WORKSHEET for Evidence-Based Review of Science for Emergency Cardiac Care

Worksheet author(s)

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Clinical question.

For BLS providers (lay or HCP) (P), does a longer-duration instructor-based course (I), compared with a shorter-duration instructor-based course (C), improve skill acquisition and retention (O)?

Is this question addressing an intervention/therapy, prognosis or diagnosis? Educational intervention
State if this is a proposed new topic or revision of existing worksheet: New topic

Conflict of interest specific to this question

Do any of the authors listed above have conflict of interest disclosures relevant to this worksheet? No

Search strategy (including electronic databases searched).

Medline (+ Scopus)
Embase
Follow-up references
Cited-by references (Scopus)

(Basic life support OR cardiopulmonary resuscitation) AND training
(Basic life support OR cardiopulmonary resuscitation) AND (training AND duration)
Cardiopulmonary resuscitation AND education
Cardiopulmonary resuscitation AND (education AND duration)

Updated search 13 September 2009 (1 year since original search)

Search terms as above re-run on Medline, Embase, Scopus (for citations)

- State inclusion and exclusion criteria

Included: Comparison of duration of instructor-led BLS courses

Excluded: Non-human (theoretical); advanced life support; AED only; abstract only; not peer reviewed

- Number of articles/sources meeting criteria for further review:

273 studies met criteria; 11 reviewed; 8 rejected (not direct comparison of course duration); 3 papers relevant

Cited-by references (Scopus) – none additional found

Updated search 13 September 2009: No additional relevant papers found

Summary of evidence

Evidence Supporting Clinical Question

Good	Andresen 2008, 419 E				
Fair		Gombeski 1982, 849 E Yakel 1989, 520 E			
Poor					
	1	**2**	**3**	**4**	**5**
Level of evidence					

A = Return of spontaneous circulation
B = Survival of event
C = Survival to hospital discharge
D = Intact neurological survival
E = Other endpoint
Italics = Animal studies

Evidence Neutral to Clinical question

Good					
Fair					
Poor					
	1	**2**	**3**	**4**	**5**
Level of evidence					

A = Return of spontaneous circulation
B = Survival of event
C = Survival to hospital discharge
D = Intact neurological survival
E = Other endpoint
Italics = Animal studies

Evidence Opposing Clinical Question

Good					
Fair					
Poor					
	1	**2**	**3**	**4**	**5**
Level of evidence					

A = Return of spontaneous circulation
B = Survival of event
C = Survival to hospital discharge
D = Intact neurological survival
E = Other endpoint
Italics = Animal studies

REVIEWER'S FINAL COMMENTS AND ASSESSMENT OF BENEFIT / RISK:

A single, manikin, study (LOE 1(manikin): Andresen 2008, 419) was found that compared BLS skill acquisition after different duration instructor-based courses. Lay volunteers were group-randomised to receive a course of 2-, 4-, or 7-hours duration. These courses included AED training but BLS skills were assessed separately. Those receiving a 7-hour course performed better in most BLS skills tested immediately after the course. Testing was also carried out 6 and/or 12 months after the course: skills had deteriorated in all 3 groups by 6 months but the 7-hour course group retained an advantage. There was no further deterioration in skills in any group by 12 months. The absolute difference in skills levels between the groups was, however, judged 'inconsequential'. Receiving a refresher course at 6 months resulted in a 2-hour course being clinically equivalent to a 7-hour course.

Two manikin studies were found that compared BLS skill retention, but not acquisition. One study (LOE 2 (manikin): Yakel 1989, 520) tested nurses 4 months and 8 months after BLS courses of 30-45 minutes or 6-8 hours; in the second study (LOE 2 (manikin): Gombeski 1982, 849)laypeople were tested 1 year after BLS courses of 4 hours or 8 hours. Both studies showed significant benefit for the longer courses, but are flawed by several differences in the courses other than just duration.

Acknowledgements:

Citation List

Andresen D, Arntz HR, Gräfling W, Hoffmann S, Hofmann D, Kraemer R, Krause-Dietering B, Osche S, Wegscheider K. Public access resuscitation program including defibrillator training for laypersons: A randomized trial to evaluate the impact of training course duration. Resuscitation 2008; 76: 419-424.

Level 1 (manikin). Good. Supporting.
Lay volunteers group-randomised to 2-, 4-, or 7-hour BLS and AED course. Immediate post-training skills significantly better for 7-hour course group. Skill deterioration by 6 months for all three groups; 7-hour group maintained advantage but not considered clinically significant.

Gombeski W, Effron DM, Ramirez AG, Moore TJ. Impact on Retention: Comparison of Two CPR Training Programs. Am J Puiblic Health 1982; 72:849-852.

Level 2 (manikin). Fair. Supporting.
Laypeople randomised to 8-hour or 4-hour training BLS course. Significantly better skill retention at 1 year for those receiving longer course.

Yakel ME. Retention of cardiopulmonary resuscitation skills among nursing personnel: What makes the difference? Heart Lung 1989; 18: 520-525.

Level 2 (manikin). Fair. Supporting.
Nurses randomised to 30-45 minute (with prior reading) or 6-8 hour BLS course. Significantly better skill retention at 4 months and 8 months for those receiving longer course.