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Development of Emergency Medical Dispatch

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Development of Emergency Medical Dispatch





Development of Emergency Medical Dispatch

An **emergency medical dispatcher** is a professional telecommunicator tasked with

- the gathering of information related to medical emergencies,
- the provision of assistance and instructions by voice, prior to the arrival of the *EMS*,
- and the dispatching and support of EMS resources responding to an emergency call.



Development of Emergency Medical Dispatch

- ▶ The term "**emergency medical dispatcher**" is also a certification level and a professional designation, certified through the Association of Public-Safety Communications Officials-International (APSCOI) and the International Academies of Emergency Dispatch.
- ▶ Many dispatchers, whether certified or not, will dispatch using a standard emergency medical dispatch protocol.

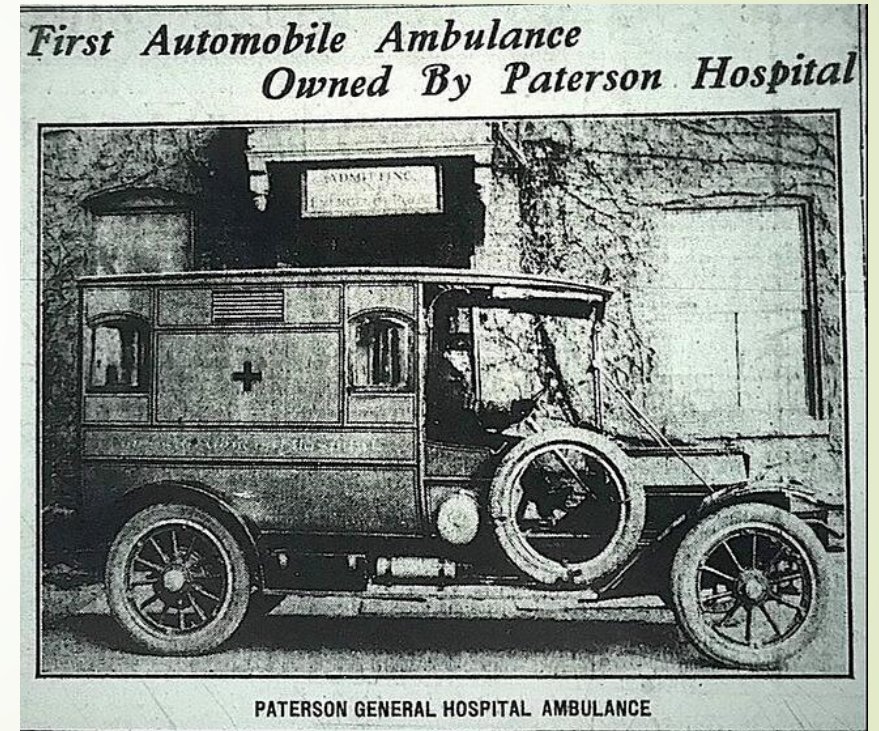


History

- ▶ Although the use of radio communication in ambulances did occur, it was not until the 1950s that the use of radio dispatch became widespread in the United States and Canada.
- ▶ During the 1950s the radio dispatch was often treated as marketing inducement, and was prominently displayed on the sides of ambulances, along with other technological advances, such as carrying oxygen.

History

- Dispatch was often determined by the business arrangements of the ambulance company, the local hospital or small independent ambulance companies.
- If the ambulance were under contract to the town, it might be dispatched as an 'add-on' to the fire department or police department resources.





History

- Dispatchers have always played an essential role of the EMS.
- At its most basic, the role of the dispatcher has been;
 - to identify the problem and the location of the patient, and then identify an ambulance that can be sent to the location.



History

- ▶ Prior to the professionalization of emergency medical services, dispatch was often informal; the caller would simply;
 - ▶ call the local ambulance → the telephone call would be answered → the location and problem information would be gathered → an ambulance assigned to complete the task.

The ambulance would then complete the call, return to the station, and wait for the next telephone call.

Development of Emergency Medical Dispatch

- Emergency medical dispatch has evolved over the last 25 years designed from limiting the abuse of the (EMS) to a sophisticated part of the **total EMS response**.
- Its current goal is to send the right task to the right person at the right time in the right way and to do the right thing until help arrives.



