improvements although highly qualified physicians carry out the service.

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Conflict of interest None declared.

Funding None declared.

27 IMPLEMENTATION, TEMPORAL CHANGES, AND FOLLOW-UP OF A NATIONWIDE AED-NETWORK

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10.1136/bmjopen-2017-EMSAbstracts.27

Aim To describe the temporal development of automated external defibrillator (AED) deployment in Denmark according to type of AED location and accessibility.

Methods We collected information on all AEDs registered in the nationwide Danish AED network, 2007–2015, including type of AED location, accessibility 24 hours a day (24/7), and year of deployment.

Results The number of registered AEDs available for public access defibrillation increased from 140 in 2007 to 12 666 in 2015. In total, 14,390 AEDs were registered during the study period. Of these, most AEDs were placed in companies/offices (29.3%, n=4,213), followed by school/education facilities (12.6%, n=1,819), and sport facilities (10.2%, n=1,464) whereas few AEDs were deployed in residential areas (6.9%, n=999) and transportation facilities (1.0%, n=147). In 2007 and 2008, most AEDs were placed in sports facilities but then declined. From 2009 and forward, most AEDs were placed in companies/offices, whereas deployment in residential areas showed a temporal increase. AED accessibility 24/7 increased from 11.4% in 2007 to 35.2% in 2015, with residential areas having the highest 24/7 accessibility (83.2%, n=758), followed by churches/community centres (74.5%, n=301), and transportation facilities (69.0%, n=87). Despite AED deployment was highest in companies/offices only 14.8% (n=542) of these AEDs were accessible 24/7.

Conclusion The number of public available AEDs in Denmark has markedly increased from 2007–2015, with companies/offices, school/education facilities, and sport facilities as most frequent places of AED deployment. However, only 14.8% of AEDs placed at companies/offices had 24/7 accessibility.

Conflict of interest None declared.

Funding Dr. Karlsson is supported by a fund from The Danish foundation TrygFonden, who has no influence on study design; in the collection, analysis, or interpretation of data.

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THE DIFFERENCE BETWEEN PHYSICIAN ASSISTANTS AND AMBULANCE NURSES AS SOLO EMERGENCY CARE PROVIDERS IN EMS, A CROSS SECTIONAL STUDY

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10.1136/bmjopen-2017-EMSAbstracts.28

Aim The aim of the study is to compare the assessment, treatment, referral, and follow up contact with the dispatch centre of emergency patients treated by the physician assistant (PA) and ambulance nurse (RN) in emergency medical services (EMS) in the Netherlands.

Methods In a cross-sectional document study in two EMS regions we included 991 patients, treated by two PAs (n=493) and 23 RNs (n=498). Data were drawn from predefined and free text fields in the electronic patient records and analysed using descriptive statistics. We used χ^2 and Mann-Whitney U tests to analyse for differences in outcome of care. Statistical significance was assumed at a level of $p < 0.05$.

Results In line with the medical education, PAs used a medical diagnostic approach (16%, n=77) and an exam of organ tract systems (31%, n=155). PAs consulted more often other medical specialists (33%) than RNs (17%) ($\chi^2=35.5$, $p < 0.0001$). PAs referred less patients to the general practitioner (GP) or emergency department (ED) (50%) compared to RNs (73%) ($\chi^2=52.9$, $p < 0.0001$). Patient follow up contact with the dispatch centre within 72 hour after completion of the emergency care on scene showed no variation between PAs (5%) and RNs (4%).

Conclusion PAs seemed to operate from a more general medical perspective. They referred significantly less patients to the ED.

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2. Affiliation of presenting author is Eastern Regional Emergency Healthcare Network, Radboud University Medical Centre, Nijmegen, the Netherlands

Conflict of interest None declared.

Funding Ministry of Health Welfare and Sports, the Netherlands

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INVESTIGATING THE POPULATION CHARACTERISTICS, PROCESSES AND OUTCOMES OF PRE-HOSPITAL PSYCHIATRIC AND SELF-HARM EMERGENCIES IN SCOTLAND: A NATIONAL RECORD LINKAGE STUDY

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10.1136/bmjopen-2017-EMSAbstracts.29

Aim To investigate the demographic characteristics, care pathways, and clinical and service outcomes of people who present to ambulance services with a psychiatric or self-harm emergency

Methods We conducted a retrospective cohort study of patients attended by the Scottish Ambulance Service in 2011 with ambulance clinician attendance codes relating to 'psychiatric emergency' or 'self-harm'. Patients resident in Scotland and ≥ 16 years on first contact were included. We used NHS Scotland's Unscheduled Care Data Mart (1) to link data from: – the ambulance service; emergency departments (ED); general and psychiatric inpatient hospital admissions episodes; and death records.

