

LETTER TO THE EDITOR

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# Physician presence at out-of-hospital cardiac arrest is not necessarily the cause of improved survival

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## Abstract

A recent publication Hiltunen et al. on Out-of-Hospital Cardiac Arrest (OHCA) in Finland show increased survival when a physician attends an OHCA, compared to EMS. But it is likely that physicians attend OHCA patients with a different prognosis due to comorbidity or illness severity, which causes confounding by indication and is the likely cause for the physician and survival association.

**Keywords:** Cardiac arrest, Out-of-hospital, Confounding

## Letter

Dear Editor

It is with interest that we read the paper by Hiltunen et al. on Out-of-Hospital Cardiac Arrest (OHCA) in Finland [1]. They found that the presence of a physician at an OHCA is significantly associated with improved survival. This finding would have important implications for the clinical skill mix of OHCA teams. But Hiltunen and colleagues rightly advise that their finding of physician associated survival should be interpreted cautiously. Hiltunen et al. state that it is not uncommon for third tier (physician) EMS to attend OHCA *only after they were tasked* to that OHCA upon the information from first and second tier EMS. This means that physician based EMS in Finland might selectively treat OHCA where the patient lived long enough for the physician EMS to attend, which might mean that OHCA treated by physicians have a better prognosis. Furthermore, it is possible that first and second tier EMS personnel request the attendance of physicians at cases which are deemed potentially viable rather than those with characteristics known to be associated with poorer outcomes. This phenomenon is called confounding by indication and happens when patients that are “sicker” receive an intervention preferentially [2]. Confounding caused by sicker patients is a problem that besets

cardiac arrest research and causes the results of such research to be biased [3, 4].

We believe that the maldistribution of prognosis between the physician and non-physician EMS caused confounding by indication and that this confounding could explain the results of the Hiltunen study. Hiltunen et al. mention that the improved survival associated with physician presence is in disagreement with a previous OHCA study from Norway [5]. However, their finding of physician benefit might be real and should be further investigated. It is important that such a study should adjust for confounding caused by sicker patients using illness severity scores and comorbidity indices such as the Pittsburgh Cardiac Arrest Category illness severity score and Charlson index [3]. If a positive association of physician- attended OHCA and survival remains it will be an important finding.

## Abbreviation

OHCA, Out-of-hospital Cardiac arrest

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Not applicable.

## Authors' contributions

PF and PJ conceived of the idea to write this letter and both prepared the manuscript. All authors read and approved the final manuscript.

## Competing interests

The authors declare that they have no competing interests.

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**Consent for publication**

Not applicable.

**Ethics approval and consent to participate**

Not applicable.

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