

## Public Heroes

**Taking a company public invites all sorts of distractions, from demanding analysts to hostile investors. Meet four founders who've made that leap while staying true to their mission.**

By Kate Rockwood and Zoë Henry

*A nerd-turned-MD is creating algorithms to deliver the overdue digital health care revolution.*

### INOVALON

IPO  
February 2015

2017 REVENUE  
**\$449 million**

PROFIT  
**\$34.8 million**



**K**ieth Dunleavy was in the middle of preparing the holiday dinner last Thanksgiving when his 76-year-old mother realized that she was in dire need of a refill for her Parkinson's medication. Thin-voiced and frail, she pulled out her smartphone, put the call on speaker, and explained to the pharmacist

that, though her previous refill of the expensive drug normally would have lasted to the end of the month, her doctor had tweaked the dosage. She needed a new prescription much sooner. Like, today. A national holiday, with no doctors sitting by the phone eager to answer pharmaceutical questions.

It wasn't a straightforward ask, but Dunleavy was struck by how much more difficult the 25-minute call might have been if not for the powerful but intuitive platform he knew the pharmacist was using, a platform that could pull up his mom's previous scripts, access data from previous treatments, and do a real-time analysis

of potential drug interactions or side effects. Dunleavy could visualize exactly how the pharmacist was navigating the platform. Because he built it.

“I was watching care happen right in front of me, with the dog barking in the background and kids moving in and out of the kitchen,” he says, “and it really brought to life this incredibly complex system that needs to work together to take care of this woman.” And because Dunleavy is almost always in work mode, he couldn’t help but note a few tweaks he wanted to make to the next upgrade so that similar scenarios would be even easier in the future.

**You don’t need** to be the founder’s mom to benefit from Inovalon’s analytics. If you’ve enrolled in a health plan, visited a doctor, filled a script at the pharmacy, or used a medical device, there’s a better than one in two chance that the Bowie, Maryland-based company has run your health info through its real-time algorithms. Inovalon counts hundreds of insurance companies, provider systems, and pharma, device, and diagnostic companies as clients, including 19 of the top 25 health plans and 13 of the top 15 pharma and life sciences companies. It pools data on more than 240 million patients.

While its clients are household names--Walgreens, Medtronic, Merck, Anthem, Aetna, Blue Cross Blue Shield--none of them could do what Inovalon has done, which is build ways for massive data sets to talk to one another and develop predictive analytics that can drive better patient outcomes and lower medical costs.

For decades, our health care industry has been dangling the prospect of a system in which each of us has an electronic health care record that

follows us around so every provider has real-time access. Instead, issues such as the inability of systems to exchange data have hindered progress. Meanwhile, U.S. health care costs continue to climb--hitting \$3.3 trillion in 2016, a 4.3 percent bump over 2015. The Inovalon One Platform, as this combination of analytics and massive cloud computing muscle is called, is transforming the tsunami of big data into something actionable and understandable.

Today, a pharma manufacturer might use the platform to track not just side effects and drug interactions, but also how compliant patients are in taking their meds, as well as a drug’s effectiveness compared with other options on the market. Doctors can look at a patient’s electronic health care record--including trips to a physician’s office, urgent care facility, or local CVS for a flu shot, hospital stays, and notes from a pharmacist--and know that all systems are actually communicating. Hospitals can flag patients who are juggling multiple chronic conditions and most likely to wind up back in the emergency room after a procedure--which could cost them Medicare penalties--so clinicians can proactively adjust care plans.

Dunleavy cites research showing that with predictive analytics in play, the average hospital stay drops by nearly a day, the number of ER visits declines by more than 20 percent, and complications from chronic conditions (such as infections and amputations) plummet.

For a brand that no one beyond the health care industry has heard of, Inovalon became a quiet behemoth before stepping onto the public stage. In 2015, looking to attract talent, to reach a broader variety of health care clients, and to access capital for big-budget acquisitions, Dunleavy took

the company public. Inovalon raised just over \$600 million in its IPO, and last year recorded \$449 million in revenue. In March, the company announced a \$1.2 billion acquisition of the clinician-focused Ability Network, with the goal of getting its One Platform into more provider hands.

**Dunleavy never dreamed** of being a doctor. “I was born an engineer,” he says. As a geeky, code-all-night teen, he was more obsessed with robotics and computer science than with flesh-and-blood patients. He studied neuroscience and engineering at Dartmouth, footing the tuition by taking on every programming gig that came his way and, with a classmate, launching a small computer company from his campus apartment. For his honors thesis, he developed a system that could simulate the way the human brain works in order to, someday, power robotic limbs.

