

From Apathy to Adherence: Using Personalization and Precision to Improve Health



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by | **Frank Gentilella**



Medication nonadherence is a costly problem for health plan sponsors. Technology, including mobile apps, may provide an effective solution.

The \$337 billion question: “What is the most significant driver of health care costs in the United States?” It is not the cost of prescription drugs, doctor salaries or government regulations—It is how we (fail to) act.

According to Express Scripts research, medication nonadherence is one of the costliest health care problems in the U.S.

A 2018 survey conducted by Russell Research showed that nearly one-third of those taking prescription medications for chronic conditions say they are not concerned about forgetting to take their medications, despite the fact that almost one-half believe it is the most important thing they can do to protect their health.¹ And they’re right in believing that taking preventive and management medications for chronic conditions can ward off a lot of pain and suffering, not to mention cost.

That \$337 billion represents health care waste—emergency room visits, hospitalizations and extra tests—all to treat health complications that might have been avoided through medication adherence and proper preventive care.²

To bridge the widening gap between health care plan members’ best intentions and worst behaviors, health care providers should consider a more direct, cost-effective approach that promotes convenience: leveraging digital solutions to develop personalized health outcomes through precision-based care. By complementing data and behavioral sciences with clinical specialization, digital innovation can

expand choice and enhance the health care experience for all plan members, making certain that the healthiest decisions are also the easiest ones to make.

With this in mind, the new question becomes, “How can providers engage with members to end nonadherence?” The answer may be in the palm of members’ hands.

There are plenty of consumer gadgets and digital applications available and no shortage of vendors knocking on benefit administrators’ doors with promises of better health care for all. But simply making everything available to everyone or, worse, becoming overwhelmed and providing none of these potentially useful tools to anyone is not a solution. Health plan sponsors faced with making benefit design decisions—including whether to provide digital apps and other high-tech tools to members—need a better way.

The better approach may be using data analytics to truly personalize health care. What if plan sponsors could engage solutions that help prescribers and other clinicians identify which patients are most likely to become nonadherent, figure out why and deploy the right individualized technology to help? Through machine learning and predictive modeling—the use of advanced analytics and computer modeling to mine patients’ medication, lab and clinical data for actionable insights—plan sponsors can address medication nonadherence. Data analysis can help providers select the right high-tech adherence intervention to get results, patient by patient, especially in chronic illnesses such as diabetes and asthma.

takeaways

- Medication nonadherence is a costly health care problem in the United States and is a contributing factor to health care waste.
- About 38% of diabetics fail to take their medication as prescribed, which results in three times more inpatient visits and 1.6 times more emergency room visits per year.
- Nearly 55% of patients with asthma self-report as nonadherent to their prescribed dosage of asthma medication.
- Technology that uses data analytics, machine learning and predictive modeling can help plan sponsors address medication nonadherence.
- Mobile apps that include features such as medication reminders, refill capabilities, appointment scheduling and clinical messaging may be an effective solution to helping plan participants manage chronic conditions and better adhere to their medication.

A Gamified Approach to Diabetes Management

Currently, more than 77% of adults own a smartphone and users check them around 80 times a day.³ America’s cultural obsession with digital connectivity lends itself to the pairing of condition management strategy with a mobile health component. Mobile platforms can deliver statistically and clinically significant benefits in members with chronic conditions, such as diabetes and asthma, which leads to better health outcomes for patients and decreased costs for health plan sponsors.⁴

According to the Joslin Diabetes Center, diabetes is one of the most widespread and expensive medical conditions, affecting more than 30 million people in the United States. People with diabetes face clinical challenges in managing their disease to prevent serious complications, such as heart disease, kidney failure and blindness. Beyond physical impairments,

diabetics also are acutely susceptible to the emotional burden of their chronic condition, and one in five patients with diabetes is prescribed an antidepressant.

Despite the rising prevalence of diabetes and associated comorbidities, 38% of diabetics still fail to take their medication as prescribed, which results in three times more inpatient visits and 1.6 times more emergency room visits per year.⁵ For plan sponsors, health plans cost nearly three times more for patients with diabetes than for those without diabetes, with \$176 billion in diabetes-related medical costs in the U.S.⁶ How do health care providers address the full spectrum of diabetes care and increase adherence among those most likely to be nonadherent?

A number of mobile apps have been developed to assist people with diabetes in managing their condition. For example, to combat the serious consequences of nonadherence, an app developed by Mango Health uses a “gamified” approach to condition management. Through the app, users receive medication reminders, clinical messaging and refill capabilities via a user-friendly interface called an Insights Dashboard. Users earn points as they respond to daily reminders. As more points are earned, the user moves up from level 1 to 8. This “leveling up” provides users a sense of progression and mastery toward goals. Moreover, elements of peer comparison, such as showcasing a user’s medication adherence data compared with others in the Mango community, are shown to further increase engagement.

Clinical data for Mango Health users shows that the app is effective. After the first 30 days of use, adherence rates rose by nearly 6%, with an average of more than two daily user sessions and

60% read rates for clinical messaging. More surprising still is that 60% of users are at least 50 years old. In this way, members benefit through increased adherence, improved health literacy and closed gaps in care, while plan sponsors reduce the cost of drug spend and improve health outcomes for member populations.

