

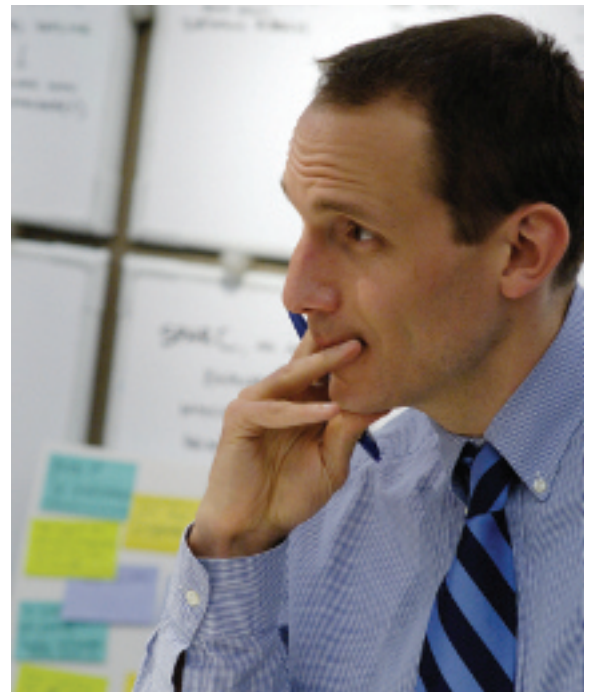
The SPARC Innovation Program at Mayo Clinic

Transforming the patient care experience through research and innovation

Medical research has led to improvements in care that would have been unimaginable to a physician practicing a century ago. The discovery and isolation of insulin means diabetes is no longer a death sentence. The polio vaccine has led to the virtual eradication of the disease in countries with high immunization rates. Organ transplantation has saved hundreds of thousands of lives.

Medical technology also has advanced significantly. X-rays have been replaced by sophisticated imaging techniques that provide remarkably detailed views of the body's interior, leading to improvements in the diagnosis and treatment of conditions such as cancer, heart disease and stroke.

Yet in spite of such giant leaps forward, there are aspects of medical care the physician of yesteryear would find remarkably familiar.



“The way in which we deliver health care has remained surprisingly static over the years. For example, the relationship between physicians and their patients has been largely paternalistic. Exam rooms today look much as they always have. It’s odd that in light of the advancements in other parts of the medical process, there’s been very little change in these areas.”

— Michael Brennan, M.D.
Chair, SPARC Innovation Program

SPARC (*See, Plan, Act, Refine, Communicate*), developed by the Department of Medicine at Mayo Clinic Rochester, uses design principles to inspire novel thinking about health care delivery.

Michael Brennan, M.D. and his colleagues at SPARC believe that in failing to examine and refine such areas, the medical community has overlooked a huge opportunity for improving patient care.

They’re out to make the most of that missed opportunity. And they believe their efforts will lead to improvements not just in patients’ health care experiences, but in their health care outcomes as well.

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“If I asked my customers what they wanted, they would have said a faster horse.”

— Henry Ford



SPARCing advances in clinical care

SPARC inspires novel thinking about the best ways to deliver health care. As part of the effort, industrial engineers observe physicians and patients interacting, and then develop ways to improve not just efficiency, but the overall patient experience.

Many SPARC activities take place in specially designed and constructed practice spaces in the Mayo Building. There consenting patients are observed as they interact with physicians. The focus of the observation varies and has included how a redesigned exam room affects the patient-physician relationship; how a new educational tool impacts a patient’s understanding of his or her condition; and how a self-service check-in system influences patient satisfaction.

“By observing people, you uncover needs that would never come out if you asked directly, ‘What could we be doing better,’” says Ryan Armbruster, SPARC’s director of operations and design. “Observing situations allows us to get at needs people are unable to articulate because they aren’t even aware they exist.”

“We’re looking to identify better ways of delivering care through hypothesis-driven research, which is similar to the scientific method used to unlock the mysteries of human diseases and formulate effective treatments,” says Dr. Brennan. “In the process, we’ve created something novel: a clinical laboratory where we can study the how of health care delivery.”

