

# The profile of victims attended by the Pernambuco Prehospital Air Service\*

PERFIL DA VÍTIMA ATENDIDA PELO SERVIÇO PRÉ-HOSPITALAR AÉREO DE PERNAMBUCO

PERFIL DE LA VÍCTIMA ATENDIDA POR EL SERVICIO PREHOSPITALARIO AÉREO DE PERNAMBUCO

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## ABSTRACT

This descriptive, exploratory study was performed using a quantitative approach to address the profile of victims attended by the Pernambuco prehospital air service. The events were evaluated from August 2007 to July 2008, corresponding to the first year of the hangar working in Recife. In the studied period, 283 event forms were studied, with an average 23 events per month. Regarding the flights, 66% were rescue flights with an answer-time of 11 minutes. As for the causes, 79% were external, mainly traffic accidents. Most victims were male, with a median age range of 34 years. The rescue of severe cases should be fast and effective, thus this study analyzed the association between the severity of a victim and the answer-time.

## KEY WORDS

Emergency medical services.  
Air ambulances.  
Multiple trauma.

## RESUMO

Estudo do tipo descritivo-exploratório com abordagem quantitativa sobre o perfil da vítima atendida pelo serviço pré-hospitalar aéreo de Pernambuco. As ocorrências foram avaliadas no período de agosto de 2007 a julho de 2008, correspondentes ao primeiro ano de funcionamento do hangar no Recife. Nesse período, foram estudados 283 fichas de ocorrências, com média de 23 atendimentos mensais. Dos vôos, 66% foram de resgate, com 11 minutos de tempo-resposta. Quanto à causa do atendimento, 79% foram por causas externas, na sua maioria de acidentes de trânsito. Prevaleceu o sexo masculino com faixa etária mediana de 34 anos. O resgate dessas vítimas graves deve ser realizado de forma rápida e eficaz, por isso analisou-se a relação da gravidade da vítima com o tempo-resposta.

## DESCRIPTORIOS

Serviços médicos de emergência.  
Resgate aéreo.  
Traumatismo múltiplo.

## RESUMEN

Estudio de tipo descriptivo-exploratorio con abordaje cuantitativo sobre el perfil de la víctima atendida por el servicio prehospitalario aéreo de Pernambuco. Los casos fueron evaluados en el período de agosto de 2007 a julio de 2008, correspondientes al primer año de funcionamiento del hangar en Recife. En ese período se estudiaron 283 fichas de atención, con una media de 23 atenciones mensuales, 66% de los vuelos fueron de rescate, con 11 minutos de tiempo de respuesta, en cuanto a las causas de las atenciones, 79% fueron por causas externas, en su mayoría accidentes de tránsito; prevaleció el sexo masculino con faja etaria mediana de 34 años. El rescate de esas víctimas graves debe ser realizado de forma rápida y eficaz y, por eso, se analizó la relación de gravedad de la víctima con el tiempo de respuesta.

## DESCRIPTORIOS

Servicios médicos de urgencia.  
Ambulancias aéreas.  
Traumatismo múltiple.

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## INTRODUCTION

The significant increase of care to victims of accidents and violence has become a problem for the public health in Brazil, motivating the creation of strategies that would meet the current needs; in this context, the Ministry of Health consolidates an enterprising measure defined as the *National Policy of Reduction of Morbimortality by Accidents and Violence* aimed at establishing measures for the promotion and prevention to these two events. The consolidation of this project was settled with the implementation of the Prehospital Care, PHC, which started in Rio de Janeiro aimed at assisting victims in situations of urgency and emergency before their arrival to the hospital<sup>(1)</sup>.

The actions of the Brazilian prehospital care were based on the experience of other leading countries. Therefore, the Brazilian Mobile Emergency Care Service (Serviço de Atendimento Móvel de Urgência – SAMU) emerged through a partnership with France, in a model characterized by the presence of a doctor in the teams of advanced life support. It differs, thus, from the American model that has its activities performed by paramedics<sup>(2-3)</sup>.

