

## COVID-19 CHALLENGES TO EMERGENCY DEPARTMENT TRIAGE

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**Abstract:** One of the most important and with utmost significance to the patients' life procedure performed into the emergency department is the triage. Based on the triage result are planned, organized and performed the following array of medical procedures. Has to be highlighted that the triage is the base for the patients' medical support prioritization. COVID 19 pandemic has seriously changed the well established for decades triage organization into the emergency departments, thus challenging the emergency medics stamina and hospitals structure resources. Not only the psychological but and the physical endurance of the emergency department personnel are challenged. The aim of this study is to present some of the most significant challenges related to the ongoing COVID 19 pandemic, emergency department managers and staff have to face and overcome for establishing and maintain an effective triage process.

**Materials and Methods** By the means of the descriptive method the imposed by the COVID 19 pandemic changes into the emergency medical personnel triage protocols are analyzed. The analyses are based on the clinical reports, published articles and the personal experience. The recorded changes are analyzed in line to the increased demands towards the medical specialists in the emergency department.

**Results and Discussion** Every emergency department mandatory establish a structure and protocols for triage. The protocols are unified addressing the need of prioritization in medical procedures. Triage is the first step of the patient management and has to be extremely precise, but at the same time less time consuming, especially when the life is endangered, as is the case into the emergency departments.

COVID 19 imply specific organization of the triage, because of the associated threat for spreading the infection among the medical personnel and the non infected patients requiring urgent medical support. Therefore, in the real world the dedicated for triage area room into the emergency department has to enlarged by the inclusion of "contaminated" area and isolation area for those who are with COVID 19 symptoms and those that are suspected to be infected. These patients have to be separated from the ordinary emergency department patients that will continue to seek life-saving medical aid. This require split into the duty shift personnel between the two areas and also following a strict decontamination protocols.

The applied into University hospital "St. George" Plovdiv changes into the structure and organization is presented.

**Keywords:** COVID 19, Emergency Department, Triage, Contamination, Decontamination

### 1. INTRODUCTION

One of the most important and with utmost significance to the patients' life procedure performed into the emergency department is the triage. Triage is the process of sorting, grouping the patients in accordance to well defined and rigid protocol. In accordance to this protocol every patient receives a triage group/tag that afterwards guides the following procedures. By its essence the triage could be described as forced medical activity. This requirement for sorting, grouping patients at the entrance of the emergency departments is related to several factors. The leading one is the lack of time. When a casualty arrives at the gate of the emergency department with life-threatening status any minute delay into the commencement of the medical support activities could lead to the undesired outcome - the death of the patients. Therefore, a rigid protocol defining the order and timing of the required life-saving and life-keeping medical procedures has to be strictly and unconditionally followed. The separation of the patients that are admitted into the emergency departments in accordance to the urgency of the required medical support is the second key requirement related to the triage. Not all the patients arriving at the emergency departments are requiring resuscitation procedures. Part of them have to underwent some surgical or therapeutically related procedures, that could be postponed for while without significantly endangering the patient lives, but also requiring urgent medical assistance. The third group of patients could demand medical aid in order to preserve their health and to prevent residual disability development - these also are urgent but could and have to be attended as a tertiary priority. This sorting allow medical staff to assure the most valuable human asset the life for the maximum number of the patients at the emergency department by prioritization of the medical support and attending the most seriously injured, those that are to die first. Such as prioritization is also allowing to the emergency department head or emergency team leader to most effectively utilize the medical means and capabilities that are available at the department into every

single moment, notwithstanding the number and severity of the patients to come. So, the third main factor that is triggering the triage is related to the most effectively utilization of the available medical assets.

The ultimate objective of the triage is to provide timely medical aid to maximal number of patients. These could be assured by rapid evaluation of the patients status and prioritizing all activities according to their urgency and the type of the medical treatment required.

Triage is performed as quickly as possible after the patients arrival at department. The medical specialist, performing the triage evaluates the severity of health deterioration, compare the patients status with the triage guidance and take decision related to the available human and material resources. As the triage is the first step of the patients' medical management, the decision made is impacting all the following procedures. The prerequisite for success, is that triage has to be performed by well educated and trained providers. Based on the triage result are planned, organized and performed the following array of medical procedures. Has to be highlighted that the triage is the base for the patients' medical support prioritization.

COVID 19 pandemic has seriously changed the well established for decades triage organization into the emergency departments, thus challenging the emergency medics stamina and hospitals structure resources. To the well defined criteria for triage a new criterion was imposed by the pandemic development. Moreover this new criterion is the one that has to precede the others, because it is the one that is supposed to safeguard the most valuable asset for pandemic management - the life and health of the medical teams. The diffused spread of the coronavirus has transform the emergency departments to forward medical stations of the hospitals. (1) The disaster medicine established triage principles dictates that the primary medical triage at the triage area of the forward medical stations have to be performed in accordance to the three principles - the principle of safety, the principle of urgency of the medical support required and the principle of the medical evacuation prioritization. Following these organization into the emergency department the triage has to separate the patients infected and suspected for COVID 19 infection from those that are not affected by the virus. Based on this first grouping the intra-hospital transportation to dedicate areas for continuation of the medical support is organized, prioritized by the urgency and the type of the treatment required. This newly imposed organization is challenging both physical and psychological endurance of the emergency department personnel, because of the need of more duties to be performed with the constant number of personnel, and what is more the threat of becoming infected and/or transfer the infection to the colleagues, family and relatives is not imaginary, but present at the departments 24 hours, seven days a week that means it is a constant one. (2 - 5)

**The aim** of this study is to present some of the most significant challenges related to the ongoing COVID 19 pandemic, emergency department managers and staff have to face and overcome for establishing and maintain an effective triage process.