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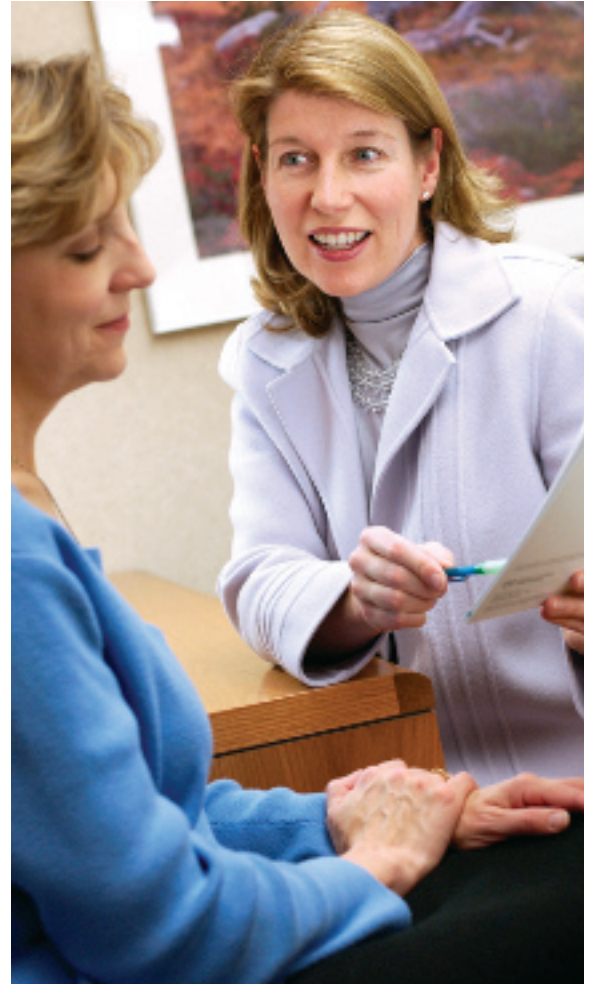
Initial projects

Though it has been in operation less than two years, SPARC has already undertaken more than 20 projects. They include:

■ Patient exam rooms

The team equipped exam rooms with movable furniture and a computer monitor that can be positioned so both physician and patient can view information. The edges of desks and tables were rounded in an attempt to make them more welcoming. Since family members or significant others often accompany patients to appointments, the size and seating capacity of the rooms were increased. The team also increased the amount of space designated as the patient area, hypothesizing that the additional space would lead patients to feel more involved in their care.

“The day after we set up the exam rooms, I was seeing patients in one of them and getting immediate feedback about what worked,” says Alan Duncan, M.D., SPARC’s medical director. “One thing patients responded well to was the room’s rounded table. Sitting next to me at a table, rather than across from me at a desk, made patients feel like a partner in their own health care.”



Rapid prototyping is used to explore and refine ideas generated by the SPARC team’s research.

■ Decision aids

Physicians often wrestle with the problem of patient compliance, wondering why patients fail to adhere to the treatment plans they are given.

“We’ve found that being ‘given’ a treatment plan is a big part of the adherence problem,” says Victor Montori, M.D., SPARC’s director of research and education. “When patients are simply handed a prescription or told to make lifestyle changes to improve a condition, they may not fully comprehend the importance of the recommendation. Furthermore, they may not get to express concerns and challenges they may face in implementing the recommendation. Indeed, the recommendation, while optimal for most, may not be the right one for this patient.”

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SPARC is one of many innovation programs at Mayo Clinic. Innovation at Mayo focuses on helping best meet the needs of patients.

To try to address this problem among patients who could benefit from cholesterol-lowering drugs, Dr. Montori designed a one-page guide that provides patients with straightforward information about the impact of such drugs on heart attack risk. The guide also provides information on the drugs' potential side effects.

