intravenous (IV) access and that IO was an effective and faster option compared to IV during a CBRN incident.
Conclusion Intraosseous access can be effectively and promptly achieved whilst wearing CBRN PPE. IO access took an additional 9.4 s whilst wearing CBRN PPE which can provide fast and efficient vascular access during a CBRN incident.

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32 TREAT-AND-RELEASE EMS PATIENTS IN THE NORTH DENMARK REGION: IDENTIFICATION AND VITAL SIGNS

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Aim Pressure on emergency medical services (EMS) and the emergency departments is increasing, thus focus is on the possibility to treat and release patients on the scene. However, data on treat-and-release patients is scarce and often incomplete due to lack of identity number. We aimed to identify treat-and-release patients in a regional EMS cohort and to describe the documentation of vital signs and/or Glasgow-Coma-Scale (GCS).
Methods All ambulances dispatched after an emergency call in the North Denmark Region (approx. 5 80 000 inhabitants) from 2007 to 2014.[1] We excluded cancelled ambulances and defined treat-and-release as the ambulances dispatched without subsequent hospital contact, including patients registered dead (registration of prehospital deaths is inconsistent because death declaration requires a doctor consultation). Patients were 'identified' or 'unidentified' based on the civil registration number.
Results We identified 31 087 ambulances dispatched to treat-and-release patients out 2 03 205 ambulance (15.3%). The number of identified versus unidentified patients was 10 272 (33.0%) and 20 815 (67.0%) respectively. A prehospital doctor was sent to 10 690 (34.4%) of the treat-and-release patients, 2354 (22.9%) to identified and 8336 (40.0%) to unidentified patients. Vital signs and/or GCS was registered in 13 678 (44.0%), 8240 (80.2%) of identified and 5438 (26.1%) of unidentified patients.
Conclusion Treat-and-leave patients constituted 15.3% of all emergency ambulances, and the documentation of civil registration number was poor. Vital signs and/or GCS were documented in less than half of the patients, only partly explained by including death on scene.

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Conflict of interest None declared.
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33 CHARACTERISTICS OF PATIENTS UNDERGOING PRE-HOSPITAL RAPID SEQUENCE INTUBATION BY INTENSIVE CARE FLIGHT PARAMEDICS IN VICTORIA, AUSTRALIA

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Aim Rapid sequence intubation (RSI) is an advanced airway procedure for critically ill or injured patients. The role of RSI in the pre-hospital setting, and who should perform the procedure remains controversial. In Victoria, Intensive Care Flight Paramedics (ICFPs) have a broad scope of practice for RSI, including high Glasgow Coma Score (≥10). We sought to describe the success rates and characteristics of patients receiving RSI by highly trained ICFPs in Victoria, Australia.
Methods A retrospective data review was conducted of adult (≥16 years) patients who received RSI by an ICFP between the 1st January 2011 and 31st December 2016. Data were sourced from the Ambulance Victoria data warehouse. Patients<16 years of age and physician retrieval cases were excluded.
Results A total of 777 cases were included in analyses with a mean age of 45 years (SD 19.6). Most patients were male (69.5%) and the majority of cases involved trauma (72.3%). The overall success rate of intubation was 99.4%. Of the five failed intubations (0.6%), two patients were managed via bag valve mask and orophayrngeal airway, and one patient via supraglottic airway. No surgical airways or cardiac arrests occurred. The most common clinical indication for RSI was traumatic brain injury (50.5%), followed by non-traumatic intracranial pathology (9.5%). A total of 226 (29.1%) patients had a pre-induction GCS≥12.
Conclusion A very high RSI procedural success rate was observed across the study period. This supports the growing recognition that appropriately-trained paramedicsclinicians can perform RSI safely in the pre-hospital environment.

Conflict of interest None declared.
Funding None declared.

34 CHARACTERISTICS OF REPEATED EMS USERS IN THE NORTH DENMARK REGION

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Aim In the light of increasing demand for emergency medical services (EMS)[1] and a scarcity of studies about repeated EMS users,[2] we aimed to examine the extent of repeated users and

compare their characteristics and diagnoses with one-time users. Additional knowledge about repeated users may help identify appropriate alternative interventions.

Methods Population-based cohort study on patients to whom an emergency ambulance was dispatched after an emergency call in the North Denmark Region (5 80 000 inhabitants), 2012–2013. Each patient was included at first ambulance dispatch and followed one year. One-time users (one ambulance dispatched) were compared to repeated users divided into: moderate (2–4), frequent (5–9), and super users (≥10). Hospital diagnoses according to ICD-10 were retrieved.

