



# Good-hearted people, Busca cardio protected city: a community of a city in the north-west of Italy involved in a public access defibrillation project

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## Introduction

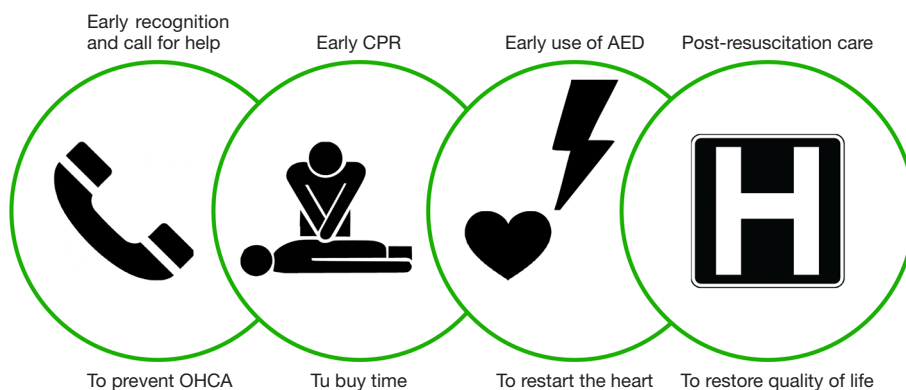
Being up-to-date about public health is one of the significant duties of the Italian Public Administration, as established in the Constitution of the Italian Republic (1). This also means creating resilient communities, able to cope with situations of medical emergency. Busca is a beautiful city of ten thousand inhabitants in Piedmont, north-west of Italy. It is a town at the foot of the Alps, located down the road to the French border. The Municipality of Busca, in cooperation with the local headquarter of Italian Red Cross (2), decided to develop a plan to transform the city in a town capable of facing a rapid-onset, frequent, unexpected event such as out-of-hospital cardiac arrest (OHCA). This has turned out in a public-access defibrillation (PAD) program, with the placement of several automated external defibrillators (AEDs) across the city and in a training program in basic life support (BLS) for the citizens, named “Persone di Cuore—Busca città cardioprotetta” (stands for Good-hearted people—Busca cardio protected city).

We considered worthwhile to work following scientific evidence and guidelines about first-aid. The latest editions of the most comprehensive guidelines (European Resuscitation Council Guidelines for Resuscitation and American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care) have started to take into consideration PAD as an essential strategy to save lives of victims of OHCA. The role of laypeople in these situations is increasingly relevant. Victims of cardiac arrest need immediate cardiopulmonary resuscitation (CPR) and

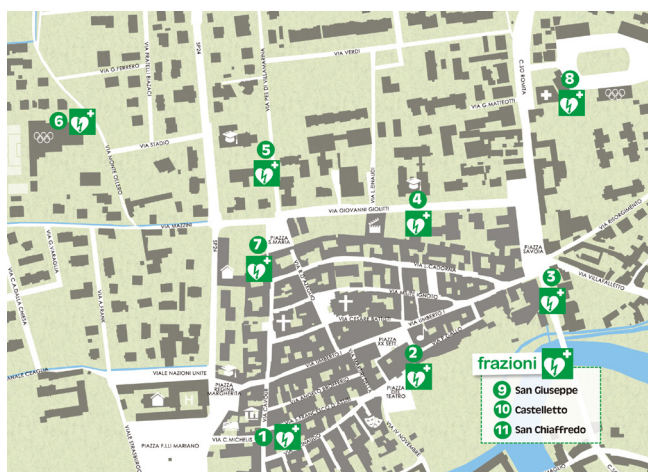
the use of AEDs by lay CPR providers grows the survival from cardiac arrest in public places (3). Survival in victims of pulseless ventricular tachycardia and ventricular fibrillation is highest when bystanders deliver CPR and defibrillation is attempted within 3 to 5 minutes of collapse (4).

