

Online Tele-ECG System in a remote Brazilian Emergency Room: The evaluation of the time interval from door to discharge of cardiac patients

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Introduction: A lack of cardiologists in small cities and rural areas of Brazil frequently delays ECG interpretation and cardiovascular therapies. Since the year 2000, an online Digital Tele-ECG System has been established in the emergency care unit at São Lourenço do Sul Hospital. **Objectives:** (1) To record and evaluate the time interval elapsed since the arrival of a patient with cardiological symptoms at the door of the emergency unit until the discharge from that unit; (2) To optimize the emergency care for cardiological patients in an attempt of time reduction; (3) To establish a new protocol for the early thrombolytic therapy of acute myocardial infarction using intravenous single bolus tenecteplase.

Methods: Data of patients with cardiological symptoms arriving at the emergency care unit were recorded at Santa Casa Hospital from April to July, 2006. The nursing staff was trained to register the time intervals in the emergency setting, recording it as: Door to ECG, ECG transmission and interpretation and Diagnosis to Discharge from the emergency room; The ECG was sent to a remote cardiologist for diagnosis, after which a therapy was proposed. A Digital Tele-ECG System with transmission via both mobile and conventional phones was used for the online interpretation of exams.

Results: A total of 95 patients were evaluated in this study (48 men and 47 women). The mean time from Door to Discharge was 164 min, which was divided into: 30.5 (\pm 4.5) min from Door to ECG, 6.6 (\pm 0.7) min during ECG transmission and interpretation and 12.7 (\pm 21.9) min from Diagnosis to Discharge. Tele-ECG interpretation showed 23 normal ECGs, 15 ECGs with signs of acute myocardial ischemia and 13 ECGs with evidence of atrial arrhythmias and heart block.

Conclusion: The results of this study stress the efficacy of the utilization of digital tele-ECG online systems in emergency rooms in small hospitals in Brazil. The 30 min interval from Door to ECG was considered inadequate for emergency care and has to be improved. However, the time of Tele-ECG transmission and interpretation was found to be excellent. The association of Tele-ECG with a single bolus administration of tenecteplase is expected to improve the treatment of myocardial infarction.