

Analysis of the emergency hospital patient flow: a case study

Análise do fluxo de atendimento de serviço hospitalar de emergência: estudo de caso

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ABSTRACT

This qualitative study, using a case study design, had the aim to analyze the service flow at two emergency hospital units. The study was developed in November and December 2010, at a service where care is provided by means of embracement with risk classification and at another one where patients are seen on a first come, first served basis. Data were collected by means of direct observation of the practice, with records made on field notes that were treated with the content analysis technique. The analyses of the collected information resulted in two thematic categories: Caring for users at emergency hospital services and Embracing users and families. In conclusion, neither of the services had a counter-referral system; care at the service that adopts embracement with risk classification was continuous and hierarchized; the flow of patients was more dynamic and; the nurse had more autonomy for making clinical decisions.

Descriptors: Nursing; Emergency Service, Hospital; User Embracement; Emergency Nursing; Triage.

RESUMO

Estudo qualitativo, modalidade Estudo de Caso que objetivou analisar o fluxo de atendimento em dois Serviços Hospitalares de Emergência. O estudo foi realizado entre novembro e dezembro de 2010, em um Serviço que atende por meio do Acolhimento com Classificação de Risco e, em outro, por ordem de chegada. Para a coleta de dados, utilizou-se como técnica a observação direta da prática, com registros em notas de campo que foram tratados com o uso da técnica análise de conteúdo. Das análises das informações coletadas, resultaram duas categorias temáticas: Cuidando do usuário em Serviços Hospitalares de Emergência e Acolhendo o usuário e familiares. Conclui-se que, nos dois Serviços investigados, não há sistema de contrarreferenciamento; o atendimento no Serviço que adota o Acolhimento com Classificação de Risco é contínuo e hierarquizado; o fluxo de pacientes é mais dinâmico, e o enfermeiro tem mais autonomia na tomada de decisão clínica.

Descritores: Enfermagem; Serviço Hospitalar de Emergência; Acolhimento; Enfermagem em Emergência; Triage.

INTRODUCTION

Emergency Medical Services (EMS), or emergency rooms, are complex units that contain only observation beds that are designated for patients with or without the risk of death whose complications need immediate intervention 24 hours a day⁽¹⁾.

Although EMS are regarded as the main gateway to the Brazilian healthcare system, their low problem-solving capacity and the high demand for the services hinder the achievement of positive results regarding the type of care provided⁽²⁾, as the time spent with low complexity consultations and the excess number of returning patients negatively interfere with the agility and safety of the procedures.

When thinking about the quality of EMS attention, it is necessary to define patient flows so as to contemplate the peculiar aspects of work processes and patient access in order to improve the effectiveness of the attention⁽³⁾.

The lack of alternatives for patient access to care contributes to the fact that most people idealize EMS as the only option to solve each and every health condition. To minimize this, hospital managers have used several strategies to deal with high patient flow, such as implementing first aid units, creating a patient flow management system from the EMS to hospital beds, increasing the number of nurses, and increasing the number of beds in the unit, among others⁽⁴⁾.

Regarding control of the flow of patients coming in and out of the EMS, one of the strategies most often used is the application of risk classification protocols to prioritize the most severe cases⁽⁵⁾. In these protocols, the classification of the level of urgency is done by the nurse, who quickly evaluates the case by gathering information from the patient history, the physical exam, and the complaints made by the patient⁽⁶⁾.

Worldwide, the use of risk classification protocols in EMS began in the mid-1970s in Australia. In 1990, it gained momentum with the use of computer systems in hospitals, and now it is used as the criterion to evaluate all emergency units⁽⁷⁾.

In the United States and Canada, most Emergency Services use the systems Emergency Severity Index (ESI) and the Canadian Emergency Department Triage and Acuity Scale (CTAS) to classify the patient's level of priority⁽⁸⁻⁹⁾. These two classification systems allow the patient to be seen according to five levels of complexity, from Non Urgent (Level 5) to Resuscitation (Level 1).

