New Sensors Stick to Organs to Monitor Health

Pliable electronic devices already tracking heart function in pigs, scientists say

WEDNESDAY, March 24 (HealthDay News) -- A new generation of flexible, miniaturized devices that stick onto organs promises better diagnosis and control of medical conditions ranging from heart problems to epilepsy, researchers report.

For example, "in the heart, we could do cardiac mapping and get rid of areas of arrhythmia much faster than is now done," explained study author Dr. Brian Litt, an associate professor of neurology and bioengineering at the University of Pennsylvania. "In the brain, we could treat movement disorders and epilepsy with finer control than ever before."

The technology might also be useful in monitoring a variety of other organs, the team said.

The new technology uses electrodes flexible enough to stick and hold to wet human tissue -- "like putting a thin film of cellophane on the heart," Litt said, and small enough so that there can be 300 contacts per square centimeter of tissue.

Electronic medical devices such as pacemakers that are currently in use keep all their electronic circuits inside a container that is typically distant from the area being controlled or monitored.

In contrast, the systems now being tested in animals have wires running to hundreds or thousands of tiny electrodes that are magnitudes smaller than those seen in devices today.

One possible goal is a new kind of pacemaker that will allow for better control of abnormal heart rhythms. "We think we can find [arrhythmias] quicker, with a thin, larger flexible patch over the heart," Litt said. "We could measure rhythm all over the heart at one time."