

## Emergency Medicine in Finland: First Year Experiences of Specialist Training

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### Abstract

**Objective:** Emergency medicine (EM) was established as a specialty in Finland at the beginning of 2013. The training period of six years conforms to the principles of the European Curriculum for EM. In this study, we evaluated the first-year experience of training in the Kanta-Häme Central Hospital, Finland.

**Material and Methods:** We studied both qualitatively and quantitatively the typical structure of the working week of EM residents. A qualitative analysis of a weekly learning day was carried out with regards to the programme, learning methods and themes. A quantitative analysis was carried out by pre/post setting of the topics offered in weekly clinical lectures and the numbers of attending physicians.

**Results:** Since the initiation of EM specialty, the lectures became more comprehensive ( $p < 0.001$ ). The proportion of topics of conservative specialties decreased from 77.0% to 46.7% while those of operative specialties increased from 5.9% to 36.7%. The mean ( $\pm$ standard error of mean) number of attending doctors increased from  $14.0 \pm 0.4$  to  $22.7 \pm 0.9$  ( $p < 0.001$ ). The working group sessions, lectures and ultrasound training increased after establishment of EM specialty.

**Conclusion:** According to these preliminary results, a successful training programme of EM is achievable by systematic planning of practical training.

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**Key words:** Emergency medicine, training, specialists

### Introduction

Emergency Medicine (EM) is internationally considered one of the major specialties (1). Apart from the United States, it has been formally established as a specialty in many European countries such as the United Kingdom, Turkey and Iceland (2, 3). According to the national act, Finland was the first continental Nordic Country to establish EM as a specialty at the beginning of 2013 (4).

In Finland, EM specialist training comprises of a six-year programme. Systematic theoretical and practical training is based on the European Curriculum for Emergency Medicine. The progress of residents is followed by personal interviews and the log-book (5, 6). In the Kanta-Häme Central Hospital (KHCH), Hämeenlinna, Southern Finland the tuition started on October 1<sup>st</sup>, 2012. To date 10 other hospitals in Finland are offering EM specialist training.

The working week of trainees consists of shifts in the Emergency Department (ED) for 18 to 24 hours, one day of theoretical and practical training and one to two days of further training in the ED or other medical units. These consist of pre-hospital emergency service, out-

patient clinics, clinical wards, operating theatres and intensive care. Working in the ED in the fields of Internal Medicine, Surgery, Neurology, Traumatology, ENT and Paediatrics is a crucial part of specialist training. In this study, we evaluated how the training evolved during the first 12 months in the ED of KHCH.

### Material and Methods

We qualitatively described the typical structure of the working week of doctors in EM training. The programme of a weekly learning day was analyzed with regards to the schedule, learning methods and themes. A quantitative analysis was carried out by pre/post setting (before and after Oct 1<sup>st</sup>, 2012) of the topics offered in weekly clinical lectures. The number of physicians attending these lectures was analyzed accordingly. The number of participating physicians was summarized from the list signed by each physician during every lecture.

### Statistical Analysis

Statistical analysis was carried out by IBM Statistics 21 (IBM Corporation 2012, USA), and the results are presented as mean  $\pm$  stan-



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standard error of mean (SEM) if not stated otherwise. Non-parametric Mann Whitney U-test was used when analyzing the number of physicians attending to each lecture before and after the initiation of specialist training in EM. The total number of group education lessons and lectures in three consecutive time spans were analyzed by the Kruskal-Wallis test. Topics of the lectures before and after the start of specialist training were analyzed using chi square test, in which they were categorized in five clusters, namely operative specialties, conservative specialties, anaesthesiology and intensive care, radiology & ultrasound as well as management and administration. Statistical significance was presented as  $p < 0.05$ .

## Results

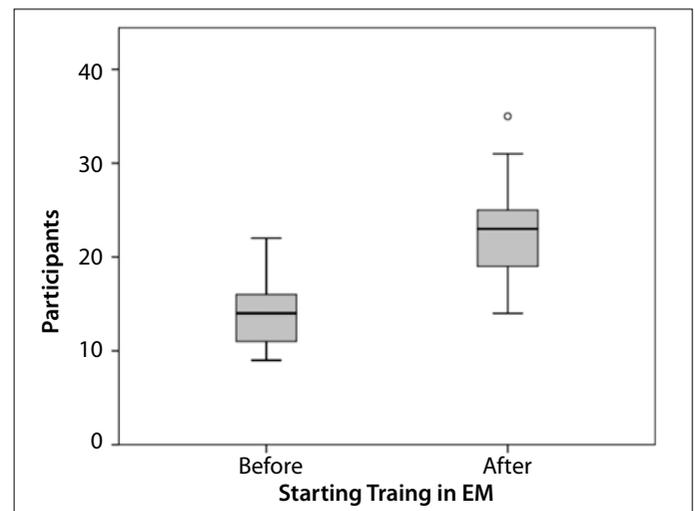
**Working Group Sessions:** The programme for the weekly theoretical and practical training day was planned and formed during the first months. The training day was supervised by one to three consultants. Residents performed three curriculum based presentations consisting of one comprehensive lecture, patient cases and synopsis from an international journal of EM (5-7). Every alternate week the day began with a lecture by a consultant. Practical ultrasound training for one to two hours was based on American guidelines (8).

During the first year, theoretical training of EM residents increased as the training advanced ( $p = 0.008$ ). Weekly educational training day of residents included on average 2.29 presentations (range 1-3) from October to December 2012. This number included lunch time meetings. During the first three months of 2013 the average number of lectures, case studies and practical training of ultrasound had increased to 4.25 (range 2-6). This increase was statistically significant ( $p = 0.004$ ). After that the number of presentations seems to have reached a steady level since the average number of presentations during April and May 2013 was 4.33 (range 2-6) (NS).

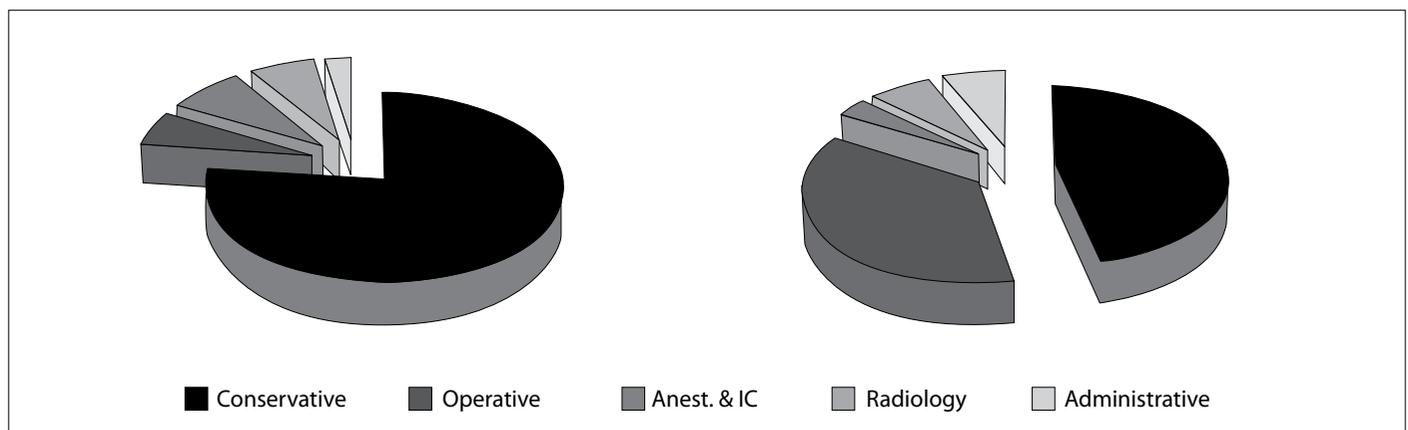
**Lunch Time Lectures:** Since 2008, in the ED of KHCH, we have had lunch time lectures in EM. Before the specialty of EM was nationally established, the lectures were planned especially for physicians of other specialties working in the ED. When the specialist training for EM was initiated, the topics became more wide-ranging than previously ( $p < 0.001$ ) (Figure 1). 77.0% of earlier lectures consisted of

themes from conservative specialties, but at present the proportion is 46.7%. At the same time, the lectures dealing with topics from operative specialties increased more than six-fold (5.9% vs. 36.7%). The remainder of lectures consisted of radiology and ultrasound, anaesthesiology and intensive care as well as managerial aspects of ED. During the study period, the interest of physicians in the lecture programme increased. After the specialist training in EM was initiated, the number of physicians participating in the weekly lunch time lectures increased by 62.0 percent (Figure 2). Before Oct 1<sup>st</sup>, 2012 the mean attendance was  $14.0 \pm 0.4$  physicians and is currently  $22.7 \pm 0.9$  ( $p < 0.001$ ).

Because there has been such an increase in the number of presentations, we have been able to deal with a remarkably wide range of topics considering diagnosis and treatment of acute conditions. In Table 1 we present topics of small working group sessions, multi-professional lectures and simulation-based training sessions performed together with nurses and paramedics. The curriculum of practical ultrasound training was familiarized during the first year (Table 2).



**Figure 2.** Number of Participants in Lunch Time Lectures in Kanta-Häme Central Hospital Before and After the Initiation of specialist training in EM ( $p < 0.001$ ). The median, upper and lower quartiles and range of both periods are showed.



**Figure 1.** Topics of the Lunch Time Lectures Before (left) and After (right) the Initiation of Specialist Training in EM ( $p < 0.001$ ). Topics were categorized in five clusters according to the specialties as follows: "Conservative": conservative specialties, "Operative": operative specialties, "Anest. & IC": anaesthesiology and intensive care, "Radiology": radiology and ultrasound, and "Administrative": managerial and administrative topics

**Table 1.** Topics of working group sessions and multi-professional lectures except lunch meetings during the first year

Lectures given by specialists	Lectures given by residents
Accidents and Complaints (multiple lectures)	Acute Renal Failure
Anaesthesia and EM	Acute Pancreatitis
Blood Gas Analysis	Acute Abdomen
Cannulation of Peripheral Vena	Alcohol Withdrawal Symptoms
Central Line Insertion	Aortic Dissection
CPAP	Blood Transfers
Ear, Nose and Throat Emergencies	Common Infections in Primary Health Care
Examining Neurological Patient	Erythema Multiforme, Stevens-Johnson
Fractures of Wrist and Hand	Syndrome and Toxic Epidermal Necrolysis
Intoxications	Eye Emergencies
Intubation	Large Vessel Vasculitis
Iron Poisoning	Laryngitis
Multi-Trauma Patient	Malaria
Necrotizing Fasciitis	Myocarditis
Neuroanaesthesia	Tropical Fever
Pre-Hospital Care (multiple lectures)	Pock Diseases of Children
Primary Treatment of Septic Shock	Preeclampsia
Thrombolysis for Cerebral Infarction	Psychosis of Under aged
Trauma Simulation (multiple trainings)	Pyelonephritis
Treatment after Successful Resuscitation	Sedation and Pain Management of Paediatric Patients
Unconscious Patient	Treatment of ST-Elevation Myocardial Infarct
	Vertigo

**Table 2.** Topics in ultrasound training during the first year of EM training

American College of Emergency Physicians: Ultrasound Guidelines
Ultrasound: Basic Principles and Technology
Abdominal Aorta
Venous Ultrasound of Inferior Extremities
Echocardiography
FAST and Extended FAST
Airways and Thorax
Soft Tissues, Bones and Tendons
Gallbladder
Procedural Ultrasound
Urinary track

## Discussion

Our study reveals the outcome of the first 12 months of a formalized training programme for EM in a comprehensive ED, which was established more than six years ago. The most important finding was that the number of weekly education sessions was increased after the beginning of formal EM training. Simultaneously, the breadth of education topics was increased as well as the number of physicians participating in the lunch time meetings with lectures.

It has previously been demonstrated that theoretical and practical training is useful for the physicians involved in clinical work (9, 10). Dur-

ing the first years of specialist training, doctors' skills increase significantly (11). In the ED, the physicians in training are especially asking for a practical training based on case reports and simulation (9). In order to maintain doctors' skills, training should be continuous (10). In Finland we follow the progress of practical and theoretical skills of doctors in training by personal interviews and a log-book based on the European Curriculum for EM (5, 6).

One type of group education session in our clinic was bed-side ultrasound training. This was done under supervision of a radiologist, an internist or an emergency physician. Echocardiography as well as ultrasound studies of pleura, abdomen and deep veins are typical examples of investigations, which enhance diagnostic and therapeutic measures in ED. In the near future these diagnostic methods are expected to be a normal part of clinical work as is the current use of stethoscopes (12). The topics of radiology and ultrasound have been in our training programme from the beginning to facilitate EM physicians in their clinical work.

EM is a new specialty both in Finland and in our hospital. We scheduled the main lecture of the week as a lunch time session in order to assemble doctors with emergency duties from different specialties. The idea was adopted from international conferences, where lectures differing from the ordinary schedule are refreshing and also give physicians the opportunity to become acquainted with each other. At the same time, the lunch meetings offer physicians from other specialties an opportunity to familiarize themselves with EM.

We found that the number of participants in the lunch time lectures increased significantly, more than the number of new residents

joined the specialty programme of EM. The reason might be that the topics of lectures and EM as a specialty were now regarded as more interesting than previously among doctors working in other specialties.

The range of lecture topics during the lunch time meetings seems to have developed in the right direction, when we compare the proportions of operative and conservative topics with each other. Although the topics now better represent the proportions of patients' complaints coming into the ED than previously, the numbers do not necessarily correlate with the need for training.

The first year of specialist training is not comprehensive enough to cover the wide curriculum of EM. We are now increasing the clinical training of our residents in the other clinics of the hospital. Our rotation will be covering training *e.g.* in intensive care, gynaecology and dermatology. The rotation including different specialty clinics is essential for successful training (13). For example, positive results exist in the field of hand surgery education for EM residents (14), but the findings may probably be generalized also for other specialties.

### Study Limitations

There are possibly some inaccuracies in the lists of participating physicians during the six years. Registration was the responsibility of each doctor; hence the real numbers of participants might be slightly higher than recorded. As the routine has been the same throughout the entire follow-up period, it is possible that minimal inaccuracies exist, but these do not presumably affect our results.

### Conclusion

In Finland, the specialist training for EM lasts for six years and the curriculum is based on European recommendations. During the first year of EM in our country, we have adopted international ideas to rapidly develop a valid practical training programme. Our continuing challenge is to find the right balance between routine work, theoretical and practical training. The success of this is based on co-operation with various other specialties and also with countries with established EM training programmes.

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**Informed Consent:** Due to the nature of this study, informed consent is waived.

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