This situation was considered unsatisfactory; therefore, the Pyhäjoki Health Station, the Local Branch of Finnish Red Cross in Pyhäjoki, the Fire Station, and Life-Boat Association of Pyhäjoki jointly established a local first-responder unit on 16 June, 1996. The purposes of this unit are to: 1) begin life-saving treatment of emergency patients sooner; 2) prepare the patient for transport using the paramedics' ambulance; and 3) assist the paramedics with their duties. During the office hours of the Health Station, the first-response group (Group 1) consists of one doctor, two nurses, and two firemen. Outside the office hours, the group (Group 2) consists of two members of the local branch of Red Cross, one of whom must be a health-care professional, while the other can be a layman who must have been trained in basic first response. Furthermore, the group also includes 2–3 firemen, who also must have been trained as first responders. Both groups can be alerted for emergencies by the emergency services dispatch centre persons who seems to be at high risk. The Health Station is responsible for providing the groups with paramedics' equipment and medicine, supplies, and for maintenance and replacement of these materials. The fire station gives pagers to the group members and provides them with a vehicle complete with first-aid and communication equipment. When necessary, the Life-Boat Association of Pyhäjoki provides the group with sea transportation. The Red Cross regularly trains this emergency unit. The responsible doctor from the Health Station supervises the operations.

In 1997, the first-responder unit was alerted 34 times and 38 patients were evaluated. The alerts consisted of seven accidents and 27 attacks of illnesses. According to the final evaluations, three of the accidents, and 14 of the illness cases required emergency care. Emergency group 1 reached the scene approximately 11 minutes (range: 2–18 min.) before the ambulance, and group 2 on the average 8 minutes (range: 0–20 min.) before the ambulance. After the first 1.5 years experience, the cooperation between officials and volunteers has been working very well.

Key words: firefighters; first-responder unit; health station; paramedic; prehospital emergency care; Red Cross

The Quality of Paramedical Treatment for Emergency Patients in Raahe Area

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The quality of paramedical treatment received by emergency patients in the area of five municipalities and 34;400 inhabitants was measured by studying how the paramedic treatment reports had been filled in, how quickly the patients had been reached, and what had been the immediate result of the treatment. The 185 emergency patients from the five Raahe-area municipalities, who were treated by the three private paramedic units in 1995 and 1996, were studied. Patients who had suffered from disorders in the basic life functions of respiration, blood circulation, or consciousness were classified as emergency patients.

During the study period, the paramedic units responded to a total of 5,632 cases. Of these, 7% of the paramedic reports showed the time when the emergency call had been received in the emergency services dispatch centre. In 100% of the cases, the time of the ambulance receiving the alert had been recorded, and 42% of the reports noted the time of that the ambulance arrived on the scene. In 83% of the cases, the time that the attendants reached the patient had been recorded, and 34% of the reports also contained the starting time of the transportation. In 29% of the reports, the patient's arrival time at the hospital was recorded, and 62% of the records contained the ending time of the whole emergency process. There were no records of the alert or transportation codes. Information that described the paramedical treatment on the scene and during the transport could be reconstructed for 83% of the cases.

The median values for the time in minutes to reach the patient within the area of the municipalities were the following: Raahe, 8 (range: 1–30); Pattijoki, 10 (range: 3–20); Ruukki, 10 (range: 4–38); Siikajoki, 21 (15–27); and Pyhäjoki, 23 (10–35). The paramedics reached the patients within 10 minutes in 58% of the cases. The corresponding 10 minute proportions for the member municipalities were: Raahe, 77%; Ruukki, 67%; Pattijoki, 57%; Pyhäjoki, 4%; and Siikajoki, 0%. A total of 47% of the patients had benefitted directly from the treatment provided. There were 41 attempted resuscitations, 59% of which were successful in the emergency situation. Of all the paramedic reports, 12% lacked sufficient information to the extent that the results of the paramedic treatment could not be evaluated.

This study revealed deficiencies in supervision and feedback in the emergency medical services system as well as regional inequalities in the paramedic services within the Raahe area.

Key words: medical records; outcome; paramedic; prehospital emergency care; response times

Specialization and Increasing Medical Abilities and Facilities Under Overwhelming Situations of Different Scale in Siberia

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The presence of potentially dangerous objects (chemicals, hazardous environments, etc.) with the likelihood of the primary striking each administrative territory of Siberia determines the particular specialization of Disaster Medicine for the area. For instance, Disaster Medicine of Òîmsk area pays greater attention to preparing the ability and facilities to manage the consequences the release of radiation; in Kemerovo area, minor trauma (polytraumas), barotrauma, and the crush syndrome; in the Omsk area, chemical releases; and so on.

