

Abstract 4

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Title: Impact of Special Training on Dispatcher-Assisted CPR

Background:

Survival from Out of Hospital Cardiac Arrest (OHCA) is poor with rates in the US of less than 8%. Recent research demonstrates that decreasing the time to initiation of Cardiopulmonary Resuscitation (CPR) can significantly improve survival. Evidence suggests that a 4-6 minute delay in CPR initiation can decrease a patient's chance of survival by almost 60%. Unfortunately, it is difficult for US systems to decrease average EMS response time, especially in rural areas. In an attempt to decrease the time to initiation of CPR, Emergency Medical Dispatchers (EMDs) are trained to provide Pre-Arrival Instructions (PAI) to callers. They have been trained to successfully use PAI algorithms to determine and initiate Dispatcher-Assisted CPR (DA-CPR). However, the vendor provided algorithms and training currently used by most EMS systems contain significant barriers for the timely initiation of DA-CPR. The objective was to evaluate the impact of special training on DA-CPR to EMDs in Surry County, North Carolina administered by the medical director in an effort to increase the proportion of calls in which the caller started DA-CPR within 120 seconds.

Method:

This is a retrospective pre/post study which assessed the impact of a didactic training intervention provided by the County EMS Medical Director on June 24, 2014 to EMDs in Surry County, NC. Data was collected on all OHCA from 01/01/2014 - 12/31/2014 from the patient care report database. Cases were cross-matched to all patients that received DA-CPR identified in the 911 center's database. We examined the percentage of calls that had repeated entry questions, ad-lib questions, ad-lib questions repeated, repeated unconscious/abnormal breathing questions, correct compression rate ensured, and caller refused instructions before and after intervention. We also examined the average time compression instructions were started and chest compressions were actually started before and after intervention. Chi-squared tests or Fisher's exact tests were used to assess statistical significance of categorical variables based on appropriateness of cell size. T-tests or Wilcoxon rank-sum test were used to assess statistical significance of continuous variables based on data distribution.

Results:

There were 23 calls included in the pre-intervention study period and 26 calls included in the post-intervention study period. There were 3 calls (pre=1; post = 2) in which the caller refused instructions. The proportion of calls in which the caller started chest compressions within 120 seconds increased from 13.6% (3/22) to 25.0% (6/24) however, this result was not statistically significant ($p=0.464$). The median time to the start of chest compressions significantly decreased 42.1% following the intervention (pre = 263.5 seconds; post = 152.5 seconds; $p=0.01$). The proportion of calls requiring ad-lib questions decreased from 95.7% (22/23) to 38.5% (10/26), and repeated ad-lib questions decreased from 52.2% (12/23) to 11.5% (3/26), ($p<0.01$). Similarly, repeated unconscious/abnormal breathing questions decreased from 82.6% (19/23) to 30.8% (8/26), ($p<0.01$). The number of times the compression rate was ensured increased from 36.4% (8/22) to 70.8% (17/24), ($p=0.02$). No significant difference was noted for the time to EMD provided compression instructions, percentage of calls with repeated entry questions, or the rate of callers refusing instructions.

Conclusion:

A brief, targeted, didactic training session was able to increase the proportion of calls in which chest compressions were started within 120 seconds. However, this result was not statistically significant, due to our small sample size. The training session was able to significantly reduce the time to initiation of chest compressions, increased the number of times correct compression rate was ensured and reduce the number of ad-lib and repeated questions. Although many of our results were encouraging and some were statistically significant, the sample size and pre- post- design were limitations. The possible life-saving implications of these results necessitate further investigations of the relationship between additional EMD training and reducing the time to initiation of chest compressions.