

establishment of contact with the local medical authorities and professionals; 4) role of MOH in provision of medical care to citizens in a foreign country; 5) organisation for evacuation of critically injured casualties; 6) incident management and interagency coordination; and 7) role of mental health professionals.

Keywords: aircraft; burns; coordination, interagency; crash; evacuation incident command; international; survivors; teams

Prehosp Disast Med 2001;16(3):S124-125.

Hyperventilation Management: The Effectiveness of Rebreathing Bag and Breathing Retraining Techniques

Mr. Ngian Bang See, Advanced Diploma of Emergency Nursing, Diploma in Nursing

Accident and Emergency Department, Changi General Hospital, Singapore

Objective: Most common current practice in managing hyperventilation symptoms in the Accident and Emergency Department is by rebreathing bag. However, reviews of the literature have suggested that breathing retraining technique could effectively control the symptoms. This study compares the effectiveness of managing hyperventilation symptoms with either of these techniques. **Methods:** A prospective, randomized study was conducted over a period of three months in the Accident and Emergency Department of Changi General Hospital. Inclusion criteria included all patients >12 years old, SaO₂ >95%, respiratory rate >22b/minute. Exclusion criteria included asthma, pregnancy, and history of heart or lung problems. The odd numbered patients received a rebreathing bag, and the even numbered patients received breathing retraining technique. Effectiveness of the management was measured in terms of response to the treatment rendered and the time taken for the symptom to subside with patient's verbalization of relief.

Results: A total of 31 patients were enrolled in this study. Sixteen received rebreathing bags and 15 received the breathing retraining technique. Three patients did not respond to either treatment. Twenty-eight samples were analyzed. The majority of patients who hyperventilate are within the age of 12 to 30 years (n = 20 [71%]). Female patients are more likely to hyperventilate (n = 24 [86%]) as compared to men (n = 4 [14%]). Triggering factors included emotional stress (n = 10 [36%]) followed by high fever (n = 7 [25%]). The average time taken for relief of hyperventilation symptoms for patients given the rebreathing bag was 26.6 mins; the breathing retraining technique took 45.7mins ($p = 0.017$ [>0.005]).

Conclusion: Although current practice advocates the rebreathing bag in the management of hyperventilation, the result of our study indicates that breathing retraining technique also elicits an effect as generally both groups responded to treatment. Nonetheless, breathing retraining technique required longer time to relieve the symptoms as compared to the use of a rebreathing bag.

Keywords: bag; breathing retraining; hyperventilation; hyperventilation syndrome; rebreathing; retraining
Prehosp Disast Med 2001;16(3):S125.

HEAL (Hospital & Emergency Ambulance Link): Using IT to Enhance Emergency Prehospital Care

Dr. Lim Swee Han; Prof. V. Anantharaman

Department of Emergency Medicine, Singapore General Hospital, Singapore

Introduction: Currently paramedics radio the hospital from ambulances regarding arrival of critically ill patients (stand-by cases), so that the emergency department (ED) could be prepared to receive such patients. Voice communication has its limitations and information transmitted usually is sparse. The objective of the HEAL pilot project was to exploit the use of electronic and information technology to convey patients' information from EAS ambulances to the ED.

Methods: A comprehensive electronic ambulance case record was created as a pilot project between 3 ambulances and an ED. All information captured by ambulance crews, including biodata, clinical information, vital signs, Glasgow Coma Scale (GCS), ECGs, and treatment information were entered or downloaded onto a ruggedised PC in the ambulance. The system was able to calculate the Trauma Score and the Revised Trauma Score from the raw data. The data were transmitted to the receiving ED via the public wireless mobile data network. Features such as canned text and interphasing of vital sign equipment with HEAL were employed to facilitate data entry in a moving ambulance.

Results: A 3-month analysis of this pilot project involving 1,694 HEAL ambulance runs and 1,239 non-HEAL ambulance runs (5.1% of the total runs were stand-by cases indicated the following: For the non-HEAL stand-by cases, radio communication that was used to transmit critical information to hospital took 122 ±48 seconds. In 31% of cases, the age was not given. Gender was not given in 9% and ETA in 42%. For non-stand-by cases, no patient information was available before arrival of the patients. For the HEAL runs, 95.5% of standby cases were able to transmit 100% of critical information before arrival in hospital. Transmission time for data was approximately 4 seconds. For the HEAL non-standby cases, 68% of data was transmittable in 75% of HEAL ambulance runs. It was possible to capture a complete ambulance case record electronically at a mean time of 94 seconds versus 7 minutes, 7 seconds for the traditional written record. Paramedics' time in the ED decreased from 15 minutes to 8 minutes as a result of the use of HEAL. The HEAL system was able to effectively prompt paramedics in carrying out critical aspects of treatment in 93 % of instances as compared to 59 % in the non-HEAL system.

Conclusion: HEAL provided timely advanced information on the condition of the incoming patients, thus enabling the ED to be prepared to receive the patient. The high compliance to treatment protocols in the HEAL ambulances suggests enhanced standards of prehospital medical treatment. A decision will be made as to whether the