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Featuring Justin Huynh, M.D.,

Using a text message-based remote patient monitoring tool to improve diabetes control

The most recent data sets show that approximately 29.1 million —9.3%—of Americans live with diabetes.

Another 86 million—27.5%—are living with prediabetes. While U.S. health care is expected to account for 20% of the nation's GDP by 2025, 20% of that spending is already directed at people diagnosed with diabetes, costing the country

\$245 billion each year. Despite such a massive financial investment in treating this chronic condition, blood glucose control for diabetes patients remains a difficult goal to achieve. Much of this failure stems from an inconsistent communication of blood glucose values to providers when patients are outside an office visit.

In an AMGA webinar, “Best Practices for Diabetes Care: Using a Text Message-Based Remote Patient Monitoring Tool to Improve Diabetes Control,” Justin Huynh, M.D., Mercy Virtual Care

Center, and Mary Laubinger, R.N., M.S.N., executive director of clinic quality, safety, and care management, Mercy East Region, discussed how Mercy's utilization of a simple, text message-based remote monitoring tool helped narrow this compliance gap and improved the health of their patients.

“In terms of our motivation to use novel tools to manage diabetes, I think it's best to walk through a typical treatment cycle for a patient,” said Huynh. “Your typical patient in a primary clinic is coming in every three to six months, and they're checking their blood sugars—maybe they're even writing them down in a glucose log—and the physician is getting no feedback in real time as to what those readings are. And then the patient eventually comes in and in a somewhat hurried visit—thanks to today's healthcare environment—the physician has just a couple minutes to try and flip through a glucose log and make sense of when these readings were taken, whether the patient had eaten before or after

the sage

and Mary Laubinger, **R.N., M.S.N.**



they took their glucose reading, etc. And that's if the patient brought glucose readings at all. Based on very limited information and a small amount of time, a provider then has to make a treatment decision to intensify treatment or to decrease treatment without really a complete picture as to what's going on. And then, unfortunately, the cycle at minimum takes another three months to repeat. In a year's time, a provider may only have two or three opportunities to really change the management of that patient."

As a result of these infrequent and data-deficient check-ups, Huynh explains, many patients are left out of control in their glucose management and eventually develop complications that are significant for their health. Recognizing that these care shortcomings could not be sustained in a value-based system of care, Mercy sought to achieve a closer, real-time data collection for its providers to make better management decisions and shorten the cycle of diabetes care.

You Have One Unread Message

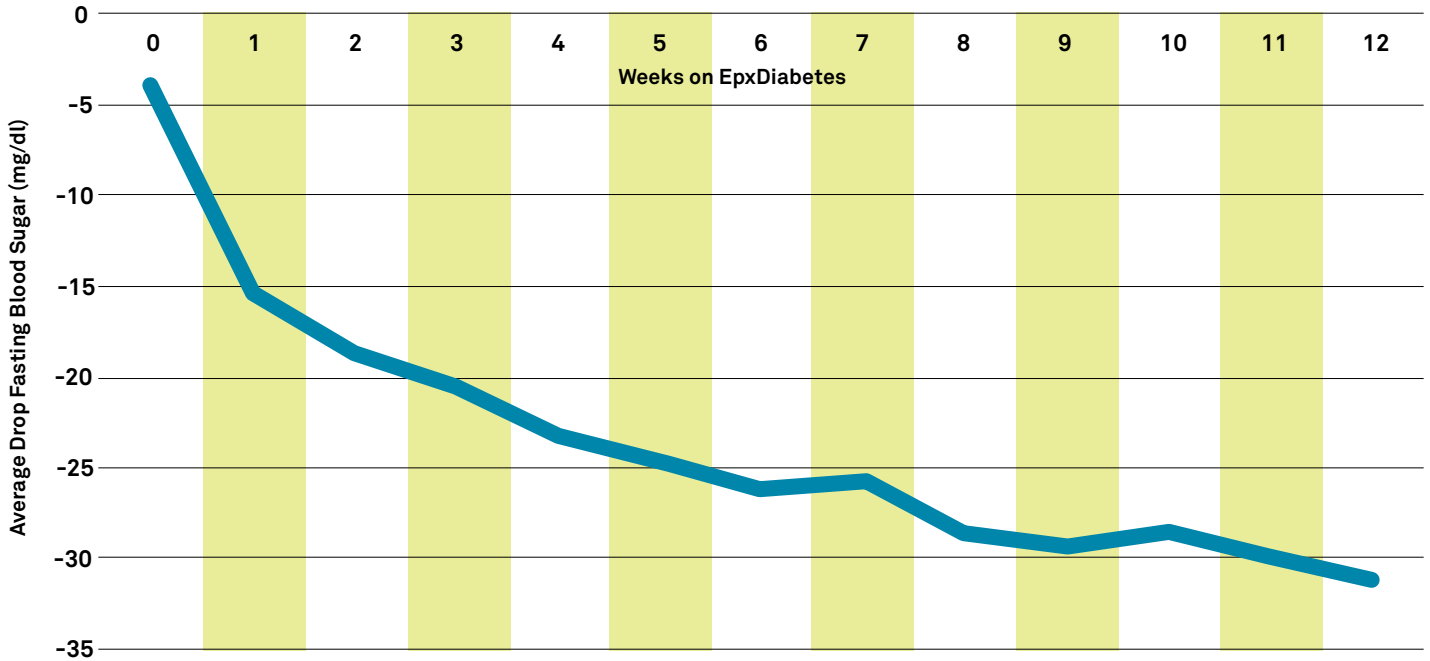
The first step Mercy took to achieve this goal of real-time management was to partner with Epharmix, a company that specializes in digital health tools. Initially, Mercy had considered the possibility of building its own unique mobile app. However, this approach felt like it was addressing a stove-top burn with a fire hose rather than a kitchen faucet, so they decided to stick with a simple text message alert.