In Sweden, a country where more than 97% of EMS attention occurs by means of Risk Classification systems, there are reports of improved patient flow and faster diagnoses⁽¹⁰⁾. On the other hand, in the Netherlands, more than 31% of EMS do not use any type of Risk Classification system and, as a result, patient flows are not prioritized and have little order⁽³⁾.

In Brazil in 2004, the Ministry of Health, by means of the National Humanization Policy, proposed, a guideline called Welcoming with Risk Classification (ACCR in Portuguese)⁽¹¹⁾, which is regarded as one of the main strategies to promote quality of care in the EMS. In addition to welcoming and classifying the patient according to the severity of each case, it enables the construction of networks and flows with the Basic Healthcare Units that, according to the purposes of the Brazilian Unified Health System (SUS, in Portuguese), must work as a gateway for the majority of the users of healthcare services⁽¹²⁾. From this perspective, the ACCR works by receiving the user at the EMS and referring him or her to either nursing consultation or medical care, according to the degree of urgency.

Given the growing number of patients accessing EMS, the nurse is becoming ever more important in managing the flow of these services⁽¹³⁾. In this sense, studies analyzing patient flow in EMS that adopt different systems to attend the public are important and necessary because, in addition to generating scientific evidence about the impact of ACCR, they may also lead employees to think about the work process and to identify those aspects that include the main problems.

In order to verify aspects related to ACCR in EMS, the question is: how is the patient flow processed in EMS? To

answer this question, the purpose of this study is to analyze the patient flow in two EMS with different modes/systems of care.

METHODOLOGY

This is a qualitative examination of a case study that made use of direct observation of the practice as a data collection technique, and consists of observing and recording behaviors without the participation of the people being observed⁽¹⁴⁾.

The observation was made known to the people being observed; that is, when there was interest, the professionals were informed of the purpose of the study and the role of the observer, who went to service using a white coat and a badge for identification.

The study was conducted in the EMS of two hospitals, which we named EMS I and EMS II.

EMS I is a philanthropic general care hospital in the countryside region of the state of São Paulo. It was founded in 1943 and receives approximately 9,000 patients per month. It has 144 beds, with an average of 10,470 consultations per month. It currently has 12 rooms for consultations and 25 actual beds; it is open 24 hours a day, and is the reference for emergency care for 27 towns in the region. It has had ACCR implemented since March of 2008, and this is in effect from 7 A.M. to 1 A.M. All of the users who seek the service during the ACCR working hours are evaluated by means of a nursing consultation.

EMS II is an indirect administration (autarchy) general care teaching hospital in the countryside region of the state of Paraná. It was founded in 1989, and it receives on average 4,000 patients per month. It has 31 actual beds, but it receives on average 90 patients per day. It is open 24 hours a day. It is a reference in trauma care and high complexity cases, and it provides care in all of the main specialties.

The observation sessions, which lasted two hours on average, were conducted in 2010, from November 1st to 20th at EMS I, and from November 22nd to December 12th

at EMS II, in different shifts and at different times, including the weekends.

The recorded information included actions, behaviors, gestures, attitudes, and words to identify the manner in which the patient flows occurred with respect to diagnostic exams, medical and nursing care, admission and discharge, information to family members, and front desk attention.

Based on the collected material, data were treated by means of the technical analysis of content, thematic mode, developed in three steps: pre-exploration of the material; sorting of analysis units; and categorization. Then the thematic units were reviewed to sort out the empirical categories that corresponded to the attention process.

The following categories emerged from the collected information: "Caring for the EMS Patient" and "Welcoming the Patient and His Family/Companion." In each category, the data were grouped in thematic subcategories and observed items, which respectively mean the different flows that occur in the attention process and work actions of each service.

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RESULTS

The exploration of the observations made regarding the Patient Flow Process resulted in two categories and six thematic subcategories.

Caring for the EMS Patient

The main observations included in this category are described in Table 1 and refer to the patient flow in both EMS departments regarding the performance of diagnostic exams, medical and nursing care, and admission/discharge.