The implementation of the SHS, through the SAMU, brought the need to define new concepts, adding to the medical glossaries characteristic terms from the care context out of hospitals. Following this dynamics, it is necessary to clarify some concepts that may be confused. The rescue is the set of measures aimed at removing victims from risk locations, which they cannot leave. On the other hand, the emergency is defined as a situation in which the patient needs immediate care. In urgencies, the period of time cannot be higher than two hours<sup>(4-5)</sup>.

The use of the correct scientific terminology is fundamental, since the survival of a patient classified as severely injured depends on time. If this subject does not receive definitive care in sixty minutes from the occurrence, his rescue will be certainly compromised. Being qualified, the team contributes recognizing risk situations to the patient, thus, increasing the chances of a better rescue of the injured victim by decreasing the so called golden time<sup>(6)</sup>. This time is directly influenced by the used means of transportation, since its definition has a direct relation to the time elapsed until the arrival to the care location.

It was only in the wars of Korea and Vietnam that the air medical transportation was acknowledged as the best way to provide quick care, configuring the best method for transporting injured people. In Brazil, this rescue method is mostly performed with a helicopter, whose main characteristics are its speed and landing versatility, establishing an advantageous choice in some emergency cases. It is often the only means capable of getting to a hospital in large urban centers<sup>(7)</sup>.

Associated to the transportation factor, it is possible to perceive the importance of the performance of qualified teams for the prehospital care. It was in the decade of 1980 that this need for the qualification of health professionals to act in emergencies was emphasized in Brazil. The nurse, acting member in this team, would have to unite the theoretical founding to the work practice, teaching ability, emotional balance and leadership capability. There are evidences of the continuous need to enable and qualify the nurses that act in this health segment, because there is an explicit increase in the incidence of this type of occurrence, for instance, trauma is the third main cause of death in Brazil, only after cardiovascular diseases and cancer<sup>(8)</sup>.

The Pernambuco Air Medical Support Service has a fundamental role in the prehospital care (PHC), which involves the early arrival to the accident location with a trained team to evaluate the victim's conditions, to perform procedures for the maintenance of life and to decide what is the best hospital unit for the definitive care<sup>(9)</sup>. Therefore, these actions bring benefits to the population due to their reduced answer-time and access to the areas, which are often unfeasible through terrestrial means of transportation.

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The air rescue theme is poorly approached and disclosed, besides counting on few states that have this type of structure. Therefore, this study aimed at outlining the profile of the victim assisted by the Pernambuco prehospital air service, at relating the answer-time of the air rescue in the mentioned State to the severity of the victim and at identifying the most frequent causes of occurrences in the first year, between 2007 and 2008, of operation of the air SAMU of Pernambuco, translating the experience of this State in this new modality of health care.

## METHOD

This descriptive exploratory study aimed at obtaining information regarding the prevalence, distribution and inter-relations of variables of a population. The quantitative approach used involved the systematic collection of numerical data and the analysis of this information through descriptive statistical procedures<sup>(10)</sup>.

The study was developed in the hangar of the Federal Highway Police-FHP in association with the City Hall of Recife, as the actions of Advanced Life Support are made feasible through the use of the FHP's helicopter. The hangar is located in the International Airport of Guararapes and the Air Medical Service team includes a commander, a special equipment operator, a physician and a nurse, who assist victims in need for support and quick removal to a reference hospital health unit on duty regime.

The study universe was made of the records of the patients assisted by the Air Medical Service of Pernambuco

State, as well as those from neighboring states who were supported by the mentioned service from Pernambuco. The sample is classified as non-probabilistic of convenience, focused on the victims assisted by the air medical transportation in its first year of operation in the State, in non-experimental character, with a total of 283 records.

