

# Paper highlights need for new studies and guidelines around oxygen therapy during MI

September 21 2010

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The European Society of Cardiology (ESC) welcomes a paper published today in the *Journal of the American College of Cardiology* (JACC )(1) highlighting concerns over the use of oxygen therapy during MI in patients with normal oxygen levels. The publication adds to calls for revision of the STEMI guidelines around oxygen therapy and for a prospective, large scale randomised trials, issues that were both first raised in a Cochrane Review published in June (2).

"The upcoming ESC Clinical Practice Guidelines for the management of STEMI, to be published in 2012 will address this issue on the basis of the [Cochrane review](#) and the entire literature," said Gabriel Steg from Hopital Bichat (Paris, France), co-chairman of the ESC Task Force on the management of AMI-STEMI.

Supplemental [oxygen therapy](#), said Stefan James, also co-chairman of the ESC AMI-STEMI Task Force, is currently recommended in European guidelines for patients with desaturation hypoxia (lack of oxygen), but that there is no clear guidance about what to do for normotensive MI patients.

"The reality is that supplemental oxygen is given to virtually all patients in the early phase of an MI, whether in the ambulance, [emergency department](#) or whilst undergoing percutaneous interventions (PCI) in the cath lab," said James, from Uppsala Clinical Research Centre (Sweden). "But following the publication of these two papers we need to consider whether it should be clearly stated that oxygen therapy is only

appropriate for hypoxic patients."

The JACC paper, by Raman Moradkhan and Lawrence Sinoway from Pennsylvania State University College of Medicine (USA), reviewed data examining the effects of supplemental oxygen in normoxic patients with acute CAD (1). "Although the use of oxygen is clearly appropriate and advisable to treat hypoxia, we hypothesize that excessive use of supplemental oxygen in normoxic cardiac patients could potentially lead to worse outcomes in a number of patients," wrote the authors. "We are not aware of any studies demonstrating that normoxic subjects undergoing percutaneous coronary intervention for acute myocardial infarction derive any benefit from [supplemental oxygen](#)."

Indeed, the Cochrane meta-analysis found that nearly three times more deaths occurred among the patients who had been randomised to oxygen therapy compared those who had been given air, and that there were no benefits in terms of pain relief (2). The review by Juan Cabello, from the Hospital General Universitario de Alicante (Alicante, Spain), had identified only three randomised controlled trials involving just 387 patients that compared outcomes for one group given oxygen and another given normal air. "Because the trials had few participants and few deaths this result does not necessarily mean that giving oxygen increases the risk of death. The difference in numbers may have occurred simply by chance," wrote the authors. "We think it is important to evaluate this widely used treatment in a large trial, as soon as possible, to make sure that current practice is not causing harm to people who have had a heart attack."

A further issue, pointed out James, is that the studies mentioned in the Cochrane analysis are up to 30 years old and only one was appropriately blinded. "Over the past few years we have completely changed the way MIs are managed. Before patients were automatically transferred to cath labs for PCI there was a much stronger rationale for giving people

oxygen therapy because they were more likely to develop pulmonary congestion. But even in those circumstances there doesn't appear to have been any mortality advantage among the group receiving oxygen."

The current widespread use of oxygen by clinicians for MI is almost intuitive. "It's widely known that an MI causes oxygen deficits in the heart muscle, so it seems logical to provide additional oxygen," said James. " However, the reality is that it doesn't follow that if you increase inhaled oxygen you will automatically transfer oxygen to the heart. In fact, there's data to show that oxygen is a vasoconstrictor and may therefore act to increase the damage caused by an MI."

Mechanisms need to be put in place, James commented, to organise large scale randomised trials without the support of industry in areas where there are no new pharmaceutical agents involved. "One logical way forward is to perform trials in registries. Indeed, in Sweden we are currently evaluating thrombus aspiration in MI in our Sweetheart registry," he said.

In the mean time until new guidelines are published, James' advice to clinicians, nurses and ambulance staff, would be to avoid oxygen in acute MI patients, unless they have demonstrably low oxygen levels, and then to only deliver sufficient to avoid hyperopic.

**More information:** 1. Revisiting the Role of Oxygen Therapy in Cardiac Patients. R Mora khan, LI Sino way. JACC September 21 2010, 56: 1013-6

2. Oxygen therapy for acute myocardial infarction (Review) Cabello JB, Burls A, Emparanza JI, Bayliss S, Quinn T. The Cochrane Library 2010. Issue 6. [DOI: 10.1001/14651858.CD007160.pub2](https://doi.org/10.1001/14651858.CD007160.pub2)

Provided by European Society of Cardiology

Citation: Paper highlights need for new studies and guidelines around oxygen therapy during MI (2010, September 21) retrieved 18 April 2024 from

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