Paediatric high fidelity simulation is useful to improve resuscitation skills in paediatric cardiology

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Introduction:
Life-threatening Paediatric Cardiac Arrhythmias are a low frequency event in paediatric resuscitation. This can cause a high stress level on teamwork, which influences the resuscitation efficiency. Patients have the best chance to survive when the team rapidly identifies the problem and performs life saving interventions. To achieve a good clinical outcome, the clinical skills as well as the non-clinical skills such as communication, leadership and teamwork have to be optimal. Our hypothesis was that offering good education and team training, including high fidelity simulation on a regular basis would improve these skills.

Methods:
A combined theoretical and practical course was put in place for a multidisciplinary group at our University Hospital. These groups were put together with nurses and Specialist registrars, who are working together in clinical practice. The course dealt with the treatment of cardiac arrhythmias like ventricular fibrillation, ventricular tachycardia, supraventricular tachycardia and asystole. After the theoretical course the group went to the simulation laboratory including a paediatric simulation mannequin, in whom they needed to handle cardiac arrhythmias scenario. During the debriefing clinical as well as the non-clinical skills were debriefed in detail. The main focus was put on the algorithm, including rapid diagnosis of arrhythmias, first choice medical treatment if needed, minimal interruption of cardiac massage, communication and leadership.

Results:
After the first course several further simulation sessions were held. An improvement in dealing with critical paediatric resuscitation situations was observed, as quantified by a score system assessing time to obtain correct diagnosis, time to give the correct instructions with respect to stabilisation and treatment, quality of leadership and quality of debriefing. A questionnaire was distributed after the session in which the candidates mentioned that regular training sessions were useful to maintain their resuscitation skills, give them more confidence in acute situations in general and in treating arrhythmias in particular and good teamwork.

Conclusion: High Fidelity Simulation is a necessary tool to prepare a multidisciplinary team for rare but serious situations in paediatric cardiologic resuscitation. This is expected to result in an improvement of patient safety and decreased stress of the team facing these acute situations.