The researchers excluded from the study the medical records of patients assisted out of the period between August of 2007 and July of 2008, comprehended by the first year of operation of the air SAMU in Pernambuco.

Data were collected through the analysis of the occurrence records of the air SAMU, and structured into eleven items. Variables presenting filling out deficit were rejected in the perspective of reducing the obliquities of the study. Therefore, the study analyzed the items of occurrence records that were better filled out in order to define greater reliability of the evaluated statistics. No questionnaire was used.

Based on the principle that the study involved human beings, it complied with the resolution no. 196, from October 10 of 1996, of the National Health Council, aimed at keeping the ethics during the development of the study, mainly regarding the identification of the patient. The study was approved by the Committee of Ethics of the Hospital Agamenon Magalhães associated to the Health State Department through the protocol number 104/08.

At the end of the collection, data were analyzed and exposed in tables, based on the scientific literature.

## RESULTS AND DISCUSSION

The study analyzed 283 occurrence records regarding the victims assisted by the Air Medical Service of Pernambuco, in the period from August of 2007 to July of 2008, which corresponds to the first year of operation of the service in this State. It is relevant to state that the entire process of construction is characterized by strategies that are still in consolidation. It is important to clarify that all patients involved in the occurrence records were considered severe, characterizing the air medical transportation as an advanced life support unit.

Severe victims need available treatment at a reference hospital in order to make feasible the continuity of the care provided on the street. From the moment a means of transportation is chosen, it is necessary to evaluate the clinical conditions of the victim, his advanced support needs with reduced answer-time, as well as the geographical characteristics of the location where he is. Based on that, the risks and benefits of this type of transfer are analyzed, aimed at determining whether to use the service or not<sup>(11)</sup>.

Rescue flights are the effective rescues, that is, the airplane goes to the accident location and transports the victim to a reference hospital unit, overflights are occurrences without landing due to a prank or because the victim was removed before the arrival of the air medical unit, and inter-hospital removals are mostly flights to the interior of the state.

Regarding the types of flight, it was observed that 66% (186) were rescues, 14% (40) overflights, 20% (56) removals and, only, one simulation, which did not influence the study result because it was a single event that was not specified in the graph, as it did not reach the percentage of an entire number.

As for the motivation of the SAMU to provide the aircraft, it was verified that 66% (186) of the effective flights were rescues, which may be related to the high rate of accidents. This association is contemplated with 79% (223) of the care services performed due to external causes.

By analyzing the types of occurrence of the Pernambuco Air Medical Service, it was observed that 79% (223) were external causes, 15% (42) were clinical causes, 3% (9) non-specified causes, 2% (5) obstetrical causes, 1% (2) psychiatric causes. Two types of occurrences were not presented in the mentioned graph, 1 medication delivery and 1 simulation, because they did not influence the study.

The high number of external causes is justified because this is the third main cause of morbimortality in the country. Automobilistic accidents stand out as for the mortality and incapacities in the country, besides their high socioeconomic level, they are generally victims in productive age<sup>(12)</sup>.

**Table 1** - Gender of the patients assisted by the Pernambuco Air Medical Care Service, Aug. 2007 to Jul. 2008 - Recife - 2008

Gender	N	%
Male	167	59
Female	60	21
Not Specified	56	20
<b>TOTAL</b>	<b>283</b>	<b>100</b>

The evaluation of the victims' gender allow to observe a higher prevalence among males, especially when related to the care services due to trauma<sup>(13)</sup>. During the development of the study, it was observed that the male gender tends to be more violent mainly by cultural and biological injunction, propitiating the fact that they are more vulnerable to death by external causes, for instance driving vehicles in higher speed, performing risky maneuvers, using alcohol, among others. On the other hand, the evaluation of the female victims showed that most of them were associated to the accident in the position of passengers, different from men, who were traumatized mainly as drivers. This scenario leads to the reflection about the socially accepted rules, in which men assume the conduction of the vehicle in most situations<sup>(14)</sup>. Therefore, a special look is needed towards the training of these drivers.

