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Contact: Christian Basi
Assistant Director
(573) 882-4430
BasiC@missouri.edu

MU Works on Technology to Increase Independence, Safety for Seniors **By Sara Bondioli**

COLUMBIA, Mo. —A senior in a long-term care facility gets up in the middle of the night, trips and falls, and is unable to get up or call for help. Minutes later, a staff member arrives to check on the resident after being alerted by special vibration sensors in the resident's room that had detected the fall.

Monitoring systems and data interpretation are under development at the University of Missouri-Columbia through a joint effort among MU's College of Engineering, Sinclair School of Nursing, and Department of Health Management and Informatics in the School of Medicine. The technology will be tested at TigerPlace, a 33-unit apartment complex operated by the School of Nursing and Americare Systems Inc. TigerPlace is one of four facilities approved by the state of Missouri to operate under the aging-in-place model of care.

"This technology has tremendous potential, not only for facilities like TigerPlace, but also for congregate housing, apartment-style living and in-home living," said Marilyn Rantz, an MU professor of nursing and TigerPlace director. "The ultimate goal is to do predictive modeling so we can predict things like falls and intervene before they happen."

A \$1.2 million, four-year National Science Foundation grant will help fund the research. An additional \$1 million of federal money will be used for installation of sensors in all units at TigerPlace.

"We're trying to develop new technologies that will go beyond what's out there today," said Marjorie Skubic, an associate professor in electrical and computer engineering. "We've tried to let this be driven by the needs that the nurses have identified."

The technology includes sensors to detect motion and vibration, as well as infrared and video technology. The sensors will be able to record seniors' normal patterns and document changes that may signal health problems. For example, increased restlessness at night is often a sign of increased health problems. Floor sensors can detect how often individuals get up through the night and alert staff to changes in their routines. Other sensors in the kitchen and stove can indicate changes in behavior as well.

"This technology would not replace staff but would help make them more efficient because they would be alerted when residents may need help and could use predictive technology to prevent some problems," Rantz said.