

CASE STUDY

Improving Medication Adherence, One Smart Pill Bottle Cap at a Time



Highlights

Tackling a Healthcare Crisis

PatchRx's solution is a simple and effective device that addresses the issue of medication nonadherence.

A Universally Accessible Solution

PatchRx's smart cap can be used on any pill bottle a pharmacy might carry.

Keeping Patients and Providers Informed

By tracking patients' medication usage, and sending alerts to help them maintain their prescribed schedule, this smart cap keeps patients on track and their providers aware.

PatchRx is a medical solutions provider that aims to tackle the serious issue of medication nonadherence across the United States. With nonadherence to a prescribed medication schedule estimated to account for about **one-quarter of all hospitalizations** in the US – and as many as 125,000 deaths each year – this is a hot-button issue that needs to be addressed.

When designing their solution, the PatchRx team recognized a few notable challenges that any remote care device will need to address for success. Chief among these was designing a solution that fits into perspective users' everyday routines, as it significantly lowers the barrier of entry for would-be users.

Securing the reliability and integrity of any data generated and/or transmitted from this solution is also paramount, as medical data is among the most sought-after personal data by bad actors.

With these concerns in mind, PatchRx set out to devise a technological solution that was simple enough for anyone to pick up, sophisticated enough to securely route data where it needs to go, and – most importantly – helped patients stay on top of their daily medication usage.

“ The coverage Soracom has provided in a lot of those rural networks has been exceptional, but I think it just comes down to the fact that there really wasn’t another service provider that had what you guys are capable of, which is offering excellent bandwidth and coverage in very rural networks in the United States. ”

Andrew Aertker

CEO and Co-founder, PatchRx



The Challenge

Finding A Technological Solution to Simplify Medication Management

From the start, the team at PatchRx recognized that nonadherence affects people from all walks of life, meaning that any solution to such a widespread challenge would need to be universally accessible to make an impact. That meant finding a technology that not only works with something all medication users possess, but one that can transmit data even from remote or rural locations.

Like many companies, PatchRx briefly attempted to function as an app for smartphones, but technical limitations and limited user engagement prevented their solution from having much of an impact.

“We found that patients really don’t want another app or widget on their phone,” said Andrew Aertker, CEO and Co-founder of PatchRx. “People typically don’t like to change their usual routine.”

This is when the company began devising a device attached directly to the underside of pill bottle caps, which would both track medication usage and transmit that data to caregivers. Initial prototypes proved bulky, leading developers to evaluate different chipset and power source combinations to make the device as universally accessible as possible.

That also meant exploring different cellular connectivity options, as the majority of the population that would be served by the device lives in rural areas.

“One of the biggest hurdles we had to overcome in developing a truly universal product was the lack of reliable cellular connectivity in many rural areas,” said Aertker. “We wanted to make sure that any patient could take our technology home – regardless of their zip code.”

The Solution

A Universal Smart Pill Cap Powered by Cellular Connectivity

Several iterations of development cycles have led to the PatchRx Smart Pill Bottle Cap, named the PatchCap, a low-profile peel-and-stick device that adheres to the underside of any pill bottle cap and tracks when patients take their medication. The device is paired with a plug-in gateway that aggregates all of the collected data to generate a comprehensive overview of each patient’s medication history, identify and monitor trends in usage, and share this information with the appropriate caregivers.

The final design is not only small enough to work with virtually any pill bottle, its peel-and-stick design is intended to make the solution simple enough for any patient to use.

“Whether you’re 85 years old and you’ve been taking medication for 45 years, or you’re 25 years old and just taking a medication for the next two weeks, we’ve designed it to be less than 15 seconds of setup,” said Aertker.

As for its connectivity solution, PatchRx tested several individual carriers but found their connectivity lacking in terms of coverage area and reliability. That eventually led them to Soracom, where comprehensive nationwide coverage, consistent connectivity, and automatic failover mean devices can easily connect – and stay connected – wherever they are deployed.

“We need the flexibility to engage on various mobile networks at any point in time,” said Aertker. “We need to ensure that not only are we going to be transferring data effectively and securely, we need to be able to flip between networks and exercise bandwidth wherever we need it.”

Smart Design and Reliable Connectivity are Essential for Remote Healthcare Solutions

PatchRx has found success with its smart pill bottle cap by focusing on user engagement. By designing its device to fit naturally into a user's day, PatchRx has helped address nonadherence issues without burdening users with additional steps and processes.

By partnering with Soracom, PatchRx has also found a connectivity partner that provides strong, secure cellular coverage across its entire area of operation. With an unblemished uptime record that has kept PatchRx's devices up and running consistently, Soracom has empowered this solution to create lasting changes in medication users' lives.

"The best carrier in the world or the best [SIM] chip in the world is [one with] a team that you don't need to talk to because it just works," said Aertker. "That's what you want at the end of the day, and that's what we've gotten with Soracom. It's been phenomenal."



Service in Use

Soracom Air: Cellular IoT Connectivity Over GSM, 4G LTE and Cat-M1