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How ‘invitations’ from Penn Medicine Restored Mammogram Completion Rates

The first few waves of COVID-19 slowed life across the United States, affecting everything from attending school to eating out for dinner and going on vacation. Segments of health care were also affected: Services that were not considered immediately crucial to fighting the virus were slowed or stopped during the pandemic’s first wave.

But once Penn Medicine invited patients back to resume normal health care—including preventive care, like screenings for disease—there was some lag in numbers.

“As we opened up to routine outpatient care, screening rates for situations when patients didn’t have symptoms were not returning back to normal,” said Mitchell Schnall, MD, PhD, FACR, a professor of Radiology, now the senior vice president for Data and Technology Solutions at Penn Medicine, and then the head of a team focused on the “resurgence” team focused on easing patients back into outpatient care. “Although a short delay in health screening is likely not going to cause long-term health problems, we were concerned whether screening rates would stay lower and lead to a long-term impact.”

Breast cancer screening was an area, in particular, that stood out as one that the team hoped to make an impact. Screening rates, overall, had fallen to 66 percent, and the team knew that a significant number of women who’d been regularly getting screenings before the pandemic were now overdue.

“Mammography saves lives, so this was important and very worrisome,” said Susan Weinstein, MD, a professor of Radiology. “We needed to get women back on track and there was a huge backlog.”

But, thanks to years of work in the Center for Health Care Transformation and Innovation, there was actually something of a road map for figuring this problem out and implementing changes in real time that utilized evidence gathered in-stream.

“We don’t just do research in a vacuum,” said Shivan Mehta, MD, MBA, MSHP, associate chief innovation officer of Penn Medicine. “Our research is embedded in and in partnership with health system operations, and that makes a difference.”

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As the first step for figuring out why screening levels weren’t quickly returning to their pre-pandemic levels, Mehta, Weinstein, and their colleagues did something simple: They watched and listened.

“We were going to different sites across the health system, talking to patients and clinicians,” said Mehta. “Our team was doing a rapid cycle innovation, and this is the first step, trying to gain a deep understanding of the problem from those that it touches upon the most.”

Rapid cycle innovation, basically, is done to quickly figure out how to adjust operations in real-time with data collected in-stream while learning more about the problem space. The Center for Health Care Transformation and Innovation, which Mehta helps lead, has been doing this work since the center launched more than a decade ago, often tackling projects centered on population health and effecting positive change.

Mehta said that patients seemed to need a “re-invitation” to the health system. It turned out that patients were not as concerned about exposure to the virus in health care settings at that time.

“There had been a lot of mixed messages in the media and from policymakers around what was safe and what health care was available,” Schnall recalled. “I think this led to confusion and patients electing to defer health screening until they were specifically told it was okay.”

“People need that invitation from someone that they trust for health issues, and it was probably a good thing to feel that someone was looking out for them and helping to take care of themselves,” Weinstein said.

The rapid innovation team found out that the practices weren’t sure how best to communicate through outreach. The team ran a quick learning pilot that used texting, letters, and email to communicate with patients with promising results, but it was hard for individual practices and clinicians to operationalize this.

“Our primary care practices are well-suited to deliver care to their patients in practices, but they were less poised in 2021 to coordinate bulk orders and support messaging and reminders at a system-wide scale,” said Corinne Rhodes, MD, MPH, an associate professor of General Internal Medicine and the associate medical director of Quality for Penn Medicine Primary Care. “Our population health team was still forming and growing at that time, so this was a wonderful opportunity to partner with the Center for Health Care Transformation and Innovation to quickly create a program while also bringing rigor to its assessment.”

Rapid cycle interventions are all about bringing projects to scale while evaluating what works best. So, Mehta and his colleagues decided to message every patient in the health system who was overdue for breast cancer screening, either inviting them to schedule an appointment or sending them a doctor’s order for a mammogram, ready to go.

And it worked. The rate of completed mammograms now stands at roughly 74 percent.

“This collaboration allowed us to use existing resources to form the basis of a fully-integrated, scaled, and sustainable program that allows us to send thousands of breast cancer screening reminders to women monthly,” Rhodes said. “We were able to transition from a successful research study in 2021 to implementation in 2022 to the full program in 2023.”

COVID lessons

In a *JAMA Internal Medicine* paper that Mehta, Weinstein, and Rhodes published about this intervention, they found that, across two study arms, patients who received text messages were more likely to complete their screenings. Completion rates increased by more than two percent in each arm, accounting for more than 200 extra patients getting screenings.

Mehta and the Center for Health Care Transformation and Innovation have been studying the effectiveness of text messaging among patients for years, but COVID’s sudden appearance was the ultimate test.

“COVID really showed us that many patients responded to text messaging,” Mehta said. “We discovered that during the community COVID vaccine clinics we set up, when we used texting to alert community members. We’re really confident in it now, particularly in making sure that all patients have access to our communication.”

But texting isn’t the be-all, end-all, so Mehta and Weinstein’s study also explored things like changing default options in the way the health system operates. In this case, the default change was to “bulk order” mammograms, a practice in which any patient who is eligible receives a doctor’s order for the screening, as opposed to the traditional method of having a patient receive an order once they’ve visited their doctor. When the bulk ordering was applied, it also resulted in a difference in screening rates of more than two percent.

“We are still learning a lot about how and when to use text messaging and defaults. We know they have been consistently effective, but we also know from behavioral science that response rates are contextual to workflow and situations,” Mehta said. “Moving forward, we also are exploring ways to deliver precision nudges based on known characteristics of patients and clinicians.”

Mehta said that he and his colleagues have received a grant from the National Institute of Aging focused on nudges during primary care visits. The idea is to have an automatic pended order for screening and a post-visit text message that goes to patients to encourage the scheduling of a mammogram.

They're also looking into "bidirectional" texting—algorithmically guided text conversations with patients—with those who are at high risk of not completing screenings. That includes patients with Medicare, Medicaid, or who often don't interact with their online patient portal.

All of this speaks to the main lesson Schnall learned as he helped guide the ambulatory service resurgence.

"Direct communication with patients is key," Schnall said. "We live in a complex environment and the information patients receive from the sources they listen to is variable. Health care providers are a trusted source of information, and our direct communication with patients is important."

by Frank Otto

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Published on : Thu, 23 May 2024