Disaster Medicine ensures treatment during the

prehospital stage and evacuation to a single-purpose medical centre prepared for such an event. The Siberian Centre for Disaster Medicine designed a Plan for Interterritorial Interaction for Field Disaster Medicine in Siberia which organizes the medical abilities and facilities in accordance with the scale of possible overwhelming situations. The document allows over the short term, the concentration of necessary specialty abilities and facilities of Disaster Medicine for management of the consequences of overwhelming situations in any administrative territory of Siberia.

These abilities and facilities can be addressed and included in the plan for international cooperation.

Key words: disaster medicine; specialization, Siberia, technological disasters

Prehospital Teleconsultation

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Wireless data communication opens a new era in the provision of emergency medical services outside of the hospital. With a combination of a terminal unit (laptop computer), a mobile phone, and a patient monitor, it is easy to collect, send, and receive information that is needed for the provision of emergency care. Recent inquiries indicate that paramedics need practical advice for acute problems much more often than has been assumed. Thus, there is a need to create a consultation system that readily fits into everyday working rhythm.

There has been created a teleconsultation entity in order to fulfil these information needs in emergency medical services. One of the essential parts of this entity is the analogue-to-digital converter unit for easy digitalisation of monitored data together with Windows-based software. This device collects the monitored parameters from different probes and displays these data on a computer screen in a form that can be transmitted directly to a doctor's computer screen. The doctor-in-charge will be reached easily using a data network.

This system facilitates an immediate response which is essential during the golden minutes in emergency situations. The system also archives this patient information automatically in an electronic form. The advise provided, then, is based on exact, actual data of patient's state and background, which in its visual graphic form, is much more exact than is solely verbal information provided by telephone. Written advise also is much more concertical and precise; thus, fatal misconceptions can be avoided.

The addition of this type of device results only in a nominal increase in workload, and will be accepted only if its benefit/extra effort relationship is positive. Besides the imminent obvious improvements in patient care, it offers indirect benefits in form of learning.

Key words: communication; consultation; information systems; medical consultation; paramedics; physicians; technology; teleconsultation

Retention of Vital Activity and Vitality of the Brain During Deep Hypothermia

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Cold paralysis of thermoregulation and respiration occurs in rats at the brain temperature of 18–19°C. We have restored these functions without rewarming the body by introducing EDTA into the blood of the cooled animals, which improves the transport of the excess of Ca^{2+} from the cells to the intercellular medium.[1] Spontaneous respiration and cold shivering continued until a brain temperature of 15.5–16.0°C was reached.[Ivanov, Arokina, Volkova, *in press*] During cooling of the animals, if an intensive circulation could be retained in the brain, spontaneous respiration continued until temperatures of 13–14°C were attained.[Ivanov, Slepchuk, *in press*] Upon further cooling of the brain, respiration and thermoregulation are switched off. However, if the arterial blood pressure is maintained at the level of 35–45 mmHg, the brain retains its vitality until temperatures of 1–2°C are established. However, its functions can be restored after a long period of such cooling.[Ivanov, Alyukhin, *in press*]

These observations demonstrate the yet unknown properties of the brain of homoisothermal animals. They can serve as a stimulus to develop new methods for reanimation after deep accidental hypothermia.

Key words: brain function, calcium flux; EDTA, hypothermia; preservation

Principles of Retention of the Vitality and Vital Activity During Deep Hypothermia without Rewarming the Body

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For 100 years of studying accidental hypothermia, rewarming the body was considered the only method for restoring life, though often, this also was the cause of death of a cooled organism. Supplying the brain of mammals with cooled blood at a sufficiently high arterial pressure under physiological conditions (special method) has allowed us to retain thermoregulation and spontaneous lung ventilation in animals at brain temperatures so low that they always paralyze these functions. Supplying the brain with cooled blood and artificial ventilation allowed us to retain the brain vitality in animals for a long time at the brain temperature of about 0°C; and following this period of hypothermia, we were able to restore the vital activity of an organism.

According to Hochachka's theory (1986), during deep hypothermia, the synthesis of ATP is violated. The lack of energy to the brain prevents the transfer of calcium ions