
We thank Drs Bullock and Hausenloy for their interest in the Air versus Oxygen in Myocardial Infarction (AVOID) Study.1 They note correctly a number of limitations to our pragmatic trial. Despite these limitations, we feel our conclusion highlighting no benefit to routine supplemental oxygen in normoxic patients with ST-segment-elevation myocardial infarction, with some evidence for increased myocardial injury, remains both justified and clinically responsible.

There were 3 measures of myocardial injury in the AVOID study: troponin, creatine kinase, and cardiovascular magnetic resonance infarct size at 6 months. Bullock and Hausenloy correctly state that the primary end point troponin did not significantly differ between the 2 groups and is more cardiac specific than creatine kinase, which was significantly increased in patients randomly assigned to oxygen in comparison with no oxygen. Although the infarct size on cardiovascular magnetic resonance was significantly increased in the oxygen group, this result was nonsignificant when adjusted for left ventricular mass. Supporting our conclusion is the fact that all 3 measures of myocardial injury were highly correlated (P<0.001) and the approximate relative increase in myocardial injury of >20% was consistent across all 3 measures. In addition, a series of sensitivity analyses, including a separate repeated-measures analysis using linear mixed models, based on all observed biomarker data, also highlighted a significant 20% increase in myocardial injury for troponin and creatine kinase in the oxygen group.

Although oxygen may benefit the hypoxicemic patient with complicated acute myocardial infarction, there remains little evidence for indiscriminate supplemental oxygen, which has for many years been administered to normoxic patients experiencing uncomplicated ST-segment-elevation myocardial infarction in both the prehospital and in-hospital settings, with little regard for oxygen’s therapeutic window or potential vasoactive effects of hyperoxia. Given the growing body of physiological data highlighting the adverse effects of hyperoxia on coronary circulation and microvasculature,2–4 and until the results of the large Swedish registry-based randomized trial of oxygen in acute myocardial infarction are published,5 we feel it clinically responsible to highlight a possible signal toward adverse effects of supplemental oxygen in normoxic patients with ST-segment-elevation myocardial infarction, which was seen in the AVOID study.

Disclosures
Dr Stub (1090302/100156) and Dr Bray (1069985/100136) are supported by co-funded NHMRC/NHF fellowships (no. 1090302/100156) (#1069985/100136). Drs Smith, Bernard, Cameron, Ellims, Taylor, Meredith, and Kaye are supported by National Health and Medical Research Council of Australia grants. The other authors report no conflicts.

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References
Response to Letter Regarding Article, "Air Versus Oxygen in ST-Segment–Elevation Myocardial Infarction"

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_Circulation_. 2016;133:e29
doi: 10.1161/CIRCULATIONAHA.115.019038

_Circulation_ is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0009-7322. Online ISSN: 1524-4539

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