For the definition of the answer-time, the study analyzed only the events classified as rescues, 66% (186) of the types of flight, observing that most of the occurrences are estimated from 7 to 14 minutes, with an average time of 11 minutes between the care service request and the arrival to the occurrence location.

In order to get to the occurrence location, this urgency mobile unit depends on the evaluation of the accident re-

ceived by the regulating doctor, who is responsible for the rationalization and distribution of the PHC units sent, controlling the demand of requests, sorting, classifying, detecting, distributing, prescribing and orienting the individuals involved in the accident<sup>(15)</sup>.

By comparing the Medical Regulation of mobile units between France and Brazil, it becomes necessary to evidence basic principles in the constitution of these mobile care services. In France, the health system allows the access of any citizen to structured medical care based on public establishments centering several services of a location or region and enabling the patient to look for it directly or through the SAMU. It also has financial support, which allows its subsistence enabling the payment of human resources, acquisition, maintenance and replacement of material and equipment in order to provide quality care to the patient. The service has a clear definition of all medical procedures and valid arsenal available in the entire country, which indicates the laudable cohesion of this system<sup>(16)</sup>.

In Brazil, the health system faces the impossibility to assist the existing demand concentrated in the central regions, propitiating every medical intervention with modern techniques, but only for part of the population. There are difficulties regarding the cultural questions diverging from the behavior given by the low level of education, impracticability of financial resources, among others. Another problem is in the education of the health professional, since many of them do not have any specialization in the urgency area<sup>(16)</sup>. The evaluation of the answer-time calculated only the time for rescue flights, as they were the only effective flights. Removals were also excluded, since they were mostly interstate and would deviate the real answer-time of the Pernambuco Air Service. Therefore, the answer-time obtained was in average 11 minutes. This time results from a set of factors that influence it, for instance, experience and professional qualification of the team, local traffic conditions, day of the week and period of the day, type and number of vehicles available, location of these vehicles, dispatch policies, among others. According to the American regulation, the ideal answer-time is 8 minutes or less, whereas in Brazil there is no specific legislation to limit this time<sup>(17-18)</sup>.

**Table 2** - Relation of the answer-time to the severity of the victim of the Pernambuco Air Medical Service, Aug. 2007 to Jul. 2008 - Recife - 2008

Glasgow Coma Scale	Number of Occurrences	Cranio-cerebral Trauma	Average Answer-time
13 -  15	133	Leve	25 minutos
09 -  12	10	Moderado	10 minutos
08 -  00	20	Grave	17 minutos

The analysis of the answer-time is very important because the victim depends on the speed and efficacy to survive and avoid sequela<sup>(19)</sup>. The relation of the answer-time to the victim's severity was possible through the study of Glasgow

Coma Scale, GCS, which evaluates the level of conscious and the severity of the trauma. This table used the items answer-time and GCS, excluding the items that were not filled out and sedated patients due to the impossibility to evaluate diligently the GCS, with a total of 120 discarded records.

Regarding the number of monthly care events, it was observed that in Aug-2007 there were 8% (22) occurrences, 10% (27) in Sep-2007, 8% (22) in Oct-2007, 8% (23) in Nov-2007, 9% (25) in Dec-2007, 7% (21) in Jan-2008, 13% (38) in Feb-2008, 12% (34) in Mar-2008, 4% (10) in Apr-2008, 10% (28) in May-2008, 5% (15) in Jun-2008 and 6% (18) in Jul-2008. Therefore, there were 23 care events in average per month.

Pernambuco's Air Medical Care Service answered to an average of 23 occurrences per month, and the months with more incidents were those holding Carnival parties like February with 13% (38) and March with 12% (34) requests of this type of service. The factors that may justify the increase of aggravations to life in this period may be the consumption of alcoholic drinks and the mixture of several people with varied behaviors, which predispose countless events such as the increase of the number of homicides and aggressions in general, as well as traffic accidents due to people driving under the condition of alcohol intoxication<sup>(20)</sup>.

