far and how long to do. The blood analysis has not been described until now, as possible predictor of survival in these patients. Aim: To analyze pH, lactate, bases excess (BE) and pCO₂ as possible predictive factors of survival in patients who suffer TCA.

Method Observational Study of patients suffered from TCA in 2016, 2017 and 2018 assisted by our EMS. Collection data from medical records and databases of hospital follow-ups. Data processing and data analysis: quantitative variables are described by central and dispersion measures and qualitative variables by frequency distribution. COR as survival analysis. Excel and SPSS v. 20.0.

Results We analyzed 112 TCA in which CPR is performed and recovered spontaneous circulation 49 (43.75%). After 7 days, 7.14% survived. At the arrival EMS, mean pH was 7.14 (SD 0.15), pCO₂ 66.57 (ED 20.61), BE -6.09 (ED 6.23) and Lactate 6.51 (ED 3.82). Lactate and PCO₂ showed significant relationship in analysis of survival curve after 7 days ($p < 0.05$).

Conclusion The survival in TCA was 7.14% of patients after 7 days. - Lactate and PCO₂ are related to survival at 7 days in our series. - It's necessary more robust studies that can define the factors related to the survival in TCA, but it seems that the biological clock can be one of them.

Conflict of interest There is no conflict of interest.

Funding There is no funding.

18 TRAUMATIC CARDIAC ARREST: IS SURVIVAL POSSIBLE?

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Background Survival in traumatic PCR has been considered almost impossible, so it was even question whether it was indicated to perform CPR. Nowadays, several studies publish variable survival rates but they are a reality.

Aim To analyze the survival of patients suffering from traumatic CRP treated by an emergency service.

Method Observational study of patients suffered from traumatic cardiac arrest in 2016, 2017 and 2018 assisted by our EMS. Collection data from medical records and databases of hospital follow-ups. Scope: City of Madrid. Data processing and data analysis: quantitative variables are described by central and dispersion measures and qualitative variables by frequent distribution. Excel and SPSS v.20.0.

Results 303 cardiac arrest of traumatic origin were selected, of which CPR is performed in 155 (51.2%). Of these, CPR was abandoned for futility in 43 (27.74%). Rest of patient were 112 (with complete CPR), 49 (43.75%) recovered the spontaneous circulation. After 6 hours, 33 patients were alive (29.46%). After 24 hours 16.96% and after 7 days 7.14%.

Conclusion Survival in traumatic cardiac arrest is possible, 7.14% of patients are alive after 7 days. - Our survival rates are comparable to those of other series published in the scientific journals. - It's possible that survival will improve in the next years due to the new management of TCA.

Conflict of interest There is no conflict of interest.

Funding There is no funding.

19 LIVESTREAMING FROM SMARTPHONES TO THE DISPATCH CENTER IN REAL EMERGENCY CALLS

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Background Currently, the emergency medical dispatchers rely solely on the spoken word when assessing and triaging emergency calls. We aimed to explore if livestreaming by bystanders could be useful during emergency calls.

Method In a 3 months period, livestreaming could be added to the emergency call at the Emergency Medical Services, Copenhagen. Nine medical dispatchers were trained to instruct laypersons to ad livestreaming at a 1 day simulation-based course before the period. For livestreaming caller received a text message with a link. When activating the link, the smartphone camera opened, allowing video to be streamed encrypted to the dispatcher. GoodSAM provided the technical solution.

Results In 68 cases, the caller had a smartphone and the dispatcher suggested livestreaming which succeeded in 33 cases. Reasons for no livestreaming were refusal from bystander (n=6) or patient (n=2), text message not received before ambulance arrival (n=17), and technical issues or caller skills (n=11). The dispatchers found the live video recording useful in all cases. In 8 cases (24%) the patient was considered more critical ill when livestreaming was added, whereas in 8 (24%) cases the patient was considered less sick. Change in ambulance priority response was done in 3 cases after the dispatchers had video. Among 25 callers interviewed 22 experienced livestreaming as an advantage.

Conclusion Adding video livestreaming to the emergency call seems useful for the medical dispatchers to improve patient assessment and to provide the appropriate emergency response. The callers found livestreaming an advantage. Technical issues/experiences, however, need to be improved.

Conflict of interest The authors declare that they have no competing interests.

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20 IMPACT OF PHYSICIAN-STAFFED HELICOPTERS ON PATIENT OUTCOMES: A SYSTEMATIC REVIEW

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Background Management of pre-hospital patients remains a challenge. In developed countries a physician-staffed helicopter emergency medical service (PS-HEMS) is used in addition to ground emergency medical service (GEMS), but the effect is debated. This systematic review aimed to evaluate the effect

of PS-HEMS compared to GEMS on patient outcome, primarily mortality.