Chart 1: Patient Flows and Procedures. Maringá, PR, Brasil, 2010.

Subcategories	Items observed	Institutions	
		EMS I	EMS II
Internal flow for diagnostic exams	Lab exams	Computerized request; priority in performance; and return according to ACCR classification	Manual request printed in two copies; identified with the word EMERGENCY when necessary
	Imaging exams		
Patient flow for medical consultation	Waiting room	The patient awaits medical care in a specific place according to the classification of his complication.	All patients are guided to the same place without distinction of priority of care.
	Medical consultation	The patient is called according to the classification in the ACCR in the following order: yellow; green; and blue.	The patient is called for medical consultation according to the order of arrival.
Patient flow for nursing consultation	Nursing consultation	After opening an Outpatient Care Form (FAA), the patient is sent to the nursing consultation.	The patient receives no nursing consultation.
	Nursing notes	Notes are recorded in the FAA from admission to discharge	Notes only exist for hospitalized patients or for complications that occurred during their stay in the sector.
	Nursing procedures	After the medical consultation, any patient who needs to be medicated is sent to the nursing station.	Same
Patient flow toward admission/discharge	Length of stay	Regulated by an internal vacancy center. After 24h, the patient no longer stays in the EMS department, but is transferred to a temporary hospital bed.	This can vary from a brief consultation to weeks of hospitalization. The facility has fixed beds for hospitalization.
	Hospitalization	The internal vacancy center locates a bed, informs the nursing staff, and proceeds to admission.	The patient awaits a vacancy for admission to the hospital ward, the hallway, or the observation room.
	Discharge	Discharges from hospitalizations from the EMS are rare; there is no orientation system for discharges from the observation.	Discharges from hospitalizations from the EMS are frequent; there is no orientation system for discharges from the observation.

Welcoming the Patient and His Family/Companion

The main observations included in this category are related to: patient referrals after information on their

state of health has been provided to their

family/companion; and also to the patient flow in the reception area.

Chart 2: Welcoming Actions for the Patient and His Family. Maringá, PR, Brazil, 2010.

Subcategories	Items observed	Institutions	
		EMS I	EMS II
Information flow to family members/companion	Information bulletin	During every new shift, Social Services receives a bulletin with information on the patients' state of health.	No written information is provided. Upon request, the on-duty doctor provides information to the patient and family. The information is provided by the nurses and, when present, by the resident doctors.
	Family visits	There are two hours allocated for visits.	No determined visiting hour was observed.
Patient flow at Reception	Reception and orientations to the patient	The patient is welcomed by a facilitator who answers his questions and guides the flow to open the FAA.	The Reception Service only provides information regarding the location of the patient in the sector.
	Completion and guiding of FAA	After filling out the FAA in the reception service, the patient is guided to the nursing consultation and, after being evaluated, conducted to one of the rooms according to his classification.	After filling out the FAA in the reception service, the patient is guided to a common room to wait to be seen, according to the specialty and order of arrival.

DISCUSSION

Caring for the EMS Patient

The quality of care in the EMS is influenced by the organization of the service and also by the creation of a bond between the patient and the staff. In this sense, when the structure to provide support to the service is discussed, careful analysis of the patient flow toward diagnostic exams, medical consultation, nursing consultation, and hospital admission/discharge are essential to organize the actions of the healthcare team.

Internal patient flow for diagnostic exams

The observations recorded in this subcategory reflect how the organization of the flow to send, analyze, and return the diagnostic exams results is organized. In this case, the flow analysis is important because the patient's waiting time to obtain the results of exams may be one of the factors that causes backup in the patient flow.

In EMS II, for example, lab results take approximately three hours, and imaging exams—although the results are available soon after the exams are conducted—are not accompanied by the reports. Many times, because of the lack of communication between the medical team and the nursing team, the request for exams (labs or X-rays) is included in the patient history folder, to be found only at the end of the work shift when the nursing professionals check the medication.

