions. They can choose to stay out of that zone or they can enter it with awareness and arm themselves with long sleeves, repellent and netting.

This application hit home with me because last year, after a man from Raynham died from a mosquito bite resulting in Eastern Equine Encephalitis (EEE), the Massachusetts Department of Public Health held meetings for the public to review the State's mosquito control protocol and discuss possible ways to improve our chances of preventing this deadly disease. The young parents that night were desperate to be better and more quickly informed when there are positive findings of EEE. One woman held up her cell phone and implored, "Couldn't you send out a text message letting us know? Couldn't we sign up for that?" The response was basically that they weren't there yet for that use and application of technology. The young people were disappointed; the "older" people were frustrated.

There often is this generational technology schism and it is a time where adults are able to learn from young people who have absorbed the technology their whole lives. The story of using the cell phones to send messages about malaria also hit home with me because we do not have instantaneous solutions for all problems and we never will be free from our own responsibilities to take safety precautionary measures.

Older learn from younger, (send text messages and tweets) and younger still need to listen to elders, (use repellent and netting). We all strive to learn new ways and discover along the way that not all the older ways are throw-aways.

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