Poster presentation

Strategies for implementation of public access defibrillation in residential areas: a community based study

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Introduction
Public access defibrillation (PAD) programmes have focused on out-of-hospital cardiac arrests (OHCA) in public though the majority of arrests occur in residential areas. However, knowledge concerning strategic placement of automated external defibrillators (AEDs) in residential areas is lacking.

Methods
The Copenhagen Mobile Emergency Care Unit identified all OHCAs in Copenhagen from 1994–2005, and data for each cardiac arrest including presumed cause and time of arrest, initial heart rhythm, and location of arrest (private vs. public) were obtained. Demographic characteristics of grid cells (100 × 100 meter areas) were analyzed according to the occurrence of residential OHCA. Each grid cell was assigned to quartiles of population density, household income, average age, and proportion of short education.

Results
Of 4828 registered OHCAs, 3554 (74%) occurred in residential areas. Compared with OHCA in public, individuals with OHCA in private locations were older (70 vs. 62 years, p < 0.0001), more frequently male (76.8% vs. 56.5%, p < 0.0001), more often had arrest during night time (21.2% vs. 11.2%, p < 0.0001), had higher comorbidity rates, experienced longer response time (6.0 vs. 5.0 min, p < 0.0001), were less likely in a ventricular fibrillation (12.8% vs. 38.1%, p < 0.0001), and had a lower survival rate (3.2% vs. 13.9%, p < 0.0001). Demographic characteristics of grid cells predicted OHCA frequency in residential areas. The rate ratios of cardiac arrest in the lowest compared to the highest quartile was: for population density 8.61 (95% confidence interval (CI) 7.25–10.22), for average age 1.80 (95% CI 1.65–1.95), for household income 0.68 (95% CI 0.57–0.81), and for the proportion of short education 1.94 (95% CI 1.68–2.25).

Conclusion
In this community-based study we found important differences in individual OHCA characteristics according to location of OHCA that could explain the poor outcome of OHCA found in private locations. In addition, we found differences of OHCA occurrence according to demographic characteristics in residential areas. These findings suggest that for the placement of AEDs as part of a residential PAD programme, the population density, average age, as well as the neighbourhood socioeconomic status should be taken into consideration.