

Simple changes in ICU can help heart attack patients

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To improve recovery for heart attack patients, hospitals should maintain normal day and night cycles for those patients during the first few days after the attack, say University of Guelph researchers.

Their new study shows for the first time that interrupting diurnal rhythms impairs healing immediately after a [heart attack](#), said Prof. Tami Martino of the Department of Biomedical Sciences.

Researchers already knew that circadian rhythms, or day-night cycles, can affect timing of a heart attack. This is the first study to show the importance of circadian rhythms during the few days after an attack.

The study led by U of G scientists appears this week online in *Circulation Research* journal.

"We have devised a simple way to better practise medicine to improve the outcome from heart attacks by considering normal circadian rhythms," she said.

She and PhD student Faisal Alibhai conducted the study with clinician collaborators, who are already looking at ways to use the results to change practices in intensive care units (ICU). "It has an immediate life application," said Martino.

Hospital ICUs are busy places at night, with noise, light, nursing and medical procedures, and other interruptions that disturb acutely ill

patients.

The team induced heart attacks in mice, and then compared rodents held under normal light and dark cycles with others whose diurnal cycles were disrupted for five days after the attacks.

Early heart repair and remodeling were impaired in the disrupted mice. Diurnal disruptions interfered with their normal inflammatory and immune responses crucial for scar formation and healing.

"These mice were likely to go more quickly to heart failure," said Martino. "Disrupting circadian rhythms for the first few days after a heart attack worsens the disease outcome."

The first five days after a heart attack are crucial for proper scar formation, removal of dead tissue, proliferation of new cells and growth of blood vessels in the heart.

About 500,000 Canadians are living with heart failure, in which the heart is damaged or weakened by heart attack or other medical conditions.

A former volunteer at Guelph General Hospital, Alibhai said, "I never really considered how important sleep and [circadian rhythms](#) are for heart health."

Provided by University of Guelph

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