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Original Research

Compliance With a National Standard by Norwegian Helicopter Emergency Physicians

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A B S T R A C T

Objective: The "National Standard Requirements for Helicopter Emergency Medicine Services Physicians" gives recommendations on medical requirements for flight physicians. This study describes the level of formal competence, experience, and guideline compliance of Norwegian helicopter emergency medical service (HEMS) physicians.

Methods: In May 2013, all HEMS physicians with full-time engagement at Norwegian HEMS bases were invited to participate in a cross-sectional survey using a structured, Web-based questionnaire.

Results: A total of 108 (79%) of 136 physicians replied to the survey, and all bases were represented. The majority (89%) had specialist training, and more than 60% had longer than 6 years of experience as a flight physician. Over 60% had attended trauma, pediatric, and incubator courses, and all physicians worked regularly in an anesthesia department. Most physicians were participating in simulation and procedure training.

Conclusion: Many of the basic requirements of the guidelines were met by HEMS physicians, but room exists for improvements. Norwegian HEMS physicians are experienced, but a need exists for a more structured curriculum in emergency medicine for HEMS physicians based on the broad spectrum of presented medical conditions to ensure optimal quality of care and safety for all patients in Norway.

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The primary goal of physician-manned emergency medical services is to provide equity of access to health care and hospital-equivalent health care outside the hospital.[1] In Norway, helicopter emergency medical services (HEMS) is an integrated part of the lifesaving chain for treating medical emergencies, and the service provides emergency care for a broad spectrum of medical emergencies.[2,3] The main tasks are to bring the skill set and decision-making competence of physicians to the scene, support ground ambulance crews, perform triage and necessary advanced medical interventions, and transport the patient to an institution capable of providing definitive care.[1] Since 2005, the requirements for physicians working in the air ambulance service have been 1) anesthesiologists with at least 2 years of clinical experience or 2) physicians with competence within emergency medicine.[4]

To improve the standard of care given by HEMS physicians (p-HEMSs) in Norway, a national working group introduced the "National Standard Requirements for Helicopter Emergency Medical Services Physicians" (rotor wing) in 2011 (Table 1).[5] The guideline addresses medical qualifications, flight and rescue operational qualifications, and health and physical requirements for physicians working in the rotor wing part of the National Air Ambulance Service (NAAS). Baseline knowledge of physician competence, training, experience, and adherence to a common guideline is important to address further steps to enhance the quality of care. No studies have previously described the competence of p-HEMSs in Norway or whether the requirements in the guideline are met. The aim of this study was to demographically describe Norwegian p-HEMSs and their level of formal competence, experience, and compliance with the medical aspects of an implemented national guideline.

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Table 1
Summary of Norwegian National Requirements for Helicopter Emergency Medical Services Physicians: Medical Qualifications ("National Standard Requirements for Helicopter Emergency Medical Services Physicians"[5] [Rotor Wing])

Basic qualifications required before accession as a flight physician
Board certification in anesthesiology (after individual evaluation, physicians with less than 12 months of remaining residency can be accepted) Experience in pediatric anesthesiology or critical care Completed course in trauma care Knowledge and proficiency in updated cardiopulmonary resuscitation
Required continuous medical education and training as a flight physician
To maintain specialist competence, the physician should work regularly in an in-hospital anesthesia or critical care unit Continuous medical education requiring updated knowledge in the fields of traumatology, cardiology, pediatrics, obstetrics, and neurology Training and participation in major incident scenario situations Participation in internal education and quality improvement activities

Methods

Study Design

We conducted a cross-sectional survey using a structured, Web-based questionnaire. The intention was to include all p-HEMSs (rotor wing) with a full-time engagement at Norwegian HEMS bases, including both civilian ambulance helicopters (HEMS) and military search and rescue (SAR) helicopters.

