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Short paper

Piloting a Basic Life Support instructor course: A short report

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Abstract

Aim: The aim was to describe a new shortened pilot of the European Resuscitation Council's standard Basic Instructor Course.

Methods: The four-hour pilot followed a blended learning strategy (pre-course preparation, on-site small-group sessions). Each participant taught a short Basic Life Support competency to the group (micro-teaching) and received the group's feedback. A feedback "drill" session followed. Primary quantitative outcome was the proportion of Basic Instructor Course participants subsequently teaching Basic Life Support. Post-course teachings were recorded and compared to standard eight-hour Basic Instructor Courses. Participants' open feedback question answers were qualitatively analyzed and presented descriptively.

Results: This pilot Basic Instructor Course taught 31 healthcare providers in 4 courses in 2019–2021 (aged 31.5 ± 12.9 years; 61 % women; 29 % physicians; 71 % medical students; 21 % no teaching experience). Participants reported that they gained most from micro-teaching (64 %), and advice on their teaching (50 %). Some judged the course as being too long (29 %). Twenty-seven pilot course participants (87 %) (including three instructor candidates) started teaching, whereas only nine of 37 participants of the 3 courses (24 %, including three instructor candidates) from the standard eight-hour course did.

Conclusion: Participants of the pilot shortened Basic Instructor Course in a healthcare setting were successfully trained to teach European Resuscitation Council's Basic Life Support provider courses in a short four-hour format. The pilot course seems to enable future instructors to teach Basic Life Support provider courses. Higher motivation to teach resulted in four times as many instructors who taught courses after the pilot course compared to the standard course.

Keywords: Basic Life Support, BLS, Instructor

Introduction

Faculty development in Basic Life Support (BLS) aims to teach future instructors to deliver standardized BLS-courses based on current resuscitation guidelines¹ and generally agreed educational principles.² The proper format of such teach-the-instructor programs is still under debate.^{3,4}

We report a pilot of a shortened four-hour European Resuscitation Council (ERC) Basic Instructor Course that teaches the educa-

tional background of ERC BLS-courses.⁵ BLS-providers participating in such Basic Instructor Courses are assumed to have sufficient and correct BLS-knowledge and skills, because the instructor course only focuses on how-to-teach BLS to small groups⁶ (ideally in 6 participants per instructor⁷).

This report describes a pilot of a shortened version of the standard ERC Basic Instructor Course focusing on the necessary competencies to teach BLS. We present first participant feedback and report the Basic Instructor Course participant proportion that subsequently started teaching BLS in a health-care institution.

Abbreviations: BLS, Basic Life Support, ERC, European Resuscitation Council

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<https://doi.org/10.1016/j.resplu.2022.100325>

Received 4 August 2022; Received in revised form 20 October 2022; Accepted 21 October 2022

Methods

This project is exempt from ethics committee review as it does not include any patient or health-related data. This newly developed blended Basic Instructor Course⁸ followed the flipped classroom format⁹ and provided pre-course reading material (ERC Basic Instructor Course-Manual, ERC BLS-Provider Manual, etc.), and the online learning program for BLS from the ERC Virtual Learning Environment (<https://cosy.erc.edu/>).

Each participant was asked to prepare a short five-minute BLS-teaching session for the on-site Basic Instructor Course. Experienced ERC educators and BLS lead instructors formed the faculty of the Basic Instructor Course at a university-based CPR and simulation center. The pilot started with a short discussion of open questions from the pre-course reading followed by clarification of the ERC educational structure for a teaching session: environment, set, dialogue, and closure.

The main part consisted of two 90-min sessions: 1) a micro-teaching session^{10,11}: “The practice of teaching BLS”, and 2) “Assessment and feedback during a BLS-courses”. At the end participants explored their learning objectives for their supervised BLS-courses. Next steps to becoming a BLS-instructor were explained.

The practical teaching exercise was a “micro-teaching session”.^{10,11} Participants were asked to prepare a 5-minute teaching sequence of a BLS-course, covering all parts of a BLS-course. This included preparation of the setting according to the stepwise skill teaching approach (e.g., chest compression, ventilation, AED, etc.), and the closure of a BLS-course.

Participants were allowed to choose the didactic approach and supporting materials. The session was followed by constructive and corrective feedback on the content, teaching structure and methodology. Using all participants, an entire BLS-teaching session was covered. This ensured a discussion of a variety of approaches to teaching.

