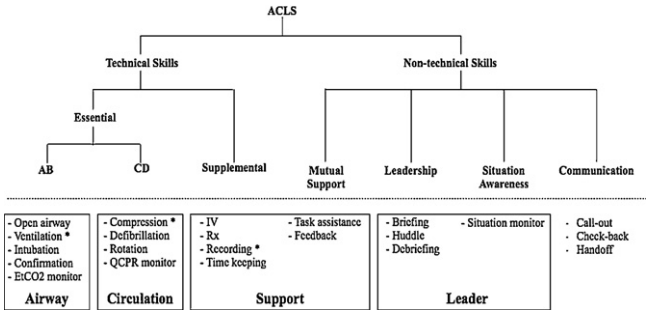

Fig. 1.

This article describes the methodology, education, and preliminary results of the A-C-L-S teamwork model.

Methods: All ACLS-related technical or non-technical skills were carefully examined and transformed into A-C-L-S teamwork framework, which is based on four CPR positions: Airway, Circulation, Leader, and Support. (Fig. 1)

A high-fidelity simulation-based training course was designed to help rescuer mastering each CPR position and its related tasks, tools, and mnemonics. Finally, we reviewed CPR videos to evaluate clinical performance metrics during CPR.

Results: Between April and May 2011, seven A-C-L-S team training courses were delivered to 52 ED staff (17 residents and 35 nurses, all qualified ACLS providers). After the course, ACLS core technical skills improved significantly in median time of success intubation (429.8 ± 193.0–197.9 ± 112.3 s, $p = 0.022$), end-tidal capnography interpretation (469.3 ± 281.4–244.6 ± 87.9 s, $p = 0.015$), laboratory data interpretation (588.4 ± 88.9–447.3 ± 112.7 s, $p = 0.005$), and sonography examination (765.0 ± 381.6–515.5 ± 232.6, $p = 0.020$).

Conclusions: The A-C-L-S teamwork model is a multi-faceted CPR approach that comprises an ACLS algorithm, learnable–teachable team structure, TeamStepps concept, and CPR assist devices. Its impact on CPR quality and patient outcomes deserve further study.

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AS16

Development and psychometric evaluation of the basic electrocardiogram interpretation self-efficacy scale

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Purpose: Research suggests that nurses and nursing students lack competence in basic electrocardiogram (ECG) interpretation. Self-efficacy is considered to be paramount in the development of one's competence. The aim of this study was to develop and psychometrically evaluate a scale to assess self-efficacy of nursing students in basic ECG interpretation.

Materials and methods: Observational cross-sectional study with a convenience sample of 293 nursing students. The basic ECG interpretation self-efficacy scale (ECG-SES) was developed and psychometrically tested in terms of reliability (internal consistency and temporal stability) and validity (content, criterion and construct). The ECG-SES' internal consistency was explored by calculating the Cronbach's alpha coefficient (α); its temporal stability was investigated by calculating the Pearson correlation coefficient (r) between the participants' results on a test–retest separated by a 4-week interval. The content validity index of the items (*I-CVI*) and the scale (*S-CVI*) was calculated based on the reviews of a panel of 16 experts. Criterion validity was explored by correlating the participants' results on the ECG-SES with their results on the New General Self-Efficacy Scale (NGSE).[1] Construct validity was investigated by performing *Principal Component Analysis (PCA)* and *known-group analysis*.

Results: The excellent reliability of the ECG-SES was evidenced by its internal consistency ($\alpha = 0.98$) and its temporal stability at the 4-week re-test ($r = 0.81$; $p < 0.01$). The ECG-SES' content validity was also excellent (all items' *I-CVI* = 0.94–1; *S-CVI* = 0.99). A strong, significant correlation between the NGSE and the ECG-SES ($r = 0.70$; $p < 0.01$) showed its criterion validity. Corroborating the ECG-SES' construct validity, *PCA* revealed that all its items loaded on a single factor that explained 74.6% of the total variance found. Furthermore, *known-groups analysis* showed the ECG-SES' ability to detect expected differences in self-efficacy between groups with different training experiences ($p < 0.01$).

Conclusion: The ECG-SES showed excellent psychometric properties for measuring the self-efficacy of nursing students in basic ECG interpretation.

Reference

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AS17

Statistical evaluation of smartphone apps for basic life supporttraining

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Purpose of the study: Smartphones and application programs (apps) are increasingly being employed in medicine and nursing. The young and people using technological devices are protagonists of an evolving way of learning. We aimed to evaluate the quality of current mobile apps for learning of cardiopulmonary resuscitation (CPR). A simple statistical method is proposed. If any critical issues were identified in the learning process of CPR, strategies for improving existing apps would be pointed out.

Materials and methods: CPR courses were held from August to November 2015, and 150 laypersons (age: 18–65; median: 25 years) were randomized to either use a smartphone app or not. "Viva! CRP" app was illustrated and employed by randomized participants. Instructors used the skill test form by Italian Resuscitation Council for a blind evaluation of practical abilities. The 16 items were grouped in 4 categories: A, Airways; B, Breathing; C, Circulation; D, Defibrillation. For each rescuer, all items were scored and summed in overall and four categorical scores. R statistical program was used for analysis.

Results: Median scores were 15 (range: 12–16) and 14 (range: 8–16), respectively, in the app and non-app group. A significant difference exists between groups (Mann–Whitney–Wilcoxon test, p-value = 0.01). Even if all trainees were accustomed to apps, a