Trial clarifies use of blood transfusion in anaemic heart attack patients

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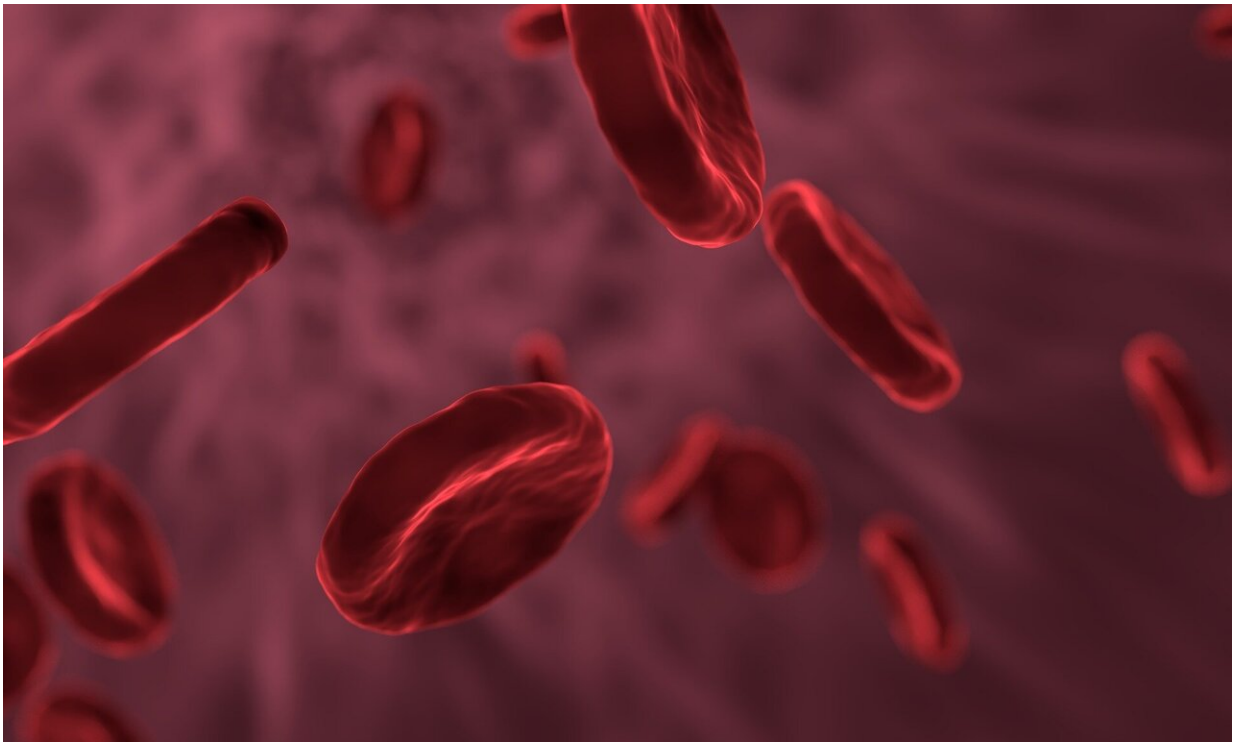

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Restricting blood transfusion in anemic heart attack patients to those with very low hemoglobin levels saves blood with no negative impact on clinical outcomes. That's the finding of the REALITY trial presented in a Hot Line session today at ESC Congress 2020.

Anemia affects approximately 5-10% of patients with myocardial infarction and is an independent predictor of cardiac events and increased mortality. The antiplatelet and anticoagulant medications used to treat myocardial infarction raise the risk of bleeding, which in turn elevates the risk of anemia and mortality.

However, there is uncertainty over the benefits of blood transfusion in these patients. Observational studies have reported that transfusion is associated with a higher rate of mortality in patients with myocardial infarction. The optimal transfusion strategy in patients with acute myocardial infarction and anemia is also unclear. Only two very small randomized trials have been conducted, with conflicting results.

REALITY is the largest randomized trial comparing a restrictive versus a liberal blood transfusion strategy in myocardial infarction patients with anemia. In the restrictive strategy, transfusion was withheld unless hemoglobin dropped to 8 g/dL. In the liberal strategy, transfusion was given as soon as hemoglobin was 10 g/dL or below. Previous trials have compared these two strategies in other settings such as gastrointestinal bleeding, cardiac surgery or non-cardiac surgery but patients with acute myocardial infarction were excluded.

There were two primary endpoints. The primary clinical endpoint was a composite of major adverse cardiac events (MACE) at 30 days, including all-cause death, myocardial infarction, stroke, and emergency percutaneous coronary intervention (PCI) prompted by myocardial ischaemia. The cost effectiveness endpoint was the incremental cost effectiveness ratio (ICER) at 30 days.

Principal investigator Professor Philippe Gabriel Steg of Hospital Bichat, Paris, France explained the reasons for having both a clinical and cost effectiveness outcome: "Our hypothesis was that in myocardial infarction patients with anemia, a restrictive strategy would be non-

inferior to a liberal strategy with respect to clinical outcomes at 30 days but would be less costly."

The trial was conducted in 35 hospitals in France and Spain. It enrolled 668 patients with acute myocardial infarction and anemia (hemoglobin 10 g/dL or below, but above 7 g/dL) at any time during admission. Patients were randomly allocated to the restrictive or liberal transfusion strategy and followed-up for 30 days.

The restrictive transfusion strategy was non-inferior to the liberal strategy in preventing 30-day MACE. The primary clinical outcome occurred in 36 patients (11.0%) allocated to the restrictive strategy and 4patients (14.0%) patients allocated to the liberal strategy (difference -3.0%; 95% confidence interval [CI] -8.4% to 2.4%). The relative risk of 30-day MACE with the restrictive versus liberal strategy was 0.79.

Cost effectiveness analysis indicated that the restrictive strategy had an 84% probability of being cost-saving while improving clinical outcomes, i.e. "dominant" from a medico-economic standpoint.

Regarding safety, compared to patients receiving the liberal strategy, those allocated to the restrictive strategy were significantly less likely to develop an infection (restrictive 0.0% vs. liberal 1.5%; p=0.03) or acute lung injury (restrictive 0.3% vs. liberal 2.2%; p=0.03).

Professor Steg said: "Blood is a precious resource, and transfusion is costly, logistically cumbersome, and has side effects. The REALITY trial supports the use of a restrictive strategy for blood transfusion in myocardial infarction patients with anemia. The restrictive strategy saves blood, is safe, and is at least as effective in preventing 30-day cardiac events compared to a liberal strategy, while saving money."

More information: Abstract title: A randomized trial of liberal vs.

restrictive red blood cell transfusion strategies in patients with acute myocardial infarction and anaemia.

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