

Research helps hospitals with energy improvement

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As health care professions and patient needs grow nationally, hospitals are looking for ways to be more efficient. Wichita State University industrial and manufacturing engineering professors Michael Overcash and Janet Twomey led a research team that discovered new methods for medical centers to lower energy and material consumption.

Their research focused on how patient care can be maintained at a high level, but with a lower carbon footprint.

The team worked with the Robert J. Dole VA Medical Center, Wesley Medical Center and Cypress Women's Imaging in Wichita to help their radiology departments understand how [energy](#) is used for CT scans, MRIs, X-rays and ultrasounds.

"It's the first time patient-care decisions can be looked at for improving energy," said Overcash.

The project was funded by the Sam Bloomfield Chair in Sustainable Engineered Systems—a part of WSU's Sam and Rie Bloomfield Foundation.

Research findings

Overcash and Twomey, with the help of about 15 undergraduates, graduates and post-doctoral candidates, conducted research at partnering

medical centers from 2008-2012. During the four-year span, they made several key discoveries.

In advanced studies using [life cycle assessment](#), or LCA, the team found that reducing the materials used during imaging tests led to direct energy improvement.

LCA is a technique used to measure the environmental aspects and potential impacts associated with a product, process or service. It is a way for researchers to compile information about energy input and release, evaluate, and interpret the results.

Twomey said that for some patient conditions, the same diagnosis can be made with interchangeable, lower-energy tests, such as a CT scan instead of an MRI, which reduces hospital energy use.

Also, when reusable materials such as surgical gowns and drapes were used instead of disposable items, there was a 200 percent to 700 percent improvement in energy use.

The Bloomfield team is conducting further research in about 15 other services at partnering medical centers including operating rooms, emergency rooms and testing labs.

Provided by Wichita State University

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