

THE GAMIFIED SELF

**How numbers, flow, and games can help patients
take control of their health**

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Games are great for many reasons. Aside from being immensely entertaining, games can help us recover from injuries, teach us new skills, even create new connections in the brain (Kato, 2010). Games and game design philosophies can also help solve one of the greatest healthcare problems of today: non-compliance.

Nearly half of all Americans have some kind of chronic illness (Wu, 2006). Chronic illness can be defined as an illness that will never go away, and must be managed rather than "cured". Patient compliance is when a patient completes his or her medications according to the prescribed dosage, time, frequency, and direction in order to properly manage the symptoms of their illness. Management can mean many things, sometimes it is as simple as taking one pill once a day to manage blood pressure, and sometimes it can be complicated treatments such as dialysis, immunosuppressive medications, or chemotherapy.

Of the patients with daily medication regimens, two out of three do not adhere to the plan (Greenberg, 2013), and 50% of medications for chronic illness are not taken as they are prescribed (Osterberg, 2005). Problems arise from this, not just for the patient, but for caregivers, healthcare, and insurance industries as well. Non-compliance costs around \$300 billion a year (NEH, 2009) and accounts for nearly 125,000 hospitalizations and 10% of deaths a year (McCarthy, 1998). Patients who do not adhere to their regimens are 2.5 times more likely to require hospitalization, and need to stay in the hospital for longer periods of time (Lau, 2004). But the economic and statistical data is nothing compared to the biggest problem with non-compliance – the patients themselves report poor quality of life and diminished will to live (Greenberg, 2012).

So why is non-compliance so prevalent? Why are patients so unwilling to do all they can to stay healthy and happy? It is a complicated issue, with many economic,

behavioral, and institutional problems. To stay on topic, this paper will focus on the behavioral and social aspects of these problems, and leave the economic implications to a separate set of scholars. The top reasons reported by patients are that the instructions and medications are too complicated, communication with the provider is limited, there is no social support, patients have inadequate tools to help them, and they simply “forgot” (Viswanathan, 2012; Greenberg, 2012).

Several ways exist to help solve the problem of non-compliance. Obvious answers include behavioral support and education, provider access to compliance information, case management, and proper tools to help the patient understand what is happening and how to fix it (Viswanathan, 2012). The long-term solution is more complex, but has the potential to be more intrinsically important than any other solution.

The answer may come down to motivation. How do we properly motivate patients to be more involved in their own healthcare? What do the tools need to look like to change and reinforce certain behaviors? Motivation according to Hufen (2013) includes three things: Autonomy – “let me do it myself”, Mastery – “let me progress in what I do”, and Purpose – “give me a reason to do it”. Motivation then for healthcare seems strikingly similar to motivating someone to play a game. A challenge is set, a goal is met, and a reward is achieved. On to the next challenge.

Such challenges must include a sense of control over the patient’s circumstances, attainable long and short term goals, awareness of one’s actions, and the acquisition of new skills. The rewards must be entirely intrinsic, and must be quantifiable to gauge effectiveness. All of these features can blend perfectly into a new compliance strategy – the Gamified Self.

The Gamified Self is a blend of three philosophies – the Quantified Self,

Meaningful Gamification, and the Flow State. Quantified Self encourages tracking personal data, interpreting, then acting on the data to “get some systematic improvement,” (Wolf, 2010). Meaningful Gamification is the integration of user-centered game design elements into non-game contexts (Nicholson, 2012). The flow state is the perfect balance between challenge and reward, and can help reinforce self-motivated practices (Czik, 1990). All three of these ideas working together can create an autolytic experience for the user to participate more in their own care.

The Gamified Self is someone who has access to their personal data and is empowered by that information, can gauge the effectiveness of that data, and *chooses* to use that information to maintain and improve their health. To be specific, a Gamified Self user may check their complete metabolic panel test results, see in those results that their potassium level is at 3.2, apply the knowledge that their potassium level should be between 3.5–5, eat a banana, input that banana in the nutrition tracker, and then be rewarded by positive reinforcement by the tool and by people in the patient’s social network. The challenge was met – “my potassium is low”, the goal was set – “to increase my potassium, I will have a banana”, and the reward is achieved – “now I will not have to worry about my potassium, my health is intact”.

