



## EMS vs. COVID-19

Critical Challenges and Innovation Needs of Emergency Medical Services identified during the pandemic



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# Introduction

Fostering the response capacities and increasing the cooperation of the European Emergency Medical Services Systems (EMSS) is of decisive importance for strengthening the resilience of European societies in the light of multiple hazards, calling for close cooperation of public safety and health authorities on an international level.

iProcureSecurity responds to this challenge by identifying the major issues the diversity of the Emergency Medical Services (EMS) ecosystem poses to the capability of working together, stimulating R&I uptake with a focus on increasing harmonisation of operations across Europe, while delivering requirements for R&I activities to boost the development of more homogeneous EMS systems.

To enhance the response capabilities of the EMS organisations across Europe and facilitate a clear needs assessment of a major innovation procurement action, the project seeks to:



**MOBILISE** practitioners of emergency medical services, researchers and experts from the field to build synergies among existing actor constellations and initiate knowledge exchange.



**ANALYSE** the European medical emergency services ecosystem, its capability gaps, challenges, and needs, and monitor R&D initiatives to create a catalogue of innovative solutions.

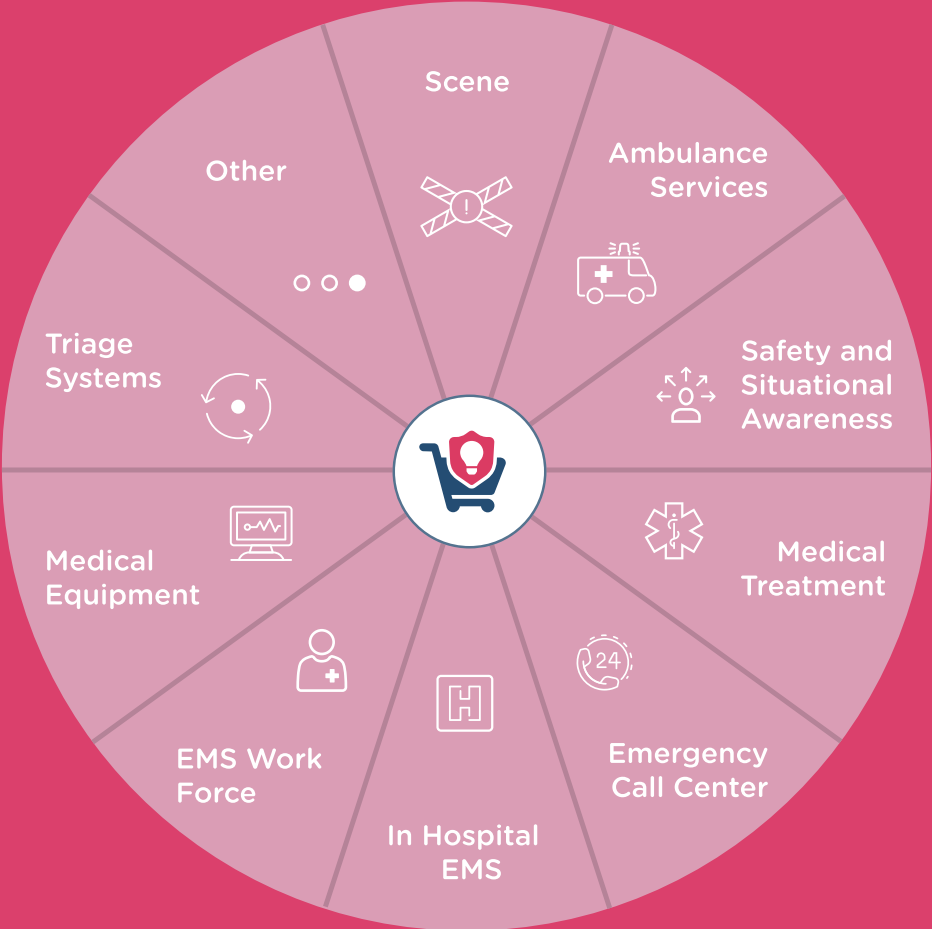


**ADDRESS** legal issues, ethical and societal aspects that should be taken into account by the design, development, and deployment of new solutions in the emergency medical field.



