: Can computerized decision support encourage health literacy?

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People make poor health choices for many reasons (Carrera, 2014). One reason is a lack of information and knowledge. Computerized decision aids can potentially help reduce the health knowledge gap. It is difficult to determine how much impact providing decision aids and decision support will have on improving the health of a population. A cynical or pessimistic person might quickly say the impact will be insignificant. Promoting technological solutions to improving health decisions might even seem trendy or self-serving on the part of app developers.

Health.gov defines health literacy as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions." Computerized decision aids and decision support can both provide information and assist in structuring health decision making situations. According to http://www.pfizer.com/health/literacy, "Low health literacy affects over 90 million people in the United States."

The advent of real-time health data gathering means that people can be expected to provide more of their own health and wellness monitoring. To do this, people need knowledge. Data can be captured about many indicators including heart rates, blood pressure and blood glucose levels, but only the individual can make choices to monitor and try to reduce or control the readings. Wishful thinking might suggest the mere provision of data will be enough when associated with an occasional consultation with a nurse or physician. Experience suggests people need more support and feedback. Both the feedback and the support should be provided quickly and easily. In some cases support should be intrusive and even "demanding". Think of a persistent robot that is repeatedly complaining about the behavior of the person being monitored: "You didn't exercise enough today." or "Your blood pressure readings are still too high."

Imagine a computerized decision aid that tracks one's physical activity based on goals set by the individual and then the aid provides encouragement or criticism. The decision aid can help motivate the user to make small incremental changes. Possibly the system will even post results to share with family and friends or pay you rewards. When a person hasn't excerized by a set time, say 9 a.m., the system will start to "beep" or in some other way provide a negative reminder. Check Pact (http://www.pactapp.com/). It "uses cash stakes to help you achieve your health goals, week after week." Also, check apps like coach.me, happify.com, and stickk.com. Nguyen (2015) reviews exercise support apps like Strava and Sworkit Lite.

For most people, motivation comes and goes to improve one's health. We are often less motivated to do the "right" thing than the wrong thing, but small rewards can change people's behaviors. If people determine what they will be reminded of or "nagged" about and are then rewarded for actions their behavior should change. To have a significant impact, health decision aids **must** be developed at a reading comprehension level that is appropriate for targeted individuals. Health care jargon can reduce effectiveness of a decision aid and therefore should be avoided.

The Joint Public Health Informatics Task Force (2013) concluded "As health information technology in both healthcare and public health settings matures, it is expected to provide tools to support decision making, whether applied to an individual patient in a clinical setting or to groups of patients who might share certain conditions or exposures." Fiks (2011) argues "as decision support evolves, the clinician should no longer be the sole target of information and alerts."

One can reasonably conclude that computerized decision aids can support and assist people who are motivated to improve or maintain healthy life styles (cf., Lewis and Pignone, 2009; Hargraves and Montori, 2014). The magnitude of any impact is varied however and it is a function of the aid itself, its delivery mechanisms, and motivational factors. Overall more research is needed as we develop health related computerized decision aids and reminder systems.

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