

DRUG COMPLIANCE

Texting Boosts Compliance in Organ Transplant Patients

Texting while driving can be a deadly mix. But the electronic prompts may well be a lifesaver in the case of solid organ transplant patients, according to a company that offers a system for sending text messages to the phones of adolescent patients, reminding them to take their immune-suppressing medications.

The developer, CareSpeak Communications Inc., recently announced that the system will be in use for a one-year tryout at the pediatric heart transplant program at NewYork-Presbyterian/Morgan Stanley Children's Hospital. A better method for motivating teens to take their anti-rejection medications is sorely needed, according to Linda Addonizio, director of the hospital's heart transplant program.

"Despite extensive educational programs for families and pediatric heart transplant recipients, significant medication noncompliance still occurs with alarming frequency, particularly with adolescents, which can prove deadly," Ms. Addonizio noted in a press release from CareSpeak. "The outlook for long-term survival in noncompliant patients can be as low as 30%, compared to 90% in compliant pediatric heart transplant recipients."

Serge Loncar, chief executive officer of CareSpeak, told *Pharmacy Practice News* that texting is "the perfect tool" for reaching out to teenagers with drug compliance reminders "because they're notorious text messagers." Although CareSpeak does not have any data on the degree to which texts are opened by teens, Mr. Loncar cited data available from Neustar, a multiplatform communications provider: the data show that it takes recipients an average of four minutes to open SMS text messages, compared with 48 hours for e-mails.

Another benefit: Cell phones "are nearly ubiquitous, and they're a familiar technology—there's really no learning curve with this system," he said.

But the texting approach really shines in comparison with pharmacy compliance letters sent home via "snail mail," Mr. Loncar said. "Our clinical partners tell us that these letters are rarely opened, or if they are, there is no way to track their impact."

With the phone texting system, in contrast, impact *can* be tracked—and documented in clinical studies. In a *Pediatrics* study (2009;124:e844-e850) by researchers at Mount Sinai Medical Center, two episodes of organ rejection occurred in liver transplant patients enrolled in the CareSpeak texting program, versus 12 cases of rejection pre-rollout.

Edward Y. Zavala, administrator of the transplant center at Vanderbilt University Medical Center in Nashville, Tenn., agreed that the "open" rate for traditional

compliance letters, which are often sent by retail pharmacies, "is probably rather low." Asked to review the basics of the CareSpeak system, he replied, "Texting seems to be supported by good data, and it does take advantage of very easy-to-use technology. So this is something we would certainly consider."

The only downside, Mr. Zavala noted, "is something I've seen in my own kids—keeping their cell phones charged can be its own compliance challenge. Texts going to a dead phone aren't going to

be much help to anyone."

In the *Pediatrics* study, similar problems did emerge: nearly a third of the patients had to drop out because they lost their phone privileges or could no longer afford a cellphone. And that's despite the researchers paying



for the texting charges.

How the System Works

Assuming teens can manage to keep their cell phones, here's how the CareSpeak system works: Patients or caregivers are sent an SMS text whenever a dose of anti-rejection medication is scheduled to be taken. "The patient has 15, 30, 45 or 60 minutes, depending on the settings of the system, to respond that he's taken the medication by sending a coded reply," Mr. Loncar said. "If he doesn't reply, then a parent or other caregiver can get an "escalation alert"

via text, warning them that there is a problem with compliance. That message has the young patient's cell phone number embedded in it. By clicking on that number, caregivers can call the child and remind them to take the meds."

Physicians can also get involved. For a snapshot of overall compliance, they can access an online dashboard and view patient self-reported compliance and the number of escalation alerts that were sent, Mr. Loncar added. Clinicians also can receive e-mail reports in case they forget to check the dashboard, he noted.

Mr. Loncar said this approach addresses a major challenge when managing organ transplant patients—keeping the continuity-of-care loop intact. "With adolescents, you have a transition of care from parents to child," he explained. "So you need a tool for reaching these younger patients. Text alerts, in our experience, are the easiest and most effective way to accomplish that."

Kwaku Marfo, PharmD, clinical pharmacy manager, solid organ transplantation at Montefiore Medical Center in New York City, pointed out that although texting may help teens comply with their organ transplant medications, it's not a fail-safe technology. "Texting that they've taken their medication is no guarantee that they've actually done so," he said.

Dr. Kwaku's strategy for ensuring compliance? "We bring teenage patients into the clinic two, three, maybe even four times a week immediately post-transplant. Then we use the direct observation method to make sure they've taken their meds." (For more compliance tips from Dr. Marfo, see sidebar.)

Mr. Loncar agreed that the CareSpeak program is not foolproof. But in the *Pediatrics* study, he noted, blood levels of anti-rejection drugs showed that for at least some patients, it *can* be effective. Before participation, the standard deviation of tacrolimus in the 41 patients studied was 3.46 g/L. After participation, that fell to 1.37 g/L ($P=0.05$),

'When you explain to teens that their lives are at stake if they don't take these medications, that's a very powerful motivator to keep their cell phones charged and to respond honestly to the text prompts.'

—Serge Loncar

More Compliance Strategies

Kwaku Marfo, PharmD, clinical pharmacy manager, solid organ transplantation at Montefiore Medical Center in New York City, and Edward Y. Zavala, administrator of the transplant center at Vanderbilt University Medical Center in Nashville, Tenn., offered the following strategies for boosting drug compliance in solid organ transplant patients:

Start immediately. "We begin educating teens and their parents/caregivers right after the patients come out of surgery," Dr. Marfo said. "That sends the right message that compliance is critical."



Focus on side effects. Teens are particularly sensitive to side effects and will stop taking their meds if you don't prepare them for the adverse effects. "We let them know what to expect," Dr. Marfo said. "It reduces anxiety and they know how to respond." In the case of weight gain related to prednisone, for example, Dr. Marfo will tell patients they can be placed on a "Quick Taper" regimen, where they are started at a fairly high dose (20 mg) for the first month and then tapered down to 5 mg thereafter. "That approach will limit weight gain and growth inhibition," Dr. Marfo said.

Offer alternatives. Cyclosporine can be problematic because it causes gingival hyperplasia, which is cosmetically unsightly. For patients who are concerned about that side effect, Dr. Marfo noted, a viable option is tacrolimus.

Use reminder tools. Dr. Marfo gives all of his transplant patients calendars with a medication sheet that outlines the timing, dose and duration of all drug therapy. Telephone follow-up, e-mails and patient visits all can be used as needed. Mr. Zavala suggests using visual aids as well. At his hospital, they give patients medication guides that have images of every medication they're taking. "It helps them to distinguish all the different meds they're taking, and to ensure no errors in dispensing have been made," he said.

Use the Internet. Vanderbilt pharmacists teach patients how to use an Internet-based system called medicationplan.com, a Web site that records a patient's drug regimens and any subsequent changes made to those regimens. Patients can access the system and schedule e-mail reminders to take and also to refill their medications. Reminders can also be sent to health care providers. "It's not only a great tool for the patients," Mr. Zavala said. "It also helps us keep track of what's going on with their drug therapy."

Offer a compliance contract. Dr. Marfo: "We will go into contract with the patient or caregiver for them to be able to demonstrate being compliant with their medications for at least six months, before we consider them ready to be a bit more independent in managing their disease."

—David Bronstein

