

The role of paramedics in British emergency aid system

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Summary:

The article presents the role of paramedics in the United Kingdom's emergency aid system, including differences in the British programs of training of technicians and paramedics with particular focus on paramedic qualification degrees. In addition, the article presents the United Kingdom's pre-hospital care system in cases of serious disorders and injuries

Key words: emergency calls, technician, paramedic, training programs, United Kingdom paramedic qualification degrees, pre-hospital care.

Paramedics in the United Kingdom's emergency aid system

The Emergency Medical Service (EMS) is a standalone organizational unit of the United Kingdom's emergency aid system. First aid provided by two-person field teams consisting of medical technicians and paramedics. The team is highly trained in emergency aid and authorized to:

- administer certain drugs, assess and monitor vital parameters, including heart rate and function, respiratory rate;
- use specialist medical equipment, such as semiautomatic external defibrillators (SAEDs).

The scope of activities of the Emergency Medical Service includes;

- 1) departures to emergency cases;
- 2) transportation of patients with medical indications to hospitals;
- 3) emergency transportation of patients between hospitals;
- 4) Transportation of disabled individuals requiring specialist or nursing care.

The following are considered emergency cases:

- 1) accidents;
- 2) poisonings;
- 3) gastrointestinal bleeding;
- 4) risk of abortion, deliveries;
- 5) suspected insufficiency of coronary arteries and circulatory insufficiency.

Emergency calls include transportation orders placed by physicians and midwives regarding transportation of patients between hospitals. Sanitary transportation is considered an integral part of the healthcare system. Transportation of patients for diagnostic or treatment procedures that do not require hospitalization, as well as transportation of physicians to home visits is carried out in a non-emergency setting.

The organizational development of the EMS is aimed at:

- 1) providing medical care of multi-site and multi-organ injuries;

- 2) shortening the time to reach the injured patients;
- 3) establishing specialist centers for the treatment of such injuries. Following the delivery of patients with multi-organ injuries to the nearest hospital, the care of these patients is taken over by emergency care units in hospital emergency wards. These are multidisciplinary teams of physicians, nurses and paramedics, who perform a wide-scale diagnostics of the patient. According to the British physicians, this allows to provide aid in a timely manner and avoids potential omission of any procedural stage, thus leading to fast initiation of causal treatment.

Paramedics are independent individuals working by themselves or in groups with patients of all ages, depending of their professional competence. They are the main members of interdisciplinary teams who belong to different organizations. Successful performance of one's duties as a paramedic requires identification and understanding of social and economical conditions of patients. This helps in planning, providing and improving medical care.

Paramedics' duties are classified according to a five-grade system including the following grades:

- Emergency Medical Technician (EMT);
- Paramedic;
- Paramedic Practitioner (incl. Emergency Medicine Practitioner);
- Advanced Paramedic Practitioner;
- Consultant Paramedic.

The term “paramedic” and its meaning are subject to legal protection. Career development is a life-long concept. In-service training creates basis for the development of college-level training methods.

Paramedics are capable of acting upon first contact with the patient without seeking help from other healthcare professionals. They are also responsible for the quality of care they provide to patients by adhering to principles and applying medical knowledge in their practice.

Paramedics of all grades should:

- 1) have the knowledge and understanding of changes occurring in the human body from neonatal to elderly age;

- 2) be capable of delivering aid to individuals and groups in a wide variety of situations, including aid in acute, primary and critical care conditions presenting complex and variable problems as resulting from multi-pathology disorders and injuries;
- 3) be capable to combine theoretical knowledge with practical skills and to develop problem solving schemes;
- 4) be able of critical self-assessment and drawing appropriate conclusions;
- 5) be able to apply clinical examinations and case studies in their paramedical practice in order to provide patients with optimum care;
- 6) be able to work in teams and cooperate with other professionals;
- 7) be able to understand patient's autonomy, internal reservations and rights as well as be able of providing support to patients;
- 8) be capable of referring the patient to a center of appropriate reference level in case the patient's needs are beyond the paramedic's capabilities.

Differences in the training programs of technicians and paramedics in the United Kingdom

The requirement for the training of technicians and paramedics are different. Part of the training is provided in ambulances and part is provided in hospitals; the training also includes a master-degree program.

The candidates go through an intensive initial training of about 12 weeks, including classes on anatomy, physiology, intensive care and ambulance driving. The theoretical part of the training is prepared by the Institute of Health Care Development (IHCD).

The clinical care is provided by technicians and paramedics in line with national clinical protocols (procedural standards). These are translated into local protocols which may be approved by local committees of hospital consultants, family practitioners, pharmacists, senior emergency service managers supervised by medical emergency executives. The list of skills and the list of drugs that can be administered by technicians is provided in schedule A.

After the basic training and after passing theoretical and practical exams, technicians work for one year under supervision of an experienced, trained technician or paramedic. At some centers, technicians keep books to record their practical skills. After a one-year training, technicians receive licenses for independent practice; however, they should take part in subsequent trainings every 3 years.