Plan sponsors have a powerful tool when their benefit managers combine the potential of a solution like smartphone apps with patient data analytics, which can identify which individuals are most likely to need—and respond to—this type of digital nudge.

Gaining Control Over Asthma Through Digital Medicine

While diabetes represents the costliest therapy class for plan sponsors and patients alike, asthma sufferers stand alone in terms of medication nonadherence, since nearly 55% of patients self-report as nonadherent to their prescribed dosage. One in 12 Americans has been diagnosed with asthma, totaling 25 million people.⁷

Despite the affordability and availability of asthma medications, the biggest barrier to better control is nonadherence to prescribed controller medications, which can reduce both the number and severity of asthma at-

tacks with proper use over time.⁸ Since asthma tends to disproportionately affect children in low-income communities, several variables besides simple forgetfulness contribute to nonadherence among asthma patients, including age, health literacy and the complexity of their prescribed therapy.

Data from digital devices can help plan sponsors identify members who are struggling with poor management of their disease and then target those members with proven approaches to helping them stay on track.

While most mobile applications for asthma control focus on medication reminders, the digital therapeutics company Propeller Health has developed a digital platform that brings together trigger tracking, clinical messaging and dosage documentation. Patients use the platform by attaching a sensor to their existing inhaler. The sensor then collects data on the amount, frequency and location of each dose and delivers insights to the patient via their smartphone, mobile phone or desktop computer, including medication adherence reminders, daily asthma forecasts, symptom triggers and tips to help them self-manage their disease. The mobile app also allows for the user’s data to be shared wirelessly with family members, physicians and pharmacists, with the patient’s consent. The

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inhaler activity trends are reviewed by clinicians who receive alerts or on-demand reports notifying them of patients who are using their rescue inhaler more often than usual or are nonadherent with their controller medication.

For example, a pharmacist receiving an alert reached out to a patient who showed a sudden increase in use of her rescue inhaler. Through a probing conversation, the pharmacist ruled out common issues for asthmatics and got to the bottom of the issue: The patient had a new co-worker, sitting just a few feet away, who wore strong cologne that triggered asthma symptoms. The patient hadn't made the connection and, without a targeted and timely intervention, could have continued to have worsening asthma symptoms and even a life-threatening attack.

As of 2018, the asthma-control technology has been tested in more than 16 clinical studies, totaling 2,500 patients, and has been deployed in more than 65 commercial programs across 16 countries.⁹ According to these studies, more than 50% of patients with uncontrolled asthma achieve controlled status within one year of starting on the app, with rescue inhaler use declining by 75%.¹⁰ With this data, clinicians can perform patient-specific counseling to improve health outcomes, allowing their patients to breathe easier through better control over their condition.

Tasked with providing members with better health outcomes and fuller lives through precision-based care, plan

sponsors can also breathe a sigh of relief when it comes to plan savings. With more than 775,000 annual emergency visits by children under the age of 15, nonadherence to asthma medication contributes significantly to plan spending on direct medical costs, totaling \$50 billion every year. By applying the clinical data behind their innovative solution, Propeller Health reports an average of \$930 per patient per year in asthma direct cost savings, with a return on investment of two to five times depending on the percent of improvement.¹¹

Conclusion

Technology and innovation affect all areas of our lives, and health care is no different. When we see people with a smartphone or tablet in hand, we often assume they're texting a friend, posting a tweet or scrolling through their newsfeed. However, they may also be using their mobile devices to monitor their health, mitigating the risk of nonadherence while promoting innovative care through digital convenience—And convenience is a key ingredient to patient engagement. These apps can be used to schedule lab testing, send and receive appointment and medication reminders, and relay information to health care professionals in real time. When it comes to medication, they can be used to price compare across pharmacies, order refills and check for potentially dangerous interactions.

These technologies can have a significant positive impact, but every approach is not the best fit for every patient. In addition to reducing the cost of health care for patients and plan sponsors, the smart use of technology and data analytics increases the chances that physicians and pharmacists are aligning the right patient with the right drug, and the right adherence solution, every time. 🌐

Endnotes

1. "To Know But Not Do: The State of Rx Adherence in the U.S." Available at <http://lab.express-scripts.com/lab/insights/behavioral-sciences/to-know-but-not-do-the-state-of-rx-adherence-in-the-us>.
2. Express Scripts *Drug Trend Report*, 2012.
3. Pew Research Center, November 2016.
4. IQVIA Institute for Human Data Science.
5. Express Scripts *Drug Trend Report*, 2016.
6. American Diabetes Association.
7. American Lung Association.
8. "Adherence: The Goal to Control Asthma." *Clinics in Chest Medicine*, 33.3 (September 2012): 405-417.
9. Propeller Health website.
10. "Effectiveness of Population Health Management Using the Propeller Health Asthma Platform: A Randomized Clinical Trial." *The Journal of Allergy and Clinical Immunology*, 4.3 (2016): 455-463.
11. Ivanova et al., 2012.

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