But when a professor mentioned that if he stuck with computer neuro-enhancements and artificial limbs, it would be a physician who would one day implant his design, Dunleavy chose to go to med school. “I was fascinated by the whole process, which led to my saying I needed to do that part also,” he says.

**That unflagging work ethic** and ambition carried through his time at Harvard Medical School, where he earned a degree while also programming AI software for Merck. “They were willing to pay for all the hours I was willing to work, and I thought that was fantastic, because I was willing to work around the clock,” he says. “I worked my heart out.”

Even in a sea of cutthroat residents, Dunleavy stood out: At Johns Hopkins, he and other residents would track the number of patients admitted

and discharged during each of their brutal, multiday shifts. Any resident who could clear his or her entire docket would crow about “winning the game.” “It was very rewarding, and I took it on as a challenge,” he says.

As he was besting other residents, Dunleavy quickly saw how many elements were beyond his control: setting up social services, coordinating in-home care, arranging for translators. Once, frustrated that a barefoot patient’s discharge was dragging, Dunleavy jogged down to a nearby store and bought him a pair of shoes. “Winning the game!” Dunleavy says, grinning at the victory two decades later.

Being a physician was rewarding, but when Dunleavy came to understand its limitations, he faced a decision: “I truly loved seeing patients. I ultimately came to the conclusion, however, that I could impact more patients by developing data-driven health care solutions for millions of patients than by seeing them personally one by one.” By all accounts, Inovalon’s early years were a slog—crunching medical data, tracking compliance for insurance companies and state health agencies. Massing that data, Dunleavy began building out a system that could predict a patient’s progress and ultimately improve outcomes. Dunleavy worked for years before making his first hire, and even then expected his staff to have the same relentless focus that he did.

Dan Rizzo, Inovalon’s Innovation Fellow and an early employee (there are now 3,000-plus), remembers working on a client presentation in the hospital while his wife was in labor. “Keith would never ask you to do something he wouldn’t do himself, but that’s hard when he’s the hardest-working person you’ll ever meet,” Rizzo says. Business began

taking off in 2003, with the passage of the Medicare Modernization Act—the largest overhaul in the program’s nearly 40-year history.

Insurance companies saw that individual member data would be necessary not just for proving compliance but also as a key measure of quality and reimbursement, he says. Soon, Medicaid was looking at similar quality metrics. All of this has been part of an industry shift away from volume-based health care—getting paid for services, such as how many tests you perform—and toward value-based health care—getting paid to proactively keep patients healthy.

“Folks have always collected data, but with the move from volume-based to value-based outcomes, you have to gather a lot more information from a lot more sources,” says Mark Lorence, a health care analytics expert at PA Consulting. “Instead of just collecting lagging data, like how many diabetes patients you saw last quarter, now you need to bring together all sorts of metrics and measures and use them to create predictive models.” For instance, is a patient’s medical condition likely to get worse or better? Which of the available health care resources within a geographical area will produce the best results for a specific patient? And more broadly, what’s the best way for the health care system to interact with a patient to produce better results?

Inovalon’s ability to do advanced data aggregation and analytics was an easy sell for insurance companies struggling to make sense of messy data silos. But to chase market dominance, Dunleavy needed outside capital. In 2008, André Hoffmann, vice chair at Roche Holdings and an early investor, doubled down and bought 15 percent of the company from shareholders. The funding would allow Inovalon to better manage the growth Dunleavy

envisioned, as well as let early investors and employees cash out. As Inovalon grew, so did the data set, says Rizzo, which in turn made it easier to get new clients on board because they could leverage richer insights with greater confidence and anonymity.

**Undaunted by med school,** programming for Merck, or making life-or-death decisions as a resident, Dunleavy found the IPO process stressful. “When you go public, there are all these people you want to feel a responsibility to, but you don’t even know who they are. And they’re judging whether they agree with what you’re doing on a minute-by-minute basis,” he says. “It’s a strange experience.”

Inovalon’s first-year performance was ho-hum, and in mid-2016, some class action law firms sued, because that’s what they do. “Whenever the stock goes down, the jackals come out,” says James Angel, an associate professor at the Georgetown University McDonough School of Business.

Inovalon has since reclaimed its stride. In the last quarter of 2017, sales increased 19 percent year-over-year, and the Ability Network acquisition is poised to combine the Inovalon One Platform with the Ability Network of more than 44,000 provider facilities. This connects the entire health care ecosystem—payers, manufacturers, diagnostics, all the way down to the patient’s point of service—to deliver real-time, value-based health care. Because the data brain that Inovalon has built works best when every part of a patient’s health care journey is feeding the machine.

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