Technicians striving to obtain the paramedic degree must have at least 12 months of professional experience as qualified technicians and must be selected by their employing institution.

Today, paramedics in the United Kingdom are subjected to an at least two-month long, intensive training in:

- 1) anatomy;
- 2) physiology;
- 3) trauma surgery;
- 4) procedures to follow in emergency cases: including:
 - a) pregnancy,
 - b) pediatrics,
 - c) psychiatry.

In addition, paramedics undergo practical training in emergency wards, operating rooms and invasive cardiology labs. During the training, paramedics have to

- perform at least: 25 intravenous punctures
- 25 intubations
- interpretations of ECG records. Next, they undergo training in:
 - Advanced Life Support (ALS);
 - Advanced Cardiac Life Support (ACLS);
 - Advanced Trauma Life Support (ATLS);
 - different medical scenarios in adults and children. These are preceded by practical training and serve as a basis.

to apply for a paramedic certificate.

Degrees of paramedic qualifications in the United Kingdom

Ambulance Clinician/Technician; Student Paramedic

Ambulance clinicians/technicians and student paramedics should have completed high school education and knowledge of the basic concepts of patient care. In addition, they must complete the

basic training program organized by the employing institution in cooperation with High Education Institution (HEI) partners.

At this level, the staff is capable of issuing accurate initial diagnosis and plan further actions. Thanks to their knowledge and skills, the paramedics are capable of differentiating between life-threatening and non-life-threatening conditions, interpret and record basic observations and patient's personal, family and social history while providing aid to the patient. Using the information obtained from the patient, paramedics formulate conclusions regarding the nature of the disorder or injury and take actions to manage the patient and stabilize their conditions according to clinical guidelines. The scope of paramedics' activities includes protection of respiratory tract, defibrillation and pharmacotherapy.

In more complex cases requiring higher skills, paramedics should seek advice from more experienced colleagues.

At this stage of the training, high school graduates should focus on gaining their own experience and ability to draw conclusions so as to be able to face the upcoming challenges. In addition, they should be well-coordinated and efficient while providing aid to the patients.

The paramedics have to be able to work in teams and establish contacts with specialists in different areas. Thanks to the professional supervision, own reflections and discussions on every encountered case, the paramedics systematically improve their professional skills and as part of the life-long competence — improving process.

Registered paramedic

The registered paramedic must have the knowledge, understanding and capability of practical application of the principles or paramedic service as developed in cooperation with the High Education Institution (HEI), and taught to them while studying at that institution.

They should be ready for unassisted work as a team member. At this grade, a paramedic is capable of using their knowledge in unassisted work aimed at providing patients with best aid possible. This includes advanced airway patency protection procedures, intravenous fluid therapy

and pharmacotherapy using medicines available to registered paramedics, as well as other invasive procedures. Paramedics must also be able to foresee the future development of patient's condition and decide on the appropriate referral hospital depending on needs.

They should be proficient, co-ordinated and confident of their skills while delivering care to patients. It is important that a paramedic is capable to make an unassisted assessment of patient's condition and, based on own experience, to make a decision that would be best for the patients' needs. If needed, they should be able to explain the measures taken, step by step.

Through studying and clinical practice they should be able not only to improve their skills, but also to evaluate their personal strengths. They should also be able to embrace the role of a supervisor and mentor of others,

Paramedic assistant

A paramedic assistant should have bachelor's degree education compliant with the curriculum developed by the employing institution in collaboration with the HEI. This professional grade requires level 6 academic education.

Education at this level is associated with proficiency, co-ordination and confidence in delivering care. While observing appropriate procedural standards, paramedic assistants should be able to work alone or as team leaders.

Paramedic assistant's duties include physical examination and collection of the medical history of a patient. Being up-to-date with the results of scientific studies and capable of appropriately assessing clinical condition, paramedic assistants may provide advice regarding health promotion, prophylactics and prevention of injuries.

Thus-trained paramedics are prepared for unassisted preparation of healthcare programs. They may also act as mentors and supervisors of younger colleagues, as well as to provide trainings.

Advanced Paramedic Practitioner

The grade of Advanced Paramedic Practitioner requires a grade 6-7 academic education compliant

with the curriculum developed by the employing institution in collaboration with the HEI.

Candidates are required to have obtained a master's degree.

A paramedic with such background will provide complete clinical safety to victims while working alone or as a team leader.

Advanced practitioners should be able to examine and manage patients in acute and chronic and to complete patients' full medical, social and family history.

With their knowledge and skills they should be able to develop care plans that might make it unnecessary for the patient to be hospitalized if there is no specific need.

Advanced practitioner should be up-to-date with the results of recent scientific studies and capable of appropriately assessing patient's clinical image. They may provide advice regarding health promotion, prophylactics and prevention of injuries.

Thus-trained paramedics are prepared for unassisted preparation of healthcare programs. They may also prescribe drugs not available to grade 2/grade 3 paramedics. Thanks to their knowledge and experience, they may also act as mentors and lecturers

Consultant Paramedic

Consultant paramedics are organizational leaders. They must be professionally registered paramedics and have a minimum of 10 years of professional experience as paramedics.

