Evaluation of quality of telephone-cardiopulmonary resuscitation under contemporary emergency medical dispatcher training in Graz – a pilot study

Introduction: Sudden cardiac arrest is the most common cause of prehospital mortality in western countries. Despite recent advances in cardiopulmonary resuscitation (CPR), mortality remains unacceptably high. This may be at least in part caused by the frequent delay to initiation of chest compressions. Since 2010, resuscitation guidelines emphasize the telephonic instruction of lay rescuers by emergency medical dispatchers (EMDs) to perform CPR (t-CPR). However, currently no universally accepted standard to train EMDs in t-CPR exists. We aimed to evaluate the performance of lay rescuers in t-CPR when guided by an EMD trained according to local standards.

Methods: Ten healthy volunteers (last resuscitation training more than 4 years ago) with no affiliation to any medical profession participated. They were advised to enter a room individually where they found some kind of emergency and were asked to provide first aid to the best of their knowledge, and then call the emergency service. Further instructions were then given by the EMD according to current guidelines. All subjects were faced with a cardiac arrest situation (adult resuscitation manikin). The time for basic life support interventions as well as the number of total and effective chest compressions and the compression frequency were recorded.

The EMD completed training according to Austrian federal law and local institutional policies. He instructed the participants to assess breathing and thereafter provide chest compression-only CPR. We assessed time-to-initiation of chest compressions and their quality (depth, rate, and recoil).

Results: All subjects completed the measurement protocol. Shocks and shouts, the emergency call, and chest compressions were initiated 8.8 sec, 25±11 sec, and 142±23 sec after entering the room, respectively. Within the first 7 minutes, median total and effective chest compressions were 454 (Q25 344, Q75 506) and 317 (Q25 187, Q75 456), respectively. Inter-individual differences in chest compression frequency and depth were observed, although 100 mmHg and “push as hard as you can, at least 5 cm” were repeatedly instructed by the EMD.

Conclusion: The overall subjects’ comprehension of EMD instructions is highly variable. Our preliminary results suggest that high quality CPR is achievable only in around half of the cases of t-CPR. Further studies with larger samples sizes, different cohorts and other protocols are needed to identify the necessary training of EMDs. A feedback of the lay rescuers’ resuscitation attempts may be beneficial for the EMDs’ guidance.

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Introduction: Sudden cardiac arrest is the most common cause of prehospital mortality in western countries. Despite recent advances in cardiopulmonary resuscitation (CPR), mortality remains unacceptably high. This may be at least in part caused by the frequent delay to initiation of chest compressions. Since 2010, resuscitation guidelines emphasize the telephonic instruction of lay rescuers by emergency medical dispatchers (EMDs) to perform CPR (t-CPR). However, currently no universally accepted standard to train EMDs in t-CPR exists. We aimed to evaluate the performance of lay rescuers in t-CRP when guided by an EMD trained according to local standards. Methods: We conducted a pilot study recruiting ten volunteers who were asked to perform first aid on a manikin under EMD (single operator) guidance. The EMD completed training according to Austrian federal law and local institutional policies. He instructed the participants to assess breathing and thereafter provide chest compression-only-CPR. Results: Participants were 18 – 61 years old and 6/10 were female. Median time to initiation of chest compression was 1.6 minutes. High quality compressions were achieved by 5/10 participants. Regular repeating of instructions lead to improved chest compressions between minutes 2 and 3 in 8/10 participants. Conclusions: Our preliminary results suggest that high quality CPR is achievable only in around half of the cases of t-CPR. Further studies with larger samples sizes, different cohorts and other protocols are needed to identify the necessary training of EMDs.