

Preventing mortality after myocardial infarction

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Human heart. Credit: copyright American Heart Association

The University of Montreal Hospital Research Centre (CRCHUM) has been awarded a grant of US\$2 million from the National Institutes of Health (NIH) to pilot the Canadian component of a study to determine the optimal amount of blood to transfuse in anemic patients who have

suffered a myocardial infarction.

"Most people who suffer a first infarction do not need [blood transfusion](#), but for those who do, the mortality rate is higher. These are often elderly [patients](#) who sometimes have other diseases. The problem is that we don't know how much blood we should give them," says Dr. Paul Hébert, head of the medical department at CHUM and co-principal investigator of the study known as MINT, for Myocardial Ischemia and Transfusion.

MINT is a vast clinical trial directed by Dr. Jeffrey Lee Carson of Robert Wood Johnson University Hospital in New Jersey (United States). This randomized trial conducted in more than 70 hospitals in the United States and Canada will compare two blood transfusion strategies—liberal and restrictive—in 3,500 patients at risk of [myocardial infarction](#). "We are going to determine whether giving more blood to keep the patient at a threshold of 100 g/L hemoglobin is preferable to giving less blood with a threshold of 80 g/L. We will see the impact on mortality after 30 days," says Dr. Hébert, also a professor in the Department of Medicine at Université de Montréal and holder of the Héma-Québec - Bayer Chair in Transfusion Medicine at Université de Montréal.

A pilot trial on 110 patients published in *The American Journal of Cardiology* showed that mortality was higher after 30 days in patients who received less hemoglobin compared with those who received more: seven people died in the restrictive group compared with just one in the liberal group. The researchers therefore believe it is better to give more blood to patients affected by [myocardial ischemia](#), that is, heart disease caused by a cessation of, or decrease in, irrigation of the heart.

Yet in a study published in the *New England Journal of Medicine* in 1999 that revolutionized blood transfusion practices around the world, Dr. Paul Hébert and his colleagues demonstrated that people hospitalized in

intensive care have a greater chance of survival if transfusions of hemoglobin are limited. "This generally is true, but the heart is a special organ that needs constant irrigation with oxygen. We think that if you have a heart attack and are also anemic, this is a concern and more blood must be transfused," Dr. Hébert says.

Blood transfusions are not without risk of infection or immune responses. Some believe that when a patient truly needs a blood transfusion, it is always preferable to limit the hemoglobin administered. "This clinical trial is the logical follow-up to our research on transfusion thresholds going back more than 30 years. It will help us resolve one of the last major issues in the field," says Dr. Jacques Lacroix, an intensivist at Sainte-Justine Hospital, professor at Université de Montréal, and contributor to the MINT study.

The MINT team will also assess whether the amount of hemoglobin given to cardiac patients affects the risk of complications such as thrombosis or pneumonia. "Our findings will definitely influence practice and ultimately save lives. We can be more effective when an anemic patient suffers a [heart attack](#), and prevent recurrences," Dr. Hébert concludes.

The World Health Organization says that cardiovascular diseases account for some 17.5 million deaths a year. Myocardial ischemia is the leading cause of death and the risk of dying is especially high among elderly and anemic patients.

Provided by University of Montreal Hospital Research Centre (CRCHUM)

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