Clinical Setting

The NAAS has been described in detail previously,[2,3] but, briefly, the rotor wing part of the NAAS is a 2-tiered response system supporting regular ambulance crews. The ground ambulance crews are staffed by emergency medical technicians. It consists of 13 HEMS helicopters at 12 bases manned by an experienced flight paramedic, anesthesiologist, and pilot (Fig. 1). One base is also staffed with a specially trained nurse anesthetist. The NAAS is publicly funded as an integrated part of the national health services. The civilian air ambulances are operated by 2 contractors (Norsk Luftambulanse A/S and Lufttransport A/S) on a tender from the NAAS, and both are subject to the same strict legal and operational requirements. They provide a helicopter, rapid response vehicle, pilot, and flight paramedic. In addition, the Royal Norwegian Air Force operates 6 SAR helicopters, which perform regular ambulance missions. These SAR helicopters are also staffed with a physician. If an incident occurs in close proximity to the base or flight operations are cancelled because of weather conditions, the crews at all bases may respond to medical emergencies using a rapid response vehicle. Twelve fixed wing aircraft also perform regular ambulance missions, but these mainly involve elective interfacility transfers. The main task of the p-HEMSs is to respond to on-scene emergencies, but, on average, 20% of the missions performed consist of interfacility transfers.[6] p-HEMSs are employed by their local health trust. Physicians participating either in civilian air ambulance operations or military-operated SAR services are defined as p-HEMSs.

Data Sources and Data Collection

All physicians working at HEMS or SAR bases were included and invited to complete a Web-based survey tool (SurveyMonkey, San Mateo, CA). The questionnaire contained 27 structured questions on education, work experience, and competencies related to the medical contents of the "National Standard Requirements for HEMS Physicians"[5] (Table 1). Participation was voluntary and performed anonymously. The survey was initiated in May 2013, and 3 additional reminders were sent via e-mail to medical directors to secure an acceptable response rate. The results from key questions in this survey are presented and discussed.

Ethics

The Regional Committee for Medical and Health Research Ethics categorized the study as quality improvement, and additional formal ethical approval was not required.

Statistical Analysis

Descriptive data are presented as absolute numbers, percentages, and ranges where appropriate. Data analysis was performed using statistical software (IBM SPSS Statistics for Windows, Version 22; IBM Corporation, Armonk, NY).

Results

Study Participation

All 136 physicians who were working in the national rotor wing HEMS in Norway were invited to participate in the study. All helicopter bases were represented; 79% (n = 108) of the physicians responded to the questionnaire. The majority (n = 96) of the physicians were aware of the "National Standard Requirements for Helicopter Emergency Medical Services Physicians,"[5] but 6 physicians were not aware of these guidelines. Six physicians did not answer this question.

Demographics

The sex distribution of the physicians was 95% men (n = 101) and 5% women (n = 5). Two physicians did not answer this question. The age distribution was 35% (n = 37) between 31 and 40 years old, 42% (n = 45) between 41 and 50 years old, 19% (n = 20) between 51 and 60 years, and 5% (n = 5) older than 60 years. One physician did not answer the age question. All women were younger than 50 years old, whereas men were represented in all age groups.

Experience as a Physician and p-HEMS

The average experience as a physician after graduating from medical school was 16 years (standard deviation = 7.6 years), ranging from 6 to 41 years (Fig. 2). Six physicians did not answer this question.

The surveyed physicians had a mean average work experience in the air ambulance service of 9 years (standard deviation = 6.7 years), and more than 60% had worked longer than 6 years in the service (Fig. 2). Twenty-two doctors (20%) of the 108 participating in the study did not respond to this question.

The majority of physicians (89%, n = 93) stated that they were specialists in anesthesiology. Of those who were specialists, 35% (n = 38) reported that they were certified as a specialist before starting as a p-HEMS.

Completed Courses

The physicians reported participation in a broad range of medical courses, and each physician had attended multiple courses. More than 50% of the physicians had taken the recommended courses in trauma, pediatric and adult life support, and neonatal critical transport. The results are presented in Table 2.

In-Hospital Training and Work

All physicians performed in-hospital clinical practice in an anesthesiology department but at different intervals (Fig. 3). In addition to working in an anesthesiology department, 24% (n = 25) reported that they had clinical practice in the emergency department, 10% (n = 10) intermittently staffed an intensive care unit, 4% (n = 4) worked in a pediatric department, 3% (n = 3) worked in a surgical department, 2% (n = 2) worked in an orthopedic department, and 1% (n = 1) worked in medical services. To gain additional experience and training, 10% (n = 10), 3% (n = 3), and 2% (n = 2) rotated through a pediatric care unit, maternity ward, and cardiology department, respectively.

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