Mobile phones video CPR: preliminary results in a non-Advanced Medical Priority Dispatch System (AMPDS) Emergency Medical Services centres

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Objectives

For several years, mobile phones offer the opportunity to transmit images and video via 3G network. Videoconference between lay rescuers of cardiac arrest and 112 dispatchers may offer interesting perspectives in the field of dispatching-assisted cardiopulmonary resuscitation (CPR). This study investigates the impact of videoconference on CPR performances.

Methods

Eighty-two students were randomly assigned either to videoconference (Video group, n = 60) or phone (Phone group, n = 22) assistance by 112 dispatchers of Liege Dispatching centre in a manikin model of cardiac arrest. The resuscitation algorithm proposed in both groups was based on the ALERT protocol (Algorythme Liégeois d'Encadrement à la Réanimation Téléphonique)[1]. Resusci®Anne SkilReporterTM manikin was used to evaluate CPR performance. Data were transferred from the manikin into a computerized database using the Laerdal® SkillreportingTM System V.2.2.1 software. Further analysis was also based on audio and video recordings.

Reference

1. Ghuysen A, Collas D, Stipulante S, et al. Dispatcher-assisted telephone cardiopulmonary resuscitation using a French-language compression-only protocol in volunteers with or without prior life support training: A randomized trial. Resuscitation. 2011;82:57-63.
2. Nolan JP, Soar J, Zideman DA, et al. European Resuscitation Council Guidelines for Resuscitation 2010 Section 1. Executive summary. Resuscitation. 2010;81:1219-76.
3. Lee JS, Jeon WC, Ahn JH, et al. The effect of a cellular-phone video demonstration to improve the quality of dispatcher-assisted chest compression-only cardiopulmonary resuscitation as compared with audio coaching. Resuscitation. 2011;82:64-8.
4. Bolle SR, Scholl J, Gilbert M. Can video mobile phones improve CPR quality when used for dispatcher assistance during simulated cardiac arrest? Acta Anaesthesiol Scand. 2009;53:116-20.
5. Bang A, Herlitz J, Martinell S. Interaction between emergency medical dispatcher and caller in suspected out-of-hospital cardiac arrest calls with focus on agonal breathing. A review of 100 tape recordings of true cardiac arrest cases. Resuscitation. 2003;56:25-34.

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Results

Medians rates and depths of chest compressions tended to increase in the video group (116 vs. 109; p = 0.31 and 49 mm vs. 48 mm; p = 0.35). The median no-flow time was significantly greater in the video group. Hands-off period was almost inexistent in the video group (0 vs. 6; p=0.0016). Time periods attributed to checks for responsiveness, airway opening manoeuvres and breathing checks are depicted in table 1.

	Video CPR (n=60)	Phone CPR (n=22)	p-value
Median rates	116.0 (104 - 120)	109.0 (90 - 122)	0.31
Median depth (mm)	49.0 (42 - 59)	48.0 (27 – 56)	0.35
Correct hand position (%)	59 (10 - 178)	47 (0 – 146)	0.18
Total number of compressions	421 (349 – 478)	364 (280 – 406)	0.0015
Time to first compression (sec)	145 (127 – 172)	103 (96 – 118)	0.0001
Hands Off (sec)	0 (0 – 0.80)	6 (0 – 21)	0.0016
Unconscious recognition (sec)	39 (33 – 46)	27 (25 – 31)	0.0001
Open airway (sec)	66 (55 – 76)	60 (56 – 70)	0.30
Recognition of no-breathing (sec)	93 (79 – 106)	77 (69 – 85)	0.0016

Hands Off (sec) : Time interval (in seconds) starting after the first chest compression (No-flow time) when chest compressions are stopped by the lay rescuer

Table 1: CPR performance in two groups of lay rescuers guided by 112 dispatchers via audio or video calls Median (P25 – P75)

Conclusions

According to these preliminary results, we believe that dispatchers should be trained to videoconference-assisted CPR in the future. Indeed, videoconference may allow bystander reach compressions rates and depths close to international guidelines[2] and reduce 'hands-off' events during CPR[3, 4]. Further evaluation of the effect of this assistance on early gasp recognition may also be interesting[5].

Mots-clés

VIDEO CPR
PHONE CPR
CARDIAC ARREST