"People love the guide because it helps them visualize how much of a difference taking a pill can make in their lives," says Dr. Montori. "Now it's not just me telling a patient to do something. Patients get to know the technical information we use and what we do and do not know such that they are able to become informed partners in their own health care decision-making, which our research shows is improving adherence."

■ Check-in kiosks

Patients checking in for medical appointments typically must wait in line to announce their arrival to a receptionist. The SPARC team wondered if self-service kiosks, similar to those used for airport check-in, would eliminate this wait. A cardboard and paper kiosk created to test the idea drew a positive response from patients, so increasingly functional versions were developed. The paper version was replaced by a laptop computer with a simulated touch screen, which was followed by a version with a working touch screen.

This type of rapid prototyping is one of the core principles of innovation at SPARC. The team creates low-cost products for users to test and quickly changes the design based on user feedback.



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Why Mayo?

Mayo Clinic is uniquely qualified to drive this type of research. Innovation has been part of the Mayo Clinic culture since the days of its founders, Will and Charlie Mayo. As boys, the Mayos observed their father's enthusiastic pursuit of new technology — once even mortgaging the family home to purchase a microscope. As adults, Dr. Will and Dr. Charlie embraced not only new technology, but new ways of thinking and working as well. The Mayo Clinic was one of the world's first integrated group practices of medicine, and Henry Plummer, M.D., — an early partner of the Mayo brothers — developed the modern medical record and other innovations, some of which inspired SPARC.

Today, innovation continues to be a high priority at Mayo Clinic. The strategic plan for Mayo Clinic in Rochester includes three priority projects dedicated to innovation and technology. The Department of Medicine at Mayo Clinic in Rochester also ranks stimulating innovation as one of its top goals, and supports several additional innovation efforts.

In addition, Mayo Clinic is known for its robust “bench-to-bedside” research programs that translate laboratory discoveries into improved patient care. The SPARC Innovation Program will follow a similar model with clinical discoveries.

This fusion of innovation, research and patient care is a natural fit at Mayo Clinic.



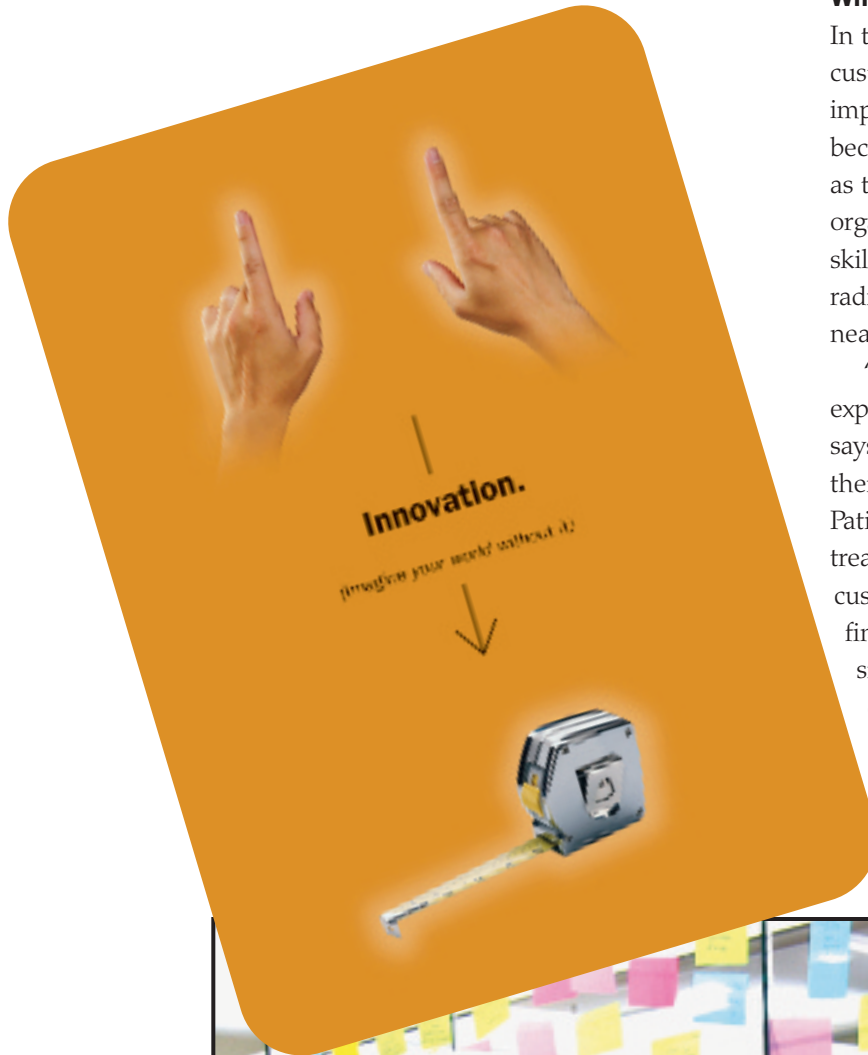
Mayo Clinic innovation in the Plummer Building, September 1930; Area in the "lower file" showing pneumatic tubes and vertical and horizontal conveyor systems used to move patient histories and other records throughout the buildings associated with medical practice.