**PROVIDE** specifications about common requirements and technical tender documents for the procurement of R&D, ready-to-use by the upcoming PCP action and external procurers.

iProcureSecurity screened the full EMS ecosystem to find gaps and innovation needs. Below some main gaps and challenges for each of the main EMS areas and their connection to the **COVID-19 PANDEMIC** are presented:





## The Scene

The scene presents many challenges to emergency medical services to provide high quality medical care in emergency situations and it strongly differs from relatively controlled working environment of hospital emergency rooms. Accident environments can be dynamic, chaotic, unpredictable, uncontrolled, sometimes dangerous and there is a significant time pressure; so, it is difficult for EMS providers to oversee all aspects of the scene and make right decisions. In addition, the intervention of bystanders is essential as they are in many cases the first ones at the scene providing important information on the patient and the environment and can if properly trained can start first aid until EMS practitioners arrive.

### Recommendations

- Missing information/guidelines/apps for bystanders to let them know how to help potentially infected victims.
- Full integration of home care system is required to remotely monitor infected patients and especially elderly and disabled patients.





## Ambulances

An ambulance is a medically equipped vehicle which transports patients to treatment facilities, such as hospitals. In some instances, out-of-hospital medical care is provided to the patient during the transport. Ambulances can be categorized in three main areas which are ground, air and marine ambulances. Following three different types of divided road ambulances are used in prehospital care to different degrees in EU Member States.

**Ambulance Type A:** Patient transport ambulance. Ground ambulance which is designed and equipped for the transportation of the patients who are not expected to develop a critical condition.

**Ambulance Type B:** Emergency ambulance. Ground ambulance which designed and equipped for the transportation, basic treatment and monitoring of patients. (Basic life support ambulance).

**Ambulance Type C:** Mobile intensive care unit. Ground ambulance which is designed and equipped for the transportation, advanced treatment and monitoring of patients. (Advanced Life Support ambulance).

### Recommendations

- Transport of infected patient has to be improved (e.g. capsules) in land, air and marine vehicles allowing proper treatment and quick handover processes.
- Better telemedicine services between ambulance and hospital are required.
- Labs on the vehicles are required allowing for rapid tests.
- Cleaning and disinfecting vehicles and equipment takes too much time and needs to be improved.





## Safety and Situational Awareness

Emergency response is dynamic by nature - in every step from taking the call to responding on the scene. Upon dispatch to an incident, responders immediately get in a search of their most valuable commodity: information. Initially, responders are provided with the key information from the person reporting the incident and upon arrival, they obtain more information about the surrounding situation at hand. While treating the patient, additional information about the situation becomes relevant. During these initial phases of information gathering, it is of utmost importance to ensure the EMS teams' safety and taking care of the patient. Situational awareness can be explained as that responders: **Understand their environment / Can determine what's happening around them / Are able to predict what can/could occur / Can respond to or withdraw from it.**

### Recommendations

- Current Personal Protective Equipment (PPE) complicates medical intervention of EMS teams, because they can be heavy and don't provide optimal comfort to work properly.
- Enhanced wearable technologies and sensors to warn and protect EMS practitioners at an early level are needed.





## Medical Treatment

Medical treatment means the management and care of a patient to combat disease or disorder. Before transporting the patient to the hospital, the diagnosis and medical treatment at the scene is one of the most relevant EMS tasks in the field. The European Resuscitation Council has identified five conditions in which EMS play a most crucial role. These are: cardiac arrest, severe respiratory difficulties, severe trauma, chest pain including acute coronary syndrome and stroke.

### Recommendations

- Real time patient data transmission between multiple stakeholders (Ambulance, Emergency Medical Communication Centre, Hospital) must be ensured.
- Implementation of more robust scoring systems to validate the severity of COVID-19 complaints.





