

## ACC: Remote monitoring shortens event response time, reduces hospital costs

*Written by Editorial Staff  
March 15, 2010*



ICD/CRT-D data can be transmitted through home monitor to physician's office.

ATLANTA—A wireless monitoring system that automatically sends information about an abnormal heart rhythm from a device in the patient's chest to the cardiologist's office significantly cuts the time between when a problem arises and a treatment decision is made, according to the CONNECT trial presented today during the late breaking clinical trials sessions at the American College of Cardiology's (ACC) 59th annual conference.

The Clinical Evaluation Of Remote Notification to Reduce Time to Clinical Decision (CONNECT) evaluated a wireless remote monitoring and notification system based on Medtronic's Conexus-enabled cardiac resynchronization therapy defibrillators (CRT-Ds) and implantable cardioverter-defibrillators (ICDs). The wireless telemetry system was compared with standard care, in which a cardiologist reviews information from an implanted device during an in-person clinic visit.

The randomized, prospective study showed that remote monitoring and automatic notification cut by nearly two-thirds the time to clinical decision making, according to lead author George H. Crossley, MD, president of Mid-State Cardiology, a unit of St. Thomas Heart, and a clinical professor of medicine at the University of Tennessee College of Medicine, both in Nashville, Tenn..

For the study, researchers from 136 U.S. sites recruited 1,997 patients with an ICD or CRT-D, randomly assigning them to remote monitoring or standard in-office care. All patients were followed up for 15 months after device implantation. Those in the remote-monitoring group were given a home monitor capable of receiving a telemetry signal from the implanted device and transmitting diagnostic information to the cardiologist's office over a telephone line, without interaction from the patient, Crossley explained.

The devices were programmed to send routine information on a schedule determined by the cardiologist, and to immediately send alerts in the case of a worrisome development. Patients in the remote-monitoring group were seen in the office one month and 15 months after device implantation only. Patients receiving standard care were followed-up in the office on a fixed schedule, typically every three to six months, without remote monitoring.

The primary endpoint of time from event to clinical decision in the remote arm was significantly shorter than in the in-office arm, Crossley said, as the median time in the remote arm was 4.6 days versus 22 days in the in-office arm. He added that the time of 4.6 days would have been reduced if all the monitors had actually gotten to the patients on the day of their discharge, as the researchers started following patients from the time they left the hospital.

He also noted that certain facilities also "took a laissez-faire attitude" to following up a patient alert, which Crossley described as "surprising."

By replacing routine clinic visits (both scheduled and unscheduled) with remote monitoring, the observed rate of total clinic visits per patient year was remote (3.92), compared with in-office (6.27), the researchers reported.

Crossley reported a significant reduction in the time between the onset of a clinical problem and a clinical decision on how to manage it (29.5 days, on average, in the standard-care group versus 10.5 days, on average, in the remote-monitoring group).

According to Crossley, there was also a significant reduction (18 percent) in the average length of hospitalization (four days versus 3.3 days, respectively), which resulted in an estimated savings of \$1,659 per hospitalization, on average, for patients in the remote-monitoring group.

“Although in our current analysis we were not able to determine the direct mechanism of this reduction in the length of stay, this is the first trial to show a correlation between **remote management** and significant positive changes to healthcare utilization,” Crossley said.

CONNECT was funded by Medtronic. Also, Crossley reported receiving speaker and research and consulting fees from Medtronic, speaker fees from **Guidant** and research support from **St. Jude Medical**.