Results We identified 36 210 patients corresponding to 46 203 emergency ambulances dispatched within the one-year follow-up. The results below are presented according to the four groups: one-time, moderate, frequent, and super users. Percentage of patients (ambulances): 83.2% (65.2%), 15.8% (28.9%), 0.9% (4.2%), 0.1% (1.7%). Male gender: 53%, 56%, 59%, 62%. Median age (interquartile range): 55 (29–72), 61 (41–77), 55 (40–71), 52 (37–68). Charlson comorbidity index ≥3: 3%, 12%, 16%, 13%. Percentage diagnosed with mental disorders (ICD-10 chapter 5; n=2,149): 4%, 6%, 12%, 19%. Respiratory diseases (ICD-10 chapter 10; n=3,033): 5%, 9%, 14%, 25%. Injuries, poisoning, and external causes (ICD-10 chapter 19, n=11,709): 33%, 20%, 15%, 9%.

Conclusion Repeated EMS users constituted 16.8% of patients (34.8% of ambulances). Compared to one-time users, repeated users were more often male, had higher comorbidity, were more often diagnosed with mental and respiratory illnesses, and less often with injuries, poisoning, and external causes.

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35 MANUAL VERSUS SEMI-AUTOMATIC RHYTHM ANALYSIS AND DEFIBRILLATION FOR OUT-OF-HOSPITAL CARDIAC ARREST

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Aim Although manual and semi-automatic external defibrillation (SAED) are commonly used in the management of cardiac arrest, the optimal strategy is not known. We hypothesised that SAED would reduce the time to first shock and increase survival compared to a manual strategy.

Methods Between 2005 and 2015, we included adult out-of-hospital cardiac arrests (OHCA) of presumed cardiac aetiology. On October 2012, a treatment protocol utilising SAED was introduced following years of manual defibrillation by paramedics. The effect of SAED implementation on patient outcomes was assessed using adjusted interrupted time series models.

Results Of the 14 776 cases, 10 224 (69.2%) and 4552 (30.8%) occurred during the manual and SAED protocols, respectively. After adjustment for arrest confounders and temporal trend, the odds of delivering the first shock within 2 min of arrival increased under the SAED protocol (adjusted odds ratio [AOR] 1.72, 95% CI: 1.32, 2.26; p<0.001). Despite this, the SAED protocol was associated with a reduction in return of spontaneous circulation (AOR 0.81, 95% CI: 0.68, 0.96; p=0.01), event survival (AOR 0.74, 95% CI: 0.62, 0.88; p=0.001) and survival to hospital discharge (AOR 0.71, 95% CI: 0.55, 0.92; p=0.009) when compared with the manual protocol. Although SAED reduced the time to first shock, there was no improvement in the rate of successful first shock cardioversion (AOR 0.73, 95% CI: 0.51, 1.06; p=0.10).

Conclusion Although SAED improved the time to first shock, this did not translate into higher rates of successful cardioversion or survival for OHCA patients. Advanced life support providers should be trained in a manual defibrillation protocol.

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Funding None declared.

36 NOT TRANSPORTING ALL PAEDIATRIC OUT-OF-HOSPITAL SETTING PATIENTS BY AMBULANCE SEEMS TO BE SAFE

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Aim We examined the safety of not transporting all paediatric out-of-hospital (OOH) emergency patients to emergency department by ambulance.

Methods We report observations from a dataset covering all (n=2387) emergency medical services (EMS) responses for paediatric patients (age 0 to 15 years) in 2015 in Helsinki, Finland (population 628 208, paediatric population 93 054 during 2015). Time intervals, patient characteristics, vital measurements, diagnoses, medical treatments, procedures and outcomes were analysed.

Results The incidence of EMS-treated paediatric OOH emergencies was 3.8 per 1 000 inhabitants and 25,7 per 1 000 in 0–15 year-old inhabitants. There were 1 069 (44.8%) non-transported paediatric patients. In 926 (86.6%) cases decision of not transporting a patient was made without consulting a doctor. 176 (16.5%) of non-transported patients got to a tertiary university hospital emergency department within 3 days by other means, comprising 184 visits. 115 (62.5%) of the visits were encouraged by emergency medical personnel. Only 3 patients' appearance was other than good at presentation. 90 (8.4%) of the patients were medicated at the emergency department. 21 (2.0%) of the patients were given respiratory support (including any form of inhalations). 28 (2.6%) had to be admitted to the hospital; 11 (1.0%) of them for more than 2 nights. None of the non-transported patients were admitted to the intensive care unit within 3 days following the call or died during the 1 year follow-up period.

Conclusion Transporting selectively those paediatric patients by ambulance, who need transportation the most, appears to be safe in the light of this dataset.