

**Background** It has been suggested that prehospital providers need to be situationally aware in order to reduce human error. By reducing human error, patient outcomes may be improved. Research during the COVID19 pandemic has been difficult and while many projects were put on hold, the authors created a novel manner in which to complete this study and measure SA – through online simulation.

**Method** This was a mixed-methods explanatory sequential study where prehospital providers participated in an online simulation. The situational awareness global assessment technique (SAGAT) was utilized during periodic freezes in the simulation where the participants would answer questions related to the environments of the patient and the scene. Questions were focused on perception, interpretation, and prediction. Following the simulation, participants provided feedback during interviews.

**Results** The providers did not possess high levels of SA. Overall SA was 45% (p-value, .162), where participants performed best at perception with a steady decline to interpretation and then prediction. Those with higher levels of education did perform better, although this was not statistically significant, (p-value, .09). Those with more experience initially had higher SA but then tended to decrease with more experience (p-value, .24). Participants did feel satisfied with the online simulation and also felt that the simulation and SAGAT were beneficial to their continuing education and improving their care in the field.

**Conclusion** Prehospital providers are not situationally aware during online simulation. They focused on the surroundings at first, but did not focus as much on the patient. The SAGAT can be utilized in an online format and may possibly enhance overall performance. Further research is needed to determine if higher levels of education and experience play a role in prehospital SA.

**Conflict of interest** None.

**Funding** None.

## Miscellaneous

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### ARE PARAMEDICS SITUATIONALLY AWARE? A CROSS-SECTIONAL STUDY DURING EMERGENCY CALLS FOR SERVICE

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**Background** Previous studies have suggested that paramedics are not situationally aware during their initial prehospital education nor during online simulation. No known research has measured situational awareness (SA) of paramedics during actual emergency calls for service.

**Method** An observational cross section study of paramedics in a busy 911 system during emergency calls for service. Utilizing the situational awareness global assessment technique (SAGAT) paramedics were asked a short series of questions during periodic stops during the emergency calls by trained

observers. The questions were based on a previously proven theoretical framework of SA for paramedicine focusing on the paramedic's ability to properly recognize events, interpret their meaning, and then predict how they may unfold in the future.

**Results** While observing 10 licensed paramedics, a total of 67 emergency calls for service were observed over a 4-week period. During those calls, 387 queries were asked of the paramedics during the actual emergency. Paramedics successfully answer 24% of the recognition questions, 32% of the interpretation questions, and 45% of the prediction questions. Overall SA was 34%.

**Conclusion** Paramedics were not situationally aware. They struggled the most with recognition questions, possibly due to high levels of stress and tunnel vision while on scene with patients. Of the events that they were able to recognize, they performed better at properly interpreting what those events meant and how those events may unfold in the future. Future studies are needed to determine if a targeted educational approach may improve SA and then, possibly, patient outcomes.

**Conflict of interest** None.

**Funding** None.

## Cardiac arrest

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### THE ASSOCIATION OF COMORBIDITIES AND SURVIVAL AFTER OUT-OF-HOSPITAL CARDIAC ARREST IN DENMARK

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**Background** An increase has been observed in 30-day survival of out-of-hospital cardiac arrest (OHCA) in the past 18 years from 4% to 14% in Denmark, but OHCA survival remains low. We investigated how pre-existing comorbidities affected 30-day survival and time-to-death of OHCA patients.

**Method** This is a retrospective registry-based study with use of nationwide registries. Data on OHCA (2001–2015) were obtained from the Danish Cardiac Arrest Registry, data on the most clinically relevant comorbidities were collected from the Danish National Patient Registry and the Danish National Prescription Registry for up to 10 years prior to their arrest. Data on time-to-death was collected from the Danish Cause of Death Registry. Analysis was performed with use of several generalised linear models.

**Results** OHCA patients with AMI, ischemic heart disease (IHD), arrhythmia, hyperlipidemia, and heart failure, had a 30-day survival of 7.39[6.87;7.95], 5.43[4.90;6.02], 2.87 [2.66;3.09], 1.76[1.60;1.93] and 1.51[1.39;1.65], respectively, presented as odds ratios (OR). Patients with the co-existing conditions i) AMI and arrhythmia or ii) arrhythmia and IHD