

## TO THE EDITOR

## Improving Mortality in Pediatric Out-of-Hospital Cardiac Arrest Events Requires a Multifactorial Approach



We would like to commend the paper by Fukuda et al,<sup>1</sup> which assessed the association of outcomes after a pediatric (<18 years of age) out-of-hospital cardiac arrest (OHCA) event with time of day and day of week. Yu et al<sup>2</sup> evaluated cardiopulmonary resuscitation quality during in-hospital cardiac arrests of children with congenital heart disease. Data collected found no significant difference in cardiopulmonary resuscitation quality during the day compared with nighttime, or weekday compared with weekend. Therefore, differences in treatment outcomes are unlikely due to in-hospital factors, but rather prehospital factors (eg, delays in prehospital intervention). Interestingly, Fukuda et al<sup>1</sup> reported rates of Advanced Life Support administration in the prehospital setting being lower at night compared with the day/evening ( $P < 0.0001$ ). This difference was not observed between weekdays and weekends ( $P = 0.0926$ ). Hence, poorer outcomes at night could be attributed to delays in recognition, and strategic staffing as proposed by Fukuda et al<sup>1</sup> may not confer the survival benefit they might expect.

Shinohara et al<sup>3</sup> investigated the association between hospital characteristics and survival in 310 pediatric OHCA patients. Witnessed arrests (OR: 6.25; 95% CI: 1.98-19.74;  $P = 0.002$ ) and daytime admission (OR: 3.64; 95% CI: 1.23-10.80;  $P = 0.02$ ) were associated with greater 1-month survival rates. These results were consistent with Fukuda et al.<sup>1</sup> Shinohara et al<sup>3</sup> also reported that hospital

characteristics such as number of doctors ( $P = 0.39$ ) or nurses ( $P = 0.57$ ) at night did not improve 1-month survival. This does not support the proposal of Fukuda et al<sup>1</sup> that staffing issues are likely to be the cause of survival differences between day and night.

We agree with the authors that more research into the causes for disparities in survival benefits between day and night pediatric OHCA events is necessary, and various factors involved, including time to intervention, could contribute to differences in survival.

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the [Author Center](#).

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