

transportable, manually (retrieval of patients from difficult terrain), by surface ambulance or in a helicopter.

**Conclusion:** The bridge is an effective mobile ICU. We will discuss the evolution of the Whangarei mobile ICU bridge and highlight its user-friendly features.

**Keywords:** critical care medicine; intensive care; helicopter; surface transport; mobile intensive care unit; New Zealand

#### G-49

##### The Importance of Measurement of End-Tidal CO<sub>2</sub> in Prehospital Care

Dr. Jiri Knor, MU;<sup>1</sup> Dr. Milana Pokorná<sup>2</sup>

1. Department of Anesthetics, Charles University Hospital KV, Prague, Czech Republic
2. Emergency Medical Care Service of the Capital, Prague, Czech Republic

**Introduction:** Due to the development of cardiopulmonary resuscitation (CPR) techniques, an increasing number of patients are surviving after cardiac arrest. In addition, the number of persons surviving with serious, permanent damage, and who depend upon permanent and expensive hospital care are increasing as well.

Optimum standard airways ensuring ventilation of patients during CPR include endotracheal intubation and artificial ventilation. A better solution, concerning this part of CPR, is not anticipated in the near future. The question of obtaining optimum tissue perfusion by external chest compression has been discussed several times.

Until now, there has not been a method for evaluating the efficiency of CPR. The monitoring of end-tidal CO<sub>2</sub> during CPR could be helpful, especially for beginner-rescuers. The initial use of capnometry in Emergency Prehospital Care was in the control of ventilation in patients who were being artificially ventilated during transport to the hospital. Originally, when capnometry was used during CPR, there were dramatic changes in ETCO<sub>2</sub> levels, but the artificial respiratory regime was not changed in accordance with the ETCO<sub>2</sub>.

**Method:** The study was performed on 13 patients who required CPR for non-traumatic, circulatory arrest. All of the patients were unconscious when the medical team arrived. The depth of unconsciousness signaled that pharmacological intervention was not necessary for intubation. Orotracheal intubation was accomplished within 20 seconds. The same parameters for artificial ventilation were used for each patient. A Cardiopump<sup>®</sup> was used for chest compression. An aspirating capnometer (BCI 8200) with a colorimetric detecting system was used to measure ETCO<sub>2</sub> levels. Levels of ETCO<sub>2</sub> were measured immediately after intubation and every five minutes thereafter. Measurements continued until either the CPR was stopped and the patient was pronounced "dead", or s/he was admitted to the hospital.

**Results:** *Surviving patients* — The initial level of ETCO<sub>2</sub> in the surviving patients was between 15 and 38 mmHg. All of the patients maintained a level of ETCO<sub>2</sub> between 25 and 60 mmHg during CPR and during transportation to the hospital.

*Non-surviving patients* — With one exception (18 mmHg), the initial level of ETCO<sub>2</sub> in patients that did not survive was <15 mmHg. All the patients who had an ETCO<sub>2</sub> level below 15 mmHg after 15 minutes of CPR did not survive.

*Patients that died before reaching the hospital* — ETCO<sub>2</sub> increased rapidly in two patients due to effective CPR, but the levels could not be sustained. The ETCO<sub>2</sub> levels remained low in each of the other patients.

*Patients that died in the hospital* — ETCO<sub>2</sub> levels did not rise above 30 mmHg. The ETCO<sub>2</sub> levels remained low during CPR in patients who were diagnosed as having pulmonary embolism at autopsy.

**Conclusion:** Capnometry can have wide application in prehospital care. It is important to be able to assess the efficacy of CPR:

- 1) During CPR, try to maintain a level of ETCO<sub>2</sub> over 20–25 mm Hg;
- 2) When the ETCO<sub>2</sub> level is high, the prognosis is good, even if CPR is prolonged;
- 3) Changes in the level of ETCO<sub>2</sub> can indicate the efficacy of the CPR treatment; and
- 4) The prognosis is very poor if the ETCO<sub>2</sub> level remains <15 mmHg after 15 minutes of CPR.

**Keywords:** back control; capnometry; chest compression; CPR; ETCO<sub>2</sub>; prehospital care

#### G-50

##### Pre-Hospital Care Provision by Accident and Emergency Department Teams in England

Judith Fisher, MBBS, FRCGP

Aaron Pennell Resuscitation Training Director, David McPhee Clinical Training Specialist Accident and Emergency Princess Alexandra Hospital, Harlow, UK

Prehospital care in the United Kingdom is provided by the ambulance service. However, additional medical support is provided by a cadre of Immediate Care doctors and Rapid Response Units (RRUs) from Accident and Emergency Departments.

This paper will provide the results of a survey of Accident and Emergency Departments in England, showing the potential scale of this additional response, the skills the teams offer, and the team composition.

The RRU at Princess Alexandra Hospital will be described, and an audit of its work presented. The recently launched HITS (Hospital Incident Training Support) education programme for team members will be outlined.

**Keywords:** Accident and Emergency Departments; emergency medical services; immediate care doctors; prehospital care; rapid response units

#### G-51

##### Integrated Rescue System in the Czech Republic

Petr Zelníček, MD, PhD

Traumatological Hospital Brno, Brno, Czech Republic