To begin the Gamified Self, one must first have data. We already do this and have been doing it for quite some time. Pedometers and portable heart rate monitors have been gaining in popularity since the early eighties (Philips, 2007). Apps like *MyFitnessPal*, *RunKeeper*, *Fitocracy*, and others are some of the top downloads for mobile devices. Gadgets like the FitBit, Nike+ Band, and Jawbone Up can be found on the wrists of over 50 percent of Americans (NPD Group, 2014). The Quantified Self movement was created by Gary Wolf and Kevin Kelly around 2007 when self-tracking started to become more

mainstream. Wolf and Kelly started seeing differences in how people were using the tracking data in their daily lives. Some people were simply tracking numbers and then “pushing them outward,” but Wolf then suggests in his TED Talk that we “[use them] to look inward, as mirrors. So that when we think about using them to get some systematic improvement, we also think about how they can be useful for self-improvement, for self-discovery, self-awareness, self-knowledge” (Wolf, 2010). Quantified Self scholar Whitney Erin Boesel suggests that “QSers don’t just self-track; they also interrogate the experiences, methods, and meanings of their self-tracking practices…” (2013).

While many in the Quantified Self community track data such as sleep, diet, and exercise, for the chronically ill self-tracking can be even more important. Being able to track everything from insulin levels to white blood cell count to the levels of certain minerals in the blood can make all the difference between a normal day and an emergency room visit. Accessible data about one’s body paired with the skill to interpret and act on that data can give patients a greater sense of control at a time when things may seem out of control (Swan, 2009). Quantifying and interpreting data helps the patient learn new things about themselves and their illness, and thus how to better manage it. Studies have shown that being able to see progress helps motivate the user to achieve certain goals, such as weight loss, athletic ability, and productivity (Consalvo et al, 2008). Quantified Self goes beyond crunching numbers to being able to reflect and engage the data to be able to see progress.

One way to easily and intuitively show effectiveness and progress is through use of game design elements in non-game contexts (Deterding et al, 2011). Gamification is a way to engage the customer with the product by motivating them toward some external reward (Nicholson 2012). This can be anything from earning points for free coffee and

becoming the “Mayor of Downtown Salt Lake City” by checking in with local businesses, to more underground uses like Alternate Reality Games (ARGs) and crowdsourcing activities. Gamification has come under some criticism because of its close association with marketing (Bogost, 2011) and its removal of the element of play for fake achievement (Deterding, 2010). The BLAP (Badges, Levels and Leaderboards, Achievements, and Points) system is an easy way for the customer to engage with the product, understand their progression, and motivate them toward an external reward (Nicholson, 2012). For external reward systems to be successful however, the rewards must keep coming and must never be taken away (Zichermann & Cunningham, 2011). Alfie Kohn argues that society has become accustomed to having external rewards be the key to motivation, but providing someone the will to control their actions and behaviors by their own choice without external motivators leads to better results (1999).

Nicholson proposes that gamification can be most useful when it reinforces intrinsic reward. When experiences and learning are inherently enjoyable for the user, the motivation to do it needs no separate external reward (Ryan and Deci, 1999). Play is the prime example of this. We do not need a reason to play, we play because we enjoy it and the experience (Caillois, 2001).

So how do we make all of these numbers and medications into play and motivate people to use them? The Flow State describes why we might feel the experience of play is a meaningful one. Flow is described at the perfect balance between challenge and reward (Csikszentmihalyi, 1990). Csikszentmihalyi states that there are several reasons why the flow state makes the experience of play a meaningful one including accomplishing a challenging activity that requires skill, merging action and awareness, clear goals and feedback, focus on the task, and a sense of control (1990). Together, these help create

the intrinsic reward and autolytic experience that can be used to help patients comply with their medical treatments.

Chronic disease is the challenge, the skill is in managing it with quantification and interpretation of data. Csikszentmihalyi says that when the activity is so engrossing, everything else fades away, but the Gamified Self is the exact opposite where the activity is so engrossing awareness expands (1990). Awareness of oneself before, during, and after an experience is also a companion component to the flow of the experience. Players will learn the skills necessary to focus on what their bodies are telling them, and give them the ability to act on it. Long term and short term goals with constant, consistent feedback provide the player with a sense of progress. Accessible data, progress, and effectiveness of the treatment give the player a sense of control, not only of their information, but of their health overall.

While this is not a fix-all for the patient compliance problem, it offers some solutions that are worth exploring. More research is needed to determine the success of the Gamified Self, and many iterations will be necessary to determine the right mix of features. Usability will be an important factor since non-compliance is not age, race, or gender specific. Many of these ideas are already in practice in their own separate ways, but bringing them together can provide powerful motivation to people suffering from chronic disease resulting in a healthier, happier, and longer life.

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