

Intra-hospital triage in maxi emergencies

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SUMMARY

The definition of a maxi emergency that can impact a trauma center is when the amount of assistance requested may not be satisfied by the resources available. When this occurs, the trauma center must be able to modify its normal organization in order to make the best use of the resources available. In this paper, we present how intra-hospital triage will be modified in the presence of a maxi emergency. We report and discuss the organization of our hospital (Azienda Ospedale Università di Padova), a level I Trauma Center part of the healthcare system in the Veneto region.

Key words: emergency, triage, disaster medicine, trauma center

Introduction

The definition of maxi emergency that can impact on a trauma center is when the amount of assistance requested may not be satisfied by the available resources¹. When this occur, the trauma center must be able to modify its normal organization in order to make the best use of the resources available. This can happen, for example, in case of natural disasters (earthquake, floods, storms), transportation accident (train derailment, bus accident, airplane crash), or terrorist attack.

The healthcare system's first reaction to major accident is on behalf of the 118 Central Operation Office (CO118), which has the task of coordinating all the operations and all the operators at the site of the accident. The second task of the CO118 is to shunt patients to trauma centers respecting the major criteria of centralization. In this case, a massive influx of patients will be directed to a single hospital, threatening the ability to follow the correct diagnostic-therapeutic pathways.

Herein, we show how infra-hospital triage would be modified in case of a maxi emergency. We report and discuss the organization of our hospital (Azienda Ospedale Università di Padova), a level I Trauma Center part of the healthcare system in the Veneto region.

Description

According to legislation¹ any hospital must prepare an operative procedure in case of maxi emergency. This procedure is called "Piano Emergenza Intraospedaliera in caso di Massiccio Afflusso di Feriti (PEIMAF)". PEIMAF has the objective of rapidly implementing the assistance needed in natural disasters. This ensures the highest level of effectiveness and efficiency, in compliance with the national and regional guidelines²⁻⁴. The implementation of the PEIMAF thus involves the detailed remodeling of the corporate⁵.

The temporary reorganization of the activity of the hospital structure envisaged by the PEIMAF has the aim of increasing the available human resources, adapting

Received: February 28, 2023

Accepted: March 22, 2023

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How to cite this article: Berizzi A, Ruggieri P. Intra-hospital triage in maxi emergencies. Lo Scalpello Journal 2023;37:9-11. <https://doi.org/10.36149/0390-5276-276>

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the structure to the hyper-influx, and therefore guaranteeing the most regular patient flows possible.

Our PEIMAF will be activated if the CO118 foresees at least 12 critical patients (red code) and > 40 non-critical patients (green or yellow).

The CO118 first alerts the Emergency Department (ED) physician on duty. It is his duty to alert the Health Directorate and the managers of the First Emergency Operational Units. These are: Emergency Laboratory, Department of Radiology, Transfusion Center, Trauma Team, Pediatric ED, and the Patient Transport Service.

The Health Director on duty will alert the Directors of Intensive Care Units, the Department of Surgery, the Department of Medicine and the Cardio Thoracic Vascular Department. The Health Director will alert also the Director of the Paramedic Department (DPD). All personnel, Medics, Paramedics and Technicians, are recalled to service.

The DPD directs the logistic preparation of the spaces which will recover the least ill patients, in order to free up space in the emergency room. After that all patients suffering from ordinary emergencies are referred to the “spoke” structures of the provincial health network. To free up Intensive Care Unit (ICU) beds, a physician from the same unit is responsible for carrying out a downgrading of patients that could be treated in Semi-intensive Care Unit. In order to better concentrate resources on the critical area of the Emergency Department, a variation of the color codes according to the severity levels of the patients at the time of triage is implemented.

Triage is a procedure that has the function of attributing a presumed level of severity to a given patient. This level allows the staff to be able to better assist people affected by life threatening pathologies or trauma who need urgent care with the prospect of survival compared to those who have little chance. It also allows assigning low priorities to non-life threatening trauma patients. This procedure has historically been entrusted to nurses trained in the evaluation of the main signs and symptoms according to well-defined algorithms.

During the Triage Procedure, patients are normally divided into 4 classes: White Code, minor pathology, with no risk of aggravation, which does not require early evaluation; Green Code, pathology of medium severity or minor trauma (simple fracture, non-bleeding wound, upper limb trauma); Yellow Code: pathology of medium severity with potential risk of aggravation; Red Code: serious pathology, life threatening; with a high risk of rapid aggravation.

During a major emergency, logistical needs require a review of severity codes, and the PEIMAF predicts some modifications. The white codes remain so and their evaluation is excluded from the main emergency room. Anxious and emotionally agitated patients are included in this group. For these patients, the main entrance hall will be prepared with seats and light stretchers.

Some pathologies normally defined in the yellow codes are included in the Green Codes: serious pathologies but with a low risk of progression. For the Green Codes, a part of the main

entrance hall will be prepared with stretchers and beds. Group of beds are delimited by mobile curtains. The Yellow Code foresees urgent pathologies with partial compromise of the circulatory system, partial compromise of the respiratory system, complex fractures of the limbs (including small exposures), fractures of the axial skeleton, intense pain, moderate risk of aggravation but not of death. For the yellow codes, rooms normally dedicated to green codes will be prepared.

The Red Codes are defined by probable imminent danger to life, with at least one vital function compromised, hemodynamic instability, loss of consciousness, respiratory failure, hemorrhage, shock, or head injury. For the Red Code, the Emergency Room (ER) will be completely dedicated.

The PEIMAF procedure, in addition to the 4 standard codes, provides for the insertion of two additional codes: blue and black. The Blue Code is attributed to a patient with compromised vital functions, but resuscitation maneuvers in progress with hope of success. The black code is attributed to patients with compromised vital conditions that cannot be resuscitated or who have already died.

Red and Blue patients are stabilized or reanimated as rapidly as possible in the ER and then shunted to Intensive Care Unit or directly to operating wards.

Yellow Code patients are stabilized and, after a second complete survey are rapidly discharged to normal recovery departments or to operating room, if available, for surgery.

To allow rapid discharge from the ER, all routine operative activities are suspended, which frees anesthesiologists, surgeons, and nurses. Green patients are discharged to normal recovery departments.

Conclusions

Maxi emergencies, with a large number of traumatized patients, represent a challenging situation. The lack of organization and a well-designed procedure could put more lives at risk than expected in standard situations. The complex organization of PEIMAF, if well executed, can reduce the risk of avoidable deaths. For the PEIMAF to be effective, it is necessary to update it periodically and to prepare exercises at least annually in order to allow hospital staff to be ready in case of need.

Acknowledgements

The author thank Dr.ssa Maria Vittoria Nesoti for the documentary contribution.

Conflict of interest statement

The authors declare no conflict of interest.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Author contributions

All authors contributed equally to the work.

Ethical consideration

Not applicable.

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¹ D.L. 81/2008 Testo Unico sulla Sicurezza sul Lavoro che rende obbligatorio il piano di emergenza negli ospedali (PEIVAC e PEIMAF).

- ² DGRV 3258/99: “Pianificazione dell’emergenza intra-ospedaliera a fronte di una maxiemergenza nella Regione Veneto”.
- ³ DGRV 4871/98: “Istituzione del Comitato Regionale Permanente per l’Emergenza”.
- ⁴ DGRV 1511/03: istituzione del “Centro di Coordinamento del Sistema Regionale di Emergenza Urgenza (CREU)”.
- ⁵ Deliberazione Direzione Generale AOP n. 1557 del 11/12/2017.