EMS

- The historical development of emergency medical dispatch in the USA is outlined decade by decade.
- In addition, the current state of emergency medical dispatch is reviewed and future directions are discussed.





EMS



- Specialized care and transportation of the acutely ill and injured prior to arrival at hospital dates back at least as far as the *Napoleonic wars*.
- The modern era of the emergency medical services (EMS) dates at least as far back as the 1960s .
- However, it was not until the 1970s that any thought was given to the important concerns of how and why to dispatch pre hospital providers to the scene.

Development of Emergency Medical Dispatch

- In a parallel evolution, the development of 9-1-1 as a national emergency number began in Winnipeg, Manitoba, Canada, in 1959.
- The concept of a *single answering point for emergency calls* to public safety agencies caught on quickly.
- In 1967, the number was established as the national emergency number for the United States, although by 2008, coverage of the service was still not complete, and about 4 percent of the United States did not have 9-1-1 service.





Development of Emergency Medical Dispatch

- Calling this single number provided the caller access to police, fire and ambulance services, through what would become known as a common public-safety answering point (PSAP).
- The technology would also continue to evolve, resulting in "Enhanced 9-1-1" including the ability to 'lock' telephone lines on emergency calls, preventing accidental disconnection, and automatic number identification/automatic location identification (ANI/ALI) for the possibility of the caller becoming disconnected or unconscious.

Development of Emergency Medical Dispatch

- As the skill set of those in the ambulance increased, so did the importance of information. Ambulance service moved from '*first come, first served*' or giving priority to whoever sounded the most panicked, to prioritizing based on how severe the medical emergency was.
- This occurred slowly at first, with local initiatives and full-time ambulance dispatchers making best guesses.





Development of Emergency Medical Dispatch

- ▶ Priority codes developed for ambulance dispatch, and became commonplace however not fully standardized.
- ▶ As it became possible for those in the ambulance to actually save lives, the process of sending the closest appropriate resource to the person in the greatest need became very important.
- ▶ Dispatchers needed tools to help them make the correct decisions, and a number of products were devised for this purpose.



Development of Emergency Medical Dispatch

- One of the first known examples of call triage occurring in the dispatch centre occurred in 1975, when the Phoenix, Arizona Fire Department assigned some of its paramedics to their dispatch centre in order to interview callers and prioritize calls.
- The following year, Dr. Jeff Clawson, a physician employed in the Fire Department as its medical director, developed a series of *key questions*, *pre-arrival instructions*, and *dispatch priorities* to be used in the processing of EMS calls.

