

A therapist in your pocket

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Brooding in your apartment on Saturday afternoon? A new smart phone intuits when you're depressed and will nudge you to call or go out with friends.

It's the future of therapy at a new Northwestern University Feinberg School of Medicine center where scientists are inventing web-based, mobile and virtual technologies to treat depression and other mood disorders. The phone and similar projects bypass traditional weekly therapy sessions for novel approaches that provide immediate support and access to a much larger population.

Also in the works at the National Institutes of Health-funded center: a virtual human therapist who will work with teens to prevent depression; a medicine bottle that reminds you to take antidepressant medication and tells your doctor if the dosage needs adjusting; a web-based social network to help [cancer survivors](#) relieve sadness and stress.

"We're inventing new ways technology can help people with [mental health problems](#)," said psychologist David Mohr, director of the new Center for [Behavioral Intervention](#) Technologies and a professor of [preventive medicine](#) at Northwestern's Feinberg School. "The potential to reduce or even prevent depression is enormous."

"These new approaches could offer fundamentally new treatment options to people who are unable to access traditional services or who are uncomfortable with standard psychotherapy," Mohr added. "They also can be offered at significantly lower costs, which makes them more

viable in an era of limited resources."

The goal is for the center to become a national resource, offering a library of intervention technologies that will be available to other researchers.

Among the center's projects:

A REALLY SMART PHONE READS YOUR MOOD

A smart phone spots symptoms of depression by harnessing all the [sensor data](#) within the phone to interpret a person's location, activity level (via an [accelerometer](#)), social context and mood.

Are you making phone calls and getting e-mails, or are you home alone ruminating for hours? If the phone – which learns your usual patterns -- senses you are isolated, it will send you a suggestion to call or see friends. The technology, which still is being tweaked, is called Mobilyze! and has been tested in a small pilot study. It helped reduce [symptoms of depression](#).

The new phone offers a powerful new level of support for people who have depression and intervenes to help them change their behavior in real time.

"By prompting people to increase behaviors that are pleasurable or rewarding, we believe that Mobilyze! will improve mood," Mohr said. "It creates a positive feedback loop. Someone is encouraged to see friends, then enjoys himself and wants to do it again. Ruminating alone at home has the opposite effect and causes a downward spiral."

YOU CAN'T FOOL THIS MEDICINE BOTTLE

A medicine bottle now being developed will track if you forgot your daily dose of antidepressant medication and remind you to take it. The savvy bottle addresses the common problem of patients who quickly stop taking antidepressant medications prescribed by their primary care doctors.

"People whose depression is being treated by primary care doctors often don't do very well, partly because patients don't take their medications and partly because the doctors don't follow up as frequently as they should to optimize the medication and dosage when necessary," Mohr said. "This pill dispenser addresses both issues."

The bottle is part of a MedLink system, which will include a mobile app that monitors the patient's depressive symptoms and any medication side effects and will provide tailored advice to manage problems. The information is then sent to the physician or health care provider with a recommendation, such as a change in the dose or drug, if necessary. The MedLink system also will be used to improve medication adherence in patients with schizophrenia and HIV.

VIRTUAL HUMAN COACHES TEENS IN SOCIAL SKILLS

A virtual programmable human will role play with adolescents and adults to teach social and assertiveness skills to prevent and treat depression. A prototype is being developed with researchers from the University of Southern California.

"We think this will be especially helpful for kids, who often are reluctant to see a therapist," Mohr said. The program will allow them to practice these behaviors in the safety of virtual space.

Existing online interventions for teens "look like homework," Mohr noted. The virtual human feels like a game, making it more likely to engage them.

The Northwestern lab will be evaluating a number of different types of social interactions that are hard for teens and adults.

"Having trouble with those situations makes people more vulnerable to depression," Mohr said. "When people have the confidence and skills to better manage difficult interpersonal interactions, they are less likely to become depressed." Previous research also has shown that intervening early in adolescents who have difficulty with social skills can help prevent the first onset of depression.

HELPING CANCER SURVIVORS COPE WITH STRESS

Web-based content to help cancer survivors manage stress and depression is more effective when a human coach checks in on their progress via a phone call or e-mail.

"People are more likely to stick with an online program if they know that someone they like or respect can see what they're doing," Mohr said. His group is creating a closed social network and collaborative learning environment where peers can serve that function for each other.

"People can get feedback from the group, share goals and check in with members if someone has stayed offline for too long," Mohr said.

Provided by Northwestern University

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