A second session started with a discussion about an assessment as the basis to provide effective feedback, the use of feedback devices during BLS-teaching, motivation, the willingness to provide, and overcoming fears to provide BLS. After watching a short video clip about resuscitation, feedback-giving was practiced in groups of 3 participants.¹² During 10 minutes, one roleplayed the person in the video receiving feedback, another provided feedback, the third debriefed the observed feedback. Each participant was allowed to practice feedback-giving and debriefing. Instructors facilitated group discussions focusing on the main points to provide effective feedback during BLS-courses¹³:

1. Description of the observed - how compared the performance to the courses' expectations?
2. Was the performance correct or was something to be improved?
3. What could the participant improve, to achieve correct BLS?

An additional optional 45-minute module by a maintenance technician was provided for participants without prior experience with BLS-manikins or AEDs. Topics were functions and troubleshooting of manikins (e.g., changing the lungs), feedback devices, training AEDs, hygiene and cleaning.

Participants' characteristics were recorded. With informed consent, feedback answers from open questions after the course were qualitatively analyzed and presented descriptively. After the Basic

Instructor Course pilot, subsequent teaching activities were recorded from the ERC-course management system. Our results were compared to anonymized data available from the ERC course management system of three standard instructor courses from healthcare institutions in German-speaking central Europe in 2021.

Results

Thirty-one participants in four courses over three years participated in the Basic Instructor Course pilot and group sizes were 4 to 6 participants. All were healthcare providers; mean age 31.5 ± 12.9 years; 61 % women; 29 % physicians; 71 % medical students (in their 4.7 ± 0.6 study year); 36 % never attended a teaching course before; 21 % did not teach before the course; the others taught medical students for 2.0 ± 0.8 years.

Twenty-seven pilot participants started to teach BLS (87 %), three of them are currently still BLS-instructor candidates, four never taught BLS. In contrast, from the 37 participants attending the 8-hour standard ERC BLS-instructor courses, only 9 (24 %) started teaching.

Basic Instructor Course outcome data are summarized in Table 1.

Table 2 displays answers to the open feedback questions. Sixty-four percent of participants gained most from the micro-teaching session, 50 % from advice on their BLS-teaching, 29 % mentioned that the course was too long.

Discussion

The findings of this report suggest that this short 4-hour version of a Basic Instructor Course enables instructor candidates to teach BLS-provider courses. The instructors might be more motivated to teach subsequent BLS-provider courses than candidates of the traditional 8-hour ERC Basic Instructor Course because nearly 80 % of pilot course participants started to teach BLS. Considering limited resources (instructors and participants being away from clinical work), a shorter version of courses educating future BLS instructors seems to be more efficient.

The current standard format and duration of the Basic Instructor Course of the ERC were questioned by national resuscitation councils and different educational bodies affiliated with the ERC. Current healthcare demands, aggravated during the COVID-19 pandemic, are pushing educational initiatives to reduce teaching and training times. The need to teach skills, e.g., basic resuscitation competencies, is however broadly accepted and supported. The results of this pilot support the move to tailor Basic Instructor Courses to the needs of participants, institutions and stakeholders, and the need to develop resource- and time-efficient instructor training programs, which are internationally recognized and cost-effective.^{14,15}

A systematic review¹⁶ showed how train-the-trainer programs in health care develop good trainers while training other professionals. Mostly in before and after studies, knowledge improved, however, no studies investigated the ability of trained instructors to deliver the learned program. Similar results were found in another systematic review on train-the-trainer models to propagate resuscitation knowledge in limited-resource settings.³ BLS-teaching does not solely depend on resuscitation knowledge, therefore, the Basic Instructor Course-pilot course did not focus on improving participants'

Table 1 – The outcome of the Basic Instructor Courses: number of courses and instructor development over three years.

Year Number of Basic Instructor Courses	Total number of participants	Participants became after the instructor course Instructor /Instructor candidate/ did not teach	BLS courses taught by instructors, mean ± SD	BLS courses taught by candidates, mean ± SD
Pilot Basic Instructor Course				
2019 1	7	6/ 0/ 1	4.4 ± 1.2	
2020 1	8	5/ 1/ 2	5.8 ± 2.9	2
2021 2	16 (8 each)	13/ 2/ 1	2.8 ± 0.8	1
Total 4	31	24/ 3/ 4	3.8 ± 1.9	1.3 ± 0.6
Standard Basic Instructor Course				
2021 3	37	6/ 3/ 28	5.5 ± 4.0	1.0 ± 0.0

BLS Basic Life Support; SD standard deviation.

