

How to set up pre-hospital ambulance electrocardiogram system in Taiwan?

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OBJECTIVE: Early reperfusion in ST-elevation myocardial infarction (STEMI) is important to patients' outcomes. Reporting or transmitting prehospital electrocardiogram to the emergency department was shown to be an important part of STEMI treatment. However, it remained a challenging issue to set up prehospital ECG in Taiwan.

METHODS: A multidisciplinary team among Kaohsiung veterans Genreal hospital, fire bureau and department of health, Kaohsiung city government was organized since Sep, 2011. The key interventions include to establish prehospital automatic interpretation ECG system with immediate ECG transmission over mobile networks, to design a ECG exam accessory device, to set up a incentive and auditing system, to arrange EMT educational program and set up a standard operative procedure with transfer to appropriate hospital. The consecutative chest pain patients received ambulance ECG exam were enrolled from Jan. 2011 to Feb. 2014 in 6 different fire brigades at Kaohsiung city.

RESULTS: We developed a ECG exam accessory device, which could shorten ECG exam from 252 seconds to 30 seconds. The ECG implementation rate increased from 0% in pre-interventional group to 33.6% in post-interventional group ($p < 0.001$). Total 14 patients with STEMI was detected in 175 chest pain patients received ambulance ECG exam. In these STEMI patients, average door to balloon time was 53.5 minutes, average ischemia to balloon time was 111 minutes and in-hospital mortality was 0%.

CONCLUSIONS: The key factor to establish pre-hospital ECG system in Kaohsiung city is cooperation of hospital and city government, comprehensive EMT education program and development of a ECG exam accessory device.