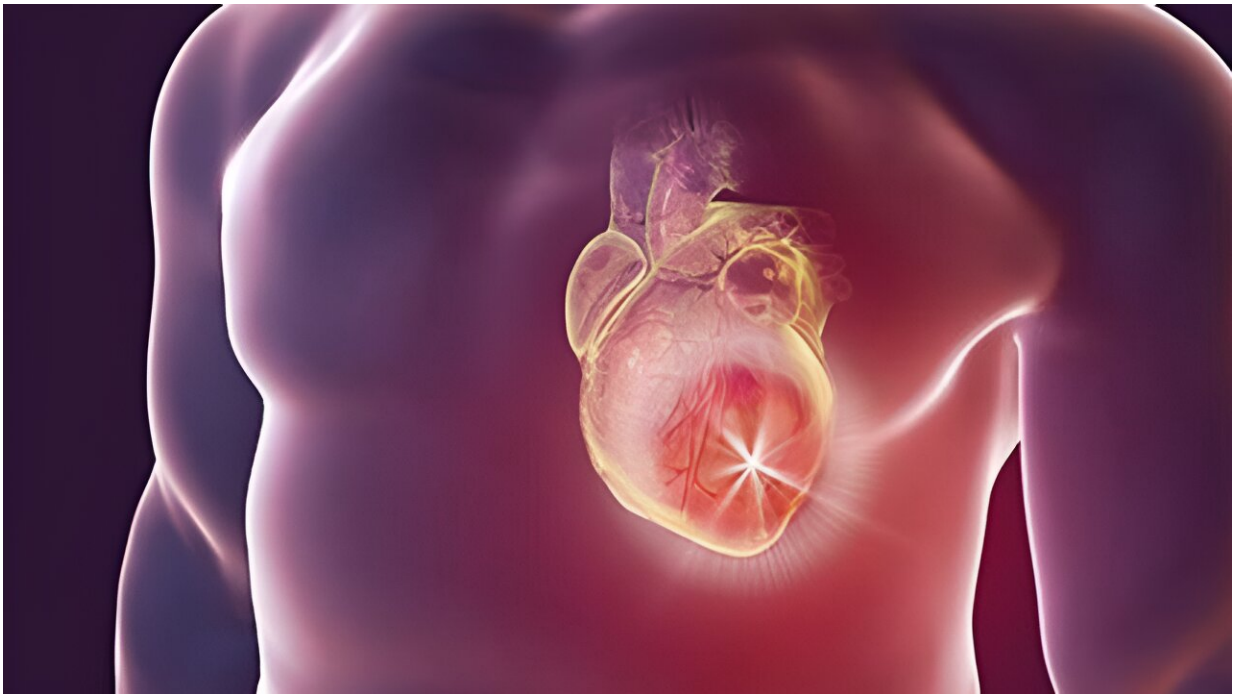


# Myocardial infarction classified into four stages based on myocardial tissue injury

November 6 2023, by Elana Gotkine

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In an expert consensus statement published online Oct. 28 in the *Canadian Journal of Cardiology*, the authors present the classification of four stages of myocardial infarction (MI) based on myocardial tissue injury, culminating in cardiomyocyte and microvascular necrosis.

Andreas Kumar, M.D., from the Northern Ontario School of Medicine

University in Sudbury, Canada, and colleagues outlined the Canadian Cardiovascular Society [classification](#) of acute MI based on decades of data relating to atherothrombotic MI with reperfusion therapy.

The researchers identified four stages of progressively worsening myocardial tissue injury: aborted MI, with no or minimal myocardial necrosis; MI with significant cardiomyocyte necrosis, with no microvascular injury; microvascular obstruction resulting from cardiomyocyte necrosis and microvascular dysfunction (no-reflow); and cardiomyocyte and microvascular necrosis yielding reperfusion hemorrhage. With progressive injury, worse remodeling and an increase in adverse clinical outcomes were seen in clinical studies.

Microvascular injury is of particular importance, with hemorrhagic MI leading to infarct expansion and mechanical complication risk.

"The new classification will help differentiate heart attacks according to the stage of tissue damage and allow [health care providers](#) to estimate a patient's risk more precisely for arrhythmia, [heart failure](#), and death," Kumar said in a statement. "The Canadian Cardiovascular Society Classification of Acute Myocardial Infarction is ultimately expected to lead to better care, better recovery, and better survival rates for [heart attack](#) patients."

Several authors disclosed ties to industry.

**More information:** Andreas Kumar et al, The Canadian Cardiovascular Society Classification of Acute Atherothrombotic Myocardial Infarction Based on Stages of Tissue Injury Severity: An Expert Consensus Statement, *Canadian Journal of Cardiology* (2023). [DOI: 10.1016/j.cjca.2023.09.020](https://doi.org/10.1016/j.cjca.2023.09.020)

Prakriti Gaba et al, Promise of a Novel Classification System for Acute

Myocardial Infarction, *Canadian Journal of Cardiology* (2023). [DOI: 10.1016/j.cjca.2023.10.011](https://doi.org/10.1016/j.cjca.2023.10.011)

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