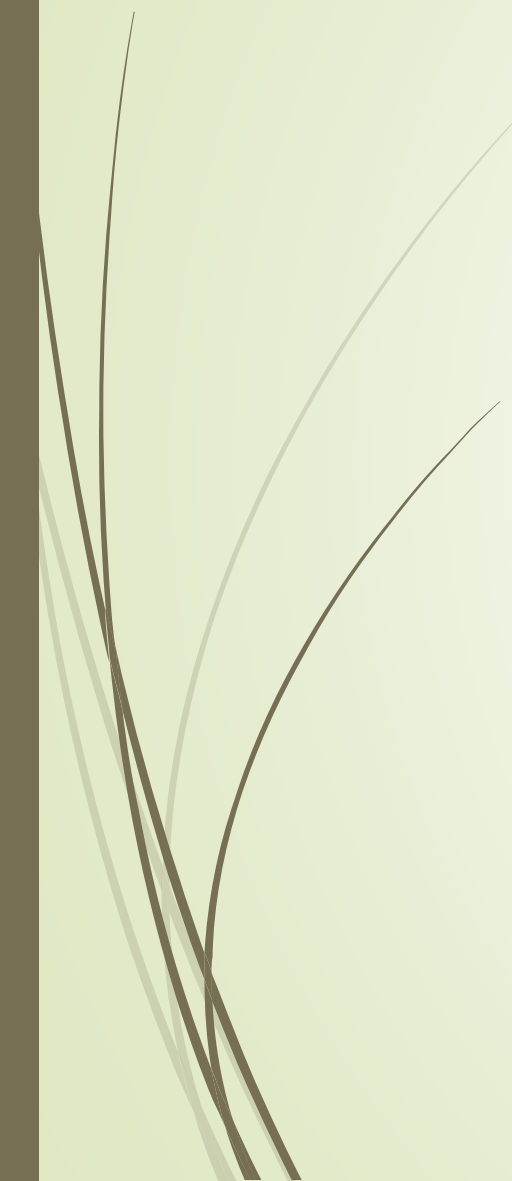


Computer-aided dispatch

- As technology, and particularly computer technology, evolved, the dispatching of EMS resources took on an entirely new dimension, and required completely new skill sets.
- Computer-aided dispatch (CAD) systems not only permitted the dispatcher to record the call information, but also automated the call triage process, allowing EMD systems to become algorithm-based decision support tools.
- Technologies once available only to the military, such as satellite-based automatic vehicle location allowed CAD systems to constantly monitor the location and status of response resources, making response resource assignment recommendations to human dispatchers, allowing human dispatchers to watch the physical movement of their resources across a computerized map, and creating a permanent record of the call for future use.

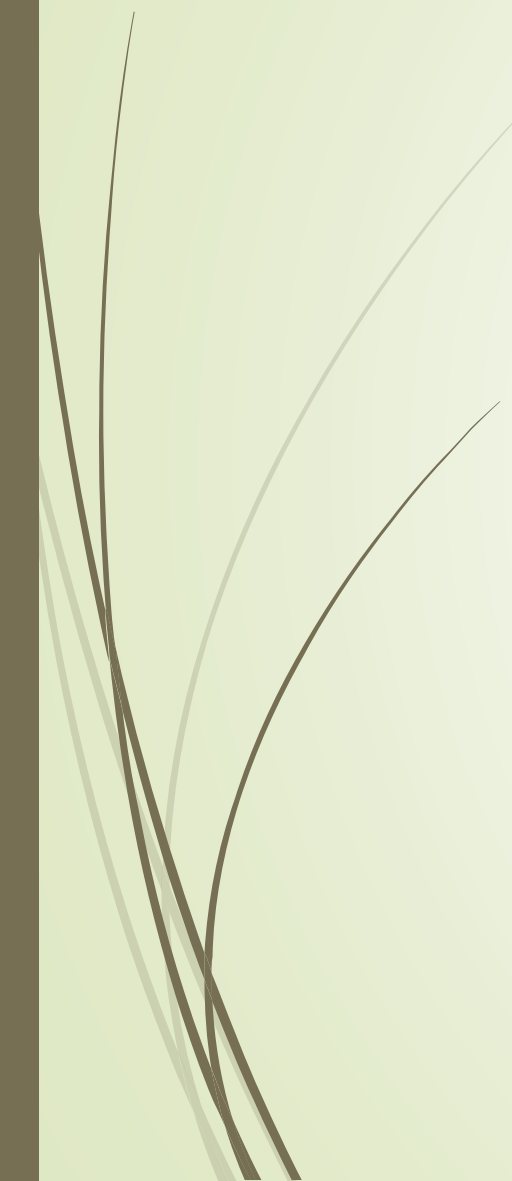


Roles of Emergency Medical Dispatch Teams

- In most modern EMS systems, the emergency medical dispatcher (EMD) will fill a number of critical functions.
 - The first of these is the identification of basic call information, including the location and telephone number of the caller, the location of the patient, the general nature of the problem, and any special circumstances.
 - In most EMS systems, the telephone remains almost a singular point of access for those needing assistance.
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Roles of Emergency Medical Dispatch Teams

- ▶ The next area of responsibility involves the triage of incoming calls, providing expert systematized caller interrogation, using the script provided by the Emergency Medical Dispatch system, in order to determine the likely severity of the patient's illness or injury, so that the most appropriate type of response resource may be expedited.
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Roles of Emergency Medical Dispatch Teams

- All calls are prioritized by medical symptom/condition acuity. This process may be further complicated by panic-stricken callers who scream, cry, or make unreasonable demands.
- The trained EMD uses interpersonal and crisis management **skills** to sort through
 - distractions,
 - taking control of the conversation,
 - calming the caller, and extracting the **necessary information**.
- This inquiry begins with the obvious questions regarding whether the patient is conscious or breathing. The questioning will continue until the EMD is able to qualify a potentially life-threatening condition, at which time the closest appropriate response resource (such as a paramedic-staffed ambulance service) is notified to initiate pinpointing the call location.
- The manner in which this questioning proceeds is often governed by protocols, or by decision-support software.

