2016 have been known in the local CA centre before. This indicates that sudden cardiac death does not occur as sudden as commonly thought and that there is plenty of room to improve preventive programme, for example by awareness-raising or educational campaigns.

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18   EFFECT OF DETECTION TIME INTERVAL FOR OUT-OF-HOSPITAL CARDIAC ARREST ON OUTCOMES IN DISPATCHER-ASSISTED CARDIOPULMONARY RESUSCITATION

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Aim The association between the detection time interval (DTI) from the call for ambulance to the detection of out-of-hospital cardiac arrest (OHCA) by the dispatcher and the outcomes in dispatcher-assisted cardiopulmonary resuscitation (DA-CPR) is unclear.
Method Adults and cardiac OHCA received DA-CPR between 2013 and 2016 were analysed. The main exposure was DTI defined as the time interval from the call for ambulance to the detection of OHCA by the dispatcher. The primary outcomes were the good cerebral performance category (CPC) (1 or 2). Multivariable logistic regression analysis was performed to calculate the adjusted odds ratio (AOR) and 95% confidence interval (CI) for outcomes, adjusting for potential confounders, by the 10- and 30 s DTI increase and three DTI groups; Short (0–90 s), Middle (91–180 s), and Long (181–1,200 s) groups.
Results Of 1 16 374 adults with an OHCA, 11 833 were finally analysed. Overall, the survival to discharge rate was 11.4%, and the good CPC rate was 8.0%. For good CPC, the AOR (95% CIs) for good CPC was 0.99 (0.98–1.00) by 10 s DTI delay and 0.97 (0.95–0.99) by 30 s DTI delay. The AORs (95% CIs) for good CPC were 0.84 (0.71–1.00) for the Middle and 0.79 (0.66–0.96) for the Long DTI groups compared with Short DTI.
Conclusion A longer DTI in DA-CPR showed significantly lower good neurological recovery in witnessed and adult OHCA patients and 30 s delay was associated with 3% decrease of good CPC.

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19   MECHANISMS OF EARLY GLUCOSE REGULATION DISTURBANCE AFTER OUT-OF-HOSPITAL-CARDIAC ARREST: AN OBSERVATIONAL PROSPECTIVE STUDY

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Aim Ultra-acute hyperglycaemia is common after out-of-hospital cardiac arrest (OHCA) and return of spontaneous circulation (ROSC) and it is associated with increased mortality. The mechanisms of the ultra-acute hyperglycaemia are not known. Because these probably differ from stress induced hyperglycaemia, we aimed to study the changes in glucose metabolism mediators during prehospital post-resuscitation phase.
Method We included 30 successfully resuscitated patients in two physician-staffed prehospital critical care units in this observational study. Blood was drawn at the time of ROSC and again at the arrival to the hospital. Insulin, glucagon, glucagon-like peptide 1 (GLP-1) were measured from both samples. Additionally, interleukin-6 (IL-6), cortisol and HbA1C were measured from the hospital sample.
Results 28 patients qualified for final study (71% were without diabetes). Median time interval between the samples was 96 min (IQR 85–119). At the time of ROSC patients were hyperglycaemic (11.2 mmol/L, IQR 8.8–15.7) with insulin and GLP-1 concentrations corresponding fasting levels (10.1 mU/l, IQR 4.2–25.2 and 6.3 ng/ml, IQR 5.2–9.0, respectively). Glucagon was in normal range (141 ng/L, IQR 105–240). Median glucose change during prehospital phase was -2.2 mmol/L, (IQR -3.6 to -0.2). No consistent change in the hormone concentrations was observed during prehospital phase. No significant correlation was observed between change in plasma glucose and change of insulin (p=0.13, r=0.30), glucagon (p=0.17, r=0.29), or GLP-1 (p=0.15, r=0.32) nor with IL-6 (p=0.75, r=(-0.07)), cortisol p=0.52, r=0.13) or HbA1c (p=0.08-r=0.34) respectively.
Conclusion Hyperglycaemia is common immediately after OHCA. High level of variability between patients was observed in the hormonal responses and no specific hormonal mechanisms for hyperglycaemia was identified. However, possibly due to global ischaemic insult, hyperglycaemia in the early post-resuscitation period seems to differ from those commonly linked to SIH.

