

Bobrow B, Silver A, Stolz U, Irisawa T, Karamooz M, Murphy RA, Kovacs A, Spaite D. **Chest compression release velocity is independently associated with survival from out-of-hospital cardiac arrest.** Oral abstract presentation to the European Resuscitation Council Resuscitation Symposium in Bilbao, Spain, May, 2014. *Resuscitation*, 2014;85, Supplement 1:S1-S2.

Purpose: There is mounting evidence that prehospital CPR quality (CPRQ) strongly impacts survival. Animal studies have demonstrated the influence of chest compression release velocity (CCRV) on survival, but there is insufficient clinical data. We tested the hypothesis that CCRV is independently associated with survival in out-of-hospital cardiac arrest (OHCA).

Materials and Methods: CPRQ was measured using a monitor/defibrillator equipped with accelerometer-based CPR sensing technology (E Series, ZOLL Medical) during the treatment of consecutive OHCA patients by 4 EMS agencies in the state of Arizona between 09/2008-06/2013, as part of an ongoing study to improve CPRQ. Cases of non-EMS witnessed arrest of presumed cardiac etiology were included. Fisher's exact test was used to compare survival among arrests grouped into categories of CCRV: fast (>400 mm/s), moderate (300-400 mm/s), or slow (\leq 300 mm/s). The impact of CCRV on survival to hospital discharge was also assessed using multivariable logistic regression to calculate adjusted odds ratios (aOR) for survival to discharge adjusting for known confounders.

Results: 730 adult OHCA (mean age 66 ± 16 , 65% male, 11% survival to discharge) were analyzed. Survival varied significantly with CCRV ($p < 0.001$; fast= 18/78 [23%]; moderate= 48/404 [12%]; slow= 16/248 [6%]). Logistic regression revealed that fast CCRV was independently associated with increased survival to discharge compared to both slow [aOR 3.86; 95% CI: 1.54, 9.66] and moderate CCRV (aOR 3.31 [1.50, 7.29]). When assessed as a continuous variable (per 10 mm/s), CCRV remained an independent predictor of survival ($p < 0.05$) and the adjusted odds of survival increased 5% for each 10 mm/sec increase in CCRV (aOR 1.05 [1.00, 1.10]).

Conclusion: CCRV is significantly associated with survival from adult OHCA after controlling for known confounders and independent risk factors. Prospective studies are required to confirm the linkage between CCRV and survival and to determine if improving CCRV will result in better survival.