



HAL
open science

Automated external defibrillator installation in the workplace: from recommendations to ADE style international registries.

Alexis Descatha

► **To cite this version:**

Alexis Descatha. Automated external defibrillator installation in the workplace: from recommendations to ADE style international registries.. J Occup Environ Med, 2012, 54 (7), pp.765-7. 10.1097/JOM.0b013e3182533528 . inserm-00806176

HAL Id: inserm-00806176

<https://inserm.hal.science/inserm-00806176>

Submitted on 1 Jul 2013

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

¹ CESP, Centre de Recherche en Épidémiologie et Santé des Populations INSERM : U1018, Université Paris XI - Paris Sud, Hôpital Paul Brousse, Assistance publique - Hôpitaux de Paris (AP-HP), 16 Avenue Paul Vaillant Couturier 94807 Villejuif Cedex, FR

² Service de Santé au Travail Assistance publique - Hôpitaux de Paris (AP-HP), Hôpital Raymond Poincaré, Université de Versailles Saint-Quentin-en-Yvelines, 104 Boulevard Raymond Poincaré, 92380 Garches, FR

* Correspondence should be addressed to: Alexis Descatha <alexis.descatha@rpc.aphp.fr >

Although a large number of international guidelines recommend the installation of automated external defibrillators (AED) in the workplace (1,2), only very few data have been published on this subject, as highlighted by the pilot study presented here (3). Several explanations can be proposed for the very limited number of data published on this subject.

A “publication effect” is very likely, i.e. effective AED installation programs have been set up, but no studies and specific data have been published. Many authors in the field of emergency medicine consider the workplace to be just another public place (4). However, the workplace is radically different from other public places in terms of the incidence and management of out-of-hospital cardiac arrest (OHCA), as OHCA in the workplace represents between 1 to 6% of all OHCA reported in published studies (5–9). Various authors have also reported that patients experiencing cardiac arrest in the workplace present one of the highest hospital discharge survival rates, and appear to be managed more effectively than OHCA occurring in other so-called public places (4,8–10). OHCA in the workplace also tend to occur in younger subjects in good health (9), which implies a large number of years of life saved.

Nevertheless, studies on the subject raise a major problem related to the definition of “workplace”, which can correspond to very different situations, ranging from small shops to large factories, from hospitals to drilling rigs, from amusement parks to construction sites, etc. Workplaces associated with a high risk of cardiac arrest must therefore be identified, by taking into account criteria of feasibility and efficacy of AED programs. On the basis of expert opinions and studies conducted in other settings(11–14), the existing guidelines on installation of AED in the workplace are based on the site-specific incidence of OHCA (with a lower limit of one OHCA every two or five years, depending on the study), or based on the number of employees on the site and their mean age. However, other parameters also need to be taken into account, such as the number and characteristics of visitors (with the same lower limit or more than 250 people over the age of 50 present for more than 16 hours per day), the presence of occupational risk factors for ventricular fibrillation (high voltage, high cardiac risk situations, etc.), and the medical profile of employees/visitors (high prevalence of risk factors for coronary heart disease or sudden death), as well as the distance from emergency medical services (15).

Consequently, apart from the legal requirements and communication needs, the lack of good quality data on AED installation in the workplace constitutes an obstacle for occupational physicians, emergency physicians, and HSEs to effectively advise decision-makers (employers and policy makers) on the best AED installation program. However, as many programs complying with international guidelines probably already exist, a useful first step would be the creation of an international multicomponent registry of OHCA occurring in the workplace, including details of the AED installation program. The conventional “Utstein style” guidelines are not strictly appropriate (16,17), and must be adapted according to the “ADE style” (Application of Defibrillation in the Enterprise): a conventional OHCA registry with specific details concerning the workplace could therefore be developed in addition to the registry of AED installation programs in companies. Table 1 summarizes the “ADE style” of these registries that should ideally be linked to each other. In this way, an international network integrating these various characteristics in addition to the out-of-hospital emergency system and organization of occupational physicians, could therefore be developed.

In conclusion, the pilot study presented here (3) emphasizes the need to obtain data about AED installation programs and management of OHCA in the workplace, which cannot be simply considered to be just another public place. Apart from the difficulties raised by the heterogeneous definition of the workplace, standardized recording of good quality supplementary data according to the Utstein style adapted to the workplace (ADE style) could provide valuable information.

References:

- 1 . Starr LM . Automated external defibrillation in the occupational setting . J Occup Environ Med . 2002 ; janv 44 : (1) 2 - 7
- 2 . American College of Occupational and Environmental Medicine (ACOEM) . Position Statement | Automated External Defibrillation in the Occupational Setting (reaffirmed May 2006) [Internet] . [cité 2012 févr 17]. Available de: http://www.acoem.org/AED_OccupationalSetting.aspx
- 3 . Mayr NP , Mayr T , Tassani P , Martin K . Use of automated external defibrillators in the occupational setting in Germany—a pilot study . J Occup Environ Med . 2012 ; 54 : 789 - 791
- 4 . Descatha A , Jost D , Carpentier JP . Is the workplace a site of cardiac arrest like any other? . Resuscitation . 2009 ; mai 80 : (5) 602 - 3
- 5 . Engdahl J , Herlitz J . Localization of out-of-hospital cardiac arrest in Goteborg 1994–2002 and implications for public access defibrillation . Resuscitation . 2005 ; févr 64 : (2) 171 - 5
- 6 . Becker L , Eisenberg M , Fahrenbruch C , Cobb L . Public locations of cardiac arrest. Implications for public access defibrillation . Circulation . 1998 ; juin 2 97 : (21) 2106 - 9
- 7 . Reed DB , Birnbaum A , Brown LH , O'Connor RE , Fleg JL , Peberdy MA . Location of cardiac arrests in the public access defibrillation trial . Prehosp Emerg Care . 2006 ; janv 10 : (1) 61 - 76

