

Another aim of practice, was to improve the cooperation and communication with the technical rescue team, such as the fire brigade. The teams were given sufficient opportunities for discussion with the tutors. No model solution was proposed to the teams in order to allow several different ways of solution to be found.

**Results:** The analysis of the trauma training provided interesting results. Overall, the participants were enthusiastic about the performance. On a range of marks from 1 to 5, the average total mark was 1.2. All participants would recommend it to others. The professional benefit was stated as being very high (mark: 1.1).

To the effect of a quality process, all persons seriously injured now are recorded within the rescue service area. The first results also show an increased application of the subjects taught in the real situation.

**Conclusion:** Thus, it can be shown that quality management leads to higher quality standards also in the rescue service, significantly improving the medical care provided to the population.

**Key words:** alert; analysis; doctors; hazards; management; paramedics; plan; quality; rescue; standards; stress; team; training; trauma; tutors

*Prehosp Disast Med* 2001;16(2):s84.

### Quality Management in the Rescue Service: Resuscitation Analysis in a Rescue Service Area *Karl Wilhelm; Christian Günzel; Frederic William; Heidi Estner*

Förderverein Rettungsdienst Dachauer Land e.V.

**Introduction:** Based on a prospective study, resuscitations in a rescue service area were analysed within a period of 12 months with respect to place, time, primary cardiac rhythm, measures to be taken, and, in particular, the outcome of the patients. The data all were collected in the District of Dachau, Bavaria, where emergency medical services are provided exclusively by the Bavarian Red Cross. A demanding training of the paramedics who have to undergo an annual test in Advanced Cardiac Life Support (ACLS) and early defibrillation has been running for several years. A first-responder system also has been installed. The ambulance and emergency vehicles, as well as the first-responder systems are equipped with AEDs. The patients are resuscitated according to a preset resuscitation algorithm including early defibrillation by rescue service staff and drug treatment on the basis of the American Heart Association (AHA) guidelines.

**Methods:** The district analysed has approximately 129,000 inhabitants. The medical care of the population is nearly exclusively provided by the district-owned hospitals of Dachau and Markt Indersdorf. The rescue service operates four rescue stations and two emergency doctor vehicles around the clock. Based on a record sheet, all resuscitations within the period of 01 January 2000 through 31 December 2000 were recorded. The outcome of the patients could be followed-up in all cases.

**Results:** In total, there were 90 resuscitations. The average age was 60 years. A few more men than women were resus-

citated. The most outstanding fact was a relatively high rate of resuscitations of children (8%). Approximately 20% of the patients were resuscitated by laymen. The most frequent cause for the resuscitations were internal diseases (81%). Most patients (78%) were treated at home. The outcome was surprising: 42% of the patients were taken to hospital after return of spontaneous circulation. Also, 12% were long term survivors. A most satisfactory outcome is the fact that 6% of the survivors were able to leave the hospital without any neurological deficiencies.

The subgroup analysis of resuscitations indicates that the best outcome occur in cases of observed cardiac arrest and immediate resuscitation by laymen.

**Conclusions:** First-class technical equipment and superior training of the rescue service staff may significantly improve the rate of resuscitations in a rescue service area. It can be shown that quality management leads to higher quality standards also in the rescue service, significantly improving the emergency medical service for the population.

**Key words:** bystanders; cardiopulmonary arrests; defibrillation; outcome; quality management; resuscitation; standards; training

*Prehosp Disast Med* 2001;16(2):s84.

### Quality Management in the Rescue Service: Development of Standards for Treatment of Stroke Patients

*Karl Wilhelm; Christian Günzel; Heidi Estner;  
Hubert Böck; Bernd Rupprecht; Frederic William*  
Förderverein Rettungsdienst Dachauer Land e.V.

**Introduction:** In view of the number of stroke patients to be treated each year, and the importance of the emergency "stroke" for each patient, the Förderverein and the Bavarian Red Cross of Dachau decided to promote quality standards in the preclinical care by specific training and the development of a stroke record.

**Methods:** Based on a prospective observation, the treatment of stroke patients was to be surveyed in a rescue service area over a period of 8 months with respect to gender of the patient, age, body temperature, blood sugar, oxygen saturation, and ECG-rhythm. The collective survey comprised the District of Dachau, Bavaria, the rescue service of which being exclusively provided by the Bavarian Red Cross. The District of Dachau covers an area of 579 sqkm with approx. 129,000 inhabitants. The rescue service operates four rescue stations and two emergency doctor vehicles. Several first-responder systems have been installed.

In current training courses, guidelines for stroke treatment were imparted, and a standardised record sheet was introduced; it was to be filled-in by every paramedic in case of the diagnosis of "stroke". Besides age and gender, the risk and prognosis factors for the disease as known today, had to be obtained in accordance with an algorithm.

