

Effective early defibrillation. Experience in the Basque Autonomous Community (region).

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A host of studies on a hospital as well as out-of-hospital level have shown that the only effective treatment for ventricular fibrillation (VF) is early defibrillation. Although we often try to assign minutes to the term “early”, there is little doubt that the closer we get to zero, the better the result will be.

Although these data may lure us into the temptation to disregard the first two links in the survival chain and proceed to fill our streets with semi-automated defibrillators (AEDs), and while we're about it, ALS ambulances as well, the stubborn reality forces us to qualify these points.

About 19% of the arrests in our dataset went unwitnessed, so it is unlikely that early defibrillation could have been applied in these cases, unless they affected patients who, owing to prior risk factors, had been fitted with an implantable automatic defibrillator (IAD).

In our dataset, as in the rest of the sets published, 70% of the CRAs occurred in the patient’s home while nearly all the AEDs are located in sports centres, airports and shopping centres.

Location	Percentage
Private Companies	31.0
City/Town Halls and Local Police	23.1
University	10.8
BLS Ambulances	10.2
Basque Autonomous Community Police	9.2
Schools and Basque-medium schools	4.6
AENA (Spanish Airports & Air Navigation Authority), Ports and FEVE (narrow gauge railway network)	4.1
Provincial Councils	2.7
Hotels	1.9
Government, Law Courts, and Parliament of the Basque Autonomous Community	1.7
Museums	0.5
Radio and TV broadcasting	0.3

Not all CRAs display a rhythm that is susceptible to defibrillation, so these arrests in which the rhythm is not susceptible to defibrillation would not benefit from early defibrillation. The percentage of rhythms susceptible to defibrillation out of the total in our dataset is 19%, rising to 54% in the subgroup in which the defibrillator is applied earlier.

Table 1: Distribution of AEDs across the BAC (Basque Autonomous Community)

All these data distance us from the possibility of early defibrillation and force us to strengthen the first two links. However, we have data which, without disregarding the first two links, nevertheless prompt us to support early defibrillation programmes.

The record pertaining to our community points to the existence of about 550 defibrillators to be used by non-medical personnel. About 44 of them are being used every month, in most cases by basic life support (BLS) ambulance technicians, and the first piece of data to highlight is good use in general with few significant incidents.

Their current distribution is responsible for the fact that the place of use is different depending on who the user is.

Location	Any user	Non-medical user and not first responder
Home	69.8%	11.1%
Sports centre	0.9%	33.3%
Confined space	10.2%	11.1%
Public place	19%	44.4%

Table 2: Place where the AED is used depending on the user.

The percentage of cases in which the witness carries out the massage on the arrival of the ambulance is 25.4. It rises to 87.5% in the cases in which the first person to respond uses the AED; this suggests that the training provided on AED use encourages the proper carrying out of the two prior links in the survival chain.

Although the presence of a monitor does not guarantee survival, both the return to spontaneous circulation and survival a year later considerably improve when the first responder uses an AED:

	Return to spontaneous circulation	Survival one year later
Total in the dataset	16.3%	5.7%
Subgroup in which the AED was used	37.5%	18.8%
Subgroup in which the AED recommended delivery of an electric shock	66.7%	33.3%

Table 3: Percentage of survival in relation to the use of an AED

Therefore, the campaigns to fit AEDs may have beneficial collateral effects, aside from their direct effects. We need to go on promoting early defibrillation campaigns as they not only encourage early AED application, they also allow the first rhythm to be detected and analysed to find out the peri-collapse conditions by setting up a network to retrieve records.