The consultant paramedics embrace four areas:

- 1) Clinical practice experts – working at the forefront of their fields, leading clinical examinations and planning individual elements of examinations both by themselves and in teams. They work with professional organizations with the aim to develop guidelines to higher-grade paramedics. In addition, they develop clinical trials in collaboration with academic centers.
- 2) They are involved in research and other activities to support training, propose tasks to involve wider circles of medical professionals and carry out audits at all levels.

- 3) By combining education with training (e.g. by holding meetings), they promote evidence based clinical information across the whole range of clinical services and encourage professional culture.
- 4) They are professional leaders capable of incorporating conclusions regarding patients' condition with national health-care system guidelines and collaboration with various organizations, including Department of Health, Health Promotion Council, Quality Assessment Agency or the Commission for Health.

Consultant Paramedics may specialize in any branch of clinical care, in particular in:

- emergency pre-hospital and hospital care (including emergency medicine);
- critical and unscheduled medical care;
- ground and air rescue operations, typically – provided by ambulance personnel.

In either branch, paramedic consultants should be involved in the development of standards for the functioning of rescue services.

The initial concept of emergency services included prompt response to emergencies, delivery of first medical aid and transportation of patients to hospitals.

Over recent 25 years, this role has changed dramatically and now includes pre-hospital care, oftentimes requiring advanced clinical skills. Current requirements oblige paramedics to constantly improve their skills which elevates required educational level to academic levels.

The clinical rescue personnel may be divided into medical care assistants, technicians and paramedics. Most ambulance personnel start their work as assistants, later on being trained to be technicians. After another twelve months of practice they may start training to acquire the paramedic degree.

After this training, they may be registered as paramedics.

The existing training curriculum is verified via Edexcel. The system encompasses data from practical training and academic-level education.

Pre-hospital care in serious ailments and injuries in the UK

Patients with serious ailments or injuries are considered a priori as requiring transportation to hospital (for further treatment).

Ambulance care is available at telephone numbers 999 or 112.

After determination of the accident location, ambulances are notified by short wave radio or mobile phones from the Emergency Notification Centre (ENC). Many ambulances are equipped with geolocation systems allowing the dispatchers to identify units (mostly ground units) closest to the accident site.

Digital terminals are also used to record regular ambulance tasks, such as times of departure to and return from the accident site or the hospital, thus reducing the load on the radio band, which is required for transmission of other data.

The calls are classified into three categories:

- “A” — if the condition may be life-threatening;
- “B” — if the condition is serious, but not immediately life-threatening;
- “C” — if the condition is neither serious, nor life-threatening.

The category is determined by the Advanced Medical Priority Determination System (AMPDS) used by the dispatchers to receive alarm calls.

The British government has defined standards for ambulance services. According to these standards:

- 1) 75% of category A calls should be received and provided for within 8 minutes after determination of accident site;
- 2) 95% of category B and C calls should be provided for within 14 minutes in urban areas and 19 minutes in non-urban areas (urban areas are defined as areas with population density of more than 2.5 person/acre).

The personnel of call-receiving ambulances consists usually of paramedics and technicians. The decision to mobilize a particular team is made by senior dispatcher who has to have skills but does not have to have experience in delivering first pre-hospital care (this role is not performed by physicians).

Besides mobilization of an appropriately equipped and manned ambulance, it is possible to mobilize a single paramedic riding a motorcycle or driving a car, particularly in urban agglomerations or in cases of remote locations.

Both in case of category A, as in case of category B/C calls, the response to the call may be provided by immediate response vehicle manned by paramedics or emergency care technicians equipped with devices to provide the patient at the accident site, or by a first aid unit comparable to ambulance. Aid may be provided by a physician, fire brigade personnel or the police. If the patient is provided for within 8 minutes by non-medical personnel and a fully manned and equipped personnel should arrive within 14-19 minutes (depending on the area), the dispatcher may decide that the ambulance arrival is redundant.

Many emergency services are supported by dispatchers present at sites of more complex events, e.g. accidents on major roads.

In order to reduce the time required to respond to a call, special software is used to plan and deploy teams (motorway junctions, railroad stations) at sites with large numbers of calls. This offers better chances to patients in densely populated areas.

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Volunteer first aid units are used to provide prompt arrival of caregivers to victims in some suburban areas.

They are comprised of personnel not employed in emergency care, but trained by the ambulance personnel and equipped with additional gear (oxygen, airway clearing devices, automatic external defibrillators (AEDs)).

If available, Air Ambulance units are also used to rescue the victims. Currently, there are 12 such units in the UK. All units except for London Air Ambulance are manned with paramedics or technicians.

The London Air Ambulance teams always include a physician (completing their specialization or having 2nd degree specialization in anesthesiology and intensive care), who had completed an intensive training in accident site management and pre-hospital care.

The Air Ambulance takes part in rescuing victims with extensive injuries and provides immediate transportation to hospital following resuscitation procedures typical for resuscitation rooms performed at accident sites. The dispatcher may also mobilize a volunteer physician from the Immediate Medical Care system.