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The successful experience of establishment of Asia First Mobile-transmit Ambulance Pre-hospital Electrocardiogram System In Kaohsiung city, Taiwan.

BACKGROUND: Prehospital electrocardiogram (ECG) can reduce reperfusion time and save the life of patients after ST-elevation myocardial infarction (STEMI). However, it remained a challenging issue to set up prehospital ECG in Taiwan or Asian Countries.

METHODS: The key interventions include to establish Asian first prehospital automatic interpretation ECG system with immediate ECG transmission over mobile networks, to invent a ECG exam accessory device, to set up a incentive and auditing system and to arrange emergency medical technician (EMT) educational program. The consecutive chest pain patients received ambulance ECG exam were enrolled from Jan. 2011 to Feb. 2013 at Kaohsiung city. The three groups included pre-interventional group from Jan to Dec 2011(N=545), Interventional group from Jan 2012 to Feb 2013 (N=743) and post-interventional group from March 2013 to Nov 2014 (N=899).

RESULTS: We invented a ECG exam accessory device, which was patent by Taiwan government and could shorten ECG exam from 252 seconds to 30 seconds. The ECG implementation rate increased from 0% in pre-interventional, to 0.6% in interventional to 47.9% in post-interventional group ($p<0.001$). Total 28 patients with STEMI was detected in 431 chest pain patients received ambulance ECG exam. In these STEMI patients, average door to balloon time was 52 minutes, average ischemia to balloon time was 115 minutes and in-hospital mortality was 0%.

CONCLUSIONS: The key factors to establish first Asian mobile-transmit prehospital ECG system in Kaohsiung city, Taiwan is cooperation of hospital, fire bureau and department of health of government, invention of a ECG exam accessory device.