Method PubMed, EMBASE, and the Cochrane Library were systematically searched on October 15, 2018 for prospective, interventional studies comparing outcomes of patients treated and/or transported by either PS-HEMS or GEMS. Outcomes of interest were mortality, time to hospital, and quality of life (QoL).

Results Of 16 studies eligible for inclusion, 12 reported on trauma patients, four on cardiac patients, and one study on stroke patients. Three studies showed significantly different mortality rates (all on trauma patients) with lower 30 day mortality (OR=0.68 [0.47–0.98] and OR=0.41 [0.2–0.87]) and lower in-hospital mortality (OR=0.29 [0.1–0.82]) for PS-HEMS compared to GEMS. Eight studies showed significantly different time to hospital between patients transported with PS-HEMS compared to GEMS. In cardiac patients, time was significantly lower (84 vs 102 min and 71 vs 78 min, both $p<0.01$). Amongst trauma patients, three showed decreased time with PS-HEMS and three showed increased time. Three studies reported QoL on trauma patients, but no benefit of PS-HEMS was found.

Conclusion In this systematic review we found a possible survival benefit for trauma patients treated and transported with PS-HEMS compared to GEMS. Furthermore, we found that time to hospital was significantly reduced in cardiac patients transported with PS-HEMS compared to GEMS.

Conflict of interest None.

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21 HOW FIT ARE PARAMEDICS/EMTS? WHAT WE KNOW AND WHAT SHOULD BE DONE?

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Background Emergency Medical Systems (EMS) structures differ across the countries but there is a consensus about the importance of physical performance for the Paramedics/Emergency Medical Technicians (EMTs). However, there is no consensus about the description of their physical workload, its measurement, and evaluation. This systematic review presents the evidence for how the Paramedics/EMTs fitness levels are defined.

Method We searched the following electronic databases: Wiley Online Library, Web of Science, Scopus, Science Direct, EBS-COHost, MEDLINE, Clinical Key and Google Scholar between 2008 and 2019. Search terms related to paramedics, emergency medical technician, and physical fitness. All studies that compared physical performance outcomes included.

Results The review identified twelve full-text publications that matched the inclusion criteria (ten original research article, two systematic reviews), three of the studies investigate the physical performance demands of Paramedics/EMTs, two of them evaluate the health and physical status in current working conditions, six of them describe the risks that they have faced while performing their duties according to their performed work-related tasks and anatomical body parts.

Conclusion Physical performance of Paramedics/EMTs should be evaluated as a whole while several skills were performing simultaneously rather than individual tasks. Especially, there is a need for investigations about fine motor skills and physical

performance under the acute fatigue and stress. Therefore, an easily applicable, reliable and validated 24 hour Physical Activity Assessment Questionnaire (24 hour PAAQ) should be developed which results in metabolic equivalent (MET) units to evaluate and defining physical performance requirements and criteria under every circumstance for any EMS structures.

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22 PUBLIC AND PATIENT INVOLVEMENT IN PREHOSPITAL CARE RESEARCH DEVELOPMENT – DESIGNING THE RAPID 2 TRIAL

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Background Involving patients and public members in research helps ensure evidence is relevant, accountable and high quality. Public and patient involvement (PPI) is required in many funding applications. We aimed to involve public contributors in designing a research bid about prehospital management for hip fracture.

Method We recruited two public contributors with experience of hip fracture and prehospital care to our research team of academic, clinical and managerial partners developing the RAPID 2 proposal evaluating paramedic administration of Fascia Iliaca Compartment Block, a local anesthetic injection into the hip. We supported them to consult with a public/patient group and identify patient priorities to inform our decisions. We held research development meetings and shared project drafts to gain views, share decisions and amend documents.

Results Consultation responses suggested patient priorities after hip fracture were to return home, recover mobility and gain independence. These views guided our decisions on setting primary outcomes which were length-of-hospital-stay and health-related quality-of-life. Their concern about the study design causing delayed access to treatment meant we decided to identify common exclusion criteria before randomisation to expedite access to pain management and reduce attrition. Public contributors also agreed patients should be offered an incentive for completing and returning questionnaires to enhance data completeness.

Conclusion Involving public contributors enabled the research team to identify patient-prioritised outcomes and adjust the proposed study design to reflect these in the proposal. Public contributors will remain involved if funding is awarded to