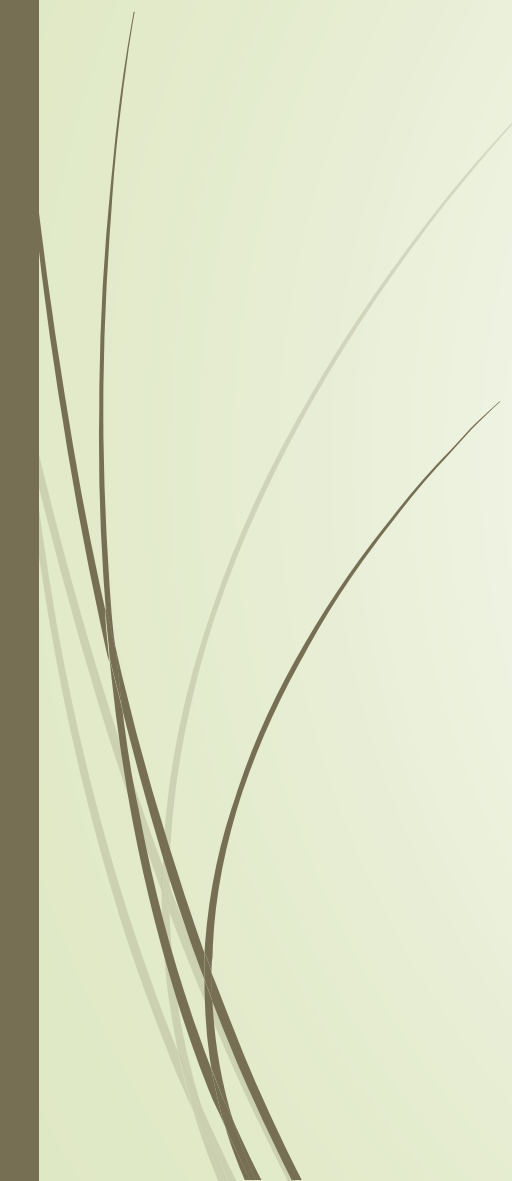


Roles of Emergency Medical Dispatch Teams

- The third function is the selection and assignment of the most appropriate type of response resource, depending on the nature of the problem, and ensuring that the crew of the response resource receive all of the appropriate information.
- The EMD is responsible for the management and work for all of the response resources in the EMS system.
- The EMD is responsible for multiple response resources simultaneously, including ALS, BLS, or some mix of skills, ambulances, 'fly-cars', and other types of resources.