The observations regarding both items in this subcategory reveal that EMS I is more agile than the EMS II in notifying requests and in the results of the diagnostic exams because of its computer system that, in addition to organizing the requests, relates the degree of urgency of the exam according to the classification given to the patient by the ACCR.

In agreement with these findings, a European study found that, in an EMS in which there is a nurse classifying the degree of urgency of the consultation in a computer system, the time to reach a diagnosis and treat the disease was reduced. According to this study, some local

protocols allow the “screening nurse” to diagnose and treat conditions regarded as minor lesions, such as small fractures; strange objects in the skin; and eye, ear, and throat infections, among others⁽¹⁵⁾.

The benefits of computerized systems in the EMS go beyond the agility in processing the information and returning the results, because their use reduces misplacement of printed requests; prioritizes urgency and emergency care; provides access to several forms of data such as patient history for quick consultation; and minimizes request errors⁽¹⁶⁾. Thus, in hospital services in which time is a determining factor for patient survival, computerized work, in addition to providing greater safety to the team and higher speed in clinical work, also constitutes an important tool in the systematization of nursing assistance because it ensures quick access to information.

According to informal information obtained at EMS I, before the ACCR was implemented requests for exams were already made by computer, but the exams were not performed according to the level or urgency, which in part delayed the care. In data collection, as the exams are organized according to the risk criteria of the patient, it was noted that the support sectors of EMS I have a direct and immediate relationship with the problem-solving capacity of the urgency service that has been established in the Basic Document of the Ministry of Health, which guides the systematization of the ACCR⁽¹²⁾.

In EMS II, despite the fact that requests for exams are done manually, when specified as “urgency/emergency” exams are performed with higher speed and the results are available in approximately 30 minutes.

Patient flow for medical care

This subcategory presents data regarding one of the most critical moments of patient care, which is the waiting time for the medical consultation.

In EMS I, there are specific locations for the patient to wait to be seen by the physician, according to the priority of the condition.

In EMS II, the reality is similar to most EMS in Brazil, which does not classify the risk of the user because all patients wait for medical attention in a common room, according to the order of arrival. In this service, the clerks at the front desk are responsible for initially filling out the FAA and determining the priority of care based on data and the impression given by the patient. Thus, if there is a perception of urgency, the employee himself is the one in charge of communicating to the medical team and/or the nursing team.

In the way EMS II provides care, it was observed that only the emergency cases, if identified at first sight or when conducted by the pre-hospital service, are seen with priority. This is a concern because, in these cases, there can be underestimation of the pain of the patients who are waiting for a consultation, which compromises the safe assessment of the real clinical state of the individual⁽¹⁷⁾.

Regarding the medical work at EMS I, according to reports given by the employees after two years of the implementation of ACCR, those professionals who once resisted acting according to this model of care seem to now be integrated into this mode of teamwork because they see that the system has made patient care more organized, humanized, and welcoming.

In EMS II, the medical routine is oriented to assist with cases that are not referenced as well as clear emergencies. In this respect, in view of the high number of false demands, there is an imminent danger of having serious cases go unidentified because patients who might have had their health problems solved at other levels of assistance but who, because of accommodation, ease, or even a desire to miss work, end up looking for care in the EMS.

It is known that in some places in the U.S. there are specific physicians at the EMS to care for patients classified by the nurse. In this manner, there are specialized doctors to care for emergency and urgency cases, and others to care for non-emergencies⁽¹⁸⁾, which

is an innovative method to manage patient flow for medical attention.

Patient flow for nursing care

This subcategory reflects how the patient flow for nursing care transpires in the observed services. EMS nursing care is regarded as the care provided to patients, starting with primary care all the way to discharge, including the records pertaining to activities, complications, and administration of the prescribed medication.

In this subcategory, due to the straight connection between the three observed items (nursing consultation, nursing procedures, and nursing notes), all three will be discussed jointly.

In EMS I, the activities are conducted with all patients during the working hours of the ACCR. In EMS II, although “nursing procedures” are conducted in high numbers, the consultation and the nursing notes are not completed during the primary approach to the patient.

