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.

Funding Departmental.

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

ensure patient perspectives inform all stages of research management and dissemination.

Conflict of interest None.

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23 IMPACT OF PUBLIC ACCESS DEFIBRILLATION ON THE LONG-TERM OUTCOMES OF CARDIAC ARREST SURVIVORS

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10.1136/bmjopen-2019-EMS.23

Background Little is known about the impact of public access defibrillation (PAD) on the long-term outcomes following out-of-hospital cardiac arrest (OHCA). We examine the impact of PAD on functional recovery and health-related quality-of-life in 12 month survivors of OHCA.

Method Between 2010 and 2016, adult OHCA survivors with an initial shockable rhythm were invited to participate in structured telephone interviews at 12 months post-arrest using the Glasgow Outcome Scale-Extended (GOSE), the EuroQol-5D (EQ-5D), and 12-Item Short Form (SF-12) health survey. Adjusted logistic regression was used to assess the effect of PAD on good functional recovery (GOSE ≥ 7) at 12 months.

Results Of the 1,221 12 month survivors, 1036 (85.6%) participated in telephone interviews of which 144 (13.9%) were first shocked by PAD. When compared to patients first shocked by EMS, a higher proportion of patients shocked by PAD reported living at home without care (84.7% vs. 76.3%, $p=0.02$) and returning to work (83.3% vs. 71.5%, $p=0.02$). Although SF-12 mental component summary did not differ between groups, fewer patients shocked by PAD reported physical disability according to the SF-12 (35.7% vs. 45.3%, $p=0.04$). Best imaginable health status (an EQ-5D score of 1) was also reported more frequently in patients shocked by PAD (52.5% vs. 41.9%, $p=0.02$). After adjustment, PAD increased the odds of good functional recovery by 77% (adjusted odds ratio [AOR] 1.77, 95% CI: 1.16, 2.71; $p=0.008$).

Conclusion Cardiac arrest patients shocked by PAD experience better long-term outcomes and more often report living independently.

Conflict of interest None to declare.

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24 FACTORS ASSOCIATED WITH EMERGENCY AMBULANCE RE-ATTENDANCE WITHIN 24 HOURS OF BEING DISCHARGED AT SCENE

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10.1136/bmjopen-2019-EMS.24

Background The factors associated with emergency ambulance re-attendance after being discharged at scene by paramedics are poorly understood.

Method Retrospective observational study of consecutive patients attended but not transported to hospital by an emergency ambulance in Victoria, Australia between 01/07/2016 and 30/06/2017. Rates of re-attendance within 24 hours were examined using probabilistic matching. Adjusted logistic regression analyses were performed to determine factors associated with: 1) re-attendance; 2) re-attendances involving cardiac arrest or 'lights/sirens' transport to hospital.

Results There were 97 061 non-transported patients of whom 3393 (3.5%) were re-attended within 24 hours. The outcome following initial attendance was: refused transport against paramedic advice (33.5%); referred to another healthcare provider (17.4%), and; discharged at scene (49.1%). On re-attendance, cardiac arrest occurred in 15 (0.5%) patients of which three were palliative, and 117 (3.4%) required 'lights/sirens' transport. The rate of cardiac arrest or 'lights/sirens' transport was higher in patients who initially refused transport against paramedic advice (4.8% vs. 3.4%, $p=0.04$). In the multivariable models, older age (Odds Ratio[OR] = 1.02[1.01–1.02] per year), male gender (OR=1.25[1.15–1.35]), and an initial alcohol/drug-related issue (OR=1.50[1.05–2.14]) were associated with re-attendance within 24 hours. Older age (OR=1.02[1.01–1.03]), male gender (OR=1.69[1.12–2.55]), an initial pulse rate ≥ 120 bpm (OR=2.49[1.22–5.06]) and an initial respiratory rate >30 bpm (OR=3.42[1.43–8.14]) were independently associated with re-attendances involving cardiac arrest or 'lights/sirens' transport. Paramedic years of experience was not associated with re-attendance.

Conclusion Ambulance re-attendance after discharge at scene is infrequent. Ambulance services may benefit from development of screening tools which identify patients at risk of harm after discharge at scene.

Conflict of interest None.

Funding None.

25 PsiCALL, EMERGENCY PSYCHOLOGICAL ASSISTANCE

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Background PsiCall is an emergency telematic psychological assistance service for students of the Universidad Complutense de Madrid, and arises to attend the psychosocial needs of this population. The goal is offering emergency psychological care, prevent and detect early mental health disorders, and referral to other resources.

Method PsiCall is composed by 18 operators, supervised by experienced clinical psychologist and/or emergencies staff; and there's also a coordinator and a director of the service. There is a call center with four teleoperation stations to carry out the assistance service, which operates from 7.30 a.m. to 23.30 a.m. from Monday to Thursday, and 24 hours during the weekends. The activity includes: Assistance: which is done by telephone, email or chat. General and specific intervention protocols have been developed for problems such as anxiety, depression, autolytic ideation, etc., based on evidence, which serve as a guide to attend people. There are also screening tools and decision trees. The phonecalls are attended first in triage to obtain sociodemographic data and the reason of consultation. After this, another operator performs the attention. Derivation is made when there's a need for it. Investigation: