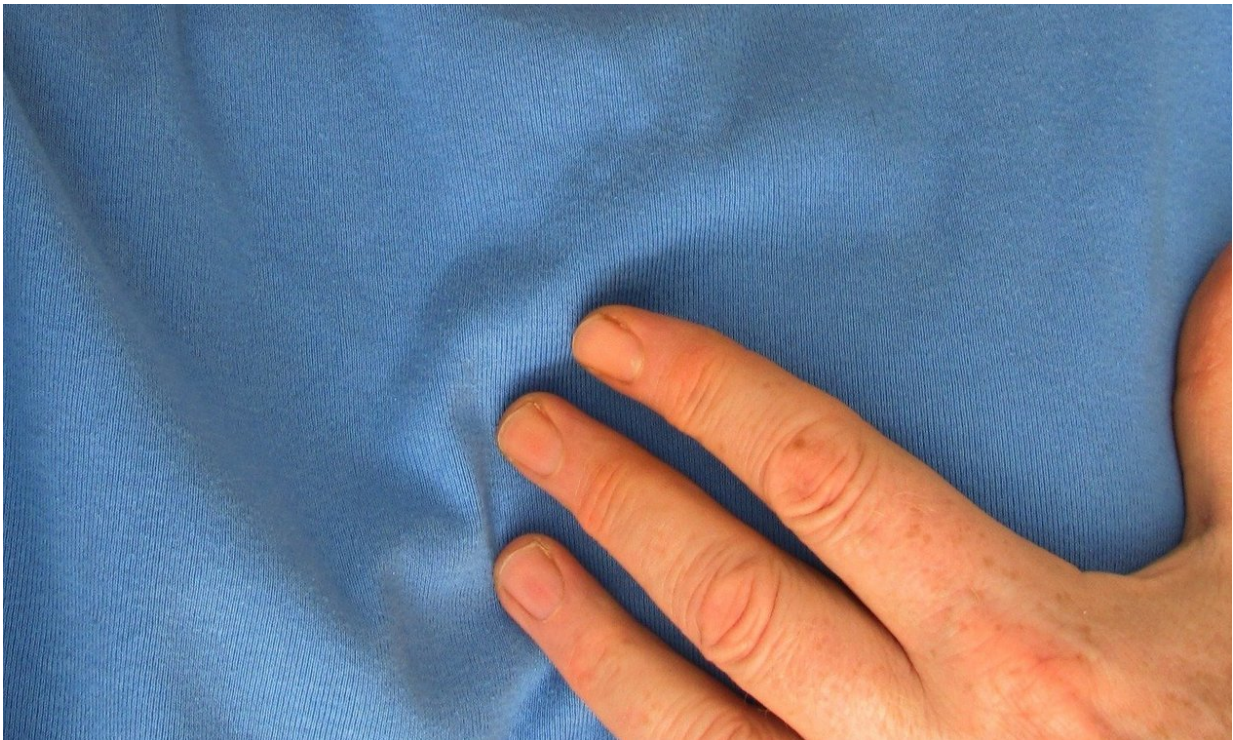


# Five-year data confirms comprehensive heart attack protocol improves survival

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A five-year follow-up study confirms that a Cleveland Clinic-developed protocol improved outcomes for the most severe type of heart attacks—not only reducing mortality in both men and women, but eliminating or reducing the gender disparities in care and outcomes typically seen in these cardiac events.

The study was published today in *European Heart Journal Open*.

In the original study, published in the *Journal of the American College of Cardiology* in 2018, Cleveland Clinic researchers put in place a comprehensive four-step protocol for STEMI patients designed to minimize variability in care. STEMI (ST-Segment Elevation Myocardial Infarction) is a life-threatening type of heart attack that is caused by an abrupt and prolonged blockage of the blood supply to the heart.

The protocol included: (1) standardized emergency department [cardiac catheterization](#) lab activation criteria; (2) a STEMI safe handoff checklist; (3) immediate transfer to an available catheterization lab; and (4) using the radial artery in the wrist as the first option for percutaneous (under the skin) coronary intervention, like stenting. This approach has been shown to have fewer bleeding complications and improved survival when compared to using the femoral artery.

The purpose of the latest study was to evaluate the association of the four-step protocol with sex disparities in STEMI care and outcomes for five years after protocol implementation.

Cardiovascular disease is the leading cause of death in women, and STEMI impacts about one million women each year. Previous studies have shown that women with STEMI have worse clinical outcomes, including higher mortality and higher rates of serious complications such as recurrent heart attack or stroke.

Results of the five-year study showed the following:

- Use of guideline-directed medical therapy and door-to-balloon time were similar between males and females after implementation of the STEMI protocol.
- There were major improvements in using the radial artery in the

wrist as the first option for percutaneous coronary intervention in both males and females, although a lower rate was seen in females after protocol implementation.

- Sex disparities in mortality and major adverse events were no longer observed after protocol implementation. Women had a more than 50% reduction in the risk of dying in the hospital with this heart attack.
- A significantly higher rate of bleeding in females persisted despite implementation of a STEMI protocol, including promotion of using the radial artery in the wrist as the first option for percutaneous coronary intervention.

"Previous to this, there has been very little data demonstrating successful strategies to provide better care for women who experience these types of critical heart attacks," said Umesh Khot, M.D., head of Regional Cardiovascular Medicine at Cleveland Clinic, and senior author of the study. "This latest data proves that our comprehensive STEMI protocol could be the first step to resolving the long-standing gender disparities that exist in STEMI patient care."

Samir Kapadia, M.D., chairman of Cardiovascular Medicine at Cleveland Clinic, added, "This study shows that excellent processes and expert care can provide uniform expeditious care to all patients with this type of serious heart attack, resulting in unparalleled outcomes."

The observational cohort study looked at 1,833 consecutive STEMI patients treated with percutaneous coronary intervention (PCI) before and after implementation of a protocol for early guideline-directed medical therapy, rapid door-to-balloon time, and use of trans-radial [percutaneous coronary intervention](#). Consecutive patients were studied from July 15, 2014 through July 15, 2019. Patients treated from January 1, 2011 through July 14, 2014 were studied as a control group.

**More information:** Chetan P Huded et al, Five Years of a Comprehensive ST Elevation Myocardial Infarction Protocol and its Association with Sex Disparities, *European Heart Journal Open* (2021). DOI: [10.1093/ehjopen/oeab011](https://doi.org/10.1093/ehjopen/oeab011)

Provided by Cleveland Clinic

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