ml of fluid at 39.7° C then was bolused through 50 cm tubing at 300 ml/hour.

Results: Initial and mean fluid temperature (C) versus distance during one-hour infusions.

rate (ml/hr)	Initial Bag	Mean Bag	100 cm	180 cm	230 cm	280 cm
1000	60.3	53.8	42.3	38.8	37.5	36.1
800	60.7	52.0	41.3	36.4	35.8	34.5
600	59.8	51.8	39.2	34.8	33.4	31.8
400	59.8	51.6	35.6	30.4	29.1	27.9
200	75.0	65.2	34.9	27.2	26.5	25.1
1000	39.3	36.1	31.7	30.0	29.6	28.9

Sixty ml of saline at 39.7° C run through 50 cm of tubing (300 ml/hr) was 37.6° C at delivery.

Conclusions: Warmed fluids cannot be delivered at therapeutic temperatures under current recommendations (37°–42° C). Emergency departments should store fluid at 60° C and physicians should consider both tubing length and flow rates when ordering warmed lavage and intravenous fluids, even when using fluid warmers. For hypothermia, intermittent boluses could deliver the same fluid volumes at higher temperatures than continuous drips and should be used when permitted.

071.
International Relief as a Model for Disaster Response Training

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The Emergency Medicine Residency Training Curriculum encourages resident education in Disaster Response. The paucity of large-scale disasters in the United States makes such practical experience difficult to obtain. An elective created at an Emergency Medicine Residency Program offered a four-week experience at a field hospital in an African war zone. Between August and December 1994, AmeriCares, a non-government relief agency, operated a medical facility in a remote area of Rwanda along the refugee route linking Goma, Zaire, and Kigali. Review of the facility's epidemiologic log revealed that physicians evaluated and treated between 1,859 and 5,054 patients a week. Medical cases included tropical diseases such as malaria and filariasis, as well as entities commonly seen in the United States. Surgical cases ranged from burns and abscesses to traumatic injuries sustained in the war. Residents participated in triage, clinical evaluation and treatment, packaging and transport of patients and public-health planning decisions for the facility, including sanitation, water, and food distribution.

This elective constituted an excellent model of disaster-response training in austere conditions with limited medical resources. We submit that resident physician participation in international medical relief provides a unique opportunity for service and education.

072.
Comparison of Two-Person CPR with Bag-Valve-Mask Device (BVM) to One-Person CPR Using the Kendall Cardiovent® (KCV®) Device in an Intubated CPR Mannequin

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Objectives: CPR in the prehospital setting requires at least two rescuers necessitating dispatch of additional rescue units. The KCV®, which permits simultaneous compression and ventilation by one rescuer was compared with two-person CPR with BVM.

Methods: A single-blinded, double cross-over study with six CPR instructors each performing one-person CPR with KCV and two person CPR with BVM on an intubated, recording, CPR mannequin (Resusci-Annie®). Tidal volume obtained by spirometry, and compression depth were recorded continuously during each 12-minute CPR session. Mean tidal volume (MTV), minute volume (MV), compression rate (CR), ventilation rate (VR), and errors in compression depth (ECD) were compared for CPR sessions performed by one person with KCV and two people with BVM. Student's *t*-test and regression analysis were used in statistical calculations (Statview II® software).

Results: A total of 1,894 ventilations and 10,532 compressions were performed in three separate 12-minute sessions. MTV and CR for KCV were significantly different than for BVM: 1,242.3 ml vs. 1,065.0 ml ($p = 0.0018$) and 63.2/min vs. 81.3/min ($p = 0.0076$) respectively. However, both KCV MV and VR were not statistically different than BVM: 14,760 ml vs. 16,058.7 ml ($p = 0.5649$) and 11.9/min vs. 14.9/min. ($p = 0.1226$) respectively. ECD rate of 9.78% was observed with KCV compared to 8.49% with two-person CPR ($p = 0.1815$). ECD, rate increased as a function of time equally for both KCV (1.8%/min) and two-person CPR (1.4%/min) (r = 0 .952; $p = 0.0001$).

Conclusions: One-person CPR with KCV was equivalent or better than two-person CPR with BVM in all measured parameters except CR. Use of KCV will effect better staff allocation upon the prehospital patient requiring CPR. Further work is needed to determine whether the lower CR associated with KCV is clinically significant or correctable with practice effect.

