Training module on ultrasound during resuscitation

Domagoj Damjanovic¹, Tobias Schroeder², Carsten Lott^{3,4}, Joerg Hanusch⁵, Caroline Busche⁶, Matthias Ott¹, Christopher Starz⁷, Raoul Breitkreutz^{8,9}

Increase in
Hands-Off-Times
>10 SEC

INTRODUCTION

Point of Care Ultrasound (PoCUS) during cardiopulmonary resuscitation ("Resuscitation Ultrasound") is increasingly available. It has a potential to **identify reversible causes** of cardiac arrest, guides invasive procedures and significantly alter patient management. It is part of the current universal ERC-Advanced Life Support-, ALS-algorithm. Recent research describes **increased no-flow times** due to use of ultrasound during resuscitation. Several authors therefore highlight the importance of an ALS-conformed integration of Resuscitation Ultrasound. **ALS-conformed** means to structure the procedure in order to minimize interruptions and use the chance to find reversible causes of cardiac arrest at an early point of time. We describe the development, implementation and one-year experience of a training module in Resuscitation Ultrasound, with a focus on procedural aspects .

Course evaluation during ERC Resuscitation 2017, N=35 (36)

Pre-Course Survey

Did you understand risk of prolonging hands-off-times?

Perceived impact of different teaching methods

METHODS

Our working group developed a curriculum consisting of a brief introduction, live scanning on a volunteer (subxiphoid four-chamber heart view) and a simplified ALS scenario-training with a low-budget ultrasound simulation solution. The training module was piloted and adapted according to the evaluation.

ACKNOWLEDGEMENTS

Viola Sauter and Anne Bauer, Freiburg, for data management of course evaluation forms

RESULTS

The module was first introduced during the ERC Congress 2017 in Freiburg, Germany. Since then, more than 200 attendees have been trained throughout the following months. The format underwent minor refinements, but it was broadly applicable and technically feasible within the given timeframe. Specific pitfalls of this training in ALS-conformed integration of Resuscitation Ultrasound have been identified that require further evaluation and can serve as training targets.

CONCLUSION

The training module on ALS-conformed Resuscitation Ultrasound has successfully been implemented. It has been designed for widespread adoption across training centers. Teaching experience suggests that ultrasound use significantly adds to complexity during ALS scenarios, and procedural training is warranted. Resource management and instructor qualification require further attention. Integration of ultrasound simulation technology is an important part of the didactic concept. Evaluation of the format is ongoing.

¹ Department of Cardiovascular Surgery, University Heart Center Freiburg, Faculty of Medicine, University of Freiburg, Germany, Freiburg, Germany. ² Department of Anaesthesiology, Surgical Intensive Care, Emergency Medicine and Pain Therapy, Klinikum Frankfurt Hoechst, Germany. ³ Academic Teaching Hospital of the University of Frankfurt, Germany, Frankfurt, Germany. ⁴ ERC ALS Science & Education Committee, ERC, Belgium. ⁵ Dept. of Anesthesiology, University Medical Center, University of Mainz, Mainz, Germany. ⁶ St. Josefskrankenhaus, Freiburg, Germany. ⁷ Department of Emergency Medicine, University Medical Center Freiburg, Faculty of Medicine, University of Freiburg, Germany, Freiburg, Germany. ⁸ SonoABCD Working group, Klinikum Frankfurt Hoechst, Academic Teaching Hospital of the University of Frankfurt, Frankfurt, Germany. ⁹ Dept. of Anaesthesiology, Vulpus Klinik, Bad Rappenau, Academic Teaching Hospital of the University of Heidelberg, Heidelberg, Germany