Table 2 – Summary of answers to the open questions from the post-course feedback form.

Reflecting on the Basic Instructor Course ...	Mentioned more often than 50 %	Mentioned less than 50 %
... from which Basic Instructor Course component did you benefit most?	Micro-teaching sessions to teach BLS (practical tips)	Mutual feedback and reflections Didactic theory Manikin maintenance
... what could be improved?		Duration of the Basic Instructor Course too long More effective facilitation of micro-teaching More focused reflection (time management) Nothing, very good course format
... what component of the Basic Instructor Course should be retained for future courses?	Micro-teaching	Individualized feedback Manikin maintenance
... what component could be omitted?		Theory Nothing, good as it is
... was there anything you missed?		Theory on BLS and didactics Assessment of competences Structure and BLS-course program
... what is your personal learning goal for your next (supervised) BLS course?		To gain self-confidence in teaching To provide constructive feedback To have a course structure To handle the BLS feedback device Less is often more To motivate learners To implement playful learning To implement learner-centered teaching

BLS Basic Life Support.

BLS-knowledge.¹⁷ It rather provided opportunities to practice what instructors need to do during BLS courses via the pre-prepared micro-teaching session and the feedback exercise: teaching BLS skills and providing corrective and constructive feedback to improve BLS-course participants' performance.

Another systematic review determined the effectiveness and optimal delivery of train-the-trainer programs in healthcare professional education. Blended learning and interactive training methods in such programs improve knowledge, clinical behaviour, and produce better patient outcomes compared to traditional, didactic-style training. The authors did not find evidence of which teaching method should be employed and when.¹⁸

Due to staff turnover, continuous availability of train-the-trainer programs to ensure retention of competencies should be ensured to improve long-term sustainability and staff commitment to keep such programs alive. Implementing such a short Basic Instructor Course as part of spaced learning (meaning learning sessions distributed in short sessions over time) has been shown to be effective in resuscitation education.^{19,20}

The combination of this short "introductory" Basic Instructor Course followed by two supervised teaching courses as instructor candidates, and annual instructor educational events as required by the ERC course rules⁶ ensures this teaching strategy. It also reduces absence from clinical work for participants facilitating the

scheduling of healthcare providers for such continuous professional development courses.

Our report has several limitations. The relatively small sample size from one course center limits data generalizability. Only healthcare providers and medical students were included as trainer candidates, therefore caution is necessary when extrapolating our experiences to other instructor courses, especially for layperson BLS instructors who might need more and/or different training. An ERC-educator was present during the pilot phase, which is not routinely the case in Basic Instructor Courses, this potential bias needs to be considered. We did not perform a cost-efficiency assessment as we lack a comparator from the longer standard ERC Basic Instructor Course. Our outcomes are on the lowest of Kirkpatrick's levels of evaluation.²¹ We did not assess the effect of blended learning on patient outcomes, or long-term educational outcomes beyond three months.⁴

Conclusion

This pilot of a short 4-hour blended learning approach for ERC BLS-instructor teaching in a healthcare setting can train successfully future BLS-instructors. Most participants subsequently became BLS-instructors and taught ERC BLS-provider courses. These instructors might be more motivated to teach subsequent BLS provider courses than candidates of the traditional 8-hour ERC Instructor Course because nearly 80 % of pilot course participants started to teach BLS. The shorter course format facilitates the participation of healthcare providers because it minimizes their absence from clinical work. Further research needs to investigate specific delivery variants of such instructor courses for other settings, specifically for layperson BLS-instructors, and the effect on BLS-providers and patient outcomes.

CRedit authorship contribution statement

Sabine Nabecker: Methodology, Writing – original draft, Visualization, Writing – review & editing. **Yves Balmer:** Contribution Methodology, Visualization. **Sander van Goor:** Methodology, Visualization. **Robert Greif:** Conceptualization, Methodology, Data curation, Validation, Writing – review & editing.