## 2. MATERIALS AND METHODS

By the means of the descriptive method the imposed by the COVID 19 pandemic changes into the emergency medical personnel triage protocols are analyzed. The analyses are based on the clinical reports, published articles and the personal experience. The recorded changes are analyzed in line to the increased demands towards the medical specialists in the emergency department.

## 3. RESULTS AND DISCUSSION

Every emergency department mandatory establishes a structure and protocols for triage. The protocols are unified addressing the need of prioritization in medical procedures. Triage is the first step of the patient management and has to be extremely precise, but at the same time less time consuming, especially when the life is endangered, as is the case into the emergency departments.

COVID 19 imply specific organization of the triage, because of the associated threat for spreading the infection among the medical personnel and the non infected patients requiring urgent medical support. A lot of articles and reports have been published recently presenting the reorganization of the triage process into various emergency departments. (6 - 8) A lot of diverse activities are described by the authors, but all of them are highlighting the need for additional space for placement of the teams for performing this pre-triage or extra triage activity for segregation of the proven and or suspected infected by the other patients. (9, 10) Therefore, in the real world the dedicated for triage area room into the emergency department has to enlarged by the inclusion of a "contaminated" area and isolation area for those who are with COVID 19 symptoms and those that are suspected to be infected. These patients have to be separated from the ordinary emergency department patients that will continue to seek life-saving medical aid. This requires, not only additional space allocation but also and reorganizing the workload of the medical staff on duty. The staff has to be split into at least two brigades - one for management of the contaminated by the virus and the second for the non contaminated patients. The main challenge is related to the urgency of the

medical treatment required by the both groups patients, therefore, the required medical expertise has to be equal for the both groups. To summarize the first two challenges are related to the infrastructure and the human resources.

The third challenge is related to the medical staff preparedness to work under the constant biological threat. This requires that all the staff from the consultants, medical doctors, nurses, medical technicians, sanitary attendants and stretcher bearers have to educate and trained how to endorse and how take of the personal protective equipment - knowledge and skills taught during the undergraduate courses and training, unfortunately, but logically forgotten throughout the years of practice. The forth challenge closely related even deriving from the pandemic characteristics and the previous described is the constant psychological impact of the work under the biological threat. Associated to this challenge is and the physical exhaustion caused by the increased number of patients arriving by themselves or medically evacuated by the ambulance services.

Responding to the above mentioned challenges the managerial body of the University hospital "St. George" has requested from the Emergency department head a proposal for addressing the biological threat and related to it changes into triage process, in a manner to assure the safety and security of the medical staff and patients, granting at the same time the fulfillment of the ordinary life-saving and life-keeping medical activities.

The solution proposed and afterwards implemented includes the following reorganization:

1. All the patients to enter into the emergency department were permitted to enter only after putting face masks, notwithstanding their complains - done by hospital guards (wearing at least face masks and gloves, avoiding contact with patients).

2. The emergency department main entrance corridor was turned into the pre-hospital triage area, where a triage medical officer endorsing full antiviral protective equipment, supported by a registration/record keeper and stretcher bearers (also in full protective equipment) are located for screening the patients to come for COVID 19 symptoms, epidemiological or contact history. Those with already confirmed by tests diagnose and those suspected were directed for intra-hospital transport to the dedicated for the COVID 19 patients examination area, where an epidemic regime of work is imposed. At this area all those requiring resuscitation were attended and those with lesser level of life threat were tested for COVID 19 infection and when required an imaginary tests also. After confirmation of the diagnosis they were transported to the established COVID 19 departments for treatment. If tests proved a non COVID 19 infection they were transferred to the emergency department for following the routine medical protocols related to their triage categories. Those patients that were not triage as contaminated or suspected for contamination are directed to the emergency department for further triage and treatment.

In summary the approach undertaken by the emergency department head included the only possible solution, due to the confined infrastructure - the triage process was split into two consecutive parts following the disaster medicine primary medical triage protocol.

3. The next organizational step is addressing the psychological impact - how to alleviate the fear. A dedicated training for donning and doffing of the individual protective equipment, a weekly briefing on availability of the personal protective equipment and decontamination solutions, mandatory testing (twice a week) of the personnel are just part of the ongoing measures into the emergency department. These measures are in line of the precautions implemented into different countries. (11 - 13)

Imposing this new organization of the triage process allowed to the Emergency department to adjust its activity to the present viral threat and to keep the workforce of the department safe and fit for fulfilling the increased demands for emergency medical support reported into the last months.

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