During the nursing consultation at the ACCR, the role of the nurse becomes important because, in addition to other data, the orientation given to the patient is also recorded. In addition, the close relationship between the nurse and the patient during the consultation favors health promotion because of the information given with respect to the health education process⁽¹⁹⁾.

That being the case, the fact that there is neither a consultation nor nursing notes recorded done for the patient in the approach “at the door” in the EMS is regarded as a nonconformity of the nursing staff in this service, and this may hinder the undertaking of safe and welcoming practices in the healthcare process. In view of this context, in addition to organizing the patient flow, the ACCR improves documentation and the flow of information and, consequently, the chance to resolve patients’ problems.

Despite observing that in EMS I nursing records are completed more often during the working hours of the ACCR (from 7 A.M. to 1 A.M.), in general terms, even in

the hours in which the ACCR is not open, the information about nursing procedures is registered often and completely. This probably occurs because in the ACCR the staff are used to taking notes about complaints and procedures on a routine basis. On the other hand, when the nursing team is not trained to work at the ACCR, the initial assessment process is hindered, because the records are not done correctly, and inaccurate classifications tend to impede treatment and patient flow⁽²⁰⁾.

With respect to the nursing notes, although they are regarded as a means to ensure the quality of the attention given, it was noted that in EMS II this procedure is done only in cases of hospital admission or when the patient has complications. As a consequence, there is a delay or even the absence of a medical reassessment in patients with the potential for aggravation of the case, which certainly contradicts one of the precepts of the ACCR resolution that provides for an approximation by healthcare professionals who treat patients that use the EMS. In consonance with the aforementioned, in EMS II a lack of organization in the patient flow toward nursing care was observed, especially in regard to consultations and nursing notes.

Patient flow for admission/discharge

The backup of patients awaiting admission in EMSs is a reason for concern among administrators and the healthcare team, because in these services the structure to tend for the patient must be organized for emergency care, stabilization, and further orientation toward either discharge or admission to a specific unit.

Problems related to the lack of hospital beds for admission occurred in both services; however, in virtue of the complexity of the cases taken by EMS II, the backup of admitted patients was higher than in EMS I. One factor that surely benefits this service is the existence of a central bed regulation unit that controls waiting times and guides patients according to the available vacancies and the severity of the cases.

In order to improve the flow of patients destined for EMS admission, the nurses who act in the Department of Emergency Medicine, York Hospital, USA, developed a triage nurse prediction (TNP) tool that aims at reducing the waiting time for hospital beds by predicting whether the patient will be admitted at the moment the risk classification is done. This instrument is applied by nurses and, in the service where it was used, a reduction in the waiting time for hospital beds was recorded⁽⁵⁾.

In Brazil, one of the current strategies used to solve this problem is the implementation of work in healthcare networks [HN, or RAS in Portuguese], whose model of care is based on the integration of attention points (health units) that communicate with each other⁽²¹⁾ to guide the patient to a service or health unit to receive care according to the severity of the complication.

Especially with regard to EMS II, a study performed in 2002 found that only 10% of the low complexity cases were referred to the basic healthcare U=units [BHU, or UBS in Portuguese]⁽²²⁾. However, after more than a decade, the absence of a structured counter-reference mechanism is noted, and this has resulted in a backup "at the door."

Welcoming the Patient and the Family Members/Companions

As the choice of healthcare service is based on the experiences lived by family members and by the patients themselves, studies on the information flow to family members and patients related to the attention provided at the front desk of the EMS are also important and necessary.

Information flow to family members/companions

In EMS I, the information flow given to family members occurs by means of an information bulletin provided to Social Services which, upon manifestation of interest by family members and friends, informs them about the state of health of the patients at any time of day. This is positive because the close relatives and

friends of the patients in the EMS want to have quick access to updated information on the state of health of their loved ones⁽²³⁾.

In EMS II, although there is no information bulletin, during the week the physician sets aside a specific time to inform/orient the family members of the high-complexity patients who are in the emergency room. On weekends and holidays, the information is provided by the on-duty doctor. On the other hand, family members of patients admitted to the other units of this service do not receive information in a systematized manner.

