

# Prehospital cardiac arrest resuscitation



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## Introduction

In Lisbon, victims of out-of-hospital cardiac arrest are assisted by advanced cardiac life support teams, as part of an integrated system of emergency medicine (SIEM). We studied one of these team's interventions (VMER-Hospital S. Francisco Xavier) with the objective of characterizing the circumstances of the cardiac arrests, the prehospital survival rate and team performance.

## Methods

In this retrospective cohort study, we collected the data on the cases of advanced-life-support administered by our team, between September 2002 and March 2004.

## Results

During this period, there were 247 men and 114 women assisted (total of 361 patients), older than 55 years in 68,4% of the cases (Fig.1). A presumed medical cause was found in 93,9% of patients and basic life support (BLS) was provided by first responders or bystanders in 73,7%. Most arrests were unwitnessed by medical technicians (82,8%). The time to advanced-life-support provider on the scene was less than 10 minutes in 90% (Fig.2).

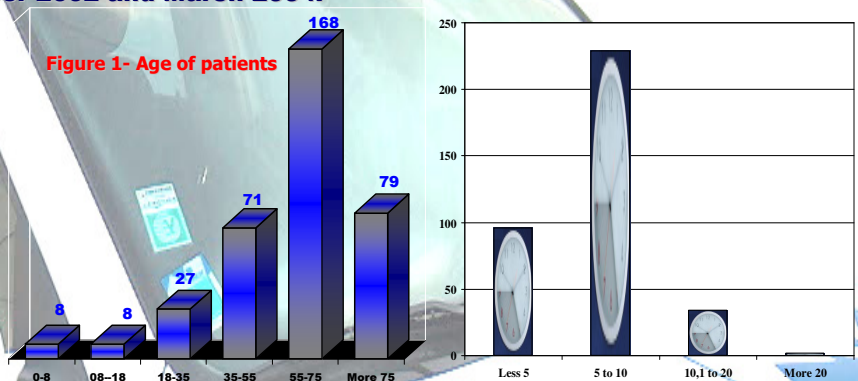


Figure 1- Age of patients

The initial cardiac rhythm mostly found was asystole (Fig.3).

Figure 2-Time from crew notification to the scene.

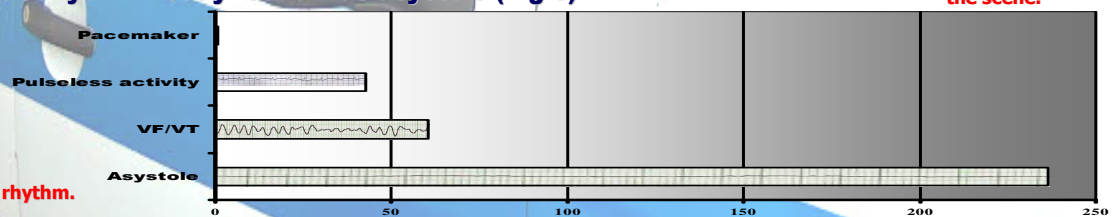


Figure 3- Initial rhythm.

Defibrillation shock was delivered on 167 victims (46,3%), endotracheal intubation performed on 342 (94,7%) and medication administered in all of them. The survival rate on the field was 26% (94 pts) and 76 patients were admitted to an hospital (21%)- 6 died during transportation and 12 at arrival. The final registered rhythm among these patients was sinus rhythm on 53,9% (Fig.4). Our usual intervention time was more than 30 minutes (68,4%)(Fig.5).

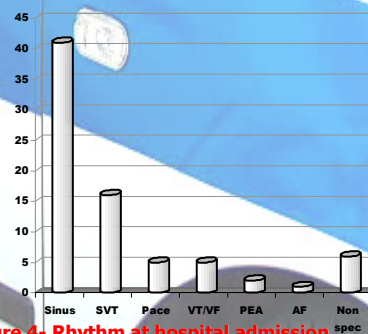


Figure 4- Rhythm at hospital admission.

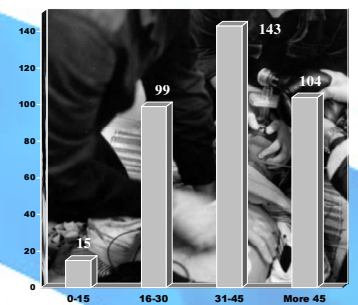


Figure 5- Time from arrival on the scene to hospital admission or death.

Looking at the victims with ventricular fibrillation at presentation (58 pts), most of them were unwitnessed (87,9%) and had BLS before our team's arrival on the scene (79,3%): less than five minutes on 29,3% of cases and 5-10 min. on 65,5%. After we delivered defibrillation, 21 victims (36,2%) were transported to hospital with return of spontaneous circulation.

The evaluation of the subgroup of witnessed cardiac arrest (62 pts), by our team or first responders, showed a rate of hospital admission of 45,2%, independent of the rhythm of cardiac arrest.

The time arrival from crew notification to vehicle arrival to patient's side was related with the outcome: 22,9% favorable outcome for less than 5 minutes and 20,4% for five or more minutes.

## Conclusion

The survival rate observed by our team was similar or better than other series<sup>1,2,3</sup>. This good result may be related to a decreased response time at every steps in the chain of survival and to an available pre-hospital ACLS. Increased survival could be possible with implementation of a rapid defibrillation system.

References:  
1. Lombardi G, Gallagher J, Gennis P. Outcome of out-of-hospital cardiac arrest in New-York City: the Pre-Hospital Arrest Survival Evaluation (PHASE) study. JAMA 1994;271:678-83.  
2. Nichol G, Detsy AS, Stiell IG, O'Rourke K, Wells GA, Laupacis A. Effectiveness of emergency medical services for victims of out-of-hospital cardiac arrest: a metaanalysis. Ann Emerg Med 1996;27:700-10.  
3. Stiell IG, Wells GA, Field B, et al. Advanced Cardiac Life Support in Out-of-Hospital Cardiac Arrest. NEJM 2004;351:647-56.