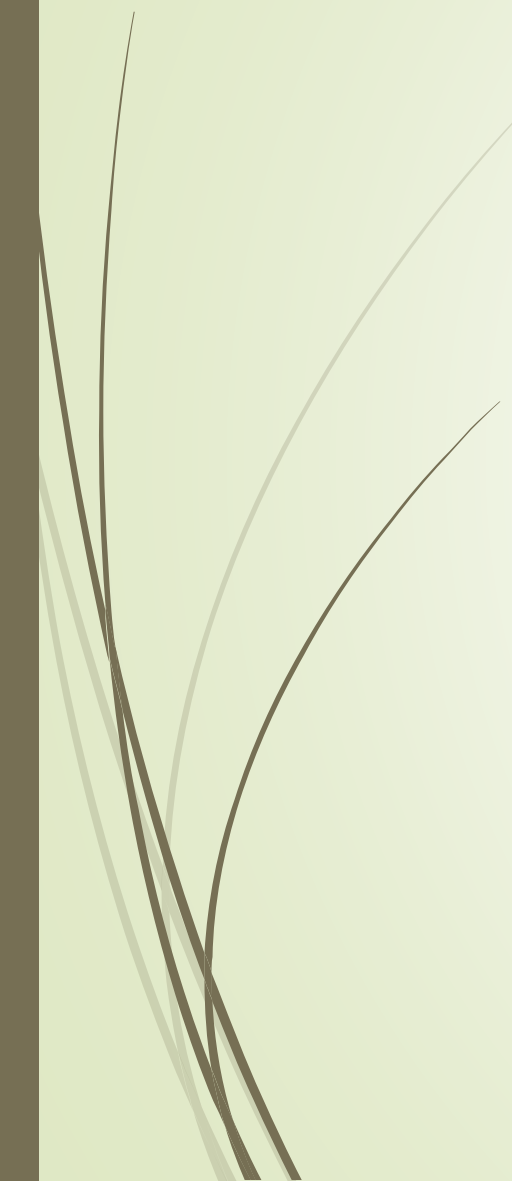


Roles of Emergency Medical Dispatch Teams

- ▶ The EMDs next priority is to provide and assist the layperson/caller with pre-arrival instructions to help the victim, using standardized protocols developed in cooperation with local medical directors.
 - ▶ Such instructions may consist of simple advice to keep the patient calm and comfortable or to gather additional background information for responding paramedics.
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Roles of Emergency Medical Dispatch Teams

- ▶ The instructions can also frequently become more complex, providing directions over the telephone for an untrained person to perform CPR, for example.
 - ▶ Examples of EMDs guiding family members through assisting a loved one with the process of childbirth prior to the arrival of the ambulance are also quite common. The challenge for the EMD is often the knowledge level of the caller.
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Roles of Emergency Medical Dispatch Teams

- The EMD is also responsible for providing information support to the responding resources.
- This may include clarifying the exact location of the patient, or sending a bystander to meet the ambulance and direct paramedics to the patient.
- It may also include requests from the EMS crew to provide support resources, such as additional ambulances, rescue equipment, or a helicopter.
- The EMD also plays a key role in the safety of EMS staff.



Roles of Emergency Medical Dispatch Teams

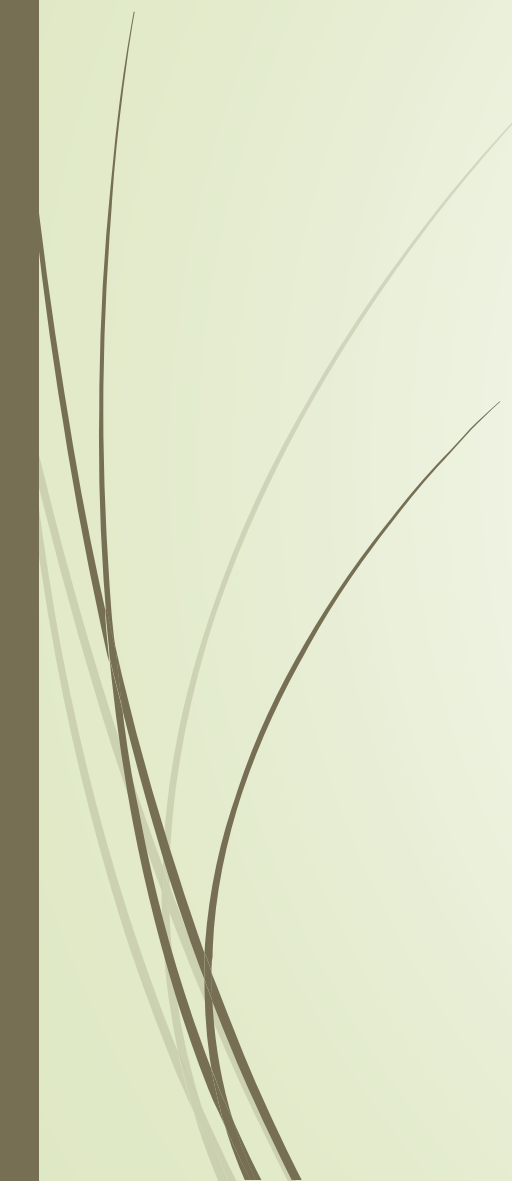
- Finally, the EMD ensures that the information regarding each call is collected in a consistent manner, for both legal and quality assurance purposes.
- In most jurisdictions, all EMS records, including both patient care and dispatch records, and also recordings of dispatch radio and telephone conversations, are considered to be legal documents.
- Dispatch records are often a subject of interest in legal proceedings, particularly with respect to initial information obtained, statements made by the caller, and response times for resources. Any or all may be demanded by a criminal court or civil court, a public inquiry, or a coroner's inquest, and may have to be produced as evidence.