In literature, there are few experiences about PAD. One of the first and most famous PAD programs is the one set up in the Chicago airport in the early 2000s which demonstrated the efficacy of AEDs if located in readily accessible, well-marked public areas (5). A nationwide PAD program in Japan has also demonstrated that public-access AEDs can provide earlier administration of shocks by laypeople; this turned out in an increase in the 1-month rate of survival with minimal neurologic impairment after an OHCA (6). A population-based multicentre cohort study in the United States has likewise found that the use of AEDs in communities is related to approximately a doubling of survival after OHCA (7). Two recent meta-analyses lastly assert that AEDs used by laypeople correlate with better clinical outcomes (8,9).

Other studies are focused not on AED itself, but on laypeople called to use an AED. A lack of confidence in using an AED and the inability to locate a nearby device is a missed opportunity to save lives (10). While writing down our project, we considered useful to study a systematic review showing barriers and facilitators to the spread of AEDs. Although PAD is a great chance to save lives of OHCA victims, the low usage rates represent a critical limit (11). We consider that the often-low usage rate is due to a not-



**Figure 1** The chain of survival (adapted from the European Resuscitation Council Guidelines for Resuscitation 2015). CPR, cardiopulmonary resuscitation; AED, automated external defibrillator; OHCA, out-of-hospital cardiac arrest.



**Figure 2** The AEDs network in Busca. The AEDs are collocated in the town centre and can be reached within 4 minutes. AEDs, automated external defibrillators.

enough-spread culture of first aid among common people.

In early 2017, we started to develop our project, being inspired by the chain of survival (3), the picture explaining step-by-step how to save lives of OHCA victims (Figure 1). Like any chain, it works only if every link is strong. It is essential to realise that laypeople are the key players of the first links of the chain. In fact, laypeople can call for help, can provide CPR, and can use the AED. We have focused on two targets:

- (I) To create a network of AEDs;
- (II) To train citizens in using AEDs and in providing CPR.

The Municipality of Busca and the local agency of Italian

Red Cross created a partnership, splitting the tasks: the former managed the collocation and the maintenance of AEDs, the latter organised the fundraising and the training program.

### The AEDs network in Busca

Eleven AEDs have been purchased (more than one every 900 inhabitants). They have been collocated in key-site throughout the town during the summer of 2017. Eight of them were placed in the town centre and three in the hamlets (Figure 2). In the town centre, an AED can be reached within 4 minutes since an AED should be available within 3 to 5 minutes to maximise the effectiveness (4). The AEDs have been collocated in the most crowded squares, next to every school building, every sports field, and every health centre. The AEDs are available 24/7, placed in alarmed, climate-controlled cabinets and signalled by big blinking signs to be easily and quickly recognised. On cabinets, people can find the necessary information about how to call for help and about the AED (how to turn it on, how to administrate the shock, where to put the pads) (Figure 3).

We want to emphasise that no public money has been used to accomplish this project. Several private sponsors have entirely financed it. Private individuals, companies, banks, foundations, associations purchased an AED, and we put their logos as mentoring on the cabinets.

### The training programme

We thought it was not enough just to collocate AEDs in



Figure 3 One of the public access AEDs in Busca. AEDs, automated external defibrillators.



Figure 5 The medical conference “A cardio protected city: community response save lives” with the presentation of the PAD project (12). PAD, public-access defibrillation. Available online: <http://asvidett.amegroups.com/article/view/23215>



Figure 4 The flyer of the medical conference “A cardio protected city: community response save lives”.

the city. From the beginning, our goal was to create a new awareness and a new first aid philosophy. We enquired the citizens on being committed to learning how to save a life.

So, we organised several lessons about BLS: 12 in less than a year. Our training program was advertised using official websites of the Municipality and Red Cross, social media and local newspapers.

Common citizens, teachers, school concierges, coaches, children’s entertainers, merchants, police officers, volunteers took part in these lessons. In less than a year 400 people attended the BLS classes. In every school’s building and every sports field, there are always potential CPR providers. Merchants guarantee a constant presence in the streets and the volunteers are always present during all the major events organised in the city. The price of the lessons was low and affordable for everybody (it just covers the cost of CPR manikins and training-use AEDs).