Results There were 9014 calls from 6802 people. Slightly more males ($n=4708$, 52%) than females ($n=4306$, 48%) were attended. Most were discharged from ED with no known follow-up ($n=4566$; 51%). Some were left at home ($n=1003$ attendances, 11%). Almost half of the people ($n=3238$, 48%) made at least one repeat call. People who self-discharge from ED were more likely to have another ambulance attendance for psychiatric emergency/self-harm within the same year (Pearson chi square=5.24, $p=0.02$). Two hundred and seventy-nine (4%) people died within the study period, 97 (35%) were recorded as suicide. Ethical approval (NRES 15/EM/0260) and other data approvals were received.

Conclusion While linked data analysis may not identify all relevant cases, it provides important information to guide the development and evaluation of evidence-based interventions. Ambulance service and ED are missing opportunities to improve outcomes for people who experience a psychiatric emergency or who self-harm. New interventions could lead to decreases in the number of suicides, episodes of self-harm and levels of patient distress; and ambulance and ED service use.

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Conflict of interest None declared.

Funding Scottish Government, Chief Scientists Office

30 A STUDY OF THE PREVALENCE OF IMPAIRED AWARENESS OF HYPOGLYCAEMIA IN PEOPLE WHO HAVE HAD A SEVERE HYPOGLYCAEMIC EMERGENCY AND BEEN ATTENDED BY THE AMBULANCE SERVICE

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10.1136/bmjopen-2017-EMSAbstracts.30

Aim To investigate the prevalence of Impaired Awareness of Hypoglycaemia in patients who require ambulance service attendance due to severe hypoglycaemia.

Methods We undertook a national cross-sectional survey of the prevalence of Impaired Awareness of Hypoglycaemia (IAH). An a priori target sample size of 415 was set to allow estimation of proportions of IAH within a 5% margin of error (99% CI). From January–June 2016, patients (>16 years) attended by the Scottish Ambulance Service due a Diabetes related emergency with a blood glucose <4 mmol/L were identified as potential participants. A questionnaire with two standardised IAH measures^{1,2} was posted to potential participants within a month of their severe hypoglycaemic event. Consent to participate was assumed through questionnaire return. Ethical approval was received from the National Research Ethics Service (15/EE/0383).

Results Five hundred and ninety-two questionnaires were returned. The prevalence of impaired awareness of hypoglycaemia in among participants as measured using the two standardised measures was 53% and 57% respectively.

Conclusion IAH is considerably more prevalent among people who have a severe hypoglycaemic emergency and call the ambulance service than in the general Diabetic population, where prevalence is 25%.¹ This knowledge will assist in the development of an intervention to reduce hypoglycaemic emergencies and may lead to improved outcomes and cost savings.

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Conflict of interest This study was funded by the Scottish Ambulance Service who employ Dr. D Fitzpatrick. The ambulance service management had no direct involvement in the design, conduct, analysis or output arising from the study.

Funding Scottish Ambulance Service

31 INTRAOSSEOUS ACCESS IS EFFECTIVE WHILST WEARING CBRN PROTECTIVE EQUIPMENT

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10.1136/bmjopen-2017-EMSAbstracts.31

Aim A cross over study aimed to determine comparisons of success rates and ease-of-use ratings in achieving intraosseous access in both wearing and non-wearing of Chemical, Biological, Radiation and Nuclear (CBRN) personal protective equipment (PPE) in a cadaver model.

Methods Using a cross over study, 8 experienced paramedics inserted an intraosseous (IO) device (Arrow EZ-IO®) into a cadaver specimen wearing their standard pre-hospital clothing. The sample then crossed over and applied CBRN PPE and repeated IO insertions. IO insertion times were recorded and assessed for clinical accuracy both before and after cross over with wearing CBRN PPE. Data collection involved the sample completing a confidential questionnaire assessing self-perceived ease-of-use scores for IO access measured in Likert scales (0–10). Qualitative data was captured following structured focus group interviews.

Results The results found no statistical difference between ease-of-use scores for IO access between wearing or non-wearing CBRN PPE. No difference in determining land marking for IO insertion (M 9 vs 8.75 $p=0.726$), humeral site insertion (M 9.13 vs 8.75 $p=0.593$), administration of IO saline flush (M 9.25 vs 8.75 $p=0.405$), holding and manipulating driver (9.13 vs 8.75 $p=0.593$) and trocar removal (9.25 vs 8.75 $p=0.405$). The mean ease-of-use scores were found to be lower in CBRN group but not significant, focus group discussions stated that PPE had some restrictions but effective EZ-IO insertion could still be achieved. Insertion times (25secs SD 3.46 vs 34.38secs SD 4.17 $p=0.0002$) were statistically longer with wearing CBRN PPE. However, focus group discussion stated that it would take significantly longer to achieve