EMD stations





Roles of Emergency Medical Dispatch Teams

- The role and certification of Emergency Medical Dispatcher has its origins in the United States but is gradually gaining acceptance in many other countries.
 - In many respects, the development of this position is a logical sequel to the incorporation of the emergency medical dispatch system by EMS.
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Roles of Emergency Medical Dispatch Teams

- ▶ However not all EMS dispatch worldwide is conducted by EMDs.
- ▶ In some jurisdictions using the Franco-German model of EMS service delivery a call for a medical emergency will not be processed by an EMD, but by a physician, who will decide whether or not an ambulance will even be sent.



Training

- ▶ Training for EMDs is required to meet a National Standard Curriculum, as outlined by the National Highway Traffic Safety Administration of the U.S. government.

This training program may be offered by private companies, by community colleges, or by some large EMS systems which are self-dispatching. The minimum length of such training is 32 classroom hours, covering such topics as;

- ▶ EMD Roles and Responsibilities,
- ▶ Legal and Liability Issues in EMD,
- ▶ National and State Standards for EMD,
- ▶ Resource Allocation,
- ▶ Layout and Structure of EMD Guidecards,
- ▶ Obtaining Information from Callers,
- ▶ Anatomy and Physiology,
- ▶ Chief Complaint Types,
- ▶ Quality Assurance & Recertification and Stress Management.



Training



- Certification in CPR is not mandatory, but upon completion of the training, students are required to sit a certification examination.
- Upon completion of the training and certification, Emergency Medical Dispatchers are required to complete 24 hours of Continuing Dispatch Education every two years, in order to maintain certification.



Training



- This may include
 - EFD (Emergency Fire Dispatching),
 - EPD (Emergency Police Dispatching),
 - ETC (emergency telecommunication),
 - ECE (Executive Certification Course),
 - CMC (Communication Center Manager), when such services are jointly operated.
- Similar courses are also generally available in Law Enforcement Dispatch (LED), Fire Service Dispatch (FSD), and Public Safety Dispatch (PSD), designed for those working in a multi-agency 9-1-1 call center that handles police, fire and EMS dispatching.



Training



- Additional local training is likely to be required for the actual skill of dispatching. This may involve extensive 'drilling' on local geography, for example.
- Some of the more sophisticated EMS systems might actually have a teaching 'lab' complete with dispatch consoles, where the trainees can practice dealing with simulated calls, using exactly the same technologies that would be present in a real call centre.



Training



- In other cases, or in addition to this 'lab' work in many cases, a graduated process of introduction and mentoring is used to develop an EMD.
- This generally involves supervised introduction of tasks, from the lowest priority and least stressful, to the highest priority and most stressful.
- A typical pattern might begin with the candidate performing call reception, then progressing to the actual dispatching of non-emergency transfers, dispatching emergency calls during periods of low volume, dispatching emergency calls at periods of high volume, and so on..



Training



- In high performance systems, the path to being left alone to run an emergency dispatch console during high volume periods may take months to travel.
- Some EMS dispatch centres also have designated Communications Training Officers, who are the only people permitted to train or mentor new EMD candidates

EMD during Covid-19 pandemic



EMD during Covid-19 pandemic



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The
American Journal of
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Correspondance

EMS dispatch center activity during the COVID-19 containment

To the Editor:

Since reported in late December 2019 from the Hubei province in China, coronavirus disease 2019 (COVID-19) has spread worldwide with more than 6 million confirmed cases by the end of May 2020 [1]. In Europe, emergency departments (ED) noticed a decrease of daily visits since the beginning of the outbreak, which majored during the implementation of containment measures [2]. However, to date, no data reported Emergency Medical Services (EMS) dispatch center activity

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Original Article

Influence of the COVID-19 pandemic on an emergency medical service system: a population-based, descriptive study in Osaka, Japan

Yusuke Katayama,¹ Kosuke Kiyohara,² Tetsuhisa Kitamura,³ Sumito Hayashida,⁴ and Takeshi Shimazu¹

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Aim: Novel coronavirus infection (COVID-19) was confirmed in Wuhan, China in December 2019, and the COVID-19 pandemic has spread around the world. However, no clinical studies on the impact of the COVID-19 pandemic on emergency medical service (EMS) systems have been carried out.

Methods: This was a retrospective study with a study period from 1 January 2020 to 14 April 2020. We included the patients transported by ambulance for acute diseases and traffic accidents in Osaka city, Japan. The main outcome of this study was the difficulty in hospital acceptance. We calculated the rate of difficulty of hospital acceptance for each month for acute diseases and traffic accidents.