**Results:** On the basis of this record sheet, all stroke treatments from 01 June 2000 up to 01 February 2001 inclusive were recorded. The evaluation of these records indicated that: in total, 94 patients were treated under the primary

diagnosis "stroke". Almost as many men ( $n = 46$ ) as women ( $n = 47$ ) were treated. The average age of the patients was 77 years, while the most strokes were observed in the age group ranging from 80 to 90 years ( $n = 42$ ). Not only the diastolic, but also the systolic blood pressure was to be measured in at least 10-minute intervals. The average systolic blood pressure was 154 mmHg, while 3 patients had systolic pressures of  $<100$  mmHg and 16 patients  $>190$  mmHg. The diastolic blood pressure was around 85.5 mmHg. The body temperature was to be taken axillary with digital thermometers. 61 patients did not run a fever, 7 patients had a slightly higher temperature, and 2 patients had a temperature exceeding  $38.0^{\circ}\text{C}$ .

The oxygen saturation amounted to an average of 94.9%. Yet 6 patients had a primary oxygen saturation of less than 90%.

**Key words:** algorithm; oxygen saturation; prehospital; protocol; risk factors; stroke

*Prehosp Disast Med* 2001;16(2):s85.

### Remote Area Mass Casualty Incident Response in Australia

Eric Williams

AUSTRALIA

Australia has a land mass of 7,682,300 sq. km., approximately the same size as the United States of America excluding Alaska, 32 times the size of the United Kingdom, twice the size of Europe (excluding the Russian Federation), and three to four times the size of the European Union (European Economic Community). Australia's population of 20 million is mostly centred around state capital cities which are situated peripherally on the island continent. Distance is a major consideration for planning a response to mass casualty incidents. Under the Australian Constitution, the Federal Government of The Commonwealth of Australia has the responsibility for the defence of Australia, and for protection of the States against invasion. However, each state and territory is responsible for the protection of citizens and property, including emergency planning and response within its jurisdiction. The Commonwealth centrally, plans and coordinates programs for response to national threats affecting national interests and provides coordination of actions between states if required. Such national programs include the development of a cyclone warning system and the Commonwealth Search and Rescue Organization, which coordinates the initial response to air and maritime incidents.

This paper outlines the measures necessary to provide effective mass casualty management for remote area incidents and for communities, which may be remote from major treatment centres. The medical coordination and organization issues involved in prehospital management and the distribution of casualties to appropriate treatment facilities will be outlined.

**Key words:** Australia; cyclone; mass casualties; maritime; plan; preparedness; remote; responses; responsibility; search and rescue

*Prehosp Disast Med* 2001;16(2):s85.

### Distal Tubes for Left Colorectal Trauma and Obstructive Carcinomas

Wu Yinai; Liu Xiantang; Xie Shanghui; et al

Department of General Surgery, The 157th Central Hospital of PLA, Guangzhou, CHINA

**Objective:** To prevent and reduce anastomotic leakage after a one-stage operation for left colorectal trauma and obstructive carcinomas, and after Dixon operation for rectal carcinomas.

**Methods:** Drainage by perianastomotic, proximal and distal tubes was used in 142 patients with left obstructive colonic carcinomas, 86 patients with left colorectal trauma, and 157 patients undergoing a Dixon operation. The incidence of postoperative anastomotic leakage and the healing time of lower anastomotic leakage after operation for rectal carcinomas were observed.

**Results:** By means of drainage by perianastomotic proximal and distal tubes, the incidence of postoperative anastomotic leakage was 4.2% (6/142) and 1.9% (3/157) respectively in patients with left obstructive colorectal carcinomas and patients undergoing Dixon operation for rectal carcinomas. These indexes were different from those in control groups ( $p < 0.05$ ). The incidence of postoperative anastomotic leakage was 3.5% (3/86) in patients with left colorectal trauma.

**Conclusion:** Drainage by perianastomotic proximal and distal tubes can effectively prevent and reduce the incidence of anastomotic leakage after one-stage operation for left colorectal trauma, obstructive carcinomas, and after Dixon operation for rectal carcinomas.

**Key words:** carcinoma; colorectal trauma; leakage; operations; perianastomotic proximal and distal tubes; surgery

*Prehosp Disast Med* 2001;16(2):s85.

### Prediction of Death in Patients with Acute Hypertensive Cerebral Hemorrhage

Wu Zhenhong

Guangxi National Hospital, Guangxi Nanning, PEOPLE'S REPUBLIC OF CHINA

**Objective:** In order to increase the rate of success of emergency treatment for patients with an acute, hypertensive cerebral hemorrhage, the risk factors for predicting death were studied in 101 patients.

**Methods:** The relationships between age, state of consciousness, blood pressure (BP) at the onset, amount of bleeding; and morality were analyzed retrospectively.

**Results:** The older the patient; the worse the state of consciousness, the higher the BP at the onset, the higher the amount of bleeding, and the higher the mortality ( $p < 0.01$ .)

**Conclusion:** The aforementioned indices are of prognostic significance for patients with an acute, hypertensive cerebral hemorrhage.

**Key words:** cerebral hemorrhage; consciousness; hypertension; mortality; prediction; stroke

*Prehosp Disast Med* 2001;16(2):s85.