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I cover science and medicine, and believe this is biology's century.

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Should Big Data Pick Your Next Doctor



Grand Rounds CEO and co-founder Owen Tripp. Credit: Tim Pannell for Forbes.

This past spring, Owen Tripp, 37, was living the Silicon Valley dream. His latest company, Grand Rounds, had raised \$100 million at a valuation said to be about \$1 billion. He and his wife had a new baby, their third child. Sure, the noise from the kids—all of them under 6—meant he slept with earplugs, but so what? Life was great.

Then he woke up one morning convinced he'd left an earplug in his right ear. He checked. No plug. But he couldn't hear anything in that ear. His doctor twice said it was just clogged before recommending an ear, nose and throat specialist. When he pulled up the specialist's Web page, something didn't feel right: Her expertise was in swallowing, not hearing. "I'm not feeling super-comfortable with the way this is being looked at," he remembers thinking. "Why am I being referred to somebody who seems to be more versed in swallowing?"

Most people would just go to that doctor anyway. Or they'd call friends in the hope that someone would know a specialist. But Tripp is not most

people: He is the cofounder of Grand Rounds, which is focused on matching patients with the right doctors. The company uses a database of some 700,000 physicians, 96% of the U.S. total, and merges it with insurance-claims data and biographical information to grade doctors based on the quality of their work. The idea is to help people find a physician who will give them the right diagnosis the first time around and link patients with experts who can give second opinions. For individuals, it costs \$600 to get a doctor recommendation and \$7,500 to get a second opinion.

Grand Rounds won't provide revenue figures, but employers, including Comcast, Quest Diagnostics, SC Johnson, Wal-Mart, News Corp. and Jamba Juice, pay for the service on a per-employee basis because they believe it cuts down on incorrect diagnoses and unnecessary procedures. Some 3 million employees have access to the service, although only a small percentage use it. At Costco, for instance, 2% of employees used Grand Rounds this year and 60% of those who got a second opinion had their care changed.

The team at Grand Rounds matched Tripp with a doctor in San Francisco. She prescribed a specialized MRI. After the scan, the head radiologist at Stanford called and told Tripp there was a 2.6-centimeter growth—a tumor called a schwannoma—in the nerve that led to his ear.

“My wife is sitting right next to me, and we both start panicking,” Tripp says. “I mean, we’re cool under fire, but inside we’re wondering, How’s this going to work for the kids if Dad’s not here in a few years? We’ve got a 10-month-old child. He’s not even going to remember me. How are we going to talk to our 5-year-old?”

The tumor was likely to be benign, but it still required major surgery. Grand Rounds' data scientists evaluated not just individual doctors but also entire surgical teams for their experience and skill with a procedure that is performed only 3,000 times a year in the United States. Tripp ended up with a team at Stanford, but he talked to surgeons around the country, who told him he'd have to make a difficult choice: between preserving the ability to move his face and the ability to hear in that ear. For a CEO the choice

was obvious: He couldn't imagine making deals with strange expressions on his face. He was under anesthesia for 11 hours as the tumor was scraped away from the nerve, layer by layer. When he woke up, he smiled broadly. His face wasn't paralyzed, but he was deaf in his right ear. "I think [the deafness is] a critical reminder of where I've been and why we're doing what we're doing," Tripp says.

In 2011 Tripp's cofounder, Stanford radiologist Rusty Hofmann, hatched the idea for Grand Rounds, originally called ConsultingMD, out of "pure frustration." Hofmann's office at Stanford was filled with FedEx packages containing medical records from desperate patients who were hoping he could help diagnose problems with blood clots in their veins, his area of expertise. He and his staff would go through the files at no charge. But there was little he could do, and the right records often weren't included. Could there be a business in triaging all such extra work that came into every academic physician's office?

Then the idea became deeply personal. In 2011 Hofmann's son, Grady, developed aplastic anemia, a deadly disease. Grady needed a bone marrow transplant. Normally, marrow comes from a sibling, but neither of the other Hofmann children was a match. Rusty was. Grady's doctors didn't know if using his father's cells would work, but Rusty called physicians at top-tier institutions and found some who had done transplants from parent to child—and they had worked. Grady got the transplant. Also, based on the advice of experts, Rusty cleaned the air-conditioning ducts in his house to cut down on germs in order to protect his son's weakened immune system. Visitors had to get flu shots. Grady, now 13, has braces, goes to school dances and surfs.



Grand Rounds co-founder Rusty Hofmann. Credit: Tim Pannell for Forbes.

The strain on his family was immense. What do people do when Dad isn't a doctor? "Every aspect of my life was feeling this pain," Hofmann says. "This has got to change. This cannot be the way we continue for the next 50 years in this country."

Hofmann had no clue how to turn his idea into a business. An early investor set up a meeting with Tripp at Tootsie's, a cafe near Stanford. Hofmann thought it was just a meeting to trade ideas. Tripp, who had previously cofounded Reputation.com, which helps people clean up their online records, had an inkling it might be more. The two hit it off instantly. Tripp was the son of a pediatrician and had intended to go into medicine before he got involved with starting one of the first wide-area Wi-Fi networks, in the early 2000s, at Trinity College in Connecticut, where he was a student. He'd gotten addicted to tech. Now he'd found a problem he thought technology could handle. Where Hofmann saw a service to help doctors filter patients, Tripp saw an opportunity for technological disruption.