Results: Between 1 January and 14 April 2020, 36,981 patients were transported to hospitals by ambulance for acute diseases and 3,096 patients for traffic accidents. There was no difference in the proportion of the difficulty in hospital acceptance due to traffic accidents between 2019 and 2020, but there was an increase in the proportion of the difficulty in hospital acceptance due to acute disease after the 13th week (25–31 March) of 2020 compared to that of 2019. The odds ratio in April was 2.17 (95% confidence interval, 1.84–2.58) for acute disease.

Conclusion: We assessed the impact of the COVID-19 pandemic on the EMS system in Osaka City, Japan and found that, since April 2020, the EMS system in Osaka City has been facing difficulty in terms of hospital acceptance of patients transported to hospital for acute diseases.

Key words: COVID-19, emergency medical service, novel coronavirus, pandemic

INTRODUCTION

NOVEL CORONAVIRUS INFECTION (COVID-19) was confirmed in Wuhan, China in December 2019, and the epidemic of COVID-19 has spread not only in China

general malaise, and some patients with COVID-19 are asymptomatic.³

As the number of patients infected with COVID-19 has increased worldwide, the global health system is on the verge of total collapse. It is evident that the COVID-19 pan-



EMD during Covid-19 pandemic

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However, no clinical studies on the impact of the COVID-19 pandemic on emergency medical service (EMS) systems have been carried out.



EMD during Covid-19 pandemic

- In one retrospective study in Osaka Japan from 1 January 2020 to 14 April 2020 followed the patients transported by ambulance for acute diseases and traffic accidents in Osaka city, Japan.



EMD during Covid-19 pandemic

- The main outcome of this study was the difficulty in hospital acceptance. Between 1 January and 14 April 2020, 36,981 patients were transported to hospitals by ambulance for acute diseases and 3,096 patients for traffic accidents.
- There was **no difference** in the proportion of the difficulty in hospital acceptance due to **traffic accidents** between 2019 and 2020, but there was **an increase** in the proportion of the difficulty in hospital acceptance due to **acute disease** after the 13th week (25–31 March) of 2020 compared to that of 2019.

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- The odds ratio in April was 2.17 (95% confidence interval, 1.84–2.58) for acute disease. It was concluded that since April 2020, the EMS system in Osaka City has been facing difficulty in terms of hospital acceptance of patients transported to hospital for acute diseases.

EMD during Covid-19 pandemic

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Correspondance

EMS dispatch center activity during the COVID-19 containment

To the Editor:

Since reported in late December 2019 from the Hubei province in China, coronavirus disease 2019 (COVID-19) has spread worldwide with more than 6 million confirmed cases by the end of May 2020 [1]. In Europe, emergency departments (ED) noticed a decrease of daily visits since the beginning of the outbreak, which majored during the implementation of containment measures [2]. However, to date, no data reported Emergency Medical Services (EMS) dispatch center activity during COVID-19 containment.

This retrospective study was conducted at the EMS dispatch center of Nantes University Hospital, France, from March 17th to May 11th 2020, corresponding to the lockdown period in France. We also collected data from the two same time periods of 2018 and 2019. Data were extracted from the advanced telephone that automatically keeps track of all incoming calls. Quantitative variables reported using median were compared using Kruskal-Wallis test, p -values were adjusted with the Bonferroni method. Qualitative data reported using percentage were compared using Chi-square test, p -values were adjusted with the false discovery rate method.

During the containment period, we received 69,845 calls (1216 calls/day, 1021–1391). Compared to 2019 and 2018, the number of calls increased during the first thirteen days of the containment (+31% and 33%, $p < .001$ for both), but followed by a significant decrease (−11% and −13%, $p = .01$ and $p < .001$, Fig. 1). Compared to 2019, we observed a significant increase in calls related to infection ($n = 6448$ (12%), +164%, $p < .001$), chest pain ($n = 1961$ (4%), +43%, $p < .001$), and breathing difficulties ($n = 3686$ (7%), +121%, $p < .001$). Conversely, we observed a significant decrease in calls related to severe trauma ($n = 64$ (0.1%), −50%, $p < .001$), minor injuries ($n = 4864$ (9%), −22%, $p < .001$), altered level of consciousness ($n = 283$ (1%), −17%, $p < .001$), patients with intoxication ($n = 475$ (1%), −7%, $p = .05$), seizure ($n = 2197$ (4%), −39%, $p < .001$), and abdominal pain/diarrhea/vomiting ($n = 2703$ (5%), −11%, $p < .001$). However, compared to 2019 and 2018, we did not find significant change in calls related to cerebrovascular accident ($n = 333$ (6.2%), +6.7% and +12%, $p = .9$ for both). Moreover, out-of-hospital cardiac arrest (OHCA, $n = 258$ (0.5%) increased by 21% and 25% ($p = .7$ and 0.3).