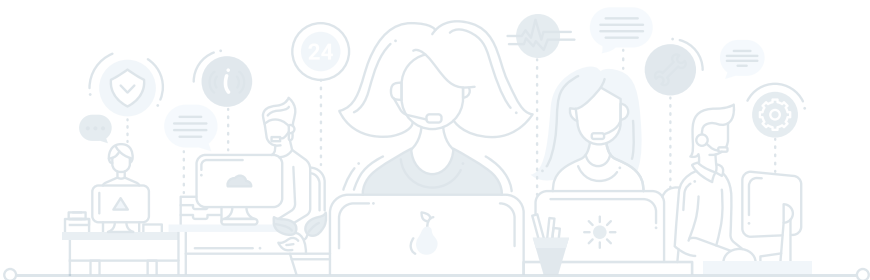


## Emergency Medical Communication Centre

Dedicated facility to answer emergency calls immediately, to identify callers' needs and to dispatch the necessary resources wherever and whenever an emergency need occurs. Incoming calls can use audio, video or text messages. The first aid instructions must be given from the EMCC. The appropriate ambulance type with right equipment must be dispatched to the scene. The data from patients, professionals and personnel are to be sent to the relevant experts and health institutions. All data must be recorded. There are regional and city-level EMCC that cover the necessary personnel, infrastructure and technology. There is no Europe wide harmonization for EMCCs. EMCCs can be differently handled even within one country. The needs are different for islands, main lands, rural and urban areas.

### Recommendations

- Better call management algorithms are needed to respond properly to incoming COVID-19 related calls.
- Identify and handle fake calls and non-emergency calls to avoid reduction of response times.
- Systems are required that allow real time management of patient loads.
- Lack of tools for disabled (deaf, impaired vision, blind, physically impaired etc.) citizens to start emergency calls and communicate properly with the Emergency Medical Communication Centre.





## In Hospital EMS

In Hospital EMS refers to all subsets of medical institutions and hospitals that have the capacity to deliver uninterrupted emergency care 24/7. Emergency Department demands continue to rise in almost all high-income countries, including those with universal coverage and a strong primary treatment network. Many of these countries have been experimenting with innovative methods to reduce the demand of acute care, while at the same time providing highly needed services that can prevent emergency department attendance and later hospital admissions. A large proportion of patients in emergency departments have minor illnesses that could potentially be handled by a health care provider in a primary care setting. The increasing number of visits to emergency departments causes not only delays in urgent care provision but it also increases the overall costs.

### Recommendations

- Stronger use and promotion of tele-medicine applications to reduce need for physical presence of the patient.
- Missing implementation of systems which can inform EMS practitioners in the hospital about the probability of receiving patients with COVID-19.





## EMS Work Force and Training

Emergency medical services (EMS) vary across Europe, with two predominant models: the Anglo-American model which uses mainly paramedics in a prehospital setting, where 'the patient goes to the doctor'; and the Franco-German model which uses mainly physicians in a prehospital setting, where 'the doctor goes to the patient'. No perfect model exists, and each country has an EMS model based upon the needs of the community and the available economic resources. The number, the types and the level of training of ambulance personnel and teams are not harmonized in European countries.

### Recommendations

- Better staff training is needed especially concerning the correct use of Personal Protective Equipment (PPE).
- Training in hygiene and patient contact should be improved.
- Better remote training approaches and systems are needed due to the danger and restrictions to meet physically.
- eLearning platforms to spread evidence-based knowledge are missing.
- Training for military physicians in the delivery of health care to civilians during pandemics should be considered.
- Need for additional EMS teams specialized in managing patients with COVID-19.
- EMS practitioners should receive health and well-being support during and after the medical emergency.



