no longer mine. I had informed him. But had I been his doctor?

Last March, my friend Paul Kalanathi, a 38-year-old neurosurgeon, died of lung cancer. Writing after his diagnosis, he contrasted his newfound obsession with cancer survival statistics with his struggle to communicate such information to his own patients without destroying their hope. As he struggled to extract from his oncologist precise information about his life expectancy, he realized, "What patients seek is not scientific knowledge doctors hide, but existential authenticity each must find on her own."[5]

Perhaps we can't provide existential meaning, but the way we share information may exacerbate patients' sense of vulnerability and alienation. When we rattle off a litany of possible risks, say "Please sign here," and check our watches when the patient says, "Hold on, I need to put on my glasses to read this," we have neither succeeded in the spirit of patient engagement nor honored anyone's values. But is more information the answer?

In an essay entitled "Arrogance," published posthumously in 1980, former *Journal* editor Franz Ingelfinger describes his experience as a patient with adenocarcinoma of the gastroesophageal junction — the area he'd studied for much of his career. As he considered the trade-offs of chemotherapy and radiation, receiving contradictory expert opinions, he and his physician family members became "increasingly confused and emotionally distraught." Finally, one physician friend told him, "'What you need is a doctor.'" Ingelfinger notes, "He was telling me to forget the information . . . and to seek instead a person who would . . . in a paternalistic manner assume responsibility for my care. When that excellent advice was followed, my family and I sensed immediate and immense relief."

The doctors I admire most are characterized not by how much they know but by a sophisticated intuition about how best to share it. Sometimes they tell their patients what to do; sometimes they give them a choice. Sometimes, when discussing treatment options, they cover all seven tenets of informed consent. Sometimes, instead, seeing the terror of uncertainty in a patient's face, they make their best recommendation and say, "I don't know how things are going to turn out, but I promise I'll be there with you the whole way."

Disclosure forms provided by the author are available with the full text of this article at NEJM.org.

Dr. Rosenbaum is a national correspondent for the *Journal*.

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Innovation as Discipline, Not Fad

David A. Asch, M.D., and Roy Rosin, M.B.A.

Some clinicians see the recent explosion of interest in health care innovation as a fad incapable of yielding sustained contributions. Such concerns seem to stem from the mistaken view that innovation is just about generating new ideas or finding new uses for the iPad. Calls for innovation can sound hollow to practicing clinicians, who know that when it comes to intractable challenges like patients repeatedly admitted with heart failure, there's no app for that.

But lately, the innovation field has shifted its focus from the generation of ideas to rapid methods of running experiments to test them. New disciplined techniques are being deployed for testing potentially value-producing ideas faster, less expensively, and more reliably. These approaches have roots in the commercial world, planted by entrepreneurs requiring reliable, inexpensive ways to test the demand for or effectiveness of new products and services.[1,2] Generating data in days or weeks instead of the months or years required for randomized clinical trials matters

just as much to health care organizations. Past approaches to learning what people wanted or needed included interviews, focus groups, and surveys. But because the link between what people say and what they do is tenuous, those approaches often took businesses down the wrong path. Newer methods test critical assumptions quickly and in context.

One such technique is the vapor test. When you select a product from a retail website and get an "out of stock" message, often the truth is that it never existed. Retailers post believable descriptions or computer-generated images of items that might interest customers, to see whether anyone will try to buy them. Their immediate goal is to see whether they could sell something if they had it. Instead of designing, sourcing materials, building, creating distribution channels, and then selling, retailers can sell first, in a context where credible evidence of demand can be generated. Vapor tests replace a wishful "if you build it, they will come" philosophy with the empirical and prescriptive "if they come, you should build it." They help answer the question "Does anyone want it?"

Because vapor tests involve deception, they require judicious deployment in health care to adhere to professional norms. An enterprising medical student recently approached us with the idea of offering immediate placement of intrauterine contraceptive devices (IUDs) in our emergency department, rather than requiring a separate visit. Before investing in such a program, we could test demand by asking patients, "We may not be able to do it today, but if I can arrange it, would you like the IUD inserted before you leave?" This "fake it 'til you make it" approach, despite its subterfuge, may do more good than harm by accelerating important changes and conserving resources.

