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### DO ORGANISATIONAL CHANGE IN OUT-OF-HOUR SERVICE INFLUENCE ON THE USE OF HELICOPTER EMERGENCY MEDICAL SERVICE? AN OBSERVATIONAL STUDY OF A NATURAL EXPERIMENT

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**Aim** Over the last decades out-of-hour services in Norway have been centralised to cover larger geographical areas, resulting in longer response times for the on-call GP. Reports indicate an unintended increase in requests of helicopter emergency medical services (HEMS) as a result. We aimed to investigate alteration in the requests for HEMS and NACA-score of the patients transported.

**Method** In 2009 nine municipalities in the county of Sogn og Fjordane relocated all local out-of-hour services into one large casualty clinic (SYS-IKL). We included all primary HEMS requests in the county from 2004–2013 and compared missions within the area of SYS-IKL to missions in the rest of the county.

**Results** Preliminary data included 7310 requests. Within SYS-IKL requests were 4.4 per week in the period. Completed and cancelled requests were 3.0 and 1.3 per week before 2009 compared to 2.7 and 1.6 per week after 2009. Outside SYS-IKL requests were 8.9 per week before 2009 and 10.4 per week after 2009. Completed and cancelled requests were 5.1 and 3.4 per week before 2009 compared to 5.5 and 4.6 per week after 2009. Mean NACA-score within SYS-IKL was 3.98 and 3.87 ( $p=0.115$ ) compared to 3.78 and 3.77 ( $p=0,786$ ) outside SYS-IKL before and after 2009, respectively.

**Conclusion** Preliminary results did not confirm the hypothesised increase in use of HEMS or reduced NACA-score due to centralization of out-of-hour services. However, further statistical analyses are required.

**Conflict of interest** None

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### SATISFACTION OF PARAMEDICS AND PATIENTS IN THE USE OF METHOXYFLURANE (PENTHROX) FOR THE TREATMENT OF PAIN

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**Aim** The objective of this study was to evaluate the satisfaction of paramedics and patients in the use of Pentrox in pain management.

**Method** The material was collected by using a questionnaire between Dec 2016–Dec 2017 in the Hospital District of South Ostrobothnia. Pentrox was given to 68 patients and the paramedics recorded both their own answers and those of the patients in the questionnaire.

**Results** The mean satisfaction of the paramedics in the use of Pentrox was 7.85 on a scale 1–10 with a standard deviation (SD) of

2.36 ( $n=61$ ). A total of 40% of the respondents scored their satisfaction as 8–10. The mean satisfaction of the patients was 8.04 with SD of 2.52 ( $n=49$ ) and 51% of the patients rated the satisfaction to be 8–10. At baseline, the average pain of 65 patients was 8.09 with SD of 1.45. The average pain at 10 min after dosing was 5.42 with SD of 2.45 ( $n=64$ ). Pain estimated at 10 min after dosing, a statistically significant difference was observed between pain at baseline ( $p<0.001$ ). Among the adverse effects, nausea occurred in one (1.47%) and haemodynamic problems in two (2.94%) patients ( $n=68$ ).

**Conclusion** Based on this study, most of the paramedics and patients were satisfied with the use of Pentrox in the treatment of pain. Pentrox relieved pain in a statistically significant manner and among the adverse effects, the occurrence of nausea and haemodynamic problems was limited.

**Conflict of interest** None

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### EMS-WIDE MULTIFACETED IMPLEMENTATION OF HEMS-PHYSICIAN PROVIDED RSI PROTOCOL

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**Aim** We developed a RSI protocol that standardises the prehospital process of anaesthetised patients and involved EMS crews as active team members. We recently reported the effect of the protocol on the intubation success rate.<sup>1</sup> The aim of the current study was to describe the methods used during implementation of RSI protocol to the EMS systems and evaluate the protocol compliance and effect on on-scene time (OST).

**Method** The RSI protocol was implemented to the HEMS unit and EMS systems in a three months period in 2015. The implementation of the RSI protocol consisted of spreading material, lectures, simulations, skill stations, academic detailing and cognitive aids. Over 20 lectures and discussion panels were organised throughout the collaborative EMS systems. Training video was published in YouTube (>34.000 views). The checklists are used by the EMS personnel preparing the patient for intubation, HEMS crew before the induction of anaesthesia and before starting the transportation. Data from RSI missions were gathered to a database before (201 patients in year 2014) and after the implementation of the protocol (468 patients in years 2015–2016).

**Results** The protocol compliance rate was 95%–97% (preoxygenation  $\geq 3$  min 97%, neuro-muscular blocking agent 97%, mechanical ventilation 95%). The median of OST was 31 min (IQR 23–38) before the protocol, and 28 min (IQR 22–37) after the implementation ( $P 0,0495$ ). Reporting of complications was also improved.

**Conclusion** Using multifaceted implementation strategy and involving EMS crews in the protocol can significantly improve the clinical process of a HEMS unit.

#### REFERENCE

1. Ångerman S, Kirves H, Nurmi J. A before-and-after observational study of a protocol for C-MAC videolaryngoscope with Frova Introducer in prehospital rapid sequence intubation. *Anaesthesia* 2018.

**Conflict of interest** None

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