Conclusion: The Pre-ACLS training course is a valuable teaching design to strengthen the ACLS concept and skills.
Keywords: advanced cardiac life support; education; pre-ACLS course; training

P-18
Accelerated Clearance of Carbon Monoxide by Normocapnic Hyperpnea in Human Subjects

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Background: The rate of carbon monoxide (CO) elimination is increased by CO_2-stimulated ventilation in CO poisoned, unconscious dogs. However, most conscious humans are unlikely to tolerate prolonged breathing of 5–10% CO_2. We proposed to determine: 1) the effect on the half-time of carboxyhemoglobin (COHb) elimination ($T_{1/2}$) of a voluntary increase in ventilation of approximately 5 times from resting levels with F_IO_2 = 100%); 2) whether this level of hyperpnea is sustainable long enough to provide therapeutic benefit when the PCO_2 is maintained at control levels; and 3) the effect of minute ventilation on the half time of elimination of carboxyhemoglobin.
Methods: After obtaining institutional board approval, seven normal male volunteers were exposed to CO until their venous [COHb] reached 10%. They then breathed 100% O_2 at resting ventilation or approximately 5 times the resting level of ventilation (~96% O_2, balance CO_2) for 1.5 h on separate days. A non-rebreathing circuit (*Eur. Respir. J.* 1998;12(3):698.) was used to prevent changes in $P_{ET}CO_2$ during hyperpnea. The $T_{1/2}$ was calculated from plots of [HbCO] versus time.
Results: 1) The $T_{1/2}$ significantly fell from 78 minutes at resting ventilation to 31 minutes with hyperpnea (p <0.01)(Figure 1); 2) All subjects sustained the hyperpnea without difficulty; and 3) There was a hyperbolic relation between minute ventilation (normalized for body weight and a [Hb] of 15 g/L) and the $T_{1/2}$ (Figure 2). $P_{ET}CO_2$ during hyperpnea did not differ from that during resting ventilation.
Conclusion: Sustainable hyperpnea can markedly reduce the $T_{1/2}$. There is a marked effect on $T_{1/2}$ of small increments of minute ventilation (effort) from resting ventilation. We suggest that normocarbic hyperpnea may provide an effective inexpensive pre- and in-hospital treatment option for acute CO poisoning.
Keywords: carbon monoxide; clearance; half-life; hyperpnea; normocapnic hyperpnea; intoxication; voluntary hypernea

Figure 1.

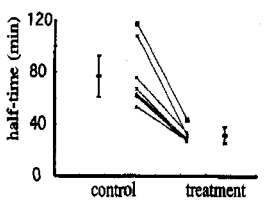
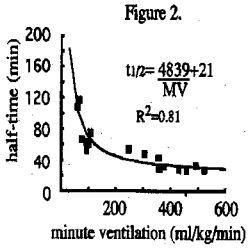


Figure 2.



P-19
Emergency Nursing Care in Penetrating Cardiac Injury

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Introduction: Penetrating cardiac injuries result in a high mortality emergency, even for those patients who reach a hospital with vital signs present. Successful emergency management requires teamwork involving Emergency Physicians, Surgeons, and Emergency Nurses.
Case report: A 36-year-old male sustained self-inflicted stab injuries over the left precordial and left neck regions. Penetrating injuries were identified medial to left nipple and a deep laceration over left neck were noted. Massive hemorrhage was present on arrival by ambulance at the Emergency Department. After emergency management that included primary resuscitation and surgical intervention, he was diagnosed as: 1) penetrating cardiac injury with left ventricle rupture and cardiac tamponade; and 2) penetrating lung injury to the left upper lobe with a left side hemothorax. He was discharged without significant complications after successful primary management.
Discussion: From the viewpoint of nursing care, the provision of care by specialized emergency nurses shortens the resuscitation time, and increases the performance of teamwork. We will identify various nursing strategies for the patient with penetrating cardiac injuries, and will discuss the roles of the specialized emergency nurses in dealing with trauma cases.
Keywords: cardiac injuries; chest trauma; nursing care; penetrating injuries; stabbing

P-20: Tug-of-War Not Only Was a Game, But a Disaster

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A mass playful contest may be a game, but also may become a disaster. We present a disaster about the tug-of-war contest causing injuries to 54 victims. On 25 October 1997, The Taipei City Government organized the tug-of-war, entitled, "Rocking the Mountain and River — Wrestling of Ten Thousand People" in Taipei. A modified tug-of-war rope system was used according to the ancient Chinese history that involved approximately 1,600 participants simultaneously in one single competition. A total of 54 people were injured after the rope snapped during an otherwise playful massive tug-of-war. There were only two physicians and two nurses on duty on the spot. Five victims were seriously injured