

The New York Times

This copy is for your personal, noncommercial use only. You can order presentation-ready copies for distribution to your colleagues, clients or customers [here](#) or use the "Reprints" tool that appears next to any article. Visit www.nytreprints.com for samples and additional information. [Order a reprint of this article now.](#)

PRINTER-FRIENDLY FORMAT
SPONSORED BY



November 5, 2009

DOCTOR AND PATIENT

Texting as a Health Tool for Teenagers

By PAULINE W. CHEN, M.D.

Gina (not her real name) had been born with a defect in her liver, with ducts so damaged and narrow that the bile could not drain. In the first year of her life, she underwent two urgent operations. The first was an unsuccessful effort to convert a loop of intestine into a drainage system for her bile; the second was a lifesaving [liver transplant](#).

Other than a single episode of rejection a few months later, Gina's new liver worked perfectly. Her visits to the hospital were limited to an annual clinic visit; as the years passed, she became a stunning example of pediatric transplantation's success.

Then Gina turned 14. Like other young patients I had cared for, she began having problems with her transplant as soon as she hit [adolescence](#). She missed appointments, forgot to get her blood drawn and had sharp fluctuations in the blood levels of her immunosuppressive medications, a sign that she was not consistently taking her drugs. Her liver function tests began to deteriorate, and despite efforts by her doctors, nurses, social workers and family members, shortly before her 16th birthday, she would be in desperate need of a new liver.

I remember visiting Gina one afternoon, then speaking to her longtime liver doctor. "It's such a pity," the doctor said, shaking her head. "She's no different than every other teenager, except that her youthful indiscretions are a matter of life or death."

Nonadherence, or the failure to follow medical advice, is [the most important cause of organ rejection in long-term transplant survivors](#). Indeed, it is a leading reason for poor outcomes [in all chronic medical conditions](#). But teenagers are at particularly high risk. [Studies have shown](#) that more than half of all teenage liver transplant recipients are nonadherent, and they are four times more likely than adult patients to take their medications at the wrong time or to forget to take them.

For years, health care professionals in transplantation and other medical fields have struggled to address adolescent nonadherence, with little success. Many of the interventions proposed to help this age group have been cumbersome at best and awkward and potentially demeaning at worst. [One potential solution](#), for example, has a clinician first identifying teenage patients who have been nonadherent, then increasing the frequency of their clinic visits and lecturing them about the importance of taking medications.

It is not hard to see why a teenager might not respond.

I recently thought about Gina and patients like her when a friend recounted a night out at the movies with his own teenage children. While he and his wife sobbed, his children sat in the theater unmoved. "They were doing this," my friend said, folding his hands in his lap and flapping his thumbs wildly while looking up and down between an imaginary movie screen and an invisible qwerty keyboard. "I started thinking I should text them the next time I want to get their attention."

My friend, it turns out, was on to something.

This past month in the journal *Pediatrics*, researchers at Mount Sinai Hospital in New York published [the results of a](#)

[study](#) showing that [text messaging](#) could significantly improve the rate of adherence among young liver transplant patients. Using a program called [CareSpeak](#), the researchers issued text messages to a group of 41 pediatric liver transplant patients. The text messages reminded the patients to take their medications, which ranged from one to three different pills once or twice a day.

Over the course of a year, investigators found that with text messaging, patients were more likely to take their medications than they had been before. Moreover, while 12 of the young people experienced rejection episodes in the previous year, only two did so during the study.

“Nonadherence can be a vicious circle, and it is difficult to penetrate this specific age group,” said Dr. Tamir Miloh, assistant professor of [pediatrics](#) and surgery at Mount Sinai Hospital in New York and the lead author of the study. “Once the cycle starts, these children have to take many more toxic immunosuppressants, and that makes adherence even more difficult.

“If we can intervene early, maybe these patients don’t have to go down that road.”

The clinicians first entered the medications and dosages for each patient into the text messaging program. The patients could then control the frequency and times of their message alerts. “Teenagers can have very busy or obscure lifestyles,” Dr. Miloh said, “so we thought it was important that they choose whatever time they wanted to get their reminders.”

After receiving their text message reminder to take a certain pill, patients then had to text back within an hour to confirm that they had indeed taken the medication. If the patients failed to respond to their reminder, their caregiver or parent would then receive an alert to intervene.

“This system was a way for parents to give their children a sense of autonomy,” Dr. Miloh said, “but it also allowed them to follow behind a screen, so to speak.”

In addition, because the CareSpeak program keeps track of the number of patient replies, doctors and nurses were able to get an overview of a particular patient’s adherence and correlate changes in medication blood levels with missed doses. “Text messaging is a tool to pre-emptively find patients who are being nonadherent instead of dealing with the consequences of rejection,” Dr. Miloh said.

But, Dr. Miloh concedes, there was one significant obstacle during the study. Although the researchers paid for text messaging, nearly a third of patients had to drop out because they either lost their phone privileges or could no longer afford a cellphone.

“In the future, we are hoping that insurance companies might support some kind of text message system for their patients,” he said. “If we can save one patient from needing another transplant, we’ve saved a life and at least a half-million dollars. The investment is relatively little and the benefit enormous.”

Although the Mount Sinai study officially ended almost a year ago, many of the study patients have continued to rely on the text messaging program. Dr. Miloh and his colleagues hope eventually to expand its use.

Ideas for future work include adding photos of the specific pill to take, sending reminders for appointments and medication refills, creating a text message support group and sending patients positive feedback and motivational messages from physicians and other members of the health care team.

“Text messaging could be used with almost any chronic disease and with anyone who has memory problems or just needs reminders,” Dr. Miloh said. “This kind of communication can only help to enhance the relationship between patients and their clinicians.

“Clinicians have been hesitant to deal with adolescent patients who were nonadherent because they thought these

teenagers could not change. But for the most part, these were intelligent kids who said they did not want us to give up on them. They simply had busy schedules and forgot to take their medications or to follow-up with their doctors and nurses.

“Now we know we can actually help a significant number of them with this system of text messaging. There is hope.”

Join the discussion on the Well blog, [“Texting for Better Health.”](#)

Copyright 2009 The New York Times Company

[Privacy Policy](#) | [Terms of Service](#) | [Search](#) | [Corrections](#) | [RSS](#) | [First Look](#) | [Help](#) | [Contact Us](#) | [Work for Us](#) | [Site Map](#)
