Cardiopulmonary Resuscitation: Is the ED Visit an Opportunity to Recommend Education?

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Cardiopulmonary resuscitation: is the ED visit an opportunity to recommend education?☆

To the Editor,

The incidence of sudden cardiac death in the United States is between 180 000 and 250 000 per year [1]. Odds of survival from sudden cardiac arrest increases 3.7 times if bystander cardiopulmonary resuscitation (CPR) is performed [2-4]. Twenty-seven percent of out-of-hospital arrests receive bystander CPR [5]. In Arizona, a 5-year educational campaign increased the incidence of bystander CPR from 28.2% to 39.9%, resulting in increased survival rates, from 3.7% to 9.8% [6]. The American Heart Association has transitioned traditional CPR to "compression-only." Laypersons exposed to short "hands-only" CPR videos are more likely to attempt CPR, than those who have not received training [7]. In addition, a 30-minute CPR course using innovative techniques was found to be as effective as the standard multiple hour course [8]. Previous research shows that patients are more likely to buy the American Heart Association's CPR Anytime kit (American Heart Association, Dallas, TX) than take a traditional CPR course when given a prescription for either; however, only 15% of those prescribed purchased the kit [9]. Our objective was to determine if patients/their families would complete a CPR Anytime kit if given to them during their emergency department (ED) visit.

This was a prospective, pilot study that was approved by our institutional review board. It was conducted with a convenience sample of patients who presented to a suburban tertiary care ED with a yearly census of 75 000. Inclusion criteria included English-speaking, access to a DVD player, and not taken a CPR course in the past year. Enrolled CPR-naïve adult participants were given a CPR Anytime learning kit, which consists of a CPR mannequin and a 22-minute DVD. Approximately 3 months after their ED visit, patients were contacted by telephone for a survey assessing self-reported completion.

Survey responses were illustrated by descriptive frequencies. Between-group comparisons for categorical variables were completed using Pearson χ^2. Wilcoxon rank-sum test was used to evaluate differences in median CPR importance responses between participant sexes. Significance was set at $\alpha < .05$. All statistical tests were 2 sided.

The mean age of 129 participants was 44.7 years, 80 (62.0%) female and 49 (38.0%) male; 83% (n = 107) had a primary care physician, and 87% (n = 112), health insurance. Seven participants (5.4%) had a history of a myocardial infarction, whereas 68 (52.7%) reported a positive family history. Sixty percent of the participants (n = 77) rated importance of personal knowledge of CPR as a "10" on a scale from 1 to 10 (not very important-to very important, Fig. 1). Similar results were observed when asking participants to rate importance of family members' ability to perform CPR, with 85 respondents (65.9%) giving the highest rating. Males reported significantly lower "perceived importance" levels than females. Of the 80 female participants, 59 (73.8%) rated personal knowledge of CPR as "very important," whereas only 18 (36.7%) of the 49 male participants responded similarly ($P = .004$). Comparable results were observed for perceived importance of family members' knowledge of CPR, with 77% of females and 46.9% of males responding with the highest score ($P = .02$).

At the 3-month follow-up, 14 patients (10.8%) either refused to continue or were lost to follow-up. Of the 115

☆ A portion of this material was presented at the Society for Academic Emergency Medicine Annual Meeting, June 1 to 5, 2011, Boston, MA.

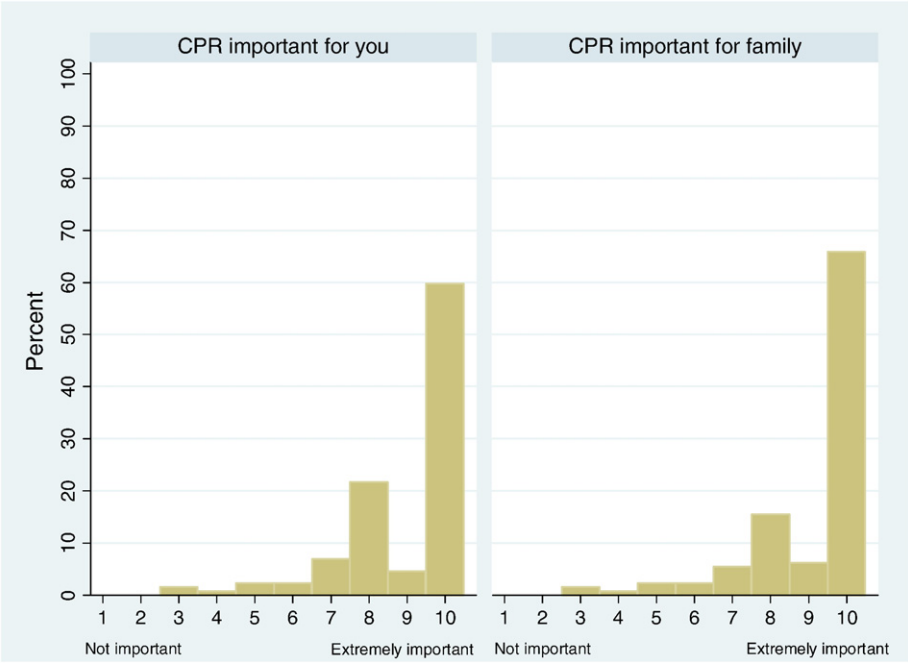

Fig. 1 Importance of CPR.