A second technique is the fake front end, which allows teams to iterate quickly on paper or another disposable medium. The inventor of the PalmPilot (arguably the first successful mobile device) carved the first version out of wood and carried it in his pocket for weeks to see how and when he might pull it out wishing it were real; that information then guided his design. Like the wooden Pinocchio who eventually proved worthy of becoming a real boy, the wooden device helped to clarify whether intended users would behave as expected when a new element was embedded in their workflow. Fake front ends make ideas tangible to help answer the question "What will people do with it?"

Lately, the innovation field has shifted its focus from the generation of ideas to rapid methods of running experiments to test them.

The Children's Hospital of Philadelphia recently used a fake front end to test whether they could safely reduce admissions among patients with sickle cell disease presenting at their emergency department with fever but low risk for bacterial infection. As part of their routine workflow, physicians were asked to identify which children could safely be sent home. What was fake was that, to prove the safety of the approach, all patients were still admitted. The data gathered resolved the debate over feasibility, and now 27% of these children are no longer admitted.

A third technique is the fake back end, which allows teams to quickly answer the question "What happens if people actually use it?" by devising temporary infrastructure held together by chewing gum and string. In 1998, cars were considered tactile, high-stakes purchases that people wouldn't buy online. Knowing he could offer lower prices without a physical infrastructure, entrepreneur Bill Gross launched a website selling cars at below-market rates. But initially he had no cars to sell — with each sale, he ran to a dealership and bought the car to deliver at a loss.[3] The thousands of dollars Gross lost learning he could make the business work were much less than the millions most entrepreneurs lose creating a scalable infrastructure only to find they got it wrong.

To test a texting-based intervention to improve the care of low-income postpartum women with preeclampsia, a maternal–fetal medicine fellow acted as the automated system we might later develop. There was reason to think it might not work: previous attempts to engage this population had failed when patients didn't answer phone calls or show up for blood-pressure monitoring. But when women were sent

home with a blood-pressure cuff and texted daily, the majority sent readings during the critical first postpartum week.

Similarly, an orthopedics practice manager, believing access to care could be improved, advertised same-day scheduling on the practice's website, providing his personal cell-phone number so that he became a one-person fake call center. In 3 days, he validated that such a system was both operationally and financially viable and also learned that when people seek same-day scheduling (which is hard to provide), they find scheduling within a few days acceptable (which is easier).

These two projects also illustrate a technique called mini-pilots: experiments integrated with operations, which may not support the small P values necessary for scholarly publication but which also don't take months or years to conduct. A typical clinical trial fixes the intervention at the start, follows it through its course, and isn't translated into new knowledge until the unblinding at the end.[4] In contrast, successful new innovators ask, "What must be true for this idea to succeed?" and rapidly test critical assumptions in context.

An audio interview with Dr. Asch is available at NEJM.org

Only days were required to learn that patients would text back their blood-pressure readings or would seek same-day scheduling and could be accommodated. That information didn't prove the programs would work, but it permitted early decisions about whether to keep moving forward, abandon the idea, or pivot the approach because of new insights or identified barriers. In less than 2 months, we ran half a dozen postpartum-hypertension mini-pilots sequentially, each addressing a question the previous pilot had raised.

Aiming to get sedentary people walking, we launched a walking contest using smartphone pedometers and a fake back end for data collection. A mini-pilot revealed that our design inadvertently motivated active people to walk even more — but demotivated the target population, who felt defeated when they lagged on leaderboards. But observation of potent social dynamics permitted identification of new kinds of social comparisons that could get people moving. A few days of testing yielded compelling insights that justified investing in larger, more definitive trials.

With these techniques, we can test ideas faster and at lower cost to determine which ones work. Some organizations have already improved health care by using these methods to identify the intersection of human needs, business viability, and technical feasibility.[5] Collectively, rapid validation techniques make us optimistic about the enduring contribution of health care innovation. They support a culture of experimentation, in which front-line clinicians and employees can turn insights into initial data, with snippets of time and small budgets. Other industries have advanced these techniques, but health care can adapt them to do much more than just build the next app.

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Differential Taxes for Differential Risks — Toward Reduced Harm from Nicotine-Yielding Products

Frank J. Chaloupka, Ph.D., David Sweanor, J.D., and Kenneth E. Warner, Ph.D.

In a January 2014 report that marked the 50th anniversary of the first Surgeon General's Report on Smoking and Health, acting U.S. Surgeon General Boris Lushniak concluded that the enormous toll of tobacco-induced disease and death is overwhelmingly the result of combustible tobacco use, specifically cigarette smoking. He called for a rapid reduction in