Training program for visually impaired and blind people on cardiopulmonary resuscitation and use of semi-automatic defibrillator

Graciotti P. 1., Messi D. 2 ,Virgini G. 3, Gabbanelli M. 3 , Mariotti V. 4

1 ASUR Marche – Area Vasta 2, Ancona, Italy, 2 AOU Ospedali Riuniti, Ancona , Italy, 3 INRCA, Ancona, Italy, 4 Opere Laiche Lauretane e Hermes, Loreto, Italy

Introduction

Cardiac arrest affects over 60,000 Italians a year.

The timely intervention of a bystander is essential to save a life.

In this scenario, the theme of the project is inserted, that is born from the request of the Italian Union of Blind and Visually Impaired Ancona (UICAM) to instruct the members on resuscitation techniques.

A study, experimentation and revision of the standard BLSD of IRC procedures were needed to make them accessible to visually impaired people.

The instructor plays the role of guide of experience, encouraging mobility and orientation, and proposing the new instrument according to the following steps: motivation, perceptual knowledge, use of the instrument, progressively reducing the aid.

Materials and Methods

The entire experimental project was conducted on a group of 13 people, including 7 blind, 3 partially sighted, 3 sighted people.

The main changes made to the standard sequence involve the aid of a bystander for the evaluation of initial safety and during the use of the defibrillator, the use of a hand in place of sight to evaluate the thoracic excursion during the breath, and finally the necessity of specify the visual disability to the central operator.

Preliminary meeting with psychologist, documents data collection, satisfaction questionnaires, checklist for participant evaluation, BLSD manual for blind and visually impaired in Braille were developed.

Steps		December 2016	January 2017	February 2017	March 2017	April 2017
1	Bibliographic research	X	X			
2	Content processing			X		
3	Experimentation and comparison with a psychologist			X		
4	Modification of the procedures			X	X	
5	Training meeting				X	
6	Data processing				X	X
7	Presentation of results					X

Table 1. Timing

Performance	Standard procedure	Modified procedure
Scene safety assessment	Independent	<i>Bystander employee</i>
Breathing assessment	-See chest excursion-Listen to breathing noises -Sense air in the face - GAS in Italian	- <i>Hand on the chest</i> -Listen to breathing noises -Sense air in the face MAS in Italian
Emergency alert	"Help, unconscious and does not breathe person"	+ " <i>I am a blind person but I can help</i> "
Safety during AED use	Independent	<i>Bystander employee</i>

Table 2. Changes to the procedures

Results

The theoretical-practical training meeting took place at the UICAN headquarters, where the participants were successfully trained in resuscitation techniques.

In fact, 100% of the candidates passed the test, of which 62% without errors.

The remaining 38% experienced difficulties mainly with the use of the defibrillator and plates application about time factor .

Mean satisfaction 4,8 (scale 1-5).

Questions	Graduation	Average	Trend	Median
Performer manual	1 - 10	8,9	8	9
Contents	1 - 10	9,7	10	10
Presentation course	1 – 5	4,5	3	5
Aims	1 – 5	5	5	5
Presentation and technique AED	1 – 5	4,7	4	5
Algorithm and security	1 – 5	4,8	4	5
Obviousness sequence presentation	1 – 5	5	5	5
Safety assessment	1 – 5	4,8	4	5
Open airways	1 – 5	5	5	5
Breathing	1 – 5	4,8	4	5
Chest compressions	1 – 5	5	5	5
Activation AED	1 – 5	4,8	4	5

Table 4. Participant satisfaction

Conclusions

The project has shown that a blind person has the skills necessary to act in emergency situations, so he is able to save a life before help arrives.

SEQUENCE BLSD	C	PC
Evaluation of security Involves a bystander and says <<I'm blind but I can help, who feels like visually evaluating?>> Establishes a relationship of trust <<My name is xxx, what's your name?>>, << check that the scene is safe, there are no dangers, no one must approach >>, << when you talk to me, keep your voice high >>	100%	
Evaluation of the state of consciousness He shakes and calls out loud	100%	
Align the victim. He discovers the chest	100%	
Opens the airways with an extension of the head- Evaluate the presence of respiratory activity and signs of life. Maintains the airways open, Listen/Sense with Hand on the chest	100%	
Activate advanced rescue << There is an unconscious person and does not breathe. I am blind but able to help. With me there is a person who evaluates security. >> He asks the plaintiff to bring an AED. Start CPR immediately	100%	
EEC technique Identify the center of the chest, overlapping hands, raised and braided fingers, outstretched arms and perpendicular (not gross errors)	100%	
Depth of compressions At least 75% are 5 cm and not more than 6 cm	100%	
Frequency of compressions100 per minute (tolerance 100-120)	100%	
Ventilation Perform 2 mouth-to-mouth ventilations of about one second, 75% of ventilations expand the chest	100%	
Compressions / insufflation report 30: 2 (tolerance 29: 2-31: 2)	100%	
Management and use of the AED. Place the AED to the left of the victim at head height. Turn on the AED and listen to the voice instructions. He takes the package containing the plates and opens it, he takes the plates	40%	60%
Place the plates correctly. A plate under the right clavicle parallel to the breastbone. The other plate about 5 cm under the armpit.	40%	60%
Connect the plate connector to the AED	80%	20%
Guarantees security. It moves away from the victim during the analysis. Place a finger on the discharge button and ask for confirmation. Recite <<go away me, go away you, go away all >>, << go away all at least one meter >>. He asks the unstoppable << confirm that nobody is touching the victim? >>	100%	
Deliver the shock promptly	100%	
CPR for 2 minutes	100%	
Stop CPR during analysis	100%	
C = CORRECT PC= PARTIALLY CORRECT		

Table 3. Percentage of correct or partially correct actions