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20   PREVENTABLE MORTALITY IN PATIENTS AT LOW RISK OF DEATH REQUIRING PREHOSPITAL AMBULANCE CARE: RETROSPECTIVE CASE RECORD REVIEW STUDY

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Aim Retrospective case record reviews (RCRR) have been widely used to assess quality of care but evidence for their use in prehospital ambulance settings is limited. We aimed to review case records of potentially avoidable deaths related to ambulance care.
Method We identified patients who were transported to hospital or died using linked ambulance-hospital-mortality data from one UK ambulance service over 6 months in 2013. Death rates (within 3 days) for patient groups (based on age, dispatch code and urgency) were determined; 3 patients calling in-hours and 3 out-of-hours were selected from categories with the lowest death rates. Five reviewers (GP, nurse, 2 paramedics and medical health service manager) assessed anonymised patient records for quality of care and avoidable mortality.
Results We selected 29 linked records from 1 50 003 focussing on patients not transported to distinguish pre-hospital from

hospital causes. Overall 8 cases out of 29 (27.6%) scored between 2.4 and 2.8 (1=Definitely avoidable, 2=Strong evidence of avoidability), 8 cases (27.6%) scored between 3.0 and 4.6 (3=Probably avoidable, 4=Possibly avoidable), and the remaining 13 cases (44.8%) between 4.0 and 5.8 (5=Slightly avoidable or 6=Definitely not avoidable). Variation between raters was satisfactory with ICC 0.84 (95% CI: 0.73 to 0.92). Common themes among cases with strong evidence of avoidability were symptoms or physical findings indicating a potentially serious condition and refusal by patients or their carers to be transported to hospital. RCRRs require linked ambulance, hospital and mortality data to ensure accurate assessment in light of the diagnosis and cause of death.

Conclusion Retrospective case record reviews (RCRR) have been widely used to assess quality of care but evidence for their use in prehospital ambulance settings is limited. We aimed to review case records of potentially avoidable deaths related to ambulance care.

Conflict of interest None

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| 21 | **TEMPORAL TRENDS IN SURVIVAL OF PATIENTS WITH AND WITHOUT DIABETES FOLLOWING OUT-OF-HOSPITAL CARDIAC ARREST: A NATIONWIDE DANISH STUDY** |

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Aim In Denmark, survival from out-of-hospital cardiac arrest (OHCA) has increased markedly following national initiatives to improve cardiopulmonary resuscitation (CPR).[1,2,3] However, whether the temporal improvement in OHCA survival also applied for diabetics is unknown.

Method Patients>18 years with OHCA of presumed cardiac cause were identified from the Danish Cardiac Arrest Registry during 2001–2014. Patients with prescriptions for glucose-lowering drugs up to 180 days before OHCA were identified as diabetics. Associations between diabetes and return of spontaneous circulation (ROSC) upon hospital arrival and 30 day survival were estimated with logistic regression adjusted for patient- and OHCA-related characteristics. In total, 28,955 OHCA cases were included and 4276 (14.8%) of those were diabetics. Compared to non-diabetics, diabetics had higher prevalence of comorbidity, same prevalence of bystander witnessed arrests (42.0% vs 43.2%) and bystander CPR (51.7% vs 52.7%), more arrests in residential locations (77.3% vs 73.0%) and were less likely to have initial shockable heart rhythm (23.5% vs 27.9%). From 2001 to 2014, temporal increases of ROSC (from 8.8% to 22.3% among diabetics vs 7.8% to 25.7% among non-diabetics) and 30 day survival (from 2.8% to 9.7% among diabetics vs 3.5% to 14.8% among non-diabetics) were observed in both patient groups (P for trends<0.001). Diabetes was associated with decreased probability of achieving ROSC (odds ratio (OR) 0.75 [95% confidence interval (CI) 0.67 to 0.84]) as well as 30 day survival (OR 0.57 [95% CI: 0.47 to 0.68]).

Results ROSC and 30 day survival increased in patients with and without diabetes. However, diabetes was associated with lower odds of ROSC and 30 day survival.

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| 22 | **PRESENCE OF FAMILY IN RESUSCITATION IN PREHOSPITAL: THE PHYSICIANS' AND NURSES' OPINION** |

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Aim The family's presence in resuscitation is a current topic but we have a lack of studies in Portugal. In prehospital setting, the patient's home is the most often place where is supplied resuscitation care.

Method We applied an online questionnaire to 116 nurses and physicians who work in prehospital setting.

Results Of the 116 professionals surveyed, 49 were physician's (42,7%) and 67 (57,3%) were nurses. At mobile medical car work 93 professionals: 44 nurses (65,7%) and 49 physicians (100%). From the remaining nurses, 18 (26,9%) work at an immediate life support ambulance and the other 5 (7,5%) at another resource. All the professionals said they provided care in the prehospital with the presence of family members. 31% have a favourable opinion (12,3% physicians vs 44,8% nurses) about the presence of family members and 49,3% have an unfavourable opinion (71,4% physicians vs 32,9% nurses). They said that the main advantages are obtaining the health history, recognition of the team effort and facilitating the grieving process. The disadvantages there may be interference from family in procedures, the stress experienced by the team for being watched and anxiety felt by the family.

Conclusion Most nurses have a positive opinion about the presence of family members during resuscitation as long as they are able to perceive the significance of interventions in resuscitation situations and do not interfere with team performance. On the other hand, most physicians have an opinion against, mainly due to the distraction of the team during all procedures and the trauma to the family with the invasive procedures.

Conflict of interest None

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