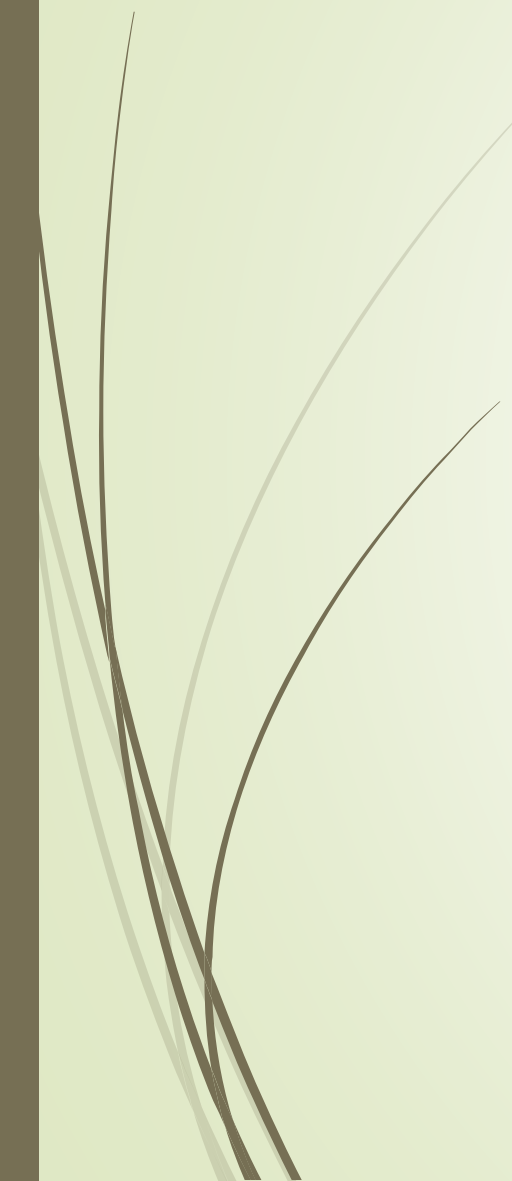
During the lockdown period, compared to 2019, EMS physicians mainly gave medical advice to the caller ($n = 18,763$ (50%), +40%, $p < .001$), sent less first aid responders on scene ($n = 10,515$ (28%), −29%, $p < .001$) and less mobile intensive care unit with an emergency physician on board ($n = 530$ (1%), −25%, $p < .001$). Moreover, more patients were left on scene ($n = 25,319$ (64%), +34%, $p < .001$) and less were transported to the hospital ($n = 13,344$ (34%), −21%, $p < .001$). Among them, more patients were transferred to the intensive care unit ($n = 627$ (6%), +7.5%, $p < .001$) and less were admitted to the ED ($n = 9499$ (85%), −21%, $p < .001$). However, we did not observe a significant change in the number of patients with STEMI transferred for urgent PCI ($n = 66$ (0.6%), −12%, $p = .9$).

Here, we found that our EMS dispatch center received more calls related to infection, chest pain and breathing difficulties during the containment period. EMS physicians addressed less patients to the ED, which may have contributed to the decrease of daily ED visits [2] and saved hospitals' resources.



EMD during Covid-19 pandemic

- In general it can be concluded that the EMD work force has been facing difficulty during Covid-19 outbreak due to;
 - Dispatch overload from non emergency citizens seeking knowlegde about the outbreak,
 - Reduced space in EMS,dedicated servises and ICUs due to the need of isolation.

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- The call system plays a very important role, especially in the pandemic process, because it is very difficult to receive suspicious cases and send them to the right place, especially during the pandemic process.



Thank you for your attention