remaining participants, 31 (26.9%) completed the kit. Five study participants enrolled, received the kit, but had a family member complete it (they were all men whose wives completed training). A total of 16 females (22.2%) and 15 males (34.9%) reported completing the CPR kit (P = .14). Twenty percent of participants with health insurance completed the kit, compared with only 7.7% without insurance (P = .10). Eighteen participants gave the CPR kit to 19 additional persons. This constitutes a "multiplier effect," where a participant "multiplies" the number of people exposed to the intervention by sharing it. Traditional CPR classes are not structured to offer this sharing opportunity, a benefit of CPR Anytime.

The prevalence of bystander CPR performance remains low. The CPR Anytime kits effectively offer a convenient means of mastering CPR. Of the participants in this study, 24% (31/128) completed these kits and/or shared the kits with their friends and family. This outcome is surprisingly low considering the perceived value of importance that subjects placed on knowing the skill. We chose to focus our study on adults and did not explore the impact of including a younger age group in our intervention. Studies in Denmark have shown successful results when targeting school populations [10]. We may have had a more robust cohort had we enrolled younger participants.

Most ED patients report that knowing how to perform CPR for themselves and their families is very important. However, a minority of these same patients and their families are motivated to complete a CPR Anytime kit, even when provided at no expense to them. This pilot study suggests that the distribution of free CPR training kits can increase the number of CPR providers in the community. However, the benefit to the few who learn CPR from this type of effort must be offset by the program cost.

Statistical analysis by Stephen W. Dusza, DrPH, Research Epidemiologist.

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Is it cost-effective to use procalcitonin to predict outcome in community-acquired pneumonia in the ED?

To the Editor,

We read with great interest the article by Park et al [1] in the September 2012 issue of the *American Journal of Emergency Medicine*. In their study of patients with community-acquired pneumonia at the emergency department, procalcitonin (PCT) was a good predictor for mortality and disease severity. Although initial PCT level had the similar area under the curve of 3 prediction rules, including pneumonia severity index, CURB65 (confusion, urea >7mmol/L, respiration rate≥30 breaths/min, low blood pressure [systolic value 90 mm Hg or diastolic value ≤60 mm Hg and age ≥65 years), and Infectious Disease Society of America/American Thoracic Society guidelines for predicting outcome, the measurement of PCT is not cheap. Therefore, we wonder whether the additional cost of PCT measurement in patients with community-acquired pneumonia only for prediction outcome is worth.

However, the recent meta-analysis about the use of PCT to guide initiation and duration of antibiotic treatment in patients with acute respiratory infections showed that antibiotic consumption was significantly reduced, but this intervention was not associated with higher mortality rates or treatment failure [2]. Although this kind of application of PCT was not evaluated in this study, it should be more cost-effective in common clinical practice.

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"Is it cost-effective to use procalcitonin to predict outcome in community-acquired pneumonia in the ED?" Response to the authors

To the Editor,

These readers ask whether using procalcitonin at the emergency department (ED) is cost-effective to predict outcome in community-acquired pneumonia (CAP). The study of Park et al [1] demonstrated that procalcitonin level was more valuable than conventional biomarkers for predicting the mortality and severity of CAP upon ED admission and suggested that it might be valuable as an adjunct to CAP prediction for prognosis and severity assessment.

Because it is difficult to rapidly apply prediction rules (eg, pneumonia severity index (PSI), CURB65 (confusion, urea >7 mmol/L, respiration rate ≥30 breaths per minute, low blood pressure [systolic value <90 mm Hg or diastolic value ≤60 mm Hg], and age ≥65 years) score, or the Infectious Disease Society of America and the American Thoracic Society (IDSA/ATS) guidelines in the chaotic ED situation, many emergency physicians seek to identify biomarkers that can readily and reliably predict the mortality and severity of CAP. Although conventional biomarkers such as C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), and white blood cell (WBC) have been used to monitor infectious patients' clinical state, they do not respond accurately to these patients' severity and outcome.

A recent meta-analysis [2] reported that the procalcitonin level is valuable to guide initiation and discontinuation of antibiotic treatment in patients with acute respiratory infections and also indicated that further studies should be