"The workflow, basically, was that a diabetes educator—and then, later, our care managers—would identify a patient with diabetes who they thought could benefit from having more real-time support," said Laubinger. "They would just have their visit with the patient, offer this tool to them, and if the patient was interested, would enroll them right there during the visit. They would explain the text messaging and how it would come to them, and then they would ask the patient to respond to the text message by entering their blood sugar that morning. They

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Figure 1

Results: EpxDiabetes Mercy East Communities



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would then identify the best time for the next text messages to come in and could tailor that to what that patient's preference would be."

Once a patient submitted their levels in response to the text alerts, EpxDiabetes would collect and display the results in easy-to-read comprehensive charts for the providers. The care management team or provider would then receive their own alerts for low blood sugar responses, enabling them to quickly intervene and make adjustments to medications, and thereby prevent further hypoglycemic episodes.

The care management team also receives weekly emails, enabling them to gain a more comprehensive and longitudinal assessment between patient visits, allowing a more thorough identification of trends. Finally, when patients were not prompted to submit their glucose levels, more generic, educational texts would occasionally be sent, reminding the patient to schedule annual diabetes eyes exams, as well as prompting them regarding what to do if and when they experience hyperglycemia or have low blood sugar.

Lessons Learned and Results

With its administrative process in place, Mercy quickly focused on what worked and what didn't when it came to optimizing the tool's utilization. Laubinger says that letting the frontline person who's managing the patient decide who's the right candidate to use the tool worked better than trying to create a report that would permit them to onboard a certain type or group of patients. It also helped maximize acceptance when providers simply described the tool as a routine part of "how we care for patients." And finally, the care team decided to take primary care providers out of the workflow, involving them only for medical decision making. The simplest and easiest way to make the tool work is to assign it to the care management team or diabetes educators.

Fortunately, for such a simple tool, the results were significant. The longer a patient made use of the text message program, the more dramatically their blood sugars decreased, with a 30% drop overall across a 12-week period.

Improvement was also seen in patients' A1c levels, with a one point drop for the full population, and an even bigger drop for patients who had an A1c greater than 8 when they enrolled.

Said Laubinger, "We've continued to see this kind of result from patients. As they engage and as they're giving us their blood sugar on a regular basis, they're paying more attention, and they're starting to understand the relationship between what they ate and what their blood sugar was or what the meds were that they took. We have consistently found that patients who we never thought were engaged before are now starting to get results."

Ultimately, as the text messaging program continues to find success, Huynh and Laubinger admit to a number of lessons learned from the experience thus far. Among those lessons was the fact that as simple as sending a text reminder can be, it takes a full clinical team and operational support to put the data into actionable engagement.

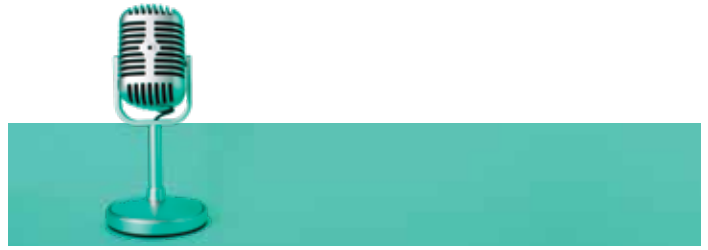
Digital health tools such as the text message program also offer an opportunity for true team-based care, supporting primary care physicians and getting better results with their patients.

Data analysis is an additional, crucial component. "I think if we would have had to struggle to put data together to demonstrate our results, we probably wouldn't have been as engaged in using this tool," said Laubinger. "But having the data right in front of us showed us we were getting results, and as a result, we got more excited."

Though patient engagement has undulated over a year and a half of use, Huynh is happy to report that over 60% of patients who were enrolled in the text messaging program continue to utilize it in reporting their glucose levels.

"Patients really like that someone is concerned enough to follow their symptoms or their disease in-between visits and really appreciate that level of commitment and vigilance from their providers," he said. "They also really like a system that is holding them accountable and keeping them on track with respect to their disease management."

Adds Laubinger, "I think it's about being able to get that sustained engagement from the patients. It's easy to get your diabetes in control for a short



The Audience Asks...

Q: *How many patients do you currently have using this tool?*

Huynh: For the diabetes module, the data we showed was for 311 patients who were primarily in the Mercy St. Louis region. And there are patients who are using some other modules, but currently more than 300 who are using it.

Q: *How are the patients billed for the service?*


Laubinger: We don't bill the patients for this service at all. We just see it as a tool that is helping us with our population health strategy.

Q: *What is the reception of a text messaging tool from historically poor-adhering or noncompliant patients?*

Huynh: I think that that was the surprising aspect of rolling this out, that some patients who we thought were not going to be compliant, who were in my practice and didn't seem to engage during visits, really responded well and would send text responses on a frequent basis, which I think just speaks to the different means of communicating with our challenging patients. Just because someone in an in-person visit doesn't really seem to be actively involved in their health, there are other avenues for us to reach them. So we've been very pleasantly surprised in that regard.

Q: *Do you engage any care managers beyond the diabetes educators in establishing the care plan for patients, for example, pharmacists, nurse navigators, or dieticians?*

Laubinger: We have expanded this tool to other modules and we've used the tool with patients who have heart failure with COPD, and even with some of our OB patients with postpartum, we've used the tool to assist with lactation. We are expanding beyond the original pilot using it with patients with diabetes.

period of time. What's hard is to maintain that and to sustain it over time." 

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