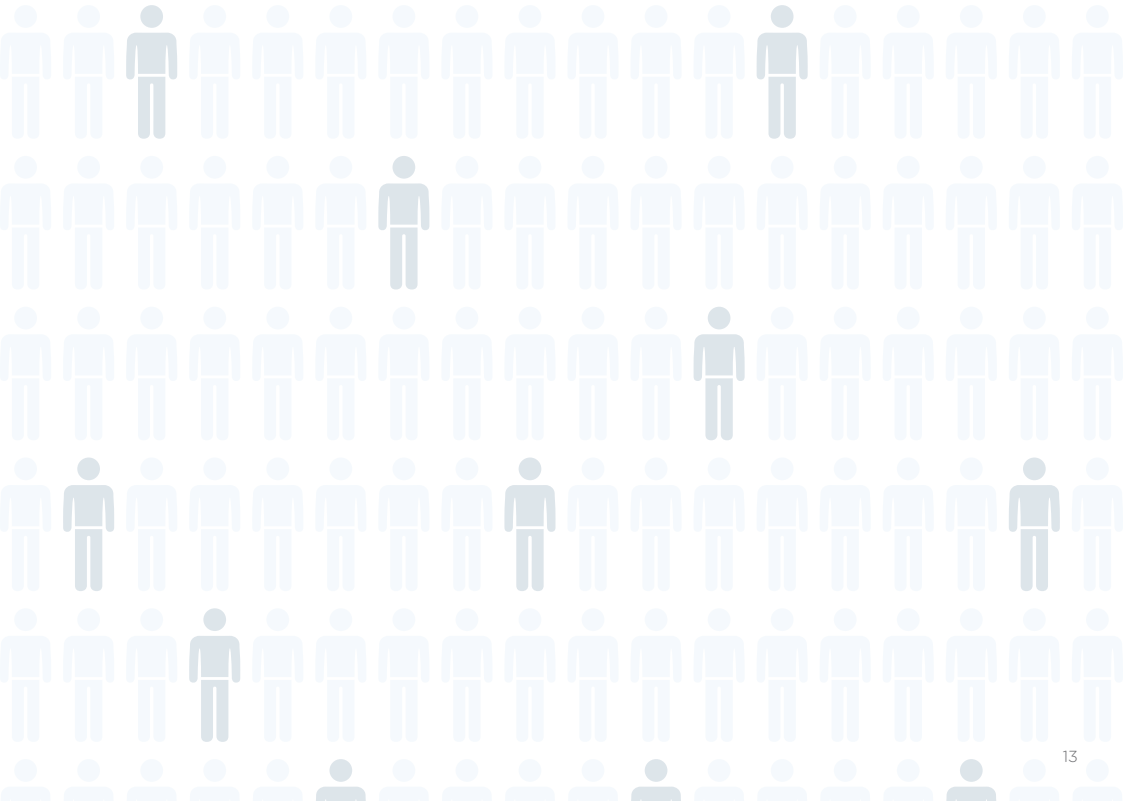


## Triage Systems

Triage can be defined as “the sorting of patients into priority groups according to their needs and the available resources”. It must ensure the efficient use of available resources e.g. personnel, supplies, equipment, means of transportation and medical facilities.

### Recommendations

- Need for digital triage management systems to avoid handover of paperwork that creates delays and increases the risk of infection for the involved EMS staff.
- Need for self-service triage systems to prevent infected people enter hospitals in an uncoordinated way.
- One Triage Approach Pathway (CPG) should be consistently implemented.



## ••• Other

This area subsumes all additional aspects which are horizontally relevant for all areas of the emergency medical service ecosystem including financial, legal, political and administrative issues.

### Recommendations

- Use the learnings of the challenges during the Corona-Pandemic to develop a crisis plan for more resilience.
- Set a stronger focus on logistics as well as on prevention during the pandemic.
- Missing regulations, standards and dedicated resources (financial, organisational, human and technical) for EMS capabilities in EU wide emergency events (e.g. pandemic) that enable a more rapid and comparable response, mitigation and recovery from significant disruptions.
- Missing service level agreements and supply arrangements between public and private health systems.





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and become a main driver  
of Innovation in the field of  
Emergency Medical Services  
and join the iProcureSecurity  
EMS Network.

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