1) wounded with soft tissue damage (61.3%); 2) with soft tissue and bone structures damage (25.8%); and 3) with posttraumatic osteomylises (12.9%). Wound flora were cultured three times to determine the amount of bacteria in 1 gram of wound detrite, and were tested to antibiotics. The cultures were made on the third and fifth days from the beginning of treatment, and on the tenth day after the end of the treatment. Ultrasound preparation of the wounds was carried out daily for 10 days before the scheduled surgical operation using local anaesthetics and antiseptics. Another 240 (89.6%) patients not treated with ultrasound equipment before the surgical operation were included into the control group. Wounded and noncombat patients from both control and analysed groups were treated during the preoperative period, using traditional antibiotic therapy.

Results: After carrying out bacteriological analyses in the wound detrite of hospitalised patients, the following data were discovered: *Staphlococcus aureus* in 102 patients (37.6%), *Staphlococcus epidermalis* in 59 (21.8%), *Pseudomonas aeruginosa* in 21 (7.7%) and *Proteus vulgaris* in 10 (3.7%) cases. Microbe associations were found in 79 (29.2%) patients. In 168 (62%) patients, the amount of bacteria in 1 gram of tissue was not more than 106, but 79 (29.1%) and in 24 (8.9%) of wounded the number exceeded 107 and 108 respectively.

The results of ultrasound wound dissection were defined as follows: 1) good effect included absence of microbes flora in control culture of wound detrite, disappearance of pus, healing of the surface of the wound area drastically (by two times), and clinical symptoms of osteomylises were stopped; 2) satisfactory effect included on the fifth day from the beginning of the treatment, the exciter still could be cultured, however, the number of microbes in 1 gram of tissue became less—from 108 to 106, healing the surface of wound area was also stated, but not more than by two times with stable little amount of wound detrite; 3) an unsatisfactory effect was defined as the absence of effects previously mentioned. Good results were obtained in 25 (80.6%) patients, satisfactory in 5 (16.2%) and unsatisfactory in 1 (3.2%) wounded patient, respectively. An indirect proof of the described treatment efficiency is the reduction of the amount of postoperative complications (suppuration of wound) to 3.2% in the analysed group compared to the control group, in which the number of complications was still 6.5%.

Conclusion: Hence, the usage of low frequency ultrasound equipment in significant damages of soft tissue and bone structures treatment has been shown to be a highly effective and prospective method. The method makes it possible to speed up preoperative wound preparation, reduce the amount of postoperative complications, and, as a result, improve the outcome of microsurgical treatment in general.
Keywords: antibiotic; bone; dissection; soft tissue; surgery; ultrasound; war; wounds
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3.2. Poster Presentations

Modularization Study for Disaster Medical Supplies

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Emergency medical assistance during catastrophic natural disasters such as earthquakes or floods, is essential. Medical supplies are a critical element for disaster rescue; and we ensure adequate amounts of medical supplies only by planning for a medical reserve in advance of any catastrophic event.

Natural disasters are unpredictable and varied and thus can result in considerable variation in the quantity and severity of the casualties. A medical reserve must be flexible and adaptable. The aim of the study is to provide the basis and methods for the modular management of disaster medical supplies by: 1) analyzing the characteristics of the medicine required for disaster rescue; and 2) designing basic modular units and the way to assemble them according to the demand rule and casualties ratio on type.

To establish a new method in modular management of disaster medical supplies, we determined how to define and assemble the basic modules by the analysis of the rules of type and distribution of injuries and diseases caused by the event. Next, we used cluster analysis and decision-making analysis methods to confirm the function, range, and degree of each module, on which we can rely to create and assemble the medical supply modules. Finally, according to the morbidity data of earthquake and floods rescues, we ascertained the kinds and quantity of medicine for three disaster relief modules.
Keywords: casualties; data; disaster; medical; modular; planning; relief; reserves; supplies, medical; severity
Prehosp Disast Med 2001:16(3):S124.

Emergency Response to the Crash of SQ006: The Role of Medical Services

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Flight SQ006 with 179 persons on board, crashed at CKS airport, Taipei, ROC on 31 October 2000. This is the second aircraft-related disaster in the last 3 years that affected Singapore. Although the crash of Silkair MI185 in 1997 had no survivors, the SQ006 crash resulted in many survivors with severe burns.

A medical team from Singapore, comprised of an emergency physician and nurses, intensivists, and burn specialists, was dispatched within 18 hours to perform an evaluation of the medical needs of these victims. This subsequently led to the repatriation of 3 severely burnt casualties requiring critical care transport and aeromedical evacuation.

The following lessons learnt will be presented: 1) team mission and preparation; 2) health needs assessment; 3)

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.

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

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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, SaO_2 >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 45.7 mins (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.

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

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Introduction: Currently paramedics radio the hospital from ambulances regarding arrival of critically ill patients (standby cases), so that the emergency department (ED) could be prepared to received 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 ruggardised 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 standby 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 ofthe 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