“SPARC is research and development on Mayo’s core value: patient care,” says Dr. Duncan. “The way we deliver clinical care at Mayo Clinic is unique. It’s our most important strength and something we are very, very good at. But we believe we can build on what we know and become even better.”

“When basketball was invented, points were scored by tossing a ball into a peach basket suspended on a pole. Each time a basket was made, someone would go get a ladder, lean it against the pole, climb up and remove the ball so play could resume. Improvement was leaving the ladder next to the pole. Innovation was cutting the bottom off the basket.”

— Nicholas LaRusso, M.D.
Chair, Department of Medicine

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Why now?

In the health care industry, like so many others, customer satisfaction is becoming increasingly important. As the quality of medical care available becomes more standardized, service is emerging as the differentiating feature among health care organizations. And while evaluating the technical skill of a surgeon or the diagnostic ability of a radiologist may be difficult for most people, nearly everyone recognizes quality service.

“When people come to Mayo Clinic, they expect to receive world-class medical care,” says Dr. Duncan. “What sometimes surprises them is the level of service they receive here. Patients write to tell us about a physician who treated them as more than just a number, a custodian who put down her broom to help them find an appointment or a desk attendant whose smile and demeanor put a nervous child at ease. You can bet that if people are taking time to tell us those stories, they are telling them to their families and friends as well.”



Brainstorming sessions yield many innovative ideas in the SPARC offices.

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Nicholas LaRusso, M.D., chair, Department of Medicine at Mayo Clinic in Rochester, believes that SPARC has the potential to elevate both the quality of care and level of service offered at Mayo.

“Studying the patient care process is going to give us great insight into how efficiently and effectively we are delivering our service to customers,” says Dr. LaRusso. “That information will enable us to better match the right patient to the right physician at the right time, which will improve patient satisfaction.”

Rapid and wide-ranging benefits

Medical research typically takes place over many years. But research into the delivery of patient care has the potential for immediate results.

“That’s one of the things that’s most exciting about SPARC,” says Dr. Montori. “It’s highly

gratifying to be able to have an impact on patient care over the period of a few weeks or months instead of a few decades. We get the satisfaction of seeing our research benefit today’s patients, rather than just hoping the research will benefit the patients of tomorrow.”

And while medical research is generally targeted toward a specific disease or group of patients, discoveries made at SPARC have a much broader scope.

“Since we’re studying the patient care process, our work can be applied in virtually any patient care setting,” says Dr. Duncan.

The SPARC team also plans to report their findings in peer-reviewed journals, making it possible for other health care organizations to adopt its innovations.

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Contact Info

SPARC welcomes other academic medical centers and organizations to visit, use, and learn from Mayo Clinic's innovative, problem-solving approach and experiences. Please contact SPARC to receive more information or to arrange a visit.

Mayo Clinic

SPARC Innovation Program

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