"I saw this guy who is in the business of saving people," Tripp says. "That's why he does it, and that's what he's really good at. But he is not scalable. There was just no way that this guy was going to be able to meaningfully reach all the patients who would benefit."

Hofmann offered Tripp the CEO job that night on the phone, and they met for a follow-up dinner. Hofmann was convinced Tripp would turn him down. Instead, Tripp was so hyped about the meeting that he showed up despite the fact that he was shivering with a 102-degree fever, because he wanted Hofmann to know how excited he was. They didn't shake hands for fear of sending germs home to Grady, who was still sick.

Grand Rounds' first product would be to give second opinions, mostly to patients who had severe illnesses like cancer or who were considering big procedures like back surgery. The first 150 cases yielded a shocking surprise: Two-thirds of the time, Grand Rounds' experts would change the existing diagnosis or prescribe a new treatment. Often the original doctor got it wrong.

Medical errors are estimated to kill between 100,000 and 400,000 Americans annually. That makes it sound like people are dying because of dumb mistakes, but many errors are cases of misdiagnosis or mistreatment. A 2012 study estimated that a third of the U.S. health care budget—then \$750 billion—is lost on wasteful care. Yet medicine has resisted one obvious solution: getting an extra set of qualified eyes on every case.

In fact, medicine has gone in the wrong direction. Thirty years ago it was common for insurance companies to require a second opinion before a major surgery. Grand Rounds takes its name from a long-standing medical ritual, in which complex cases are presented to an audience of doctors so that ideas can be exchanged and physicians can be sure they get the right answer. In other words, it's like doctors' rounds on steroids.

Of course, Grand Rounds' investors aren't in this game just to improve health care. They see a huge upside. Bryan Roberts, a well-known tech venture capitalist at Venrock, thinks Grand Rounds might someday play a role every time a patient picks a doctor. A couple of years ago he started offering Grand Rounds' services to Venrock entrepreneurs. "Within a couple months," he says, "I'd gotten three or four e-mails from our entrepreneur CEOs saying things like 'I think my dad's alive because you bought Grand Rounds for us.'"

Bob Kocher, another Venrock partner, who played a role at the Obama White House in crafting the Affordable Care Act, started a Grand Rounds case on his teenage niece, who had cancer. The second opinion confirmed her diagnosis but recommended freezing her eggs before her ovaries were damaged by chemotherapy. Her original doctors hadn't suggested that.

Grand Rounds employs a staff of 80 clinicians who interact with patients. The doctors' job is not to make diagnoses or correct mistakes but to deal with patients directly to help them understand what the experts said. Just handing a sheaf of papers to the patient without explaining it, Tripp says, is not enough to have an impact.

These staff physicians connect with patients, getting medical records and asking key questions, like how far the patient is willing to travel. Then they use Grand Rounds' database to match the patient with the right doctor. The company's database grades doctors on factors like where they trained, which other experts they trained with and how often they perform certain tests and procedures, based on insurance-claims data provided by Grand Rounds' customers. (Too many tests tends to indicate poor medical judgment.) The experts the company trusts are those who do best, according to a machine-learning algorithm, in literally hundreds of categories, including mortality data, readmission and complication rates.

Individuals can pay for Grand Rounds, but the company sees its big opportunity in selling its service to employers that want to reduce their health care costs. Like Costco (which, including part-timers, employs 218,000 people), many of Grand Rounds' customers self-insure. This means that while Aetna manages its health benefits, Costco is exposed to a certain amount of financial risk. The number of patients who use the service is small but increasing quickly, from about 90 patient cases a month when Costco started using Grand Rounds last January to 150 monthly cases now.

Patients are more likely to trust Grand Rounds than their own insurers. When an insurance company denies a claim, employees just become angry; they're willing to believe Grand Rounds if its doctors provide the same reason. "There's nothing like an objective party that is different from the insurance plan," says Donna Sexton, Costco's director of employee benefits.

Sometimes, of course, the original doctors got the diagnosis and treatment right, in which case Grand Rounds represents a powerful tool for getting the insurance company to pay. Leslie Nava, a personal trainer, got access to Grand Rounds through Costco, where her husband works part-time to get health benefits. She and her son both have a hereditary disease called neurofibromatosis type 2, which causes noncancerous tumors to grow throughout the nervous system. A tumor on her son's acoustic nerve was going to rob him of his hearing. The

only thing that would preserve his hearing was regular treatment with the cancer drug Avastin. Aetna wouldn't pay.

"I probably sat there crying for ten minutes," Nava says. A nurse at the doctor's office told her that her insurance included Grand Rounds and that she might try the service. She did and was amazed by the personal care she got from the company's staff physician and relieved when the report came back saying that Avastin was, in fact, the best option. Aetna agreed to pay. "It definitely renewed my faith in the health care system," Nava says.

Privately held Grand Rounds won't discuss financials, but it seems to be growing fast. The service is now available to more than 3 million people through their employers. Tripp says that revenue has been increasing 100% a year for each of the past three years and that the company's customers include four of America's largest retailers and three major food manufacturing plants, as well as Autodesk and the Wahl Clipper Corporation. He's particularly proud that Grand Rounds is offering blue-collar workers the kind of medical care once available only to the rich.

"I think that's a frequent misconception that we are simply trying to help the 1% get 1% health care," Tripp says. "In fact, it couldn't be further from the truth. We're actually helping the 99% or the 90% get the 1% health care solution." If it works, it will be an amazing case of capitalism improving the world.

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