Detrimental Oxygen: Oxygen Supplementation In STEMI Patients

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Background:
There is evidence that supplemental oxygen administration in an acute myocardial infarction is associated with worse outcomes and larger infarct size. This is reflected in the American College of Cardiology 2013 ST elevation myocardial infarction (STEMI) guidelines which states “a pooled Cochrane analysis of 3 trials showed a 3-fold higher risk of death for patients with confirmed acute MI treated with O2 than for patients with acute MI managed on room air [1].

Methods:
We retrospectively reviewed our acute STEMI population from February 1, 2020 to November 25, 2020 to assess how many of these patients were inappropriately placed on supplemental oxygen. We used a cut-off value of Sp02 greater than 90% as a threshold for inappropriate supplementation, in accordance with the published literature. The exception to this was if the patients Sp02 was greater than 90% but otherwise had signs of respiratory distress, or other high-risk features for hypoxemia, such as acute CHF exacerbation. We then provided education to all first point-of-care staff members on the appropriate use of supplemental oxygen and measures for changes in behavior. Our aim is to reduce inappropriate supplemental oxygen use by 50% in nine months.

Results:
There were a total of 126 patients from February 1, 2020 to November 25, 2020, 79% of them were placed on supplemental oxygen despite having an oxygen saturation greater than 90%.

Conclusions:
We identified a clear potential for harm with excessive use of supplemental oxygen for acute STEMI patients. Our goal is to obtain the follow-up data at three month intervals to monitor for improvement, with plans to provide re-education if our goal of a 50% reduction in inappropriate supplemental oxygen use is not achieved.

Follow-Up:
Three months after we provided education to all first point-of-care staff members our use of appropriate supplemental oxygen was 19%. Direct bedside education was provided by all cardiology fellows responding to the STEMI calls, as well as re-enforcement of the new protocol at the monthly emergency department meetings. Two months after that (five months after initial education), the use of appropriate supplemental oxygen improved to 35%.

References: