PROFESSIONAL PAPER

Development of Emergency Medicine as Academic and Distinct Clinical Discipline in Bosnia & Herzegovina

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1. INTRODUCTION

Introduction: Emergency medicine is a new academic discipline, as well as a recent independent clinical specialization with the specific principles of practice, education and research. It is also a very important segment of the overall health care and health system. Emergency medicine as a distinct specialty was introduced in the U.S. in 1970. Ten years later and relatively quickly emergency medicine was introduced in the health system in Bosnia and Herzegovina as a specialty with a special education program for specialist and a final exam.

Goal: Compare the development of emergency medicine in Bosnia and Herzegovina with the trends of development of this discipline in the world as a specialization and an academic discipline. Identify specific problems and possible solutions and learn lessons from other countries.

Methods: Reviewed are the literature data on the development of emergency medicine in the world, programs of undergraduate and postgraduate teaching, the organizational scheme of emergency centers and residency. This is then compared with data of the current status of emergency medicine as an academic discipline and a recognized specialization, in Bosnia and Herzegovina.

Results: There are substantial differences in the development of emergency medicine in the United States, European Union and Bosnia and Herzegovina. Although Bosnia and Herzegovina relatively early recognized specialty of emergency medicine in academia, it failed to match the academic progress with the practical implementation. A&E departments in the Community Health Centers failed to meet the desired objectives even though they were led by specialists in emergency medicine. The main reason being the lack of space and equipment as well as staff needed to meet set standards of good clinical practice, education and research. Furthermore the Curriculum of undergraduate education and specialization does not match modern concept of educational programs that meet the principles set out in emergency medicine and learning through practice.

Conclusion: The Development of emergency medicine as a separate specialization and independent academic discipline has had different way and pace of development, and there is no ideal model that can be applied in all countries. However experiences from countries with well developed emergency medicine, suggest that the model of the simultaneous development of emergency medicine as a distinct academic discipline on independent recognized residencies with a strong national association is the best way for the formation of an efficient health system. The establishment of Emergency centers - departments for emergency medicine at university and cantonal hospitals, introduction of emergency medicine as an academic discipline, implementation of specific post-graduate teaching and continuing medical education through appropriate courses, as well as academic development program for the teaching staff is the most important element of future development of this discipline. It would also contribute to it achieving the appropriate status in both the academic institutions and in practice within the health system of Bosnia and Herzegovina.

Keywords Emergency medicine, academic development, medical education.

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the development the pre-hospital triage, re-
suscitation, initial assessment and manage-
ment of undifferentiated urgent and emer-
gency cases until discharge or transfer to
the care of another physician or health care
professional. It also includes involvement
in the development of pre-hospital and in-
hospital emergency medical systems (5, 6).

In order to achieve these goals emerg-
ency medicine physicians must be well
educated in medical education from under-
graduate to continuing medical education
in the acquisition of practical skills for all
the listed roles.

Undergraduate, graduate education-
specialization, continuous postgraduate
medical education and practice must be
firmly connected. Medical schools are re-
defining the plans and programs. Students
and trainees must be familiar with modern
medical practices of emergency centers -
departments to acquire effective commu-
nication and basic clinical skills. During
work and study in emergency centre-de-
partments they can be trained to use self-
important diagnostic and therapeutic pro-
cedures, can find out how fast they should
note and formulate a medical problem and
set up an adequate plan for its resolution.

Teamwork is one of the main charac-
teristics of emergency medicine, and it re-
quires an adequate education for nurses
and other health professionals as well. Specific
skills may be acquired through continuous
education and teaching modules imple-
mented as planned to meet the needs of de-
partments of emergency medicine.

Research and experience from countries
with well developed emergency medicine
have shown that a good academic and clin-
cal development system established within
a well-developed emergency center is effi-
cient and effective. Emergency medicine has
become a key lever of effective and quality
medical practices of emergency centers -
departments. Hospital-based emergency medi-
cine seeks to ensure: The highest qual-
lity of emergency care for all patients, the de-
cent of academic emergency medicine
and the presence of academic centers. Hospital-based emergency medi-
cine is currently recognized as a primary
specialty in fifteen member states in Euro-
pean Union. These include Belgium, Czech
Republic, Estonia, Hungary, Ireland, Italy,
Malta, Poland, Romania, Slovenia and the
United Kingdom. Other nations are striving
do to so, for example Sweden, France, Ger-
many and Greece. Training for the specialty
of emergency medicine is advanced already.
Several curricula presently exist in the re-
spective European countries (15, 16, 17).

The European Society for Emergency
Medicine (EuSEM) currently includes 22
European national societies of Emergency
Medicine and represents more than 12,000
emergency physicians in Europe (6).

The UEMS multidisciplinary joint com-
mittee on emergency medicine governed by
the European Society for Emergency Medi-
cine has developed a model curriculum for
all of Europe, which was published in 2009.
This comprises a 5-year specialty train-
ing, with three of them spent in an ED. The
curriculum follows a symptom-oriented
approach to emergency medicine, and in-
cludes a skilled description of the key com-
petencies of the future trained emergency
physicians. The Model of the pre-hospital
emergency service in some European coun-
tries still represents the main approach in
practice. The last milestone, the develop-
ment of academic emergency medicine
has started in most European countries (6).

The European Society for Emergency
Medicine seeks to ensure: The highest qual-
ity of emergency care for all patients, the de-
ivery of such care by specialists trained in
Emergency Medicine and comparable stan-
dards of clinical care in Emergency Depart-
ments across Europe.

In order to achieve these objectives Eu-
SEM has the following aims: European com-
petency-based core curriculum to include:
- Patient Care
- Medical Knowledge

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3. DEVELOPMENT OF EMERGENCY MEDICINE IN EUROPE

It is very important to understand of
the existence of two main models of how Emergency medicine is practiced through-
out the world: The first is the well-known
Anglo-American system with strong devel-
oped and skilled Emergency departments
(EDs). The second is the so-called Franco-
German system, with a highly developed
pre-hospital emergency service, but only a
basic organization of hospital-based emer-
gency medicine. In the Anglo-American
system emergency medicine has become
its own strong clinical and academic disci-
pline with board certification.

Specialized and skilled staff practice
emergency medicine in hospital-based
emergency departments, so it is a hospit-
al-oriented specialty. The Franco-German
system and model focuses more on medi-
cal care outside the hospital setting. This
model considers emergency medicine as an
interdisciplinary activity mostly outside the
hospital (10, 15).

This gap is now closing fast because of
the rapid advancement of hospital-based
emergency medicine in Europe. Four cri-
teria might be used to measure the level
of development: the recognition as a spe-
cialty, the specialist training program, and
the professional organization of emergency
physicians and the presence of academic
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Guidelines for Residency Training in Emer-
gency Medicine “ developed by the Royal
College of Physicians and Surgeons of Can-
da) (1, 3, 8, 9).

At the same time the American Board of
Emergency Medicine (ABEM) was formed
with a mandate to create a program of res-
idency and certification and accreditation of
emergency medicine as a recognized specialty. By 1987, 67 certified programs
for emergency medicine specialization ap-
proved by ABEM, had already been created
with duration of three or four years. Ear-
lier (1968) the Association of the Ameri-
can College of Emergency Medicine (ACEP)
was formed. It was the first association of
emergency medicine as a specialty. In the
same year in San Francisco an association
known as the Academic University Associa-
tion for Emergency Medical Services UA/
EMS, which later became the Society for
Academic Emergency Medicine (SAEM),
was also formed. Already in 1972 the Jour-
nal of Emergency Medicine (Annals of EM),
began publishing. In 1975 the associ-
tion: Society of Teachers of Emergency
Medicine was formed. In 1983 new journal,
The American Journal of Emergency Med-
icine (AJEM) (10, 11, 12, 13, 14) was then
launched. Today, emergency medicine as a
recognized has a significant and important
place in U.S. health care system, but also a
great influence on the development of emer-
gency medicine in the world, including Bos-
nia and Herzegovina (12).

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• Communication, collaboration and interpersonal skills
• Professionalism, ethical and legal issues
• Organizational planning and service management skills
• Academic activities in education and research
• Education and training programs to deliver this core curriculum
• Assessment and examination structure to confirm that the necessary competencies have been acquired
• Clinical standards and a robust audit program to ensure that these standards are being achieved
• Research projects to contribute to the development of an international evidence base for the specialty
• Inclusion of Emergency Medicine as a core part of the medical undergraduate curriculum (2, 6).

There are great differences in the manner and degree of development of emergency medicine in the European Union countries, as elsewhere in the world. Although Germany has a well-developed health care and pre-hospital emergency medical system, it is still not recognized as the formation of district departments of emergency medicine in hospitals and an increased need for emergency procedures in practice requires the integration of both models in the development of emergency medical systems as recommended by the European Association and adopted curriculum (18). Sweden officially introduced emergency medicine as a core part of the medical undergraduate curriculum in 2005. The residency program was modified after the publication of the European emergency medicine curriculum. The staff of the emergency centers and university hospitals were internists, surgeons, anesthesiologists and other specialists trained for emergencies. When emergency medicine gains the status of primary specialization with academic performance it will create a national unified curriculum that will meet the requirements of the European Association for residency and urgent medicine (UEMS and EuSEM) (19).

In Spain, the Ministry of Health introduced emergency medicine as a primary specialization in a program that corresponds to the European curriculum in 2010. (20).

Turkey officially introduced emergency medicine as a primary specialty in 1993. A program for a period of 3 years and a further two years later formed a national association for emergency medicine. The program and way of practicing emergency medicine correspond to a modified Anglo-American model with hospital wards (21). Croatia began the reform of emergency medical services and new network of institutions only this year and has promoted the first 27 physicians who specialize in emergency medicine. During the formation of joint hospital emergency medicine departments, which now exist in three hospital centers (2 in Zagreb and one in Koprivnica).

According to the objectives set by EuSEM and also adopted curriculum and the optimum system of medical education would be as follows:

• Medical education must respond to people’s needs at the level of the individual, region, nation and society. Changes in medical practice should determine the changes in medical education.
• Undergraduate medical education and medical practice are strictly connected.
• Each medical school should incorporate longitudinal curriculum of emergency medicine as an integral part of undergraduate curriculum.
• A specialist in emergency medicine learns a wide range of clinical skills. The medical school must establish and maintain a stringent post-graduate program in emergency medicine and the continued development of emergency medicine based on research.
• EuSAM aims to raise and maintain high standards of medical practice in European countries through quality education. It provides support at different levels of education: undergraduate teaching of specific courses, ongoing continuing education and high professional education in general practice, including new methods of learning (6, 15, 16).
• Emergency Medicine in Bosnia and Herzegovina needs support of these European and World organizations to implement a quality manner stated goals of medical practice, research and education.

4. DEVELOPMENT OF EMERGENCY MEDICINE IN B&H

The Ministry of Health of Bosnia and Herzegovina, as a republic of the former Yugoslavia, formally approved a program of specialization of emergency medicine is 1980, so that Bosnia and Development of Emergency Medicine as Academic and Distinct Clinical Discipline in Bosnia & Herzegovina is one of the first countries after the United States that recognized health system with primary specialization of emergency medicine (Figure 1).

The organization of the health system however did not follow the development of emergency medicine as a specialty. Indeed the first specialists worked in A&E in Community Health Centers at primary level rather in a Hospital A&E department. They were restricted to work with insufficient equipment, poor facilities and an insufficient number of trained health professionals. As a result they were unable to promote emergency medicine in an appropriate manner.

Instead of scheduling models with specialist hospital departments of emergency medicine, where specialist emergency medicine would implement a complete program of emergency admission, triage, treatment and further transfer, a multidisciplinary model was used, where injury or illness determined where and how to provide emergency diagnostic and therapeutic procedures. In the absence of professional status and personal professional development and academic specialists emergency medicine was subsumed into another clinical discipline or area health management.

During the war emergency medicine specialists in B&H played a crucial role in the treatment of mass injuries and in the overall health care organization and health care of the population. (22) International assistance from NGOs took place in two ways: direct aid in clinical practice and help in the organization and development of emergency medicine as a clinical discipline. The organization of emergency medical services during the war was clearly impacted by different models: The Anglo-American approach to the departments of emergency medicine in hospital centers and European multidisciplinary model systems strengthening emergency medical services in primary health care and the involvement of other specialists in the system (anesthesiologists, surgeons, internists, etc.) (22, 23, 24).

In 1994 the International Organization of emergency medicine -International Medical Corps (IMC) was established for the first time in Europe, an American type of emergency department and program.
The Centralized Emergency Hospital Center at the University Hospital in Sarajevo played a significant role in education and in the practice of emergency medicine in Bosnia and Herzegovina as a particular specialization of academic disciplines, even before the war. During the war an adequate system of triage, rapid diagnosis and treatment for a large number of injured and sick (22, 26, 27, 28) was established in Sarajevo. Mostar as a university center with the opening of new hospitals and hospital creates an urgent type of centralized department, which will represent education and the research base of emergency medicine for this area of Bosnia and Herzegovina.

The model of pre-hospital organization of emergency medicine (Franco-German system) was applied in other parts of B&H, particularly through the Institute for Emergency Medical Services in Sarajevo, which was developed by intensive training activities to form an educational center for the implementation of a large number of educational projects for all health professionals involved in the process of providing emergency medical assistance (in the period 1996-2000, 45 courses of different levels) (26). In Tuzla Canton alone pre-hospital model of 13 cells with the organization of emergency medical assistance was implemented that does not fully correspond to the set standards related staff, equipment and facilities.

Hospital organizational aspect of emergency medicine in the other clinical disciplines (29,30).

Currently there are preparations under way to set up the Emergency Department of the University Clinical Center Tuzla, in order to promote emergency medicine as an academic discipline.

Republic of Srpska and other cantons in the Federation have a similar organization. The organization of Emergency Centre in Banja Luka belongs to the primary health care system. There are over 140 specialists in emergency medicine in Bosnia and Herzegovina (in the Federation, about 100, and in the Republic of Srpska about 40) who work predominantly in cells of emergency assistance at the Department of Emergency Medicine in Sarajevo (31).

Bosnia and Herzegovina has not got a single curriculum for the specialty of emergency medicine, or a single approach in undergraduate and postgraduate teaching. The Association of Urgentologists of Bosnia and Herzegovina has no bearing on the authorities engaged in the developing of the health system and is not officially a member of any national, European and World associations of emergency medicine.

The current organizational chart of emergency medicine in Bosnia and Herzegovina was unplanned and is incompatible with the set objectives of the European and the World Association. Figure 1. Countries with Emergency Medicine Residency Training programs (2).

The development of Emergency Medicine as Academic and Distinct Clinical Discipline in Bosnia & Herzegovina is one of the first countries after the United States that had recognized health system with primary specialization of emergency medicine.

The organization of the health system in practice did not follow the development of emergency medicine as a specialty. As a result the specialists instead of working in departments of emergency medicine at the hospital remained in A&E units at primary care level.

Restricted to work with inadequate equipment, facilities and insufficient number of trained health professionals these specialists have been unable to promote emergency medicine in an appropriate manner.

Instead of scheduling models with specialist hospital departments of emergency medicine, where specialists emergency medicine is implemented as a complete program of emergency admission with triage, treatment and further transfer, a multidisciplinary model was applied whereby injury or illness determined where and how to provide emergency diagnostic and therapeutic procedures.

Thus, in the absence of professional status and personal professional development emergency medicine found itself going in another clinical discipline or area health management. During the war emergency medicine specialists in Bosnia and Herzegovina played a significant role in the treatment of mass injuries and overall health care organization and health care population. (22)

International assistance from NGOs took place in two ways: direct aid in clinical practice and help in the organization and development of emergency medicine as a clinical discipline.

The organization of emergency medical services during the war clearly identifies the impact of different approaches to emergency medicine in practice: Anglo-American approach to the departments of emergency medicine in hospital centers and European multidisciplinary model systems strengthening emergency medical services in primary health care and the involvement of other specialists in the system (anesthesiologists, surgeons, internists, etc.) (22, 23, 24). In 1994 International Organization of emergency medicine -International Medical Corps (IMC) was established for the first time in Europe an American type of emergency department and program. (Cantonal Hospital Zenica, EM Training and Development Project, Johns Hopkins University Baltimore, MD, USA) (24, 25).

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played a significant role in education and practice of emergency medicine in Bosnia and Herzegovina as a particular specialization of academic disciplines, even before the war. During the war in Sarajevo an adequate system of triage, rapid diagnosis and treatment was established for a large number of injured and sick (22, 26, 27, 28).

With the opening of new hospital Mostar as a university center will create a type of centralized department, which could provide for education and the research base of emergency medicine for this area of Bosnia and Herzegovina. Model of pre-hospital organization of emergency medicine (Franco-German system) was applied in other parts of Bosnia and Herzegovina, particularly through the Institute for Emergency Medical Services in Sarajevo. There they developed intensive training activities to form an educational center for the implementation of a large number of educational projects for all health professionals involved in the process of providing emergency medical assistance (in the period 1996-2000, 45 courses of different levels) (26). In Tuzla Canton alone pre-hospital model of 13 cells with the organization of emergency medical assistance was implemented that does not fully correspond to the set standards related to staff, equipment and facilities.

Hospital organizational aspect of emergency medicine in the other clinical disciplines (29, 30).

Currently steps are being taken to form a department for Emergency Medicine at the University Clinical Center Tuzla, with the aim of promoting emergency medicine as an academic discipline.

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Bosnia and Herzegovina has currently got over 140 specialists in emergency medicine (in the Federation, about 100, and in the Republic of Srpska about 40) who work predominantly in cells of A&E and the Department of Emergency Medicine in Sarajevo (31).

Bosnia and Herzegovina has not got a single curriculum for the specialty of emergency medicine, nor has it got a single approach in undergraduate and postgraduate teaching. Association of Urgentologists of Bosnia and Herzegovina bears no influence upon the authorities undertaking changes in health system. Furthermore it is not an official member of any regional, European and World associations of emergency medicine.

The current organizational chart of emergency medicine in Bosnia and Herzegovina was unplanned and incompatible with the set objectives of the European and the World Association. Current concept of emergency medicine in Bosnia and Herzegovina is representing a set of emergency situations from different clinical disciplines must be replaced by the basic principle of emergency medicine, which is characterized by a specific approach to all situations that threaten to endanger life. The academic development of emergency medicine in B&H, as is the case with other European countries is in its infancy. Notwithstanding the relatively large number of specialists in emergency medicine only a very small number of emergency medicine specialists have simultaneous academic careers (throughout B&H, less than 7).

5. DISCUSSION

The development of emergency medicine as a separate specialization and academic independent discipline has been undertaken in different ways and at different pace and there is no ideal model that could be applied in all countries (1, 14, 15, 16, 20).

In the international approach to urgent health care there are three models which are now in practice:

a) The model of primary residency, which is well developed in the U.S., has the basic principle that all emergency cases are sent to hospital emergency medicine departments, where well-trained specialists in emergency medicine make possible the realization of definite urgent treatment. Those centers of emergency medicine are also at the same time educational centers for undergraduate, postgraduate and continuing education. They are also academic centers which provide an academic career to health professionals, and research and publications, and have a strong relationship with universities.

b) This model is rapidly expanding in many countries around the world (15,16). c) The model of a multidisciplinary approach has been developed in many European countries, and has been applied in B&H. In this model definitive diagnostic and therapeutic procedures are performed in hospital wards of different clinical disciplines (18). The subspecialist model puts emergency medicine in the area of a sub specialization, because prior training in emergency medicine is a basic need specialization from other clinical disciplines (such as surgery, anesthesia or internal medicine). This model is also applied in EU countries (13).

Experiences from countries with well-developed emergency medicine suggest that the model is the simultaneous development of emergency medicine as a distinct academic discipline on all new and independent recognition of basic specializations with a strong national association the best way for the formation of an efficient health system. In Bosnia and Herzegovina, which was among the first in the world to introduce emergency medicine as a distinct specialty, there has been no simultaneous development of the four essential elements of full implementation of this discipline in practice. During 30 years of existence this specialization did not create a unique program of undergraduate teaching and training, nor has it achieved the necessary academic development. It has also failed to establish necessary links with international networks (27, 28). The formation of emergency hospital centers as the teaching base of medical schools can help to overcome these problems in the development of emergency medicine and accelerate the overall reform of the health system of B&H.

Based on international experiences necessary tasks of the emergency centers departments in B&H would be as follows:

In undergraduate courses:
- To establish the program curriculum and teaching of emergency medicine with fixed objectives and the way of practical application and to evaluate the entire educational process.
- To establish satellite centers for primary care in different regions with the same standard of education (Primary Health Care Centers)
- To identify and improve the way of formal evaluation for set educational goals and set methods of formative and final assessment of not only knowledge but also clinical skills, attitudes and ethical values.
- To apply methods of learning from practice and other methods of education with the principles of adult learning in all forms of emergencies.
- To develop in students the ability to make quick decisions, teamwork, learning for life skills and critical assessment of information obtained (32, 33, 34, 35, 36). In residency program:
• To establish the program curriculum and teaching of emergency medicine with fixed objectives and the way of practical applications relevant to the nursing process.
• To establish a program of continuous medical education of nursing process and post-graduate classes.

This is a model in which clinical practice is oriented not only to a clinical problem but also a student and patient. With the dominant method of learning to practical problems, using different methods, models and simulations, students and residents become active participants in the process of urgent care (35). To practice and implement their knowledge and also have a role model is a practical and educational aim of the work which wait the new and new generations of physicians.

The current 150 emergency medicine specialists will have a difficult task to affirm the practice of emergency medicine as an independent specialty, but also recognized academic discipline. Objectives of EuSEM are great challenge for Emergency Medicine of Bosnia and Herzegovina. To undertake these challenges is a great opportunity for young doctors to build their own successful professional career and to be pioneers in changing the entire health system in the country and its adaptation and join the global movement of emergency medicine in the world and especially European Union countries. The path that will allow access of emergency medicine of Bosnia and Herzegovina worldwide and in the European family is clearly significant and illuminated, and may be much shorter than the other countries it passed thanks to the experience of early recognition of emergency medicine as a specialty.

**6. CONCLUSION**

Development of emergency medicine as a separate specialization and academic independent discipline has had different paths and paces, and there is no ideal model that could be applied in all countries. Social and cultural differences as well as differences in economics, medical tradition and a country’s geopolitical position require different solutions for the practice of emergency medicine. Experiences from countries with well-developed emergency medicine suggest that the model of the simultaneous development of emergency medicine as a distinct academic discipline on all levels and new independent recognized specialty with a strong national association is the best way for the formation of an efficient health system (38). Setting up of emergency centers and departments in all university and can-

tonal hospitals as teaching bases of emergency medicine as an academic discipline, implementation of specific postgraduate teaching and continuing medical education through appropriate courses, with academic development program for members of cathedras of emergency medicine could be the most important element of future development to achieve appropriate status in the academic institutions of the health system of B&H, but also in practice.

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