073.
Physicians' (MDs) and Nurses' (RNs) Knowledge of and Attitude Toward Advanced Directives: Experience and Preference

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Objectives: Patients' preferences for intensity and duration of medical treatment often are delineated in legal documents

called Advanced Directives (ADs). MDs and RNs in hospital practice have to assess and respond to these ADs. This study investigates MDs and RNs own knowledge of, experience with and attitude toward ADs.

Methods: Sixty RNs and 37 MDs on the staff at a large teaching hospital were surveyed (convenience sample) about their knowledge, experience, and attitudes toward ADs. The survey also contained four scenarios in which the subject had to choose a course of action. Action choices were compared to survey responses using log-linear analysis with the SAS CAT MOD program for categorical data.

Results: Only 10% of MDs and RNs had ADs of their own. While 68% of MDs and 44% of RNs had experience informing patients about ADs, only 40% of MDs and 15% of RNs felt that informing patients was part of their job. MDs and RNs who did not have ADs were more likely to refuse heroic measures for themselves and be compliant with ADs of a parent, spouse, or adult child. Experience with termination of life support (24% MDs, 70% RNs) did not determine the choice of heroic measures for self or compliance with ADs of a parent or adult child.

Conclusions: Regardless of experience of personal preference, few MDs or RNs had ADs, but most respected patient preferences in the action scenarios. Many MDs and RNs inform patients about ADs and comply with them, but do not see patient education about ADs as part of their job. It appears that MDs and RNs may require additional education in order to strengthen their role in patient decision-making about ADs.

074.
Teach a Man to Fish: Sustainable Emergency Medicine Training in Armenia, Kyrgystan, and Siberia

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Emergency medicine residents from our institution supported by AmeriCares (a charitable relief organization) and USAID have actively participated with a faculty member in a series of unique emergency medicine training programs in Armenia, Kyrgystan, and Siberia. Practicing side by side with their partners from the Tibetan plateaus to the Siberian tundra, the residents helped to adapt appropriate textual material for translation, edit the texts, choose educational and practical equipment, plan the logistics of transport and travel, negotiate with administrators on site, teach with didactic lectures and practical hands-on interactions, and evaluate performance in the field. They learned and applied a "teach a man to fish" approach to sustainable health-care education. This experience reinforced their clinical and teaching skills in unique and austere environments, forcing them to adapt and grow as doctors and people of the world. This presentation will review their work with pictures, examples of texts, and printed material.

118.
A Training Package in Disaster Medicine

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For some, time there has been a deficiency in terms of training in disaster medicine for health professionals. This particularly is relevant in Australia where the potential for disasters in remote areas is high. As a result of a joint effort between the Department of Human Sciences and Health, the Department of Defense (Surgeon General and Emergency Management Australia), and the Royal Australian College of General Practitioners, a package has been developed for training of health professionals in disaster medicine. This package comprises video, manual, and a five-day live-in course. A pilot course was conducted in December 1994, and the experience with this and the training package in general will be reviewed.

034.
Educational Experience in Bosnia-Herzegovina

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The death of Tito, the fall of communism, and the impending declaration of independence of Yugoslavian states paved the way for a vicious ethnic war. Political and historical aspects aside, one result of this war was the destruction of infrastructures that led to the collapse of health services in central Bosnia and Herzegovina. The obvious results of war taxed an already troubled health system beyond its ability. Henceforth, humanitarian organizations, in cooperation with Bosnian authorities began to develop a course of action not only for treatment of the sick and injured, but also for educating the medical population in Bosnia to emergency-specific medicine.

The International Medical Corps (IMC) based in Los Angeles, California, USA, embarked on a comprehensive medical-education training program in central Bosnia based in Zenica, a city 75 km northwest of Sarajevo. This was a two-track program—one track for existing physicians working in war hospitals throughout the country, and the second track for nurses who would work in the same facilities or staff an ambulance program that IMC also was developing.

Over a six-month period, 215 physicians and 240 nurses were trained in areas such as advanced trauma life support, pediatric advanced life support, orthopedic/soft-tissue injuries and treatment, and the systematic approach to patient assessment.

This presentation will focus on problems encountered in the educational endeavor, and ways in which they can be avoided in future similar circumstances.

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