Declaration of Competing Interest

S.N. is European Resuscitation Council SEC-IES committee member (Instructor-Educator-Support Science and Education Committee), and Canadian Anesthesiologists' CEPD (Continuing Education and Professional Development) Committee member. S.N. is currently also Handling Guest editor of the Special Edition on Resuscitation Education in the Resuscitation plus journal. R.G. is European Resuscitation Council's Director of Guidelines and ILCOR, and ILCOR (International Liaison Committee on Resuscitation) Task Force Chair Education, Implementation, Team. R.G. is Board member of the Resuscitation plus journal and is currently also Guest editor of the Special Edition on Resuscitation Education in the Resuscitation plus journal. S.v.G. is educational co-chair of the European Resuscitation Council's Science and Education Committee Basic Life Support. R.G. and Y.B. taught during these pilot courses.

Acknowledgements

We like to thank all participants of these Basic Instructor Course pilot courses, the involved instructors and the administrative staff of the Bern Simulation and CPR-Center for their help in conducting the Basic Instructor Courses.

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REFERENCES

- Olasveengen TM, Semeraro F, Ristagno G, et al. European Resuscitation Council Guidelines 2021: Basic Life Support. *Resuscitation* 2021;161:98–114.
- Greif R, Lockey A, Breckwoldt J, et al. European Resuscitation Council Guidelines 2021: Education for resuscitation. *Resuscitation* 2021;161:388–407.
- Anderson CR, Taira BR. The train the trainer model for the propagation of resuscitation knowledge in limited resource settings: A systematic review. *Resuscitation* 2018;127:1–7.
- Ko Y-C, Hsieh M-J, Cheng A, et al. Faculty Development Approaches for Life Support Courses: A Scoping Review. *J Am Heart Assoc* 2022;11:e025661–e.
- <https://www.erc.edu> last accessed 25 July 2022.
- In, https://www.erc.edu/assets/documents/ERC_Course_Rules_Version_21092021.pdf last accessed 16 May 2022.
- Nabecker S, Huwendiek S, Theiler L, Huber M, Petrowski K, Greif R. The effective group size for teaching cardiopulmonary resuscitation skills - A randomized controlled simulation trial. *Resuscitation* 2021;165:77–82.
- Elgohary MP, Breckwoldt J, Cheng A, Pellegrino J, Schnaubelt S, Greif R, Lockey A. Blended learning for accredited life support courses – A systematic review. *Resuscitation Plus* 2022;10.
- Phillips J, Wiesbauer F. The flipped classroom in medical education: A new standard in teaching. *Trends Anaesth Crit Care* 2022;42:4–8.
- Remesh A. Microteaching, an efficient technique for learning effective teaching. *J Res Med Sci* 2013;18:158–63.
- Higgins A, Nicholl H. The experiences of lecturers and students in the use of microteaching as a teaching strategy. *Nurse Educ Pract* 2003;3:220–7.
- Dieckmann P. Debriefing olympics-a workshop concept to stimulate the adaptation of debriefings to learning contexts. *Simul Healthc* 2012;7:176–82.
- Wisniewski B, Zierer K, Hattie J. The Power of Feedback Revisited: A Meta-Analysis of Educational Feedback Research. *Front Psychol* 2019;10:3087.
- Sachdeva AK. Continuing Professional Development in the Twenty-First Century. *J Contin Educ Health Prof* 2016;36:S8–S13.
- Milanes SF, Grimmer-Somers K, Souvlis T, Innes-Walker K, Chipchase LS. Is a blended learning approach effective for learning in allied health clinicians? *Phys Therapy Rev* 2014;19:86–93.
- Poitras ME, Belanger E, Vaillancourt VT, et al. Interventions to Improve Trainers' Learning and Behaviors for Educating Health Care

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- Professionals Using Train-the-Trainer Method: A Systematic Review and Meta-analysis. *J Contin Educ Health Prof* 2021;41:202–9.
17. Crosby RMHJ. AMEE Guide No 20: The good teacher is more than a lecturer - the twelve roles of the teacher. *Med Teach* 2000;22:334–47.
 18. Pearce J, Mann MK, Jones C, van Buschbach S, Olf M, Bisson JI. The most effective way of delivering a train-the-trainers program: a systematic review. *J Contin Educ Health Prof* 2012;32:215–26.
 19. Yeung J, Djarv T, Hsieh MJ, et al. Spaced learning versus massed learning in resuscitation - A systematic review. *Resuscitation* 2020;156:61–71.
 20. Greif R, Bhanji F, Bigham BL, et al. Education, Implementation, and Teams: 2020 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. *Resuscitation* 2020;156:A188–239.
 21. Kirkpatrick JK. Kirkpatrick's Four Levels of Evaluation. ASSN For Talent Development 2016.