Despite the information flows being different in both services, in general family members/companions are informed of the state of health of the patients. This is important and necessary, especially in EMSs, because in the dynamics of care the affection and social bonds between patients and their families/companions tend to generate results that lead to their recovery⁽²⁴⁾.

Regarding visits, in EMS I they occur twice during the day. The information is provided individually by the nurse responsible for the shift and/or the on-duty doctor. In EMS II, there were no visiting hours, and the information was provided only by the on-duty doctor according to his availability.

Nowadays, healthcare institutions have used the open visit model to create an environment that is favorable to developing communication between patient/team/companion⁽²⁴⁾. Strategies of this nature make it possible to overcome the barriers imposed by hospitalization, and tend to promote a safer and more therapeutic environment for the patient⁽²⁵⁾.

Despite the importance of the open visit, when it comes to optimizing time this resource does not fully meet the needs of the EMS because, in such an environment, the service needs to care for urgencies and emergencies which, in principle, mean the patient must stay for a brief amount of time.

Patient flow toward the front desk

This subcategory revealed the way the primary approach to the patient takes place, and how he or she is guided to the other phases of care.

An important differential observed in EMS I is the fact that the patient is welcomed by a facilitator (flow supervisor; receptionist) when he or she arrives, and also after receiving orientation. While still at Reception, the patient and his companion are first sent to open an FAA and then to the nursing consultation.

In EMS II, although Reception is the only reference for primary care, after the FAA is opened, the patient is guided to a waiting room located in front of the specialty area that will care for him. It is worth remembering that, in both services, the entry and the first approach to the most severe victims occur in a place (emergency room) that is different from the one where the general public is seen, which is necessary as they are situations that require an immediate response.

In some EMSs, because of the high number of patients, the nurse is the "first face" that the patient and his family see when they enter the hospital⁽⁶⁾. In this respect, ACCR definitely intervenes in the humanization of care and in the reorganization of the flow because, according to a study published in 2010⁽⁶⁾ that covered the roles of nurses in triage systems, the academic background of these professionals provides them with greater qualification to conduct safer and more humanized approaches to the patient when he arrives at the unit.

CONCLUSION

In the organizational context of the EMS, the correct definition of healthcare flows tends to result in systematized and efficient actions. Although both services aim for such actions, it was found that, in the institution that adopts the ACCR guideline, patient flow occurs in a continuous and hierarchical manner. There are professionals in charge of providing care and a closer bond exists between patient and professionals.

Regarding the job of the nurses, it was observed that in EMS I, in addition to the fact that the activities are more valued, these professionals have more autonomy to conduct cases, because they are the main persons in charge of the organization, management, and evaluation of the initial care provided to the patient.

Another important finding of the study is the confirmation that, in the researched institutions, there was no counter-reference system with the basic healthcare network, which certainly results in a higher backup "at the door" of the EMS. In this sense, studies that cover the reference and counter-reference mechanisms in health services networks are necessary and urgent, as the absence of or even the inadequate use of these mechanisms can compromise the safety of the patient.

In conclusion, the patient flow in an EMS that uses ACCR is more dynamic, systematized, and safe because, in addition to prioritizing severe cases, the nursing notes,

the internal sequence of performing complementary exams, the administration of drugs, and the clinical reassessments are also guided in accordance with the severity of each case.

A limitation of this study is the fact that the results come from the observations and interpretations made by the researchers and not the employees of the services, who might provide more objective testimony.

The issues that involve the observation of patient flow are a rich field for studies aiming at improving the EMS. In this sense, future investigations should have a wider focus, such as those regarding the internal and external relations of the patient flow and the identification of the potentials and weaknesses of the ACCR in EMS, considering the characteristics of each institution. In terms of practice, the implementation and monitoring of the ACCR guideline is suggested to managers, employees, and especially nurses who work in EMSs and see patients in order of arrival.

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