

Title: The Impact of Guideline-Based Protocols and Training on the Provision of Pre-Arrival CPR Instructions and Patient Outcomes at Three 9-1-1 Centers in Arizona

Introduction: Bystander CPR (BCPR) is associated with survival from out-of-hospital cardiac arrest (OHCA) but is provided in a minority of cases. The American Heart Association (AHA) has published guidelines for providing pre-arrival Hands-Only telephone CPR (TCPR) instructions to increase rates of early BCPR in adult arrests. The impact of implementing these guidelines is unknown, however.

Objective: Evaluate the impact of implementing the TCPR guidelines on: dispatcher recognition of OHCA, time from call-receipt to start of TCPR instructions, time to first chest compression (CC), pre-hospital return of spontaneous circulation (ROSC), survival, and favorable neurologic outcome (FNO)

Methods: The Bureau of Emergency Medical Services and Trauma System at the Arizona Department of Health Services used a standardized time-stamp methodology to evaluate OHCA audio records from 3 regional dispatch centers in Maricopa County, AZ (10/10-11/12). Data were entered into a structured database linked to EMS and hospital outcome data. Intervention: Guideline-based protocols were installed and a 2.5-hour training was conducted at each center.

Results: There were 860 pre-implementation (P1) and 799 post-implementation (P2) cases. A total of 1265 cases met inclusion criteria. Outcome data collection and linkage is continuing. ROSC, survival and neuro outcomes were available in 26%, 24% and 22% of cases, respectively. The proportion of cases receiving TCPR increased: P1 (28.7%); P2 (49.9%, $p<0.001$). Median time to beginning TCPR instructions decreased significantly: P1 (153 sec); P2 (129 sec, $p<0.001$) as did median time to first CC: P1 (242 sec); P2 (162 sec, $p<0.001$).

Conclusions: The implementation of the AHA pre-arrival TCPR guidelines was associated with a significant improvement in the rate of TCPR and in the time-to-TCPR instructions and time-to-first CCs. This small, preliminary analysis of prehospital ROSC, survival, and FNO revealed higher, but statistically non-significant, rates after the interventions.

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