The lessons last 4 hours; people are trained in CPR, evaluation of the safety of the scenario, identification of cardiac arrest, evaluation of the victim, emergency call, BLS and use of AED (basic life support & defibrillation, BLSD) in infants, children, adults.

Beyond the 400 people trained in 2017, the Busca BLSD army also consists of more than 150 paramedics (Italian Red Cross volunteers). So, we can count on more than 500 CPR lay providers (in a city of 10,000 inhabitants), and they should be ready to provide CPR and to use AED in the occasion of an OHCA.

**Community response save lives**

Our project was inaugurated in December 2017. We organised a medical conference “A cardio protected city:

community response save lives” (*Figure 4*) where emergency doctors and cardiologists discussed the importance of PAD programs in saving lives of OHCA victims (*Figure 5*). Our goal will be to organise such events every year, making Busca a capital city of cardioprotection.

In the next future, we would like to share our experience to inspire similar projects. We are going to purchase other AEDs, increasing the AEDs network. The training program is going on (training new people and re-training everybody every 2 years). We have also started a follow-up of the project to evaluate the effectiveness of our PAD program.

In conclusion, the intense effort of the entire community is giving OHCA victims a chance to survive. The heroes of our project are the citizens that have helped us purchasing the AEDs and those who got involved in learning how to save lives.

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### References

1. Constitution of the Italian Republic, article 32 [Internet]. Senato.it. 2018 [cited 8 January 2018]. Available online: <https://www.senato.it/documenti/repository/istituzione/costituzione.pdf>
2. Strategy 2020—IFRC [Internet]. Ifrc.org. 2010 [cited 8 January 2018]. Available online: <http://www.ifrc.org/who-we-are/vision-and-mission/strategy-2020/>
3. Perkin GD, Handley AJ, Koster RW, et al. European Resuscitation Council Guidelines for Resuscitation 2015: Section 2. Adult basic life support and automated external defibrillation. *Resuscitation* 2015;95:81-99.
4. Kleinman ME, Brennan EE, Goldberger ZD, et al. Part 5: adult basic life support and cardiopulmonary resuscitation quality: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation* 2015;132:S414-35.
5. Caffrey SL, Willoughby PJ, Pepe PE, et al. Public use of automated external defibrillators. *N Engl J Med* 2002;347:1242-7.
6. Kitamura T, Iwami T, Kawamura T, et al. Nationwide Public-Access Defibrillation in Japan. *N Engl J Med* 2010;362:994-1004.
7. Weisfeldt ML, Sitlani CM, Ornato JP, et al. Survival after application of automatic external defibrillators before arrival of the emergency medical system: evaluation in the resuscitation outcomes consortium population of 21 million. *J Am Coll Cardiol* 2010;55:1713-20.
8. Holmberga MJ, Vognsena M, Andersenc MS, et al. Bystander automated external defibrillator use and clinical outcomes after out-of-hospital cardiac arrest: A systematic review and meta-analysis. *Resuscitation* 2017;120:77-87.
9. Bækgaard JS, Viereck S, Møller TP, et al. The Effects of Public Access Defibrillation on Survival After Out-of-Hospital Cardiac Arrest: A Systematic Review of Observational Studies. *Circulation* 2017;136:954-65.
10. Brooks B, Chan S, Lander P, et al. Public knowledge and confidence in the use of public access defibrillation. *Heart* 2015;101:967-71.
11. Smith CM, Lim Choi Keung SN, Khan MO, et al. Barriers and facilitators to public access defibrillation in out-of-hospital cardiac arrest: a systematic review. *Eur*

- Heart J Qual Care Clin Outcomes 2017;3:264-73.
12. Giamello JD, Bertolaccini L, Gallo M. The medical conference “A cardio protected city: community response

save lives” with the presentation of the PAD project. *Asvide* 2018;5:119. Available online: <http://asvidett.amegroups.com/article/view/23215>

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