The analysis of the reasons to contact the Air Medical Service (Table 1) indicated that 33% (90) of them were non-specified reasons, 27% (75) were collisions, 11% (31) running over, 8% (22) vehicle overturning, 8% (21) motorcycle falls, 5% (15) falls from other vehicles different from motorcycles, 3% (9) perforation by firearm, 2% (5) falling of large vehicles, 1% (3) perforation by cutting weapon, 1% (3) diving in shallow waters and 1% (2) electrical shocks, totalizing 276 of the occurrences. The 7 remaining occurrences comprehended 1 labor accident, 1 bronchoaspiration of foreign bodies, 1 compression truck-wall, 1 physical beating, 1 drowning, 1 fall over a car and 1 stone thrown by a truck, not specified because they did not influence in the study result.

**Table 3** - Reason for contacting Pernambuco's Air Medical Care Service, Aug. 2007 to Jul. 2008 - Recife - 2008

Contact Reason	N	%
Not specified	90	33.0
Collision	75	27.0
Running over	31	11.0
Vehicle overturning	22	8.0
Fall from motorcycle	21	8.0
Falls	15	5.0
Perforation by firearm	9	3.0
Fall of large vehicles	5	2.0
Perforation by cutting weapon	3	1.0
Diving in shallow waters	3	1.0
Electrical shock	2	1.0
<b>TOTAL</b>	<b>276</b>	<b>100</b>

The age group is related to the type of bonding that will be established with the rules of the community, the younger



the individual the more unstable this relation will be, a fact that is aggravated when this individual does not have cultural references, such as family and religion, or even due to the lack of life perspective, which encourages this social dissociation and the increased risk of a fatal closure<sup>(21)</sup>.

The most prevalent age group among the victims assisted by the air medical transportation was between 21 and 30 years with 21% (60), but the mean performed between 0 and 90 years resulted in a median of 34 years. Young adults are the most vulnerable to accidents and violence, interfering in the personal and social costs, since it reduces the brute work force by compromising the quality of life<sup>(9)</sup>.

Nevertheless, in the segment of PHC, the SAMU as a whole, terrestrial and air, faces difficulties related to the knowledge of the population and the partners of health services regarding the real individual roles to be performed so that the work team is composed and this service flows. The mobile unit is frequently contacted for low complexity events, in which, most of the times, functions are confused, specially between the PHC team and the fire brigade, so important to rescue victims. However, there is little integration between these services, as well as with the Municipal Guard, the Civil Defense and the Military Police. The relevant increase in the number of occurrences makes this service rather important for the population, and this health segment currently faces a serious problem in the context of public articulations that make a care system feasible within the international standards. This scenario brings the victims of accidents and violence, which reach epidemical

proportions, specially for traumatized victims whose rehabilitation depends directly on the success of the care<sup>(22-23)</sup>.

## CONCLUSION

The air medical transportation is a resource used to provide advanced life support to severe victims in need of reduced answer-time, quick transference and definitive treatment in reference hospitals, configuring the golden time.

There is an urgent need to redefine and clarify the attributions among the rescue services, firemen and SAMU, as well as to articulate better the PHC services with the hospital sector. The air medical rescue of Pernambuco, which is in its first year of operation, had the average answer-time was 11 minutes and met the expectations since many occurrences come from distant locations in the metropolitan region of Recife, mainly in highways that connect Pernambuco to other states and to the interior of the state.

The most frequent types of occurrences are rescue flights to assist external causes, in which the victims with the average age of 34 years and prevalently male were involved in traffic accidents, demonstrating a relevant and efficient role in the implementation of the Unique Health System.

Professionals from Pernambuco's air medical support are in constant training through simulations and practical and theoretical courses to better serve the population.

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