Availability and accessibility of community automated external defibrillators in NTW Territory in Hong Kong

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Introduction
Prehospital defibrillation and return of spontaneous circulation before hospital arrival was the single strongest predictor of survival-to-discharge among out-of-hospital cardiac patients. Public access defibrillation (PAD) i.e. operation of automatic external defibrillator (AED) by laypersons to conduct defibrillation on the arrest scene, is one of the major components of bystander CPR in the chain of survival. Successful PAD depends on the knowledge and attitude of bystander, and the availability and accessibility of AED in the community.

Objectives
To evaluate the availability and accessibility of community automated external defibrillators in a territory in Hong Kong.

Methodology
We conducted a cross-sectional study in Emergency Departments of two public hospitals in New Territories West Cluster (Tuen Mun Hospital and Pok Oi Hospital). Locations of community automated external defibrillators were obtained from AED suppliers or through community search. Locations of out-of-hospital cardiac arrests from August 2010 to September 2013 were obtained from the local cardiac arrest registry of the emergency departments of two hospitals. Sites of both automated external defibrillators and out-of-hospital cardiac arrests were geographically coded and mapped. The number of out-of-hospital cardiac arrests within 100 m of automated external defibrillators per year and the proportion of out-of-hospital cardiac arrests with accessible automated external defibrillators (100 m) were calculated. The
number of community automated external defibrillators per 10 000 populations and public access defibrillation rate were also calculated and compared with the American Heart Association (AHA) recommendation.

**Result**
There were a total of 207 community automated external defibrillators in the territory. The number of automated external defibrillators per 10 000 population was 1.942. All facilities with automated external defibrillators in this territory had more than 0.2 out-of-hospital cardiac arrests per automated external defibrillator per year within 100 m. Among all out-of-hospital cardiac arrests, 25.2% could have an automated external defibrillator accessible (i.e. reachable within 100 m). The public access defibrillation rate was 0.168%. Conclusions: The number and accessibility of community automated external defibrillators in this territory are comparable to developed countries. The placement is judged to be cost-effective according to AHA recommendation. However, the public access defibrillation rate is low. Further education or promotion on public access defibrillation should be done.