- 8 . Muraoka H , Ohishi Y , Hazui H , Negoro N , Murai M , Kawakami M . Location of out-of-hospital cardiac arrests in Takatsuki City: where should automated external defibrillator be placed . *Circ J* . 2006 ; juill 70 : (7) 827 - 31
- 9 . Rudner R , Jalowiecki P , Wartak M , Marciniak R , Byrczek T . The effects of selected factors on survival of out-of-hospital cardiac arrest victims . *Anest Intens Ter* . 2005 ; 37 : (3) 174 - 80
- 10 . Descatha A , Frederic M , Devere C , Dolveck F , Goddet S , Baer M . Details of the initial management of cardiac arrest occurring in the workplace in a French urban area . *Resuscitation* . 2005 ; juin 65 : (3) 301 - 7
- 11 . Link MS , Atkins DL , Passman RS , Halperin HR , Samson RA , White RD . Part 6: electrical therapies: automated external defibrillators, defibrillation, cardioversion, and pacing: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care . *Circulation* . 2010 ; nov 2 122 : (18 Suppl 3) S706 - 719
- 12 . Folke F , Lippert FK , Nielsen SL , Gislason GH , Hansen ML , Schramm TK . Location of cardiac arrest in a city center: strategic placement of automated external defibrillators in public locations . *Circulation* . 2009 ; août 11 120 : (6) 510 - 7
- 13 . Cram P , Vijan S , Fendrick AM . Cost-effectiveness of automated external defibrillator deployment in selected public locations . *J Gen Intern Med* . 2003 ; sept 18 : (9) 745 - 54
- 14 . Hallstrom AP , Ornato JP , Weisfeldt M , Travers A , Christenson J , McBurnie MA . Public-access defibrillation and survival after out-of-hospital cardiac arrest . *N Engl J Med* . 2004 ; 351 : (7) 637 - 46
- 15 . Descatha A , Baer M . Automated external defibrillators in the workplace . *BMJ* . 2008 ; oct 8 337 : (oct08_1) a1816 -
- 16 . Cummins RO , Chamberlain DA , Abramson NS , Allen M , Baskett PJ , Becker L . Recommended guidelines for uniform reporting of data from out-of-hospital cardiac arrest: the Utstein Style. A statement for health professionals from a task force of the American Heart Association, the European Resuscitation Council, the Heart and Stroke Foundation of Canada, and the Australian Resuscitation Council . *Circulation* . 1991 ; 84 : (2) 960 - 75
- 17 . Jacobs I , Nadkarni V , Bahr J , Berg RA , Billi JE , Bossaert L . Cardiac arrest and cardiopulmonary resuscitation outcome reports: update and simplification of the Utstein templates for resuscitation registries: a statement for healthcare professionals from a task force of the International Liaison Committee on Resuscitation (American Heart Association, European Resuscitation Council, Australian Resuscitation Council, New Zealand Resuscitation Council, Heart and Stroke Foundation of Canada, InterAmerican Heart Foundation, Resuscitation Councils of Southern Africa) . *Circulation* . 2004 ; nov 23 110 : (21) 3385 - 97

Table 1

"ADE Style" for standardized workplace registry data

Registry Part	Item	Core	Supplementary
AED programs on site: – Workplace characteristics – AED program <i>(data that should be collected prospectively every one or two years)</i>	Activity sector	X	
	Number of workers	X	
	Estimated number of people/day on site (including visitors)		X (if available)
	Specific occupational risks identified (and which ones)	X	
	Distance from closest EMS		Indicate type of EMS
	Number of public access AEDs on site		
	Number of AEDs used by trained teams	X	
	Number of trained bystanders/BLS/ALS on site	X	
	Number of healthcare professionals	X	
	Number of OHCA occurring on site over the last ten years	X	
	Time of OHCA	X	
	OHCA in the presence of a bystander	X	
	Time of confirmation of alert/confirmation of OHCA	X	
	Etiology: Presumed cardiac? Trauma? Submersion? Respiratory? Toxicological? Other	X	
	Associated with an industrial risk?	X	
	Suicide?		If possible
	Time of initiation cardiopulmonary resuscitation	X	
	Time of application of the AED	X	
	Number of shocks delivered?	X	
OHCA management <i>(data that should be collected prospectively for each OHCA)</i>	Time at which team the workplace team trained in the management of OHCA reached the victim	X	
	Time at which the EMS/paramedics reached the victim	X	
	Time of intubation	X	
	Time of return of spontaneous circulation	X	If applicable
	Time of death	X	If deceased
	Dose of adrenaline before return of circulation	X	
	Transfer to hospital alive	X	
	Discharged from hospital alive		If possible
	Neurological outcome at discharge (CPC score: 1, 2, 3, 4, or 5)		If possible
	EMS or paramedics?		If possible
Organization	EMS response time in the department?		If possible
	Number of occupational physicians and nurses in the department/country		If possible

ADE: "Application of Defibrillation in the Enterprise", AED: Automated External Defibrillator, EMS: Emergency Medical System; OHCA: Out-of-Hospital Cardiac Arrest; BLS: Basic